



# World Environment Report

WORLD ENVIRONMENT CENTER



# World Environment Report

## News and Information on International Resource Management

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### SLANTS & TRENDS

WIDESPREAD STARVATION will be the major threat to mankind following a nuclear war, according to a report by the Scientific Committee on Problems of the Environment, a branch of the International Council of Scientific Unions. Following a study of the biological effects of a nuclear winter, the period of darkness and freezing that some atmospheric scientists predict will be the result of a major nuclear war, the scientific group concluded that a large proportion of the world's population will not die of cold, the earth's climate will eventually return to normal, and, contrary to wide-spread belief, global fallout is "comparatively not of major concern" as a cause of death.

WHAT IS OF MAJOR CONCERN is the probable destruction of agriculture in the northern hemisphere for a year or more, the scientists say. They predict that 2.5 billion people could be plunged into famine. "Sudan and Ethiopia today are probably far more representative of what the world would be like after a nuclear war than are Hiroshima and Nagasaki," according to Mark Harwell, a study director. Because of their food stores, the U.S. and Canada would be expected to have enough food to avoid major famine, although distribution would be a problem because of fuel shortages. Most other parts of the world, however, would face severe famine. Japan, India and Brazil are expected to be especially hard-hit, even if not the subject of a direct nuclear strike.

\* \* \*

A STRONG PENALTY SYSTEM for polluters is being urged by legal researchers in Canada who contend that current pollution legislation lacks "teeth." Jail terms, not just fines, should be used in certain cases, says the paper, adding that courts need beefed-up sentencing powers. Another need, according to the authors, is for the courts to have broader authority than is now available to them to order restitution and compensation for damages caused by pollution. The paper was prepared for the Law Reform Commission of Canada. See page 146.

Leonard A. Eiserer  
Publisher

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INDIA HEADING FOR ECOLOGICAL DISASTER,  
STATE-OF-THE-ENVIRONMENT REPORT CLAIMS

by Darryl D'Monte

Unless its natural resources are better managed, India will face a "social, economic and ecological disaster," warns the second "State of India's Environment Report," produced by the Delhi-based Centre for Science & Environment. The report highlights how the pace of destruction of natural resources in India is gathering speed, noting that solid erosion is spreading quickly and that ravines have gobbled up and depopulated more than one-tenth of the Chambal Valley villages in central India.

The government is underplaying the extent of forest destruction, the document charges. It cites the latest satellite data as showing that India is losing 1.3 million hectares of forests a year -- nearly eight times the amount of land reforested by the government. The result, the report claims, is an impending fuel and fodder famine. In a typical drought-prone village, women must walk as much as 1,400 kilometers/year in search of fuel (roughly the distance between Delhi and Calcutta). Next year this figure is expected to rise to 1,500 km.

The affects of deforestation on the water cycle are reflected by global data which shows that the largest number of drought-affected victims -- 80% of the global total -- lived in India in the '60s and '70s, the report points out. It also notes that smokey woodstoves expose women to the equivalent of 200 cigarettes' worth of carcinogenic benzo(a)pyrene in just three hours; and that India's urban population will be the world's largest, between 350 and 400 million by the year 2000. Three out of four city-dwellers are expected to be living in slums by that time.

Approaches to improving the situation are discussed by the report, which suggests that proper storage of the country's rainfall could provide water during the drought season. Experts calculate that tanks built over 3% of India's land area could store a quarter of its rainfall. Currently, India uses only 10% of its rainfall.

While "environmental destruction is pushing India towards a crisis," the report concludes that on the other hand, "its environment is so rich in potential and diversity that it is one of the few remaining countries which can become the breadbasket of Asia."

Copies of the report are available from Anil Agarwa & Sunita Narain, Centre for Science & Environment, 807 Vishal Bhawan, 95 Nehru Place, New Delhi 110 019, \$40.

STUDY OF OMAN'S WAHIBA SANDS TO GATHER  
DATA FOR DESERT CRISIS MANAGEMENT

by Barbara Massam

From an intensive five-month study of the Wahiba Sands of Oman, British scientists hope to establish a data base that will be of help in the long-term management of crisis desert areas such as those in Ethiopia and other countries in the sub-Saharan region of Africa. A research team of 30 British and Omani scientists went to the Wahiba, Sept. 3, to begin their studies under the aegis of the Royal Geographical Society. Under study will be the Sands' sedimentary and geomorphological history; sand movement, soil moisture and vegetation -- to help explain the distribution of plants; biological resources of the different areas within the Sands; economic interrelationship between the indigenous communities; and the impact of recent oil-related changes, development and planning.

### HUNGARY APPROVES DANUBE POWER PROJECT IN FACE OF ENVIRONMENTALIST OPPOSITION

by William Mahoney

Hungary on Aug. 15 gave the go-ahead to a power project with Czechoslovakia that Hungarian environmentalists contend will harm great stretches of the Danube River and its surroundings. According to the Hungarian MTI news agency, the government based its decision on a report that says the project will not damage the environment.

The project involves the construction of power plants at Gabickovo, Czechoslovakia, and Nasymaros, Hungary, and the daming or diversion of 220 kilometers of the Danube. Opponents of the project earlier this year gathered about 7,000 signatures on a petition opposing the construction -- an action unique in that country.

The Danube Circle, a private group of Hungarian environmentalists, claims the project would adversely affect the drinking water for many communities, damage plant and animal life and change the traditional Danube landscape. They predict that if the project goes through, by the end of the century, 30-40% of the population living near the Danube bend will have to be supplied with water from other parts of the country.

A report by the Hungarian Academy of Sciences estimates that electricity generated by the project would provide less than 2% of Hungary's total energy needs and that the money might be better spent on energy-saving projects.

During a meeting last month, Hungarian and Czechoslovakian deputy prime ministers, Jozsef Marjai and Rudolf Rohlicek, reviewed plans for the project and "outlined joint topical tasks" designed to ensure that "all possible damage to the environment would be forestalled and nature protected," Radio Budapest reported.

Some Western observers, however, believe that Hungary is dragging its feet on the project. In late August the government invited planners and builders to submit new plans for segments of the project. This will give environmentalists time to renew their protests, according to some observers. Imre Balint, chief engineer of the Hungarian Ministry for Construction and Urban Development, said that his office is looking for architectural designs that will "blend with the environment."

### STRONGER POLLUTION PENALTIES URGED BY LEGAL STUDY PAPER

Those who deliberately pollute the environment should not merely be fined, but in some cases should be jailed, two legal researchers have urged in a study paper prepared for the Law Reform Commission of Canada. The greater use of jail terms "will achieve the ultimate goal of stopping the offending behavior, repairing damages caused to the environment and preventing the recurrence of the harm," according to John Swaigen, who with Gail Bunt authored the report.

The stronger enforcement policy recommended by the paper includes: Incarceration as a punishment in itself and not merely as a sanction for failure to pay a fine; higher fines for corporations than for individuals; tailoring of fines to an offender's income; raising statutory maximum fines that are exceptionally low; ordering of restitution and compensation. As alternative sentencing options, the authors suggest the forfeiture of property, suspension or revocation of licenses, permits and other privileges, requiring convicted persons to post performance bonds.

**SWISS INDUSTRY LAUNCHES CAMPAIGN  
TO ENCOURAGE WASTE RECYCLING**

by William Mahoney

A two-week campaign to promote waste recycling throughout Switzerland was launched Sept. 7 by Swiss industry and professional groups. The publicity effort, aimed at educating citizens about the important role recycling plays in this land-locked country that virtually lives by importing raw materials, is sponsored by Semaine Suisse-Arbalette, an organization of some 1,500 Swiss firms and professional groups.

The promotion material of SSA notes that each Swiss now produces about 400 kilograms of waste per year, compared to 150 kg. 25 years ago. This breaks down annually to 2.4 million tons of household waste, 2.6 million tons of water purification sludge, plus junked vehicles, old tires, oils, animal cadaves, glass paper, industrial and agricultural waste, for a total of some eight million tons a year, the organization says.

**DUTCH GRANT TWO-YEAR PERMIT  
FOR AT-SEA INCINERATION**

by Simon Geschwindt

The Dutch environment ministry has granted a two-year permit to the Rotterdam-based waste disposal concern, Ocean Combustion Service (OCS) to incinerate about 2,000 tons/year of chlorinated waste at sea. OCS currently handles about 300,000 ton/year of chemical waste from throughout Western Europe. But in accord with its commitment to the Oslo Treaty to combat marine pollution, the Dutch government is investigating whether ocean incineration can be halted. The transport and waterways ministry has commissioned a feasibility study into incineration by the Rotterdam disposal company AVR or the Dutch chemicals producers Akzo Zout Chemie in Botlek, near Rotterdam, after expiration of the new OCS permits. For its part, OCS claims that at-sea incineration causes less pollution than onshore disposal, and that government policy reflects out-of-date information on the subject.

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✓  
COLOMBIA CONVERTS GORGONA ISLAND  
INTO BIOLOGICAL RESEARCH STATION

by Peter Nares

In response to pressure from conservationists, the Betancur government of Colombia has closed its penitentiary on endangered Gorgona Island in the Pacific Ocean. The prison center will be converted to a Galapagos-Island-style biological research station. Located 35 miles off Colombia's coast, Gorgona Island has been described as "a living laboratory" because of its hundreds of species of birds, monkeys, reptiles and ornamental fish. Over 20 freshwater streams flow down the slopes of the 1,100-foot jungle mountain range of the 55-square kilometer island.

Biologists have been calling for years for the closure of the island's prison because of its impact on the island's natural habitat. In recent years, about ten tons of timber have been cut each day to meet the penitentiary's fuel needs, and a number of streams have been silted over because of the deforestation. Prisoners have also sold large numbers of wildlife species to tourists and damaged Gorgona's coral reefs.

Designated a national park, the island now will be administered by the state wildlife protection agency, Inderena. With the cooperation of four Colombian universities, a biological and oceanographic research center will be established. Only closely supervised tourism will be allowed.

In other efforts to preserve its environment, the Colombian government has prohibited the importation and sale of pesticides containing ethylene compounds; and has signed an accord with local authorities in the Cundinamarca District to limit industrial contamination of the Bogota River. The State Council has ruled that the Macarena nature reserve cannot be dismembered for agricultural settlement.

SCIENTISTS WARN OF POLLUTION ON NORTH SEA COAST;  
WEST GERMANY SEES SOME WATER QUALITY IMPROVEMENT

by William Mahoney

Chemicals, heavy metals and fertilizers are threatening to destroy hundreds of kilometers of North Sea beaches and wetlands, according to scientists commissioned by eight North Sea communities to study environmental dangers in the area. Growing pollution poses a critical threat to the area's tourism, commercial fishing and natural ecology, the report said.

A major source of the problem, according to researchers, is the flow of nitrates, toxic chemicals and metals reaching the coast via large rivers such as the Rhine, Weser, Elbe, Ems and their tributaries. The capacity of the sea to absorb the pollutants has been greatly overestimated, and some of the damage to the coast is irreversible, according to the report. Among the problems cited are: mercury contamination of flounder and scallops, the disappearance of six species of fish and beach crabs because of polychlorinated biphenyls, and phosphate-caused foam on some resort beaches following rough weather.

The report was released only a few days after that of a study by the West German Agricultural Ministry, which says the quality of the rivers is improving. The ministry report concedes that fertilizer contamination has worsened, but says that overall, water quality has improved since 1972. Specifically, it notes that the oxygen content of the Rhine has doubled since 1972 and that pollution by heavy metals has decreased.

Conditions in the Elbe River have not improved, the report notes, naming Czechoslovakia, East Germany and the city of Hamburg as the major culprits.

SOME CANCER RATES HIGHER FOR UKAEA WORKERS  
THAN REST OF POPULATION, STUDY REPORTS

by Robert McDonald

Radiation safety levels recommended by the International Commission for Radiological Protection could be up to 15 times too high, according to a survey of nuclear industry workers prepared for the United Kingdom Atomic Energy Authority by the Medical Research Council. The study analyzed the deaths of 3,373 people among nearly 40,000 employed by the authority between 1946 and 1979.

A total of 937 of the deaths were from cancer -- only a small number above the national average. However, the death rates from genital cancer were substantially higher:

- o prostate cancer was eight times the national average.
- o Testicular cancer was twice the national average.
- o Ovarian and uterine cancer was nearly twice the national average.

Deaths from leukemia were also slightly above the national average, but the difference was sufficiently small statistically to be a matter of chance, according to researchers.

Despite the observations about genital cancer, the study concluded that working for the UKAEA carried no particular health risk, noting that the overall death rate among those working at nuclear plants was actually lower than average. However, a majority of the workers are professional people who statistically have a lower incidence of job-related deaths.

The six-year study is to be continued for a further five years to make its findings more precise. The study will be used by parliamentarians who are to consider new regulations this year about radiation doses deemed to be acceptable in occupations outside the nuclear industry. The findings are also expected to fuel the debate about land-based radioactive waste disposal sites.

POLAND NEEDS TO DO MORE TO PROTECT  
ENVIRONMENT, STATE COUNCIL SAYS

by Simon Geschwindt

Poland's state council for environmental protection says that attempts to reverse the dramatic decline in the state of the country's environment have fallen far short of what is needed, and that recent measures to tackle pollution of the Baltic coast in accord with the Helsinki agreement cannot be isolated from what is a problem of national proportions.

The council is now pressing for implementation of a national cleanup program to the year 2000, with investments indexed to development of the country's economy. Bound by multilateral agreements to provide pollution-free shipping waters, Poland has started to reform its penalty system for environmental offenders. Construction of two waste disposal plants at Gdansk and Gdynia have been delayed by a shortage of funds and materials.

Meanwhile, Poland's major environmental group, Polish Ecological Society, claims the country's industrial sulfur dioxide emissions total 4mt/y -- twice the 1975 level. Sulfur dioxide emissions in the industrial Silesia region are five times those of West Germany's Ruhr Valley, and 70% of inhabitants of Upper Silesia around Katowice live in conditions injurious to health and display a relatively high incidence of respiratory diseases and cancer, the group says.

### SOLAR ENERGY LOOKS PROMISING FOR PUMPING AND PURIFYING WATER

Solar power shows promise as a means of running pumps for water purification systems, West German researchers told a solar energy conference held in Beijing, China, in early August.

Klaus Speidel of Dornier System GmbH said that work on the solar pump for drinking water, which began in 1978, has yielded a highly reliable system with high total performance. It features a thermal principle with Freon 11 as a working fluid. A Chinese partner in the study, Beijing Solar Energy Institute, performed part of the manufacturing and the tests, while an Indian partner, BHEL in Hyderabad, has manufactured a complete system, which has been operating since December 1984.

The economics appear "very encouraging," Speidel said, although, "at the moment, the solar pump cannot be competitive with conventional electric energy. Thermal systems, however, have the potential to be economical in regions with weak or no infrastructure, especially if manufactured in the country of application." India, is such a country, he noted.

The German researchers also have developed a photovoltaic-run method of purifying surface or river water. The process involves removing colloidal organic impurities through flocculation, fine-filtering and cleaning pretreated water with active carbon, disinfecting with chlorine and two-step filter cleaning. The only electrical consumer in the PV array is the water pump and a second small pump for injection of flocculation material.

For 1 m<sup>3</sup> of clean water, only 20-50 Watt-hours of electricity is needed, a consumption rate low enough to make PV attractive, the researchers said, adding that cleaning about 100 m<sup>3</sup> per day at normal conditions requires some 20 m<sup>3</sup> of arrays. A small, portable, experimental unit designed by the team could be useful in emergency cases and in remote villages. Tests conducted by the Beijing Solar Energy Institute show the daily price of supplying one person with drinking water meeting the World Health Organization standard is about 2 fen (0.7¢).

### MORE THAN HALF THE FLOTSAM ON U.K. BEACHES IS HAZARDOUS, BRITISH SURVEY REPORTS

by Robert McDonald

Demands are being made in Britain that the U.N.'s International Maritime Organization (IMO) tighten up the reporting of deck cargo losses. Spurring these demands are findings that more than half the flotsam washed ashore in the U.K. contravened the International Maritime Dangerous Goods Code. A survey was conducted between September 1982 and August 1983 by the organization Keep Britain Tidy, with cooperation from local governments and the Ministry of Defense.

Of the 254 items logged, 131 were hazardous, many of them bearing no warning markings. Among the hazardous substances that washed ashore were drums containing 842 litres of ether and containers of hydrochloric acid and hydrogen peroxide. One empty container had previously been used to transport uranium hexafluoride. A report on the survey notes that few of the containers carried markings to identify their contents, and in only 5% of the cases was warning received that the materials had gone adrift.

The report calls for mandatory reporting of the loss of dangerous cargoes; improvements in the durability of labeling for dangerous packages; a ban on the dumping of outdated flares, smoke canisters and pharmaceuticals at sea; and international conventions to govern damage claims.



AROUND THE WORLD

AUSTRALIA -- Defoliation chemicals used in Vietnam cannot be linked to veterans' health problems, a special Australian Royal Commission report has concluded. In fact, the commission says, Vietnam veterans are healthier than the general Australian male population, and have a lower cancer rate. In presenting the report to Parliament, Minister for Veterans' Affairs, Sen. Arthur Gietzelt, declared, "on the basis of the scientific, medical, statistical and other evidence relied upon by the commission, the government accepts that the case of a link between Agent Orange and health problems among Vietnam veterans has not been established.

GERMAN DEMOCRATIC REPUBLIC -- A facility that is reportedly the largest in the world for removing phosphates from water has begun operations in West Berlin. Built at a cost of DM 210 million, the plant is being operated in conjunction with two other water purification facilities, including one in the GDR, in efforts to reduce the amount of phosphates dumped into the Tegeler Sea from 395 to 3 tons per year.

INDIA -- The International Union for Conservation of Nature (IUCN) is proposing to launch a program to conserve the endangered Himalayan ecology, according to the group's new president, Dr. M.S. Swaminathan of the International Rice Research Institute in Manila. Unless an eco-development program for the Himalayas is developed, Swaminathan says, the mountain range will become barren by the turn of the century. The absence of a systems approach in designing and developing agricultural and industrial projects in the area has led to a rapid decline in the Himalayan forests during the past 50 years, he notes. Forest cover in the area was estimated to be 60% of the land area at the beginning of the century and is now estimated at one-fourth that.

INDONESIA -- Jakarta is seeking a \$100 million loan from the World Bank to finance improvements in the city's water supply system. Total cost of the project is expected to be about \$200 million. Experts at a recent water pollution seminar expressed fears that unless the improvements are undertaken, Jakarta will experience serious shortages of clean water. Water from some of the city's water plants and from private wells have already been found to contain mercury.

JAPAN -- The Environment Agency will update its regional environmental control plans to take into account new technologies and industries. A report is expected by March 1987. The present plan was put in place in 1971. While sulfur dioxide emissions have been cut by one-third, nitrogen dioxide levels have not gone down, which the government interprets to mean that industrial controls are effective, but that controls on auto emissions are not so effective. In water pollution, emphasis is changing from industrial waste to household waste.

✓ SOVIET UNION -- The government says Arctic waters around its territory are practically free of pollution as a result of strict rules for pollutant control for industry, ships and planes. The government complains, however, that other countries which border the Arctic Sea are not doing their share, and claim to have found some chemicals in the seas which are only used in the United States.

✓ SWITZERLAND -- The Swiss government has banned the use of phosphates in detergents as of July 1, 1986, the first move by a European government to do so. The Swiss government has not recommended alternatives to phosphate detergents, but notes that there is no limit on use of zeolite-based detergents. Nitrilotriacetic acid sodium salts may also be used, but there is a maximum 5% content for detergents. The current phosphate limit is 5.5% phosphorous (22% sodium tripolyphosphate). The move is expected to cut phosphate in Swiss lakes by only 10%, as the majority of the problem is from fertilizers, an issue also being considered by the government.

END



# World Environment Report

## News and Information on International Resource Management

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### SLANTS & TRENDS

REP. STEPHEN SOLARZ (D.-N.Y.) called for legislation requiring the fullest disclosure to the host government at the national and local levels of the potential hazards from U.S.-owned plants overseas. Visiting the site of the gas leak disaster in Bhopal, India, Solarz, chairman of the House Foreign Affairs Subcommittee on Asian and Pacific Affairs (see story, page 200) said he wanted legislation to require U.S. companies producing dangerous materials overseas to comply with U.S. health, environmental and safety standards. "There are shocking loopholes in our own regulations concerning establishment of such facilities abroad," Solarz warned. "These loopholes need to be plugged."

ATTEMPTS TO NEUTRALIZE THE REMAINING chemicals in the Bhopal plant by turning them into pesticides resulted in an exodus of nearly 90% of the city's population. Dr. Mustaq Ahmed Skeikh told the Press Trust of India that Union Carbide's medical officer "told me the gas was non-poisonous. He told me there was nothing we could do except ask the patients to put a wet towel over their eyes," a precaution which proved ineffective.

REP. JAMES FLORIO (D.-N.J.) said Dec. 14, during congressional field hearings at the site of Union Carbide's similar plant in Institute, W.Va., that attention is needed to safety standards in the United States to prevent a similar accident. At that hearing, Rep. Henry Waxman (D.-Calif.) linked emissions from the plant with a high cancer rate in the Kanawha Valley.

MIC SHIPMENTS ARE NOT THE MOST POPULAR cargoes these days. The Brazilian state of Rio de Janeiro sent 13.6 tons of MIC back to Union Carbide. Another shipment was rejected in France, and sent back to the U.S.

THE U.S. WAS THE LONE DISSENTER in a 147-1 vote in the U.N. General Assembly to continue to publish and expand a directory of 500 potentially dangerous products that are banned, restricted or have failed to win approval in any one of 60 countries. A U.S. delegate said the Reagan administration believes the publication is "wasteful" because the information is generally available elsewhere (although not all in one place), and "misleading" because it oversimplifies. The U.S. vote was condemned by the Pesticides Action Network International.

AN EERIE REPLAY OF THE BHOPAL DISASTER took place Dec. 17 in Mexico, the scene of an earlier industrial disaster (WER, Nov. 28, 1984, p. 183), when ammonia fumes escaped from a ruptured hose at an anhydrous ammonia fertilizer plant in Matamoros, across the border from Brownsville, Texas. Officials said 200 people inhaled the fumes and were treated at hospitals. The only reported serious injury was a plant worker who suffered serious facial burns. At least 3,000 people were evacuated from three colonias (poor suburbs) surrounding the Ucamfa plant. Matamoros Fire Chief Huventino Garcia Faavedra said 30,000 to 40,000 liters of ammonia were released when a hose to a railroad car burst.

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**SOLARZ THREATENS UNION CARBIDE WITH SUBPOENAS  
AFTER FRUSTRATING HEARING ON BHOPAL DISASTER**

Rep. Stephen Solarz (D.-N.Y.), frustrated at the number of times questions concerning the Bhopal chemical accident (WER, Dec. 12, 1984, p. 191) were answered with "I don't know," warned a representative of Union Carbide to provide detailed, written answers to his questions or face a subpoena aimed at Union Carbide officials and documents. Solarz chaired a hearing of his House Foreign Affairs Subcommittee on Asian and Pacific Affairs Dec. 12, focusing on the international implications of the Bhopal accident.

Ronald Wishart, Union Carbide's vice president for federal government relations, said he did not know if Indian environmental standards were lower or higher than those in the United States. He did say that the process safety standards were the same at the Bhopal plant as at the plant in the United States, which prompted Solarz to suggest that residents near the United States facility at Institute, W.Va., might want to evacuate.

Wishart contended that the chemical industry is the "safest industry in the United States," bringing a retort from Solarz that "it obviously isn't the safest industry in India." Wishart said that Union Carbide did not yet know what exactly had happened in Bhopal.

Liability Uncertain

Several questions in the hearing revolved around Indian law and what liability Union Carbide could face in a lawsuit in that country. Rep. Robert Torricelli (D.-N.J.) said it was his understanding that there is no strict liability in Indian law. Also, he noted, there is a \$300 filing fee for an individual claim and no waiver provision; \$300, he observed, is more than the annual incomes of most of the victims. It is also unclear if Indian citizens have standing in United States courts to sue Union Carbide.

Union Carbide has two facilities which make methyl isocyanate to produce pesticides, in India and the United States. Other plants make the chemical in Japan, West Germany, Israel, South Korea and Taiwan. Plants in other countries use methyl isocyanate to make pesticides.

Gus Speth, former head of the Council on Environmental Quality and now president, World Resources Institute, termed the Bhopal incident "the chemical industry's Three Mile Island." To ensure that there are no more similar accidents, Speth said, an aggressive response is needed both from the government and the private sector. Particular attention should be paid to the Third World, he argued, "where burgeoning populations, high urban migration, low educational levels and weak environmental enforcement often create special vulnerability."

The chemical industry, both in the United States and abroad, Speth said, should establish programs to police operations that are especially hazardous. "The circumstances found in much of the Third World today impose special obligations on U.S. companies to adopt measures that are not necessary in the U.S.," he argued, "including special siting, controlled transportation, and vigorous training and community involvement efforts. Population exclusion areas or buffer zones should be considered in appropriate cases."

The United States government should set up a program to assist and advise Third World governments in dealing with hazardous facilities established by U.S. firms, Speth argued. Some sort of inspection and certification service should be established by an international agency, perhaps the United Nations, he suggested. Research efforts should focus on improved automatic fail-safe systems

(Continued on following page)

**BHOPAL DISASTER (Cont.)**

"that do not depend significantly on human intervention." He also posed the question if there are industrial processes "that are simply too hazardous, even after all appropriate steps are taken, to allow wide commercial use."

Robert Peck, deputy assistant secretary of state for Near Eastern and South Asian affairs, told the subcommittee that the State Department had little information other than what was publicly available. He said a team of experts had been dispatched to India from the Centers for Disease Control, and a team from the Environmental Protection Agency was also prepared to go.

Solarz raised the issue of whose standards U.S. firms are bound to meet when setting up overseas facilities. Peck said American firms "are generally bound by host country laws and regulations in the environmental or industrial safety fields," Peck said. "We do not generally apply U.S. environmental and industrial safety laws to activities or multinational enterprises in other countries."

Peck also told the subcommittee that sections of several U.S. environmental laws requiring export notices to recipient countries would not cover methyl isocyanate. That is considered an intermediate chemical, not a pesticide, so no notice is required.

**BHOPAL DISASTER RAISES  
FAR-REACHING QUESTIONS**

by Darryl D'Monte

BOMBAY -- While public attention will be focused on the question of compensation for the victims of the gas poisoning from the Union Carbide plant in Bhopal, India, for the next few weeks, environmentalists in the country are raising some far-reaching issues. The location of the plant in a crowded area in the old part of the capital of Madhya Pradesh state is the primary cause of concern. The state government, which will probably be sued along with federal authorities in Delhi for agreeing to license the company, is sure to argue that when the plant was situated 15 years ago, the area was not as congested.

However, environmentalists feel this doesn't exonerate the central government from agreeing to the site when it was presumably aware that the factory used deadly methyl isocyanate (MIC), as well as phosgene, to make pesticides.

The federal authorities issue a license to manufacture under the Industrial Development Regulation Act, under which they also have to look into the question of permitting factories, or expansions of existing plants, to operate only in certain zones. Nothing of the kind apparently was done at Bhopal.

Under the Insecticide Act, a board is supposed to keep the plant under surveillance for a year and then conduct periodic checks. Considering that the World Health Organization considers the pesticide Sevin to be dangerous, environmentalists say the federal authorities who supervised the factory have a great deal to answer for. The provisions of the Factory Act, which sets general rules for operating plants which manufacture dangerous products, or use potentially hazardous processes, have apparently not been stringently applied.

At the state level, environmentalists suspect complicity with the plant management at every stage. At the time when the location was being decided, the authorities did not raise any objections, probably out of fear that to do so might drive the investors to another state.

(Continued on following page)

INDIA (Cont.)

When the former municipal commissioner of Bhopal, a respected Indian Administrative Service official named M.N. Buch (also one of India's biggest authorities on urbanization), tried to deny Union Carbide permission to operate in the city in 1975, he was promptly transferred.

Local journalists had raised the issue of hazards at the plant as early as 1982, two years after the processing of MIC began. An editor of a Bhopal weekly had written about three accidents that had taken place between 1981 and 1983, the first of which claimed the life of an operator who succumbed to leaking phosgene. In June this year, he again wrote an article in a Hindi daily from Delhi, raising the alarm yet again. But the Madhya Pradesh ministers steadfastly denied the danger, and in December 1982 the labor minister said, "There has been an investment of Rs 25 crore (\$25 million). It is not a small stone which can be removed just like that."

The disaster has raised the question of siting hazardous plants. In Bombay, several refineries, thermal stations and atomic research centers are located cheek by jowl in what has come to be known as the "gas chamber" in midtown.

Environmentalists are demanding the right to know in such cases; no one had any idea of the hazards of the Union Carbide plant -- certainly not the shanty dwellers who had congregated around the factory in search of casual work, or, for that matter, the rest of the city's residents. Very often, pollution is shrugged aside in countries like India on the grounds that badly needed development comes first.

The tragedy also throws into doubt the whole strategy of industrialization and urbanization which is based on pockets of high productivity in a mass-poverty situation. The pesticides were needed for the Green Revolution, which contributes to the high degree of urbanization of India. With some 160 million people, it has the fourth largest urban population in the world and will surpass China's urban population by 2000. The implications for the environment, as well as for social and economic justice, are staggering. The brunt of the damage in Bhopal was born by the residents of the "unintended city" -- the slumdwellers who have been forced off farms because of the poverty they face there.

While the legal implications are getting immediate attention, environmentalists are looking beyond and trying to press for more fundamental changes in official policy on rampant and unchecked industrial growth.

WORLD ENVIRONMENT CENTER TO INVESTIGATE  
OPTIONS IN AFTERMATH OF BHOPAL DISASTER

The World Environment Center has launched "Project Aftermath" to identify positive industry and governmental actions that can be taken in the aftermath of the gas leak at Bhopal, India. The center's board of directors approved the project Dec. 12. The project consists of a series of meetings between industry, international organizations and government environment officials from both industrialized and developing nations. These meetings will discuss strategies and actions for improved environmental management and training worldwide.

Results from the meetings will be presented at the center's fourth international conference on environment and development, to be held in The Hague, Netherlands, Sept. 25-27, 1985. Contact: Whitman Bassow, President, World Environment Center, 605 Third Ave., 17th Floor, New York, N.Y. 10158, (212) 986-7200.

**ENVIRONMENTALISTS REACT ANGRILY TO  
BRITAIN'S REJECTION OF ACID RAIN PLAN**

by Barbara Massam

British environmentalists are angry at the government's rejection of plans to reduce acid rain pollution. They urged Prime Minister Margaret Thatcher not to rely on the evidence of the Central Electricity Generating Board (CEGB), whose coal-fired power stations are the chief pollution source, for discussions on acid rain at the first summit on the environment, held in London Dec. 17.

The report of an all-party Select Committee on Acid Rain, published Sept. 7, recommends immediate action and expenditures for controlling the problem. It said Britain should join the "30% club" of 20 countries who have committed themselves to that amount of reduction in sulfur dioxide emissions by 1993. It also recommended acceptance of the goal of a draft EEC directive for a 60% reduction by 1995.

Government Reply Repeats Previous Arguments

The government's reply to the committee's recommendations, published Dec. 3, reiterates the arguments with which it has faced previous criticism: Britain has already reduced emissions by nearly 40% since 1971 and is committed to continuing this trend; broad-based research will continue to establish more evidence of the relationship between SO<sub>2</sub> emissions and environmental damage; the retrofitting of existing power stations to reach the EEC targets would cost 150 million pounds (\$42 million) in capital costs and 35 million pounds (\$42 million) in annual operating costs for each of the 10 or more major power stations involved. Total costs for reaching the targets would add 5% to electricity bills.

"In these circumstances," says the government reply, "the government does not intend to commit the country to expensive emission controls, especially when there is uncertainty about the environmental benefits to be achieved in this country and in continental Europe. The government intends to achieve further reductions in national SO<sub>2</sub> emissions, aiming at a reduction of 30% from 1980 levels by the end of the 1990s."

The government has been persuaded by the arguments of the CEGB, which has also been able to use the acid rain problem as propaganda for its commitment to an expanded nuclear power program.

CEGB Evidence Criticized by Select Committee Chairman

CEGB evidence to the select committee was later publicly criticized by the committee's chairman, Sir Hugh Rossi. In a published letter to CEGB Chairman Sir Walter Marshall, he said, "You say my committee has misunderstood CEGB evidence. To the contrary. Your evidence was assessed alongside that of over 100 other witnesses, tested, evaluated and found wanting -- not for the first time by a select committee."

Friends of the Earth accuses the CEGB of "perpetuating a corporate lie of quite substantial proportions." Britain, it emphasizes, is the largest sulfur emitter in Western Europe, with the CEGB the main source. Contrary to CEGB assertions, there is now sufficient evidence to show that falling emissions do produce proportional reductions in deposited acidity. Even the CEGB statement on costs, argues Friends of the Earth, distorts by confusing generating costs of electricity with consumer prices.

As the major polluter, even in its own built and natural environment, and the only Western Europe nation not in the "30% club," Britain is now facing increasingly bitter criticism internationally, within its own parliament and from its own citizens.

## JAPANESE WHALING INDUSTRY PROTESTS U.S.-JAPANESE COMPROMISE AGREEMENT

The U.S.-Japanese whaling agreement reached last month, which was not well received by some environmentalists (WER, Nov. 28, 1984, p. 188), is also being protested by the Japanese whaling industry, which says it will continue whaling after 1988 and "will not stop all whaling unless it has reason to stop." The agreement allows the Japanese to continue whaling until 1988 and is being challenged in U.S. courts by environmentalists.

Shigeru Hasui, chairman of the Japan Whaling Association, said, "This unilateral pressure diplomacy by the U.S. is unfair and unconscionable, and can only be viewed as an attempt to take advantage" of Japan's whaling industry. The \$5.7-million industry employs some 61,300 Japanese and Hasui maintains that "any reduction in quotas will mean our extinction."

Citing a recent association poll showing that 80% of all Japanese eat whale meat and 70% oppose the International Whaling Commission ban which resulted in the U.S.-Japanese agreement, the association said it plans to try to overturn the agreement by stressing to the world the dietary and cultural importance of whaling to Japan, appealing to international courts, and encouraging further negotiations between the U.S. and Japan.

## PAUEA CONVENTION PROMOTES CLEAN ENERGY TECHNOLOGY

by Hilary Branch

Pursuing the goal of "development without destruction," which is the United Nations' motto for this decade, the Pan American Union of Engineering Associations urged the adoption of "clean technology" to prevent environmental degradation at its recent 18th annual convention in Caracas, Venezuela. Recommendations stressed a new humanism in education to orient the engineering profession towards the social problems of Latin America.

In a Declaration of Caracas, the Union expressed the hope that engineers will contribute decisively to a "fairer distribution of wealth in the Americas with which to meet the needs of food, health and education."

The Pan American Union of Engineering Associations represents 25 countries in the hemisphere. Venezuela is to be the seat of the Union from 1985 to 1989.

Regional energy cooperation was called on for the exploitation and rational use of energy resources and the development of appropriate technologies. The engineers said they see a need for heavy crude refineries in the Caribbean, given the vast proven reserves in the area. Some 40 papers were presented in the field of energy alone, ranging from national energy policies to alternative energy, the study of which was encouraged on a national scale. The engineers recommended nuclear energy for those countries lacking other major energy sources. They encouraged the use of coal as an alternate source of energy.

Member nations were instructed to set up an information system in collaboration with official bodies to register local, regional and extra-regional participation in engineering projects. A data bank is under consideration for area information including companies, technologies, developments, production costs and specialists. This would facilitate the sharing among countries of their management experience in large-scale projects.

This chart compares emissions levels from all member nations of the Organization for Economic Cooperation and Development. Direct comparisons are not always possible, due to differing assumptions in regulations. Figures come from an OECD report on its member nations' emissions standards (WER, Dec. 12, 1984, p. 196).

## PARTICULATES:

COUNTRY	FUEL	EMISSION LIMIT		FORM
		mg/Nm <sup>3</sup>	ng/J	
Australia	solid	250	105	guidelines
Belgium	solid	350	147	regulations
Canada	all	116	43	guidelines
Denmark	liquid	97	36	guidelines
	solid	150	63	guidelines
W. Germany	liquid	50	18	regulations
	solid	50	21	regulations
	gas	5	2	regulations
Greece	all	150	56	regulations
Japan	liquid	50	18	regulations
	solid	100	42	regulations
	gas	50	15	regulations
Netherlands	solid	48	20	guidelines
New Zealand	solid	125	52	regulations
Sweden	solid	36	15	regulations
United Kingdom	solid	115	48	regulations
United States	solid	31	13	regulations

## SULFUR OXIDES:

COUNTRY	FUEL	EMISSION LIMIT		FORM
		mg/Nm <sup>3</sup>	ng/J	
Belgium	liquid	5,000	1,850	regulations (normal conditions)
	" "	2,000	740	regulations (alarm conditions)
Canada	all	700	258	guidelines
W. Germany	liquid	400	168	regulations
	solid	400	148	regulations
	gas	35	10	regulations
Japan	liquid	549	203	regulations
	solid	549	230	regulations
	gas	549	165	regulations
Netherlands	solid	548	230	guidelines
Sweden	solid	240	100	proposal
	liquid	270	100	proposal
United States	liquid	920	340	regulations
	solid	1,238	520	regulations
	gas	920	340	regulations

## NITROGEN OXIDES:

COUNTRY	FUEL	EMISSION LIMIT		FORM
		mg/Nm <sup>3</sup>	ng/J	
Australia	gas	350	105	guidelines
Canada	liquid	350	129	guidelines
	solid	614	258	guidelines
	gas	287	86	guidelines
W. Germany	liquid	450 (150)	167 (56)	regulations
	solid	800 (200)	333 (83)	(proposals)
	gas	350 (100)	106 (30)	
Japan	liquid	267	99	regulations
	solid	616/411*	259/173*	regulations
	gas	123	37	regulations
Netherlands	solid	643	270	guidelines
Sweden	solid	667	210	regulations
United States	liquid	570	210	regulations
	solid	619	260	regulations
	gas	287	86	regulations

(\* facilities installed before/after March 31, 1987)



**BRAZILIAN PROMOTERS OF WILD BIRD BARBECUE  
GET FIRST JAIL SENTENCE FOR KILLING WILD BIRDS**

by M. Cristina Garcia

The two Brazilian promoters of the wild bird barbecue (WER, Sept. 19, 1984, p. 147), which featured a menu including some 2,400 small birds as a main course, have been found guilty and condemned for environmental damages. This sets a precedent in the country for prosecution. Davi Orlandi and his son, Nivaldo Orlandi, the major of Embu, some 20 miles from Sao Paulo, were declared guilty by Judge Laurindo Minhoto Neto of the Third Federal Justice Court for holding the barbecue at the family's farm last June for some 200 relations, friend and political constituents. (They can still appeal to the Supreme Court.)

The judge sentenced the Orlandis to the heaviest penalty applicable, in accordance with the Fauna Protection Law, which provides for one year of imprisonment and payment of a \$370 fine for each of the men, in addition to a two-year suspension of the right to hold political office for Nivaldo Orlandi. This is the first time anyone will have been jailed in Brazil for killing wild birds.

**AROUND THE WORLD**

**WEST GERMANY** -- Environmental protection can promote employment, says Siegfried Bleicher, a member of the executive committee of the Federation of German Trade Unions. The recent past has shown that failure to protect the environment has endangered jobs, he said in a lecture at the Ruhr University in Bochum. He said the number of jobs directly or indirectly related to environmental protection grew from 280,000 in 1975 to over 410,000 in 1984.

-- The Green Party's seventh national convention avoided a showdown between the "fundamentalist" and "realist" wings. Internal debate centers on whether or not to support so-called red/green coalitions, i.e., working with the Social Democrats. The Greens in Hesse ended a working relationship with that state's minority SPD government in a disagreement over the nuclear energy issue (WER, Dec. 12, 1984, p. 197). The debate was avoided in part because the possibility of a national red/green coalition could only arise at the earliest after the 1987 federal elections. On the other hand, little was achieved to bring the two wings back together.

END

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## SLANTS & TRENDS

**AN INTERNAL SAFETY REPORT MADE TWO YEARS** at the Union Carbide plant in Bhopal, India, site of the Dec. 3 methyl isocyanate disaster, found so many lapses that inspectors predicted a "runaway reaction" similar to the accident. The report was released by Union Carbide Dec. 10. A Bhopal journalist and a city administrator had also questioned the safety of the plant in recent years. At press time, at least 2,250 people had died and 200,000 were injured by the leak. Dr. V. Ramalingaswami, chief of the Indian Council of Medical Research, said a door-to-door epidemiological study will be done of possible damage to the kidneys and immune systems of the city's 700,000 residents. Methyl isocyanate is an ingredient of Carbaryl and Temik, agricultural pesticides. It is made of cyanate, a derivative of phosgene gas and methalamine.

**FIVE PLANT EMPLOYEES WERE HELD** by Indian authorities as being directly responsible for the accident. Union Carbide Chairman Warren Anderson was also held under house arrest for a while when he flew to India. Indian officials said six people were killed at the same plant in 1978 when they were exposed to phosgene gas. Union Carbide's India unit owns 51% of the plant, while the rest is owned by the Indian government. The exact cause of the accident has not been determined. A similar plant in the American town of Institute, West Virginia, was shut down by Union Carbide pending an investigation. Union Carbide is already facing a \$15-billion suit over the case. The Bhopal plant was opened in 1977 and produces about 2,500 tons of pesticides annually.

**THE NAGGING QUESTION IS HOW MANY** similar disasters are waiting to happen in Third World countries, where pollution controls are often not enforced, if there are any at all. In reaction to the disaster, the Brazilian state of Rio de Janeiro stopped the unloading of a shipment of methyl isocyanate and prohibited its use, transport, storage or processing in the state. There are also few rules for underground storage tanks in the United States, although this disaster may result in some. Several congressional hearings are being held this week concerning both the Bhopal disaster and the similar plant in the United States. Rep. Henry Waxman (D.-Calif.) is holding hearings in Institute, W.Va., to examine safety procedures at that plant. Rep. Stephen Solarz (D.-N.Y.) said he will go to Bhopal Dec. 18.

Leonard A. Eiserer  
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Editor

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**WATER WILL BE THE ISSUE OF THE 1990s,  
WORLDWATCH INSTITUTE REPORT CONTENDS**

The volume of fresh water naturally renewed each year could meet the needs of five to 10 times the existing world population, according to a report from Worldwatch Institute. However, if current trends continue, lake and river quality will deteriorate, groundwater supplies will decrease, and fresh water shortages may restrict food production and economic growth, according to study director Sandra Postel. Regional shortages are a distinct possibility, she said.

Part of the problem, Postel said, is that "remarkably little" is known with certainty about how much water is used where, when, and by whom. No event is likely to trigger a worldwide restructuring of water use the way the oil price hikes did for energy, she said.

The greatest water stress is facing Asia and Africa, the report noted. Supplies for each person in Asia are less than half the global average, and the continent's runoff is the least stable of all the major land masses. Two-thirds of the African nations have at least a third less annual runoff than the global average. Drought conditions that persistently plague Africa's dry regions have in recent years threatened over 20 nations with famine, Postel said.

Given existing climatic conditions and current population projections, the report said, the per capita global water supply at the end of the century will have declined by 24%, while the stable, reliable component of that water will have dropped from 3,000 to 2,280 cubic meters per person. Adding to the problem, Postel said, is the fact that population growth is fastest in some of the most water-short regions. Also, if projected climatic shifts from the rising concentration of atmospheric carbon dioxide materialize, she warned, water supplies may diminish in some areas already chronically water-short.

Pollution Could Also Decrease Water Supply

Without adequate treatment, Postel argued, the growing volume and toxicity of wastes could render as much as a fourth of the world's reliable water supply unsafe for use by the year 2000. In most Third World countries, pollution controls "are either nonexistent or unable to keep pace with urbanization and industrialization." Pollution controls in the United States and other industrialized nations have helped to curb manufacturing water use.

Developing nations are in a prime position to take advantage of new water recycling technologies, Postel said. Building water efficiency and pollution control into new plants is "vastly cheaper than retrofitting old ones." Experience in industrialized nations has shown that "industries will have little incentive to adopt these measures without either sufficiently high water and wastewater fees or stringent pollution control requirements." Many of the technologies available, Postel noted, are able to reduce water use and wastewater flows at least 90% and "thus can contribute greatly to alleviating water supply and pollution problems in growing industrial areas." On the negative side, industry typically accounts for less than 10% of total withdrawals in most Third World countries, so water demand for power production, manufacturing, mining and materials processing could rise rapidly.

Postel also said that, with the oceans holding 97% of all the water on the planet, desalted sea water seems to offer the ultimate solution to a limited renewable freshwater supply. However, current technologies are more expensive than alternatives.

"Water: Rethinking Management in an Age of Scarcity," Worldwatch Paper 62, is available for \$4 from: Worldwatch Institute, 1776 Massachusetts Ave., N.W., Washington, D.C. 20036, U.S.A., (202) 452-1999.

**OECD'S TORRENS SAYS AUTO EMISSIONS STANDARDS  
SIMILAR TO THOSE IN U.S. ARE 'INEVITABLE' FOR EUROPE**

Mobile sources have not been regulated as heavily in Europe as they have here, but stricter standards, perhaps similar to American standards, could be in place in Europe between 1988 and 1995, according to Ian Torrens. Speaking to a conference on the economics of acid rain in Washington, D.C., last week, he said that catalytic converters have not yet been needed on vehicles in Europe to meet emissions standards, but stricter standards in Europe are "inevitable." Torrens heads the resources and energy division in the environment directorate of the Organization for Economic Cooperation and Development.

West Germany has shown a dramatic turnaround in government attention to and attitudes about acid deposition in the last several years, Torrens said, and is looking at emissions standards for vehicles. West Germany enacted "severe" emissions regulations for large combustion plants in 1983, affecting both new and existing plants. Also, each year since 1981 has seen a "remarkable increase" in estimates of the forest area in Germany affected by blight of uncertain origin, from 8% in 1982 to 54% recently. Air pollution is a prime suspect in the damage to forests, although categorical proof is not yet available, he added.

Two factors have contributed to the increasing attention West Germany has paid to the acid deposition issue, especially concerning the forests, Torrens contended. First, the fir tree holds a "special" place in German culture, making the damage more significant. Second, the election success in federal and state bodies of the environmentally oriented Green Party has forced a keen awareness of the environment onto the other parties in West Germany.

What is often overlooked, Torrens argued, is that many nations have had "a degree of success" in controlling air pollutants. Sulfur dioxide emissions in the United States have dropped by about a quarter from 1972 to 1982, he noted, and without current controls the levels would have increased. Also, present controls in place will lead to further reductions in pollutant levels as older facilities are retired. All OECD countries have some sort of controls for airborne emissions from power plants. The question, Torrens said, is how much more needs to be done, when, and at what cost.

For information on conference proceedings, contact: Center for Environmental Information Inc., 33 S. Washington St., Rochester, N.Y. 14608, U.S.A., (716) 546-3796.

**NATIONAL RESEARCH COUNCIL SAYS MAJOR NUCLEAR EXCHANGE  
COULD PRODUCE ENOUGH SMOKE AND DUST TO LOWER TEMPERATURE**

There is a "clear possibility" that a major nuclear exchange could produce enough smoke and dust to cause severe temperature drops over much of the Earth's northern temperate zone, according to a report from a U.S. National Research Council committee. However, the committee declined to offer quantitative estimates of atmospheric effects, cautioning that "accurate detailed accounts" of such effects are not reliable at this time.

Temperature reductions could range from 18°F to 45°F, with normal temperatures restored after about six to 20 weeks, the committee said. A major uncertainty is how much smoke would be generated and how long smoke particles from city-wide fires would remain in the atmosphere. The committee did not address radioactive fallout, or the possible biological and social effects of a nuclear exchange. "The Effects on the Atmosphere of a Major Nuclear Exchange" is available for \$14.50 from: National Academy Press, 2101 Constitution Ave., N.W., Washington, D.C. 20418.

**CARS MAKE MELBOURNE  
AUSTRALIA'S SMOG CAPITAL**  
by Trevor Rees

MELBOURNE -- According to the Environment Protection Agency of Victoria, Australia, the state capital of Melbourne has become the country's smog capital. The agency says in terms of how badly the city is afflicted with smog, it ranks fourth in the world, following Los Angeles, Tokyo and Mexico City. Victoria's EPA says cars are the main cause of the problem, as many fail to meet exhaust emission control standards.

Tougher emissions standards introduced in 1976 have failed to reverse the severity of the smog, and the EPA notes that the most toxic ingredient, ozone, exceeded the World Health Organization's acceptable level of 0.12 parts per million on nine days during the summer of 1983-1984, 24 days during the summer of 1982-1983, and 12 days during the summer of 1981-1982. In an effort to reduce Melbourne's pollution, the state government is mandating catalytic converters on the exhaust systems of new cars produced after January 1986.

**SCOPE SEEKING INPUT FROM  
U.S. ENVIRONMENTAL RESEARCHERS**

The U.S. National Committee for SCOPE has been organized as a standing body under the Environmental Studies Board of the National Research Council. SCOPE is the Scientific Committee on Problems of the Environment, established by the International Council of Scientific Unions in 1969. It serves as a nongovernmental, interdisciplinary, international council of scientists seeking to identify environmental problems of global concern and to contribute to the understanding of such problems.

The objective of SCOPE is to advance knowledge of the influence of humans on their environment and the effects of these environmental changes on human health and welfare. Particular attention is paid to influences that are global in nature or shared by many nations. The emphasis is on stimulating new approaches, synthesizing existing information, organizing balanced appraisals and identifying important research needs. SCOPE does not generally engage directly in research at the bench and field levels. SCOPE focuses on the following areas: biogeochemical cycles, land transformation, climatic impact assessment, integrated pest control, ecotoxicology, dynamics of continental wetlands, ecology of biological invasions, environmental consequences of nuclear war.

The U.S. National Committee will host the 6th SCOPE General Assembly in Washington, D.C., Sept. 9-13, 1985. The committee is seeking input from the U.S. scientific community in identifying global environmental problems to be addressed by SCOPE. The committee is also seeking to broaden the involvement of the U.S. scientific community in SCOPE activities. Limited travel funds are available for scientists participating in SCOPE projects.

Members of the U.S. National Committee are: John W. Farrington, Woods Hole Oceanographic Institution, chair; Edith Brown Weiss, Georgetown University Law Center, vice chair; Richard A. Carpenter, East-West Center; Paul G. Risser, Illinois Natural History Survey; Christine A. Shoemaker, Cornell University; and Robert G. Woodmansee, Colorado State University.

Contact: Dr. Ruth DeFries, U.S. National Committee for SCOPE, Environmental Studies Board, National Research Council, 2101 Constitution Ave., N.W., Washington, D.C. 20418, (202) 334-2000.

**ACID RAIN DEBATE CONTINUES IN BRITAIN WITH  
CRITICISM OF CENTRAL ELECTRICITY GENERATING BOARD**

by Barbara Massam

The debate in Britain on acid rain continued last month with criticism of the Central Electricity Generating Board (CEGB) by the chairman of the government's Environment Committee. The committee reported on acid rain in September (WER, Sept. 19, 1984, p. 144). In its report, the committee accused the CEGB of underestimating the damaging effects of the SO<sub>2</sub> and NO<sub>x</sub> emitted from its power stations, and of making insufficient efforts to reduce them.

In discussing the report with the press, said Committee Chairman Sir Hugh Rossie, the CEGB asserted that the committee had misinterpreted the evidence it presented to them. "I reject these assertions utterly," Rossie said in a published letter to CEGB Chairman Sir Walter Marshall on Nov. 14. In coming to its conclusions, Rossie said that the committee considered "oral and written evidence from over one hundred different sources, including independent scientists both from home and abroad who are specialists in this field. In this process the CEGB evidence was tested, evaluated and found wanting. It did not assist that some of the facts had to be painfully extracted from your witness by recourse to cross-examination. We were left with the distinct impression that the CEGB was not as forthcoming as we were entitled to expect it to be."

The letter referred to complaints made by the CEGB about the committee's use of its evidence. The committee accused the CEGB of playing down the effect of current emissions on building corrosion and the effect of NO<sub>x</sub> on forests.

The CEGB is also accused in the letter of retarding the development of pollution-control technology by clinging to the "tall stack" policy as a solution, of presenting emission control costs in an exaggerated manner, and of suggesting that the liming of lakes was an effective palliative when the committee clearly presented evidence to the contrary.

**HUMANE SOCIETY FILES SUIT AGAINST U.S. GOVERNMENT  
OVER SPORT HUNTING ON NATIONAL WILDLIFE REFUGES**

The Humane Society of the United States announced Nov. 29 that it is suing the U.S. Interior Department and the Fish and Wildlife Service to end sport hunting of wildlife on national wildlife refuges. The HSUS noted that, within the last six months, 22 wildlife refuges have opened new hunting programs. Hunting is now allowed on 244 of 424 refuges and more than 400,000 animals are killed or wounded each year.

The suit, filed in U.S. District Court for the District of Columbia, charges that the transformation of refuges from areas designated for wildlife protection to sport hunting areas violates several federal laws. "There should be no place for sport hunting on refuges -- they are havens for wildlife, not public hunting grounds," argued John Grandy, HSUS vice president for wildlife and environment. The suit also challenges the legality of Interior's attempt to turn over control of refuge hunting to state fish and game agencies, which Grandy said is "a way of hiding these destructive programs from public view, and may be a forerunner of similar attempts to hide other destructive activities on refuges such as predator control, pesticide use and mining."

The suit also charges that the agencies unlawfully diverted resources from refuge wildlife management funds to finance sport hunting programs. HSUS provided figures showing there are 71 endangered species in wildlife refuges in the United States. The HSUS noted in the suit that, historically, hunting has been permitted in refuges only under very narrow circumstances.

### **OECD REPORT SAYS AIR EMISSION STANDARDS VARY WIDELY AMONG MEMBER COUNTRIES**

All nations which belong to the Organization for Economic Cooperation and Development exercise some form of environmental control over airborne emissions resulting from combustion for electricity generation, according to an OECD report. However, there is wide variation among countries with respect to both the level and type of regulation employed.

Gaseous emission standards commonly fall into one of two categories: (1) an energy input-related standard such as nanograms of pollutant discharged per Joule of energy applied to the plant, or (2) a standard expressed as a concentration of pollutant present in the exiting flue gases.

OECD found that maximum values for particulate emissions in OECD countries tend to be fairly similar, especially for solid fuels. This reflects the fact that particulate control technology has been well developed for some years, OECD said, and high collection efficiencies are possible with "off the shelf" units. Particulate control is now generally considered an integral part of coal-fired power plant design, OECD added.

On the other hand, sulfur oxide emission standards are more complex, with many countries preferring to control sulfur content of fuels. Standards reflect a number of factors: (1) length of time since last review of regulation, as the means of higher levels of SO<sub>x</sub> control have only recently become commercially available; (2) comparatively isolated, underpopulated and less industrialized countries are less likely to force the imposition of a relatively expensive form of environmental control; and (3) attitudes of policymakers towards the technical and economic viability of comparatively new control options.

Nitrogen oxide emissions are less varied, OECD said. They tend to reflect the current state of technology in NO<sub>x</sub> control. There is, however, a tendency in some countries for NO<sub>x</sub> control standards to be technology-forcing, "particularly with reference to the development of flue gas denitrification."

"Emission Standards for Major Air Pollutants from Energy Facilities in OECD Member Countries" is available from OECD headquarters in Paris or its local sales agents.

### **LEAD-BASED PAINT AND VARNISH TO BE PHASED OUT IN BRITAIN**

by Barbara Massam

The removal of all deliberately added lead in gloss paints and varnishes by spring 1988 has been announced by the British Paintmakers Association, representing 90% of the industry. The decision is seen as a response to pressure from the government, consumer and environmental groups.

Last year's Royal Commission on Environmental Pollution called for the phasing out of lead as an unnecessary and harmful ingredient. A Private Members Bill pursuing this failed in the House of Commons shortly afterwards. Pressure from CLEAR (Campaign for Lead-Free Air), which recently threatened a consumer boycott, appears to have been more successful.

The Department of the Environment said it will try to move the removal date forward. Also, the Consumers Association plans to meet with the Paintmakers Association to discuss the labeling of paint and varnish cans in the meantime.

## **NON-INDUSTRIAL ACID RAIN FOUND IN AUSTRALIA'S NORTHERN TERRITORY**

by Trevor Rees

MELBOURNE -- An American research team conducting research into the levels of acid rain in an area uncontaminated by industrial pollution -- the Northern Territory of Australia -- has found apparently natural acid rain. The study, by Gene Likens, director of the Institute of Eco-Systems at the New York Botanical Garden, was done because, "We wanted to find out what things might have been like before the Industrial Revolution. So we thought it would be useful to go to sites in the Southern Hemisphere where the land masses are smaller and the fossil fuel consumption is smaller."

Likens told a recent conference in Australia, "We set up a series of sites, one of which was at Katherine [340 km south of Darwin]." Acidity was found to be much lower than in northeastern North America, but to the researchers' surprise it was only 15 to 20 times less, still appreciably acidic.

The acids which dominate rain in the Northern Territory are acetic acid and formic acid, completely different from the sulfuric and nitric acids which are characteristic of North American and European acid rain. Likens commented that the acids "come from natural causes, not human causes."

### **AROUND THE WORLD**

**ARGENTINA** -- The National Congress has passed a law which declares the Southern Right Whale (*Eubalena australis*) a natural monument. This grants the species an absolute protection against whaling and protects feeding and breeding habitats. It also incorporates the species into the local culture, through educational programs and special research by the Park Service. The legislative move was planned against an eventual "rational use" of the whales as economic resources when stocks have recovered. With the act, the cultural element prevents that from happening and guarantees "non-consumptive use" forever. -Pedro Tarak

**WEST GERMANY** -- Agriculture Minister Ignaz Kiechle called on the United States to join the 20 countries that have pledged to reduce sulfur dioxide pollution by at least 30% by 1993. He told an American delegation on an acid rain fact-finding tour that forest damage was the number one environmental issue being discussed in West Germany, adding that half the air pollution in the country is believed to come from other countries.

-- The working coalition between the Social Democrats and the Green Party in Hesse split up on the issue of nuclear fuel production. The Greens said they will no longer cooperate with the minority government of Prime Minister Holger Borner because it endorsed the expansion of two nuclear fuel production facilities in Hanau. Borner called on the Greens to return; if they wished to express lack of confidence in his leadership, he added, they should call for a vote of no confidence in the Wiesbaden parliament. The Greens, in return, said that on principle they will not cooperate on the 1985 state budget bill.

-- The Federal Cabinet voted Nov. 27 not to sign the International Law of the Sea Convention. The government did say it would not try to stop the European Community from signing the convention.

-- Commercial uranium mining in the Black Forest was turned down by the Freiburg Administrative Court Nov. 22 on the grounds that environmental protection as a public interest takes precedence over all other considerations. Exploratory mining has gone on for 20 years, but the permit expired this year.



CALENDAR

March 25-27, 1985: Seminar on Exposure to Enhanced Natural Radiation and Its Regulatory Implications, Maastricht, The Netherlands. Contact: Project Office for Energy Research, P.H. van Dijkum, P.O. Box 1, NL-7055 ZG PETTEN, The Netherlands, Tel. (0)2246-4879, Telex: 57211 REACP NL.

April 17-21, 1985: Globescope, meeting on world environment issues and U.S. role in their resolution, Portland, Ore. Contact: David McGrath, Global Tomorrow Coalition, 1525 New Hampshire Ave., N.W., Washington, D.C. 20036, (202) 328-8222.

May 19-24, 1985: Second U.S.-Dutch International Symposium on Aerosols, Williamsburg, Va. Contact: Si Duk Lee, U.S. Coordinator, U.S. Environmental Protection Agency, MD-52, Research Triangle Park, N.C. 27711.

May 20-24, 1985: International Conference on Atmospheric Sciences and Applications to Air Quality, Seoul, South Korea. Contact: Y.S. Chung, Atmospheric Environment Service, 4905 Dufferin St., Downsview, Ontario M3H 5T4, Canada, (416) 667-4980.

June 25-27, 1985: Hazardous Materials Management Conference and Exhibition Europa, Hamburg, West Germany. Contact: TCM Expositions Ltd., 331 West Welsy St., Wheaton, Ill. 60187, (312) 668-8100.

Sept. 9-11, 1985: Ninth International Symposium on the Scientific Basis for Radioactive Waste Management, Stockholm, Sweden. Deadline for submission of paper abstracts is Feb. 15. Contact: L.O. Werme, SKB, Box 5864, S-10248 Stockholm, Sweden, Tel. Int. + 468679540.

Sept. 10-13, 1985: Heavy Metals in the Environment, Athens, Greece. Submit abstracts for papers by Feb. 1. Contact: Heavy Metals Secretariat, CEP Consultants Ltd., 26 Albany St., Edinburgh EH1 3QH, U.K., Tel. 031 557 2478.

Sept. 24-26, 1985: Environment Conference on pollution abatement in pulp and paper industry, Toronto, Canada. Contact: David Paterson, Technical Section, CPPA, Sun Life Bldg., 23rd Floor, 1155 Metcalfe St., Montreal, Quebec H3B 2X9, Canada, (514) 866-6621.

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# World Environment Report

## News and Information on International Resource Management

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### SLANTS & TRENDS

PERHAPS THE MOST SIGNIFICANT COMMENT in the aftermath of the Nov. 19 fire at a natural gas plant in Mexico City came from Marcelo Javelly, minister of ecology and urban development. Speaking before the accident occurred, Javelly said that Mexico "can't afford clean industry"; the choice is between dirty industry and no industry. The government oil company, Pemex, has disclaimed responsibility for the accident, the country's worst industrial disaster, saying a gas leak at a private facility sparked the fire. While the blast site will become a park, the problem remains at other sites in Mexico (and other developing nations): industrial facilities next to densely populated areas. Relocating a similar plant in a crowded section of Mexico City would be too costly, Javelly said.

\* \* \*

INDOOR AIR QUALITY LEVELS VARY, according to an ongoing study by Harvard University for Electric Power Research Institute and two U.S. agencies. In all but one of the six cities studied, "the overall indoor mean levels are higher than outdoor levels." While outdoor pollutant levels were generally steady within cities, the range of indoor levels for each is "considerable." The results show the importance of indoor sources in determining indoor concentrations, EPRI says, as well as the importance of dwelling characteristics that affect the indoor-outdoor exchange of air. A site in one city with an extremely high indoor annual mean concentration of respirable particles (144 micrograms/m<sup>3</sup>) was a tightly sealed, central-air-conditioned home where both occupants were smokers.

THE HARVARD INVESTIGATORS are now developing an air monitoring system for characterizing the home environments of at least 300 study subjects in each of the six cities. The program will focus on NO<sub>2</sub>, CO, and respirable particles; on the indoor sources of these pollutants; and on air exchange rates. A study on indoor radon levels, conducted for EPRI by Geomet Technologies Inc., indicates that a circulation fan redistributes radon gas and tends to equalize its concentration throughout the house. By bringing in fresh air, a heat exchanger tends to equalize indoor and outdoor gas concentrations to produce the lowest indoor level. The lowest indoor working levels occurred during continuous operation of the circulation fan without the heat exchanger. This suggests, EPRI says, that removal of particles carrying radon decay products is more important in limiting working levels than is the reduction of radon gas concentration.

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**WORLD RESOURCES INSTITUTE SAYS INCREASING PEST RESISTANCE TO PESTICIDES COULD LEAD TO CRISIS**

WASHINGTON -- The increasing resistance of pests, especially insects, to chemical pesticides could result in a threat to national or regional food production, according to a study released by the World Resources Institute. Many pests are becoming resistant to pesticides faster than effective new products can be developed, argued WRI staffer Michael Dover and Professor Brian Croft of Oregon State University. The year-long study was released in conjunction with a National Academy of Sciences symposium on pesticide resistance management held Nov. 27-29.

Several insect species -- common houseflies, certain mosquitoes, cattle ticks, tobacco budworms, and spider mites -- have overcome nearly every pesticide used against them, Dover and Croft found. "With some chemicals," Dover noted, "insects die only if they drown in them." The researchers noted that 11 kinds of rice insects in Asia can resist one or more major chemical groups. Diamondback moths threaten the staple cabbage crop in Malaysia.

The rate of resistance development in recent years has "increased dramatically," Dover and Croft said. From the early 1900s to 1980, 428 species of arthropods are known to have become resistant to one or more insecticides or acaricides. Over 60% of these species are of agricultural importance, while the remainder are either pests of medical concern or nuisances to people. Among plant pathogens of agricultural crops, over 150 resistant species are known. An estimated 50 herbicide-resistant weed species have been reported. Fewer than 10 species of small mammals and plant-attacking nematodes are known to be resistant.

Increase in Arthropod Resistance, 1970-1980

<u>number of species resisting:</u>	<u>1970</u>	<u>1980</u>
DDT	98	229
Cyclodienes	140	269
Organophosphates	54	200
Carbamates	3	51
Pyrethroids	3	22
Fumigants	3	17
Other	12	41
Total	313	829

Innovative chemicals, such as juvenile hormone mimics and chitin inhibitors, have not proved immune to resistance, the researchers noted, nor have bacterial diseases of insects or natural poisons derived from plants.

Pest resistance also poses a direct threat to human health, the World Resources Institute report notes: 51 of the 60 malaria-carrying Anopheles mosquitoes are now resistant to the three most effective pesticides used for malaria control (DDT, lindane, and dieldrin). Plus, 14 of the 51 are also immune to various replacement chemicals. Replacements -- where they still work -- can cost anywhere from five to 20 times as much. Malaria's resurgence today is due in part to pest resistance, the researchers said, pointing to 40-fold increases in the incidence of malaria in India and Pakistan. Public health may also be jeopardized by resistance to rodenticides among mice and rats, they said.

The report faults the structure of the pesticide industry for some of the problems, noting that over 400 companies manufacture pesticides in the United

(Continued on following page)

### PEST RESISTANCE (Cont.)

States alone, but only 25 of them control 80% of the market. There is reason to believe, the researchers said, that "in the next few years pesticide management and especially R&D will become further dominated by a few large companies."

The large firms, they said, increasingly aim at the safer sections of the market with the prospect of higher, more reliable returns. This narrows the R&D effort, compounded by the fact that the chemicals that were easy to synthesize have already been discovered. New pesticides take up larger amounts of corporate resources to develop compared to older pesticides.

The synthetic pyrethroids were developed to be effective at very low doses and less toxic to mammals. However, Dover and Croft said, of the more than 50 species described in 1978 as promising targets of the pyrethroids, at least 15 have already shown resistance to these compounds in some part of the world.

Cross-resistance with DDT has been established in several species, "which raises the possibility that numerous species may already be or may soon become resistant to the pyrethroids." With R&D converging, they added, "users may have few if any replacement compounds available if cross-resistance affects the pyrethroids as it has other chemical classes."

The solution, Dover and Croft said, is to think of chemicals as finite resources rather than disposable commodities. The vulnerability of pest-control programs to pesticide resistance "appears to be growing as a result of ecological, genetic, economic, and pesticide-use factors." Ecological methods of managing resistance have been less thoroughly studied than new products or new use patterns, they noted; much basic and applied research needs to be done.

#### No Organized Data Collection

No national system exists in the United States to systematically collect and disseminate information on pesticide resistance, the report said. Monitoring by the state agricultural experiment stations is sporadic, usually done for research or in response to reports of pest-control failures. Other monitoring data, such as those collected by pesticide manufacturers in support of their products or by pesticide-user groups, "are often unavailable to most researchers and pest-management advisors."

Education on resistance management for users and pest-control professionals is also needed, Dover and Croft argued, because resistance management is a relatively new pest-management strategy.

Another problem is that detailed data on the subject are "unavailable, or at best, widely scattered." Pest resistance should be carefully monitored, and the data linked to other pesticide data. An historical data base on pesticide resistance should be established, and resistance risk should be incorporated into pesticide-registration data requirements. Users and manufacturers are naturally reluctant to accept more regulatory restriction, the researchers said, "but the limits to voluntary action must also be recognized." The best effort will be a balance between long- and short-term goals, private- and public-sector responsibilities, and environmental and economic considerations, they concluded.

"Getting Tough: Public Policy and the Management of Pesticide Resistance" is available for \$3.50 (with reduced prices for orders of 10 or more) from the World Resources Institute, 1735 New York Ave., N.W., Washington, D.C. 20006, (202) 638-6300.

**WILDLIFE CONCERNS IN INDONESIA  
ARE ADDRESSED IN AGREEMENT**

by Kate Webb

JAKARTA -- The amended border agreement between Papua New Guinea and Indonesia, signed by the nations' two foreign ministers Oct. 29, includes a new clause on cooperation in the protection of wildlife. Diplomats from both countries say they hope the amendment will hinder large-scale smuggling overseas of rare species, notably the prized bird of paradise, and a wide variety of parrots and other colorful tropical birds found in the rain forests in both countries.

At the same time, Prince Bernhard of the Netherlands has proposed to President Suharto that Malaysia and Indonesia cooperate in setting up a joint game preserve on the island of Borneo. Bernhard, on a visit to Indonesia in his capacity as head of the World Wildlife Fund (WWF), said such cooperation could help protect rare species such as the orangutan. No specific site was publicly designated for the proposed park, but it would presumably lie on the border of West Kalimantan in Indonesia and Sarawak in Malaysia.

In Malaysia, local WWF Director Ken Scriven said the plan had already been approved there, but was awaiting Indonesia's approval. Scriven said the area designated bordered the Lamjak-Entimau Park in Sarwak's second division.

**U.N. OFFICIALS HOPEFUL SINGAPORE  
WILL SIGN ENDANGERED SPECIES PACT**

by Kate Webb

JAKARTA -- United Nations Environment Program (UNEP) officials are reported hopeful that Singapore will sign the convention on international trade in endangered species when it attends the Association of Southeast Asian Nations (ASEAN) wildlife meeting in Bangkok Nov. 29.

The five original members of ASEAN -- Singapore, Malaysia, Indonesia, the Philippines and Thailand -- will attend the meeting. Officials say that, to date, the fact that other members have signed the treaty carries little weight because of the vast numbers of endangered species and their products that are shipped out of Singapore annually to Japan, the United States, and Europe.

Products being shipped out include not only rhino horns, reptile skins, rare birds and fish, but also ivory, panthers, leopards, and deer from neighboring Vietnam, Cambodia, and Burma, and even from Africa.

Though wildlife conservation efforts in the other ASEAN countries are lax at best, officials hope that if Singapore signs the convention, along with a joint ASEAN agreement on preventing slaughter of endangered species, it will at least slow down the traffic.

**INDONESIAN LOANS WILL GO TOWARD IMPROVING  
FARMING, LAND USE IN CENTRAL AND EAST JAVA**

Loans from the World Bank (\$11.3 million), plus funds from Indonesia's government (\$20 million) and the U.S. Agency for International Development (\$18.9 million) will be used to develop and test agricultural and conservation techniques designed to improve upland farming in Central and East Java. Population pressures have caused cultivation to be extended into the upland areas of major river basins, which are highly susceptible to erosion and are unable to sustain even subsistence agriculture.

## **IUCN URGES GOVERNMENTS, INSTITUTIONS TO WORK TO SAVE ENDANGERED SPECIES**

by William G. Mahoney

GENEVA -- the International Union for Conservation of Nature and Natural Resources (IUCN), the world's largest conservation organization, reported at its annual general assembly that it has placed 24 species -- 12 animal and 12 plant -- on its endangered list. The general assembly ended a 10-day meeting in Madrid by urging all governments and private foundations to join in concerted action to save these species from disappearing.

Those listed represent only a tiny portion of animal and plant species threatened, warned Grenville Lucas, chairman of the IUCN's Species Survival Commission. He said the particular plants and animals were chosen on such factors as their uniqueness, potential use, immediate danger, and possibilities of saving.

The assembly also named 11 endangered national parks. Included were two parks in the United States: Florida's John Pennekamp Coral Reef State Park and Key Largo National Marine Sanctuary, both threatened by sewage, landfilling and condominium development. Other parks were in Brazil, Chile, Czechoslovakia, Indonesia, Ivory Coast, Peru, the Philippines, Tanzania, Yugoslavia and Zaire.

Among the plants on the list was the yeheb bush of Ethiopia and Somalia, which produces nuts that are the traditional food of nomadic tribes. It is threatened by drought, overgrazing and war. Another is the world's largest flower, the giant rafflesia, with a scarlet bloom that measures one meter across. This is threatened by the destruction of the rain forest in Sumatra.

On the animal list was the smallest known mammal, the bumblebee bat, which lives in remote caves in Thailand and is threatened both by collectors and proposed hydroelectric projects.

In a separate action, the general assembly of IUCN admitted Greenpeace International as a member after days of debate that focused on its often-unusual tactics to save whales and halt nuclear projects. The favorable decision came only after Canadian government agencies said that they would not pursue their objections to Greenpeace's acts of civil disobedience.

## **LITTLE ADDITIONAL FUNDING CAN BE EXPECTED FOR WATER DECADE PROJECTS**

It is unlikely that there will be any significant increase in the funds available from donors and governments for Water Decade projects, according to Michael Cohen, Chief, Operations Support and Research Division, Water Supply and Urban Development, The World Bank.

Speaking to the 12th meeting of the Steering Committee for Cooperative Action for the International Drinking Water Supply and Sanitation Decade in Vienna last month, Cohen and Alberto Harth, World Bank deputy chief for South Asia urban and water supply projects, said the Bank is looking for means to use available funds more efficiently, through the choice of technology, improved operations and maintenance, rehabilitation of existing facilities, greater community involvement, and programs to strengthen national institutions.

The World Bank is also seeking increased coordination among donors, so that the available external resources can be targeted more effectively, Cohen and Harth said. This year, the Bank will consolidate existing programs and look at ways to maximize the impact of its projects.

### **NIREX SAYS ABANDONING OCEAN DUMPING OF RADIOACTIVE WASTE COULD COST \$33 MILLION**

The Nuclear Industry Radioactive Waste Exchange (NIREX) in the United Kingdom said in its second annual report that abandoning ocean disposal of radioactive waste will cost some 22-27 million pounds, or \$27-33 million. The additional cost will be for additional storage facilities and new treatment plants in the years before new disposal sites become operational in the early 1990s. Existing storage sites for raw or packaged waste, which would otherwise be dumped at sea, will reach capacity by 1985-86, NIREX said.

NIREX is planning to build two new disposal facilities to accommodate the entire volume of low- and intermediate-level radioactive waste generated in Britain over the next 50 years. One will be a deep repository for long-lived intermediate wastes, primarily reprocessing waste, and the other will be a shallow repository for low-level waste and short-lived intermediate waste.

The waste exchange is also looking at the possibility of disposing of long-lived intermediate-level waste in deep seabed holes drilled from a converted oil exploration rig. The feasibility of this proposal, put forward by Ensec Ltd., will be studied and compared with other alternatives.

### **GREENPEACE PLANS BOYCOTT OF JAPAN AIR LINES UNLESS JAPAN STOPS COMMERCIAL WHALING**

The international conservation group Greenpeace announced Nov. 27 in London that it will organize a worldwide boycott of Japan Air Lines unless Japan stops commercial whale hunting. Greenpeace is joining a coalition of 15 other environmental, conservation and animal welfare groups with offices in 18 countries to try to pressure Japan into obeying an international accord to phase out commercial whaling by the end of the 1985-86 season.

Greenpeace said its decision was in response to a bilateral deal between Japan and the United States, announced Nov. 13, which allegedly allows Japan to bypass the decision of the International Whaling Commission to end commercial whaling. The U.S.-Japanese deal "threatens to destroy the existing international system for whale conservation," Greenpeace said.

JAL was chosen for the boycott as "a natural and vulnerable target," Greenpeace said, because the Japanese government owns 37.7% of the airline. If there is no guarantee by Jan. 1 that Japan will stop whaling, the coalition will launch a worldwide appeal to its two million members to enforce the boycott of the airline, the Greenpeace announcement said. "The initial campaign effort will concentrate on travel agents in 19 cities worldwide where JAL flights originate or have major connections," Greenpeace said. Greenpeace International Chairman David McTaggart said the coalition has already written JAL President Yasumoto Takagi and "respectfully stated our position."

Meanwhile, on Nov. 19, Greenpeace activists occupied the Japanese embassy in Copenhagen, Denmark, and symbolically blindfolded, gagged and harpooned through the heart that city's famous Little Mermaid statue. Ten activists chained themselves in the foyer of the embassy, and were later peacefully removed by the police. Angry Japanese tourists grabbed a bloodied Japanese flag that had been placed by the statue. Greenpeace demonstrators also hauled down the Japanese flag in front of Japan's embassy in Stockholm, Sweden, replacing it with a blood-stained banner.

### **HUNGARY BLAMES CZECHOSLOVAKIA FOR ACID RAIN KILLING TREES**

by William G. Mahoney

Hungary has charged that Czechoslovakia is the primary source of the acid rain killing trees in northern Hungary. An Agricultural Committee reported to the Hungarian Parliament in October that Czechoslovakia was the main source of the sulphurous pollution, which, it added, had caused a mysterious disease that had been killing deciduous trees for the past four years.

The committee said that, although emissions from factories in Western Europe also blow into Hungary, they have had no catastrophic effects so far. In recent years, West Germany and Austria have also charged Czechoslovakia with "exporting" air pollution and have held talks in an attempt to improve the situation.

However, Hungary has a special problem because it does not have the wealth of forest that West Germany and Austria do. Trees cover only 18% of the country's surface and more than half of these are deciduous beech and oak that are most affected by acid rain. In a nationwide effort to overcome this deficiency, Hungary has increased tree cover by one-third since World War II, and now plants 7,000 hectares of saplings annually.

### **WEST GERMAN CABINET DECIDES ON TAX MEASURES TO PROMOTE LEAD-FREE GAS**

The West German Cabinet decided earlier this month on tax measures to encourage the use of unleaded gasoline. The proposed legislation would save around DM 3,000 for motorists who use unleaded gasoline, regardless of the size of the car. As of April 1, 1985, the tax on leaded gasoline is to be raised 2 pfennig, and the tax on unleaded gasoline lowered by the same amount.

Starting in January 1986, the proposed law would also raise the vehicle tax on cars without the catalytic converters that require lead-free gasoline. Automobiles registered from January 1988 on with engines larger than 2,000 cc displacement would be required to meet the emissions standards currently in force in the United States. Smaller cars would have to meet the standards starting in January 1989, at which time the vehicle tax allowance would expire.

In announcing the cabinet decision, Finance Minister Gerhard Stoltenberg expressed the hope that the other countries of the European Community would "quickly come along," both by providing the unleaded fuel at their service stations and by taking their own measures to reduce pollution.

### **REPORT SAYS MOST THIRD WORLD DISASTERS ARE UNSOLVED DEVELOPMENT PROBLEMS**

Most disaster problems in the Third World are unsolved development problems, according to a report by the Swedish Red Cross and Earthscan. More than 14 million people died in earthquakes, floods and droughts during the 1970s, mostly in the Third World, the report said.

The weather was "clearly to blame" in most cases, but "human activity made the disaster worse." The report added, "for many Third World countries it is environmental degradation, poverty and rapid population growth which turn a natural disaster into a major disaster." Western governments should link development aid to disaster prevention and mitigation, the report said, by improving housing and encouraging rational agricultural policies and reforestation.



AROUND THE WORLD

**CHILE** -- The third stage of the rural national improvement program has brought potable water and sewage system service extensions to about 45 cities, the government reports, benefiting nearly 2.5 million people. The infrastructure development program for the Metropolitan Region, which aims to secure a steady supply of potable water through 1995, is now 30% complete. However, severe storms which Chile experienced in July inflicted considerable damage on public facilities, which are still undergoing repairs.

**JAPAN** -- The Japan Atomic Industrial Forum has submitted to the Japanese Atomic Energy Commission and other government agencies a report on the back end of the nuclear fuel cycle which emphasizes the need to promote plutonium recycling in light-water reactors. The JAIF report recommends that a second spent fuel reprocessing plant, in addition to the one under construction at Tokai, should be ready for operation around the middle of the 1990s. Further, plutonium recycling in light-water reactors should be incrementally increased until it reaches commercial levels sometime toward the end of the 1990s, JAIF says.

**UNITED STATES** -- EPCOT Educational Media has a 9-minute film on "The Challenge of Survival: Water" that shows the need for conserving water and preventing uncontrolled runoff which leaches the soil. Available in 16 mm for a free two-week preview and video cassette. Contact: EPCOT Educational Media Co., 500 S. Buena Vista St., Burbank, Calif. 91521, U.S.A., 1-800-423-2555.

**WEST GERMANY** -- Chopping down trees for the Christmas season does not contribute to the death of the forests, says Federal Minister of Agriculture Ignaz Kiechle. Instead, thinning is actually healthy for the remaining trees, giving them needed room for growth. As foresters from Brekendorf in Schleswig-Holstein recently argued, each evergreen sold also helps to finance measures necessary for the care of the forests. However, environmentalists are still calling on the public to forego using firs as Christmas trees this season. The chairman of the Federation for the Environment and the Protection of Nature, Hubert Weinzierl, issued an appeal Nov. 16 that only trees already showing signs of pollution damage be sold throughout the country for Christmas. Weinzierl said that nobody's enjoyment of a colorful Christmas need be spoiled, but added that, without restraint now there would be no firs, spruces and pines left to be future Christmas trees.

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### SLANTS & TRENDS

**AUSTRALIA'S GREAT BARRIER REEF** is being contaminated with considerable concentrations of polychlorinated biphenyls (PCBs), WER Correspondent Trevor Rees reports. Dr. Bob Smillie, a microbiologist at Australia's Latrobe University, says that the Northern Hemisphere is the source of this pollution. Says Smillie: "I think the most reasonable explanation is that what we are seeing is the result of global pollution originating in the Northern Hemisphere, carried to Australia in the upper atmosphere by winds."

**LOCAL INDUSTRY IS NOT TO BLAME.** "The prevailing ocean currents sweep across the Pacific and reach Australia around Sydney. About half the water goes north and the other half south. These currents are fairly free of pollution because there are not many sources of PCB contamination in the Pacific," Smillie explains. In his research, he found traces of DDT with the PCBs in sharks' livers and clams from the reef, and although contamination of the reef is nowhere as high as in many northern waters, there is a real danger that PCBs will interfere with the reef's marine life reproduction.

\* \* \*

**GIANT PANDAS ARE SURVIVING** threats to their bamboo food supply far better than was expected one year ago, WER Correspondent William G. Mahoney reports. Dr. George Schaller, co-director of the China-World Wildlife Fund panda research project in Sichuan Province, explained that when bamboo began to flower and die off last year, scientists feared a recurrence of the 1974-76 bamboo die-off when 138 of the 1,000 remaining in the wild starved to death. Last winter, only about 20 pandas were found dead and not all died of starvation.

**AT LEAST SOME BAMBOO SPECIES** that pandas eat are available in most areas, new research has established. Speaking to scientists meeting in Frankfurt under the auspices of the Frankfurt Zoological Society, the Senckenberg Natural History Museum and the WWF, Schaller noted that the pandas wander farther in search of food than was originally thought. "A few pandas may face starvation this winter in several small areas hardest hit by the bamboo die-off," he said. "But we have gained valuable experience in rescuing weak animals."

**'WHAT IS MORE WORRYING NOW,'** said Schaller, "are the long-term prospects of the panda in habitat under pressure." Agriculture and logging are cutting into panda habitats -- germination of bamboo is poor in logged areas. Some pandas are caught in snares set for musk deer, and many live outside the protection of China's 12 panda reserves.

## **ASBESTOS DUMP FOUND TO BE LARGEST IN GREAT BRITAIN**

by Barbara Massam

GREAT BRITAIN -- The largest asbestos dump known in Britain -- containing 100,000 cubic meters and 75,000 tons of blue, white and brown asbestos -- has been found under a 62-acre site in Faslane on the River Clyde in Scotland.

The site, a former ship-breaking yard taken over by the Ministry of Defense (MOD) in 1981, is being prepared for conversion into a shiplifting dock for four 16-missile Trident nuclear submarines. Although the dump was located in 1981, the amount of asbestos it contained was not quantified until a further survey in August and September of this year. Some is pure asbestos and some mixed with soil and metal waste. The site has been fenced off and warning notices erected. MOD stresses that there is no danger while the asbestos remains in the ground.

The local Dumbarton District Council expressed anger that it only learned of the dump's existence when the MOD announced it at a press conference on Oct. 30. Council planner Ian Leitch said that 4,000 people lived downwind from the site. The council is asking for full information on any tests and surveys carried out, and for full consultation with the government's Health and Safety Executive (HSE) on health hazards.

The council was denied a public inquiry into the development of the site for nuclear submarines by Secretary of State for Scotland George Younger, but will now apply again because of the discovery of the dump.

Three options are now open to the site managers in consultation with HSE -- a cement covering, relocation within the site, or removal. Removal could involve an estimated 10,000 truckloads, costing millions of pounds. Because of safety regulations affecting asbestos, the solution will be a long and complicated one, and will delay considerably any planned construction work on the site.

## **INDIAN EXPERTS EXAMINE USES FOR URBAN SEWAGE**

by Darryl D'Monte

BOMBAY -- Experts in India are examining ways of using city sewage to produce biogas and algae for fish to feed on. Some 140 major cities in the country generate 9 billion liters of sewage daily -- only one-third is treated and the rest is dumped into rivers and the sea. Moreover, several big cities, such as Ranchi, Bhopal and Jabalpur, have no treatment facilities whatsoever. And even in Bombay, Calcutta and Delhi, only 50% to 60% of the sewage is treated.

Delhi's Sewage Disposal Undertaking is now working on a project to provide gas to 10,000 homes. The Central Board for the Prevention of Water Pollution calculates that by the year 2001 the urban population of 205 million will produce 17,000 million liters of waste every day, which can yield 2,232 tonnes of nitrogen, 744 tonnes of phosphorus and 1,488 of potassium daily. The value of these nutrients amounts to \$50 billion annually, while the waste now unused costs the country \$30 billion.

Indian experts are looking at the experiments conducted by Dr. Brian Winfield of Portsmouth Polytechnic in England, who has coordinated strategy for recycling sewage for use on crops. Winfield is also developing a computer program to make cheap compost fertilizer by mixing treated solid with domestic waste. He is improving filtration techniques to filter effluent under pressure and obtain potable water as well as a concentrate of nutrient salts. He is also mixing effluent with sea water to produce seaweed.

## EUROPEAN GOVERNMENTS CALL FOR CLEANER NORTH SEA

by William G. Mahoney

BREMEN -- Ministers of eight West European and Scandinavian governments ended the first international North Sea Environmental Conference Nov. 1 with a pledge to reduce pollutants pouring into the sea from their rivers and coastal waters.

The delegates unanimously approved a document urging a collective effort to clean up the rivers and coastal waters that were described as the main sources of North Sea pollution. Waste and sewage sludge must be better regulated and processed on land rather than dumped into the sea, the document stated. The declaration also called for further restrictions on pollution from ships, particularly upon the dumping of waste oil and chemicals. It also pledged stricter limits on air pollution generated by the incineration of highly toxic chemical wastes at sea.

A West German proposal that would have given the North Sea the status of "special zone" to ensure maximum environmental protection was rejected. British delegate William Waldegrave, who led the opposition fight against the move, told ministers that his country felt that the North Sea's condition was satisfactory.

It was not an outright rejection, though. The eight countries agreed to take up the special-zone proposal at a follow-up conference in 1986 -- if the pollution problem shows no signs of abating. Meanwhile, no timetable has been set for implementing the non-binding, nine-point declaration. Countries involved include: Belgium, Denmark, France, Great Britain, Norway, Sweden and West Germany.

Although the host of the conference, German Interior Minister Friedrich Zimmermann, called the declaration "a visible success," many environmental groups attacked the outcome as simply more empty words. The environmental organization, Greenpeace, summed up the attitude of environmentalists by calling the declaration "an empty pledge of good intentions" unaccompanied by any concrete measures.

Environmentalists have complained that the North Sea has been turned into "Europe's garbage dump" and is threatened with ecological collapse. Some 450,000 metric tons of toxic heavy metals, 7 million tons of poisonous refuse and 11 million tons of raw sewage and runoff are dumped into the North Sea annually. Danish Environmental Minister Christian Christensen criticized the agreement because it did not ban dumping of chemicals and other wastes into the sea.

## EUROPE'S LARGEST LAKE THREATENED BY POLLUTION, SOVIET PAPER CHARGES

by William G. Mahoney

MUNICH -- The Soviet trade union daily Trud reported Nov. 4 that industrial waste pollution is threatening Lake Ladoga, Europe's largest lake. Waste flowing into the lake, which is located northeast of Leningrad near the Finno-Soviet border, is poisoning fish and triggering the rapid growth of weeds that threaten to choke off all life in the water.

Officials said the pollution is reaching a serious level because shoreside factories are not monitoring their toxic wastes. Alexei Treshnikov, director of the Soviet Lake Studies Institute, stated that "the rapid development of factories, the housing boom and intensified agriculture have led to a sharp rise in pollutants and biogenetic matter entering the lake." Weeds that thrive on the phosphorus-rich waters of Ladoga have multiplied by up to 30 times in the past 10 years and now threaten to kill all life in the lake unless action is taken immediately.

A fish farm manager told Trud that the lake's water, once considered the purest in Europe, is now undrinkable in some places.

## CHINESE BEGIN DEALING WITH SOLID WASTE PROBLEM

The Chinese government currently regulates transport of over 6,000 hazardous materials but there are no particular rules for hazardous waste, according to Gu Youzhi and Zhu Yaohua of the Research Institute of Environmental Protection in Shanghai. In a paper prepared for presentation last week at the 5th National Conference on Management of Uncontrolled Hazardous Waste Sites, in Washington, D.C., the authors indicated that "to perfect the management framework in China, a series of regulations for the prevention of pollution are being drawn up."

Included in the drafts are criteria dealing with residues and sludges for agricultural use and for the building material industry, as well as standards for control of solid wastes from non-ferrous metallic industries.

The annual generation of residential refuses and night soil by 200 million urban residents in China amounts to about 150 million tons, the authors said. Industrial wastes have totaled 370 million tons annually. In addition, solid wastes may reach some 1 billion tons/year by around the year 2000.

### Pollution Impact of Solid Wastes

Over the years, 540 million tons of solid wastes, covering over 40,000 hectares of land, have been accumulated, the paper stated. As a result, 17,000 ha of farmland have been contaminated by salts and heavy metals. Total quantities of solid wastes generated were more than 500 million tons per year, including:

<u>Waste Type</u>	<u>Amount</u> (million tons/yr)
Coal Gangue	100
Mineral Tailing	100
Cinder	70
Fly Ash	40
Smelting Slag	40
Residues from Chemical Industry	16
Residential Refuses and Night Soil	146

Residues or ashes from some industries have been directly discarded into water bodies. Since the 1950s, that has caused a 1.3 million ha reduction in water surface area of the country's rivers and lakes.

### Disposal Practices

The authors cited disposal of chromic wastes, tailings, red mud and radioactive materials in their analysis of China's solid waste management. More than 2 million tons of chromic residues have accumulated in China. Because enterprises generating the wastes are spread all over the country, "disposal is a difficult task." Currently, a requirement that chromic residues be detoxified and/or dewatered before further use or ultimate disposal is being considered.

Tailings from Sanshandao Gold Ore-dressing Mill in Shandong Province contain cyanides and other harmful substances. To eliminate the hazard from seepages, a tailings landfill site has been proposed in the form of an enclosure, with each cell 400 m X 400 m in size and 1 million cubic meters in volume.

One key in disposal technology is impermeable material, said the authors. A new kind of red mud compounded material has been developed in China to provide for seepage prevention at red mud disposal sites.

Finally, new storage sites for both intermediate and permanent purposes are under consideration for the disposal of radioactive wastes. For municipal radioactive wastes in Shanghai (from laboratories, hospitals, etc.), an experimental treatment station is being planned.

### BIOGAS REACTORS BEING IMPROVED IN CHINA

Use of biogas plants in China rose to a high level in the 1960s and 1970s, but the quality of the plants was often very poor, according to Jiao Ruishen, chairman of the Department of Microbiology, Shanghai Institute of Plant Physiology. Speaking recently to the Biotech 84 USA conference in Washington, D.C., he said that after 1978, the office responsible for biogas production examined the situation and stressed scientific management.

Recent trends in biogas production in China include anaerobic digestion of industrial wastewater, multipurpose utilization of the digester residue in rural areas and microbiological studies on methanogens and kinetics of digester fermentation, Ruishen said. Biogas production has been extended from household uses to factories in rural villages and town to run internal combustion engines for milling of flour, rice and feeds, and generating electricity.

He said that anaerobic treatment of industrial wastewater is currently gaining much interest because of the double advantage of recovery of energy and improvement of the environment. The potential production of biogas is great in industrial cities, he added.

### BRAZIL BUILDS WOOD PULP BOILER TO REDUCE FUEL OIL CONSUMPTION

by Charles Thurston

SAO PAULO -- Brazil's Petroquimica do Nordeste S.A.-Copene is building the world's largest wood pulp-fired boiler in an effort to reduce fuel oil consumption and dependence on foreign energy imports.

Copene, which supplies both the steam and first generation petrochemical products for 26 downstream product industries at the Camacari, state of Bahia petrochemical facility, has embarked on a program of wood and electricity substitution that has helped reduce annual consumption of fuel oil from 700,000 tons at the start-up of the complex in 1979 to only 400,000 tons this year, despite an increase in production.

The \$80-million boiler, being supplied by Companhia Brasileira de Caldeiras-CBC, a subsidiary of Mitsubishi, was designed by Mitsubishi Combustion Engineering to produce 400 tons of steam per hour at a temperature of 538°C and a pressure of 120 kilos per cubic centimeter. This boiler, the largest existing unit specifically designed to burn wood pulp, is preceded only by a 100-ton-per-hour unit adapted to wood from fuel oil in 1980 by a Swedish group, a CBC spokesperson says.

Copene has built its own eucalyptus forest project, run by a subsidiary company, Copener, which is developing 70,000 hectares of wood. The wood being burned in the boilers initially is native groundcover, cut, pulverized and dried in one of six grinding units which each produce 15 tons of pulp per hour with a maximum humidity of 30%. The boiler, first of two planned, consumes 90 tons of wood pulp per hour.

The boiler will run at full capacity next year at Copene, and allow reduced loads on the five fuel oil boilers now in operation at the facility, producing a total of 1,600 tons of steam per hour. Utilizing naphtha from the state oil company Petrobras, Copene produces 1.35 million tons of ethylene, benzene and seven other first-generation petrochemical products per year for the other companies that compose the Camacari petrochemical pool.

**DANISH ECOLOGISTS EXPELLED  
BY CZECH AUTHORITIES**

by William G. Mahoney

MUNICH -- Bavarian border police said that three Danish ecologists were detained Oct. 24 for two days in Czechoslovakia and were subsequently expelled for doing what Czechoslovak officials described as "unauthorized research."

A border police spokesperson in Munich said that the three-member team, headed by a University of Copenhagen biology professor, went to Czechoslovakia on Oct. 23 to study environmental damage. When they attempted to return to West Germany the following day, he said, Czech officials at the Zelezna Ruda border checkpoint detained them and took them to Pilsen for interrogation.

The spokesperson said that, according to Czech officials, the three Danes had, without permission, taken samples of soil and water, bark, roots and brushwood in the Krusnehozy Mountains and the Bohemian forest region. Forests in the two areas have been suffering particularly severe pollution damage in past years.

The Danish team, which had done similar research in West Germany's Harz and Fichtelgebirge mountain ranges, was held and questioned at the Pilsen-Bory prison for two days. They were then expelled as undesirable aliens at Dolni Folmava on the West German border. Their samples were confiscated.

The Danes informed German authorities that they would contact Professor Jan Materna of Prague University and ask for his support for permission to continue their research in Czechoslovakia, the spokesperson said.

**MOBILE WATER POLLUTION DETECTOR  
DEVELOPED BY AUSTRALIAN SCIENTIST**

by Trevor Rees

MELBOURNE -- A mobile water pollution detector, which can function unattended in harsh, remote areas has been developed at Australia's Deakin University by Professor of Chemistry Alan Bond. Working with other scientists, Bond has developed a water-pollution detector weighing only a few kilograms that may be concealed on a riverbank to monitor up to a dozen potential pollutants from factory effluent.

The device eliminates 24-hour human monitoring, is more sensitive, flexible and faster than most existing laboratory analyses. Its simple keyboard allows it to be reprogrammed on the spot for different tasks. A handful of flashlight batteries will power the monitor for days until a trained operator comes to read its analyses, the scientists note.

Bond pointed out that the monitor can be fitted with radio-broadcast alarm to report severe pollution immediately, and the versatility and automatic operation of the portable version would allow it to be installed far out to sea to record concentrations of toxic chemicals such as mercury.

Another type, the mains-power version, with its greater computing flexibility, can be programmed to detect a multitude of elements and compounds, with sensitivities of one part per billion -- about 1,000 times more sensitive than many other laboratory detection systems. Bond's multi-element analyzer can detect both inorganic and organic compounds. Most existing detectors are restricted to one or the other.

Bond says he hopes that three production models will be available for extensive trials starting in 1985.

AROUND THE WORLD

**INDONESIA** - The government will develop and test agricultural and conservation techniques designed to improve upland farming in Central and East Java. The resulting improvements are expected to increase the production and incomes of some 165,000 families in these areas. Population pressures have caused cultivation to be extended into the upland areas of major river basins, particularly in Java. But these basins are highly susceptible to erosion and are often unable to sustain even subsistence agriculture. The project will finance the design and development of plans to promote improved farming and conservation practices on about 23,000 hectares. Research will be carried out on soil and water conservation and management, crop and livestock systems. The project is being supported by an \$11.3 million loan from the World Bank; \$20 million from the Indonesian government; and \$18.9 million from the U.S. Agency for International Development.

**PHILIPPINES** - Recently started pilot projects are a first step toward exploiting the country's trees for rural electrification, according to Development Forum Business Edition. By 1990, the pilot projects are expected to develop the design, equipment and operational parameters for small-scale, widespread dendrothermal power generation. The potential for dendrothermal power generation in the Philippines is around 100,000 megawatts, far more than any other energy source. The pilot phase of the project, run by the National Electrification Administration, will result in 70 plants running shortly after 1990. All will be small 3-MW power plants, each with an associated 1,000-hectare plantation. The current plan is to divide plantations into 100-ha modules. Forming an association, 15 families would farm each module. Ten modules would grow enough wood to supply the power station.

**SOVIET UNION** - Large-scale development of piggeries and poultry farms provides obvious advantages of mechanization and economy, according to the Soviet publication Ekonomicheskaya Gazeta. However, it also has produced major pollution problems. Liquid waste from a farm with 108,000 pigs is equal to that from a town of 250,000 people. The Soviet Union has found that anaerobic fermentation to speed up the production of methane seems to be the most promising solution. A consulting group associated with the president of the USSR Academy of Sciences concluded that anaerobic fermentation can save 20 million tonnes of fuel equivalent, also resulting in high-quality organic fertilizer. The Soviet government plans to set up five fermentation system tests in five Soviet republics. Pilot projects have already been launched in Estonia, the Ukraine and the Moscow region.

**VENEZUELA** - The government has called for an international effort to fight pollution in Lake Maracaibo, the area where the oil industry was born. The lake stretches over an area of 12,000 square kilometers in the northwest part of the country. Industrial waste has polluted the lake to such an extent that the government says that only a worldwide effort could save it, the OPEC Bulletin reports. The ecological balance of the lake is now in extreme danger, largely because of 4,000 liters of dirty, untreated water that are continuously dumped into it. It is also contaminated by bottling plants, electric power houses and petrochemical facilities. Oil spillage and illegal dumping by tankers is a continuing phenomenon. An estimated \$120 million would be needed to build a processing plant to clean the dirty water disgorged into the lake. The Ministry of Environment has \$100 million earmarked for the project and nearly 80% of the required equipment.

**WEST GERMANY** - The U.S. 7th Army's Training Command, headquartered in Grafenwohr (Bavaria), is placing a major emphasis on environmental protection measures, the German Information Center reports. In an effort to minimize the effects of noise and dust on nearby communities, the Army is planting trees around the training grounds and garrisons under its authority. Other environmental projects include the construction of a \$1 million waste treatment plant and a \$5.4 million central heating system aimed at reducing air pollution.



CALENDAR OF WORLD ENVIRONMENT MEETINGS

Dec. 16-21: 1984 International Chemical Congress of Pacific Basin Societies, (PAC CHEM '84), Honolulu, Hawaii. Contact: American Chemical Society, 1155 16th St., N.W., Washington, D.C. 20036, (202) 872-4450 or (202) 452-8994.

March 25-27, 1985: Seminar on Exposure to Enhanced Natural Radiation and Its Regulatory Implications, Maastricht, The Netherlands. Contact: Project Office for Energy Research, P.H. van Dijkum, P.O. Box 1, NL-7055 ZG PETTEN, The Netherlands, Tel. (0)2246-4879, Telex: 57211 REACP NL.

April 17-21, 1985: Globescope, meeting on world environment issues and U.S. role in their resolution, Portland, Ore. Contact: David McGrath, Global Tomorrow Coalition, 1525 New Hampshire Ave., N.W., Washington, D.C. 20036, (202) 328-8222.

May 19-24, 1985: 2nd U.S.-Dutch International Symposium: Aerosols, Williamsburg, Va. Contact: Dr. Si Duk Lee, U.S. Coordinator, U.S. Environmental Protection Agency (MD-52), Research Triangle Park, N.C., 27711.

May 20-24, 1985: International Conference on Atmospheric Sciences and Applications to Air Quality, Seoul, Korea. Contact: Y.S. Chung, Atmospheric Environment Service, 4905 Dufferin Street, Downsview, Ontario M3H 5T4, Canada, Tel. 416-667-4980.

June 25-27, 1985: Hazardous Materials Management Conference and Exhibition Europa, Hamburg, West Germany. Contact: TCM Expositions Ltd., 331 West Welsy St., Wheaton, Ill. 60187, (312) 668-8100.

Sept. 9-11, 1985: Ninth International Symposium on the Scientific Basis for Radioactive Waste Management, Stockholm, Sweden. Deadline for submission of paper abstracts, Feb. 15, 1985. Contact: L.O. Werme, SKB, Box 5864, S-10248 Stockholm, Sweden, Tel. Int + 468679540.

Sept. 10-13, 1985: Heavy Metals in the Environment, Athens, Greece. Submit abstracts for papers by Feb. 1, 1985. Contact: Heavy Metals Secretariat, CEP Consultants Ltd., 26 Albany Street, Edinburgh EH1 3QH, U.K., Tel. 031 557 2478.

Sept. 24-26, 1985: Environment Conference, Toronto, Canada. Conference on pollution abatement in pulp and paper industry. Contact: David Paterson, Technical Section, CPPA, Sun Life Bldg., 23rd Fl., 1155 Metcalfe St., Montreal, Quebec, Canada, H3B 2X9, (514) 866-6621. END

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### SLANTS & TRENDS

**DAMAGE TO WEST GERMAN FORESTS INCREASED** dramatically over the last 12 months, according to a report presented Oct. 16 by the country's Agriculture Minister Ignaz Kiechle. Compared with 34% a year ago, 54% of the forests now show visible signs of damage. The study shows that 1.5% of the forests are dead or in critical condition, with damage to beech and oak increasing most dramatically and the existence of the fir seriously threatened. Of the affected forestland, 61% is in Baden-Wurttemberg and Bavaria.

**FURTHER DESTRUCTION COULD BE EXPECTED**, if 1985 is a dry year and if there are only moderate reductions in air pollution, Kiechle said. Both he and Interior Minister Friedrich Zimmermann warned against panic and "blind activism." Instead, Kiechle recommended a step-by-step reduction in air pollution, such as the government's plans to switch to unleaded gasoline by 1989 (WER, Oct. 17, 1984, p. 163).

\* \* \*

**'RESPECT THE MORATORIUM,'** read the banner. Written in Russian, the sign was hung aboard a one-time Russian whaling ship near the strait of Gibraltar earlier this week by three members of the international environmental group Greenpeace. The three were protesting the Soviet Union's refusal to sign a moratorium on commercial whaling. The environmentalists climbed aboard the 844-ton "Dorby" from inflated rubber boats and proceeded to chain themselves to the ship.

**THE TWO-HOUR PROTEST ENDED** after the ship's captain convinced the Greenpeace delegation that the ship was no longer used for whaling. The protesters said they believed him because no whaling equipment was seen on board. Greenpeace Director in Spain, Xavier Pastor, said the group has not decided whether to continue its lookout for Russian whalers.

\* \* \*

**HOW OIL AND GAS DRILLING,** increased fishing and farming will affect marine life in the pristine ocean waters bordering northern Alaska is the topic of a new two-year, \$2.5 million study. Studies already conducted suggest that, despite the short growing season, the seas around the Bering Strait produce more plant life than most other marine areas in the world. Physical oceanographers, chemists and biologists from the U.S., Belgium and Denmark will study the fate of nutrients introduced into the continental shelves of the Bering and Chukchi Seas from the Yukon River and the deeper waters of the Bering Sea. The effort is being funded by the National Science Foundation's Division of Polar Programs.

Leonard A. Eiserer  
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**ENVIRONMENTAL RULES NOT DRIVING  
U.S. INDUSTRY OVERSEAS, CF SAYS**

Environmental regulations have not caused a significant exodus of U.S. industry abroad, a study by the Washington, D.C.-based Conservation Foundation concludes. The study analyzed the "industrial flight" hypothesis by examining recent international trade and investment trends for evidence of significant changes in the overseas investment patterns of those U.S. industries accounting for over two-thirds of all domestic pollution control expenditures.

H. Jeffrey Leonard, author of Are Environmental Regulations Driving U.S. Industry Overseas?, found "no significant examples of industrial flight from pollution or workplace health standards in industries where product demand is expanding and U.S. producers enjoy technological superiority."

Leonard said that the costs of complying with U.S. regulations do not override traditional factors in industrial location decisions, such as market considerations, transportation and labor costs, and political stability. Even for the pollution-prone chemicals, metals and pulp and paper industries, the data show no large increases in total overseas investment, large shifts to developing countries or large jumps in U.S. imports of "pollution intensive" goods.

But the study indicated that a small number of chemicals and metals firms have been influenced by environmental factors to relocate production facilities abroad. Included are:

- producers of some highly toxic, dangerous or carcinogenic substances, such as asbestos and benzidine dyes, where firms have not yet been able to develop safer substitutes or to meet environmental standards through technological changes;
- mineral processors of copper, zinc and lead, where environmental factors have combined with other economic problems to speed the dispersion of the industry abroad; and
- some companies producing a few chemical intermediates -- chemicals needed for the manufacture of other products -- where capacity has moved abroad in part because of pollution and, more significantly, because of workplace health standards.

The report concluded that two broad policy implications are apparent. First, the relaxation of regulatory standards, by reducing incentives for technological progress and manufacturing-process changes, would not restore the long-term competitiveness of U.S. industries experiencing pressures for industrial flight. Instead, it would take away an important incentive as well as increase health hazards to both workers and the general public.

Second, any effort to weaken, roll back or fail to enforce existing environmental regulations by Congress or the executive branch "cannot legitimately be supported by arguing that the stringency of those regulations has caused a significant amount of U.S. productive capacity in important manufacturing industries to be transferred abroad."

To obtain copies of the study, send \$11.50 (plus \$2.00 shipping and handling) to The Conservation Foundation, 1717 Massachusetts Ave., N.W., Washington, D.C. 20036, (202) 797-4300. For areas outside the U.S., Canada, Mexico and Central and South America, direct inquiries on price and shipping fees to Bowker Publishing Company Ltd., P.O. Box 5, Epping, Essex, CM164BU, England.

**WASTE DISPOSAL PROBLEM PLAGUES****BRITISH NUCLEAR PROGRAM**

by Barbara Massam

GREAT BRITAIN -- The unresolved problem of radioactive waste disposal is casting a shadow on the Thatcher government's plans to expand its nuclear power program. Even those who agree with the Central Electricity Generating Board (CEGB) about the cleanliness and cheapness of nuclear power say they are opposed to disposal of nuclear waste anywhere in their neighborhoods.

The contamination of local beaches by waste from the Sellafield nuclear processing plant in Cumbria early this year, and the apparent delay in informing the government, dented public confidence in the nuclear industry. In spite of a steady stream of television and newspapers advertisements, this confidence has not been fully restored.

The National Union of Seamen has blocked all sea dumping of low or intermediate level waste, and thus forced the government to honor the London Dumping Convention's call for a moratorium. Seamen and dockers have also impeded research to find ways of burying high level waste under the sea bed by blocking the research ship.

Pressure for land dumping is therefore rising and the extra cost of storing waste, already existing from the country's present level of nuclear production, has been estimated at about £22 (\$27.3 million) per year.

On Oct. 12, Environment Minister William Waldegrave visited Billingham, a town in the industrial northeast that is one of two sites selected a year ago by NIREX (Nuclear Industry Radioactive Waste Executive) for study of potential dumping sites.

**Strong Opposition to Burial in Billingham**

During the year between the announcement of Billingham's selection and Waldegrave's visit, a protest group has been organized. BAND (Billingham Against Nuclear Dumping) claims support from all local political parties and local industry as well as the residents themselves. The group presented Waldegrave with a petition containing 85,000 signatures and reasons why using Billingham as a dump would be "political suicide" for the government.

One proposed site is an old mineral mine which extends under ICI's chemical works and a surrounding residential area. Billingham already lies in an area said to be the most densely covered with hazardous industries in Europe. Its residents say they do not wish to increase their hazardous position further.

The town also has Britain's highest level of unemployment -- 30%, with small pockets rising to 60%. Since the announcement of the dump-site investigation, sources say that property values have fallen and job development has been affected. There are also fears about the transportation of the radioactive waste through residential areas.

ICI lacked enthusiasm for the plan from the start, but at first agreed to cooperate if it proved "to be in the national interest." On learning of the reaction of its staff of 7,500 and other residents, it has now reversed its position and says it would go as far as to fight purchase of its land.

Meanwhile, BAND's Secretary Jan Wilson says that a recent EEC debate mentioned Billingham as a possible European dumping site. He said he believes that this is the government's ultimate plan for the area. Says Wilson: "We are not becoming the nuclear dustbin of Europe. There are literally thousands of people here who would lie down in front of the bulldozers and the trains."

### DEMONSTRATORS ARRESTED IN PROTESTS AGAINST GERMAN LLW DISPOSAL SITE

Fifteen anti-nuclear protesters were arrested in West Germany Oct. 9 while trying to block shipments of low-level radioactive waste from the Stade nuclear power plant, west of Hamburg, to a storage site in the salt domes at Gorleben in eastern lower Saxony near the East German border.

Demonstrators had blocked all access roads into the Gorleben site, which they claim is not geologically safe for the storage of radioactive waste. They used tree trunks, burning tires and flammable liquids, but were unable to stop the five-truck convoy carrying 296 containers of LLW from the Stade plant. The convoy was accompanied by 50 police vehicles and one helicopter. Police estimated that 600 demonstrators took part in the blockades, while organizers of the protest claimed 2,000 participants.

### NEW AID APPROACH TO THIRD WORLD ENERGY CRISIS NEEDED, OWINO SAYS

International development agencies must reformulate their approach to the energy crisis in the Third World, according to Frederick Owino, chairman of the African Energy Research Program.

In a recent interview with IPS news service, Owino said Africa faces a complex problem of which fuelwood is only one component. "We have the problem of improving the productivity of the land, halting the desertification process, while encouraging farm and village wood lots," he said.

Owino is participating in a panel of 10 Third World energy specialists who will carry out a two-year study on existing energy programs and suggest development scenarios. The project is backed by the Canadian-based International Development Research Center (IDRC), with some funding from the United Nations University in Tokyo. Coordinated by Indian energy economist Ashock Desai, the panel has commissioned studies on most Third World nations.

One aim of the study, said Owino, is to show development agencies they should rethink their approach to crisis management in the environment by moving from "high-budget, single solution" programs to flexible mini-projects that encourage local solutions to local problems. After international awareness is aroused about a problem, all sorts of programs are quickly set into motion, but "some are unfortunately started without due research into the support base," he said.

He cited the example of afforestation programs, which, he said, should have tested new species and worked out a management plan for each so that farmers could be given exact instructions. Owino cautioned that the international community should not be looking for overnight solutions in projects that are essentially long term -- such as afforestation. Instead, work on rural energy should be devoted to research on alternative forms of energy, such as solar, biogas and wind.

AUSTRALIANS ADVISE ON DESERT FORESTRY: Foresters, agricultural scientists and land and rehabilitation officers from North Africa and the Middle East are undertaking an intensive three-month course in Australia on the use of Australian trees and shrubs in dry zones, WER Correspondent Trevor Rees reports. Countries represented are the Egypt, Sudan, Syria, Jordan and Ethiopia, all of which have similar climatic and dryland conditions to the state of Western Australia. The course, designed and run by the W.A. Institute of Technology, has been structured to demonstrate Australian climate and soil environments, which are relevant to North Africa and the Middle East.

### NRC PANEL URGES INTERNATIONAL EFFORT TO UNDERSTAND TROPOSPHERIC POLLUTION

An international effort should be mounted to make a systematic study of the troposphere, a U.S. National Research Council panel of scientists concluded in a report released earlier this month. The group recommended that the U.S. take the lead in the study of the layer of atmosphere closest to earth because "it is here that our concerns about air pollution, climate and environmental abuses center."

For starters, the panel urged doubling the \$10- to \$20-million research budget devoted to tropospheric chemistry during the next fiscal year. Several scientific objectives need to be studied, the NRC group specified. Among these are an evaluation of the biological sources of chemical substances in the troposphere; determination of global distribution of trace gases and airborne particles and testing of the photochemical theory through field work. To date, only lab tests have been performed.

The panel also suggested an investigation of wet and dry removal processes for trace gases and aerosol particles, a process that should aid in the understanding of acid rain, among other problems. "Research should be directed not only toward evaluating the rate at which various elements are deposited on land and water surfaces, but also toward obtaining a fundamental understanding of the scavenging processes and reaction mechanisms in cloud and rain droplets." Finally, a wide range of models for global tropospheric chemistry systems needs to be developed, with the "ultimate goal" of being able to predict future changes.

Robert Duse of the University of Rhode Island, chairman of the panel, noted that now is a particularly propitious time to initiate a global tropospheric chemistry program. "Significant" advances have been made in methodology that "enable us to measure many substances at concentrations impossible only five years ago." In addition, 20 years of urban and regional research on air pollution "provides a solid foundation" for the program. He said the group will press the administration to allocate more funds for research, adding that the panel's sense of urgency is not out of line. "The troposphere is receiving increasing quantities of waste products from our continually growing technological society."

Global Tropospheric Chemistry: A Plan for Action is \$20.95 from the National Academy Press, 2101 Constitution Ave., N.W., Washington, D.C. 20418.

### DROUGHT, OVER-GRAZING CONSIDERED RESPONSIBLE FOR KENYAN CATASTROPHE

An ecological and social catastrophe looms in northern Kenya's Wamba region, about 217 miles north of Nairobi. West German development aid workers say that in the coming weeks half of all the cattle will die.

The drought is partially responsible for the disaster -- no rain has fallen in Wamba since March 1983. In large part, the catastrophe is also the result of a cattle population of 70,000, which together with 120,000 goats and sheep, have destroyed grazing areas, leaving grassless patches even after rain.

Under a food program financed by the West German Development Aid Ministry, Samburu nomads are being asked to reduce their herds by trading each cow for a 99-pound sack of maize. But some experts point out that the nomads have traditionally lived off the meat, blood and milk of their animals. The maize deliveries could make them dependent on the fluctuating maize markets. Moreover, the Samburu have been reluctant to work the fields. Because of this, the women dig contours, plant trees and maintain the environment of the rain catchments on a food-for-work basis under which they receive maize, beans and cooking fat.

## EUROPEAN COMMISSION URGES EARLIER DATE FOR AUTO EMISSIONS REDUCTIONS

by Anna Lubinska

BRUSSELS -- The European Commission wants the 10 EEC governments to commit themselves to reducing auto emissions to near United States standards at the end of 1986 instead of 1988.

Getting EEC ministers to adopt such measures earlier will permit countries such as West Germany to introduce stricter emission controls on auto pollutants, including nitrous oxides, carbon monoxide and hydrocarbons, more speedily.

The latest Commission proposals provide for a 20% range in limit values: 10 to 35 grams/test for carbon monoxide; 2.6 to 8.2 grams/test for nitrous oxides and hydrocarbons together; and 1.025 grams/test for nitrous oxides alone. This range of values has been provisionally proposed because the European test cycle has not yet been completed while the U.S. test cycle is not compatible with its European counterpart.

In order to ensure enforcement of the limits, the new proposals also impose an additional system of technical check-ups on cars on the road.

## GOVERNMENT, INDUSTRY, NGOs TO CONVENE ON THE ENVIRONMENT

The first World Industry Conference on Environmental Management (WICEM) is scheduled for Nov. 14-16 at Versailles, France. The French government will host the conference, which is sponsored by world industry with the UN Environmental Program and in cooperation with the International Chamber of Commerce.

According to U.S. Steel Corp. Chairman David Roderick, the conference is the first international effort to bring together industry, government and other groups involved with environmental management and protection. Represented at the meeting will be ministerial-level delegations from the United States, Canada, China, Japan, Kenya, Zambia and most Western European and Latin American nations. WICEM organizers say they also expect several additional countries -- the Soviet Union and several other African and Asian nations -- to participate.

Other participants will include representatives of a selected group of non-governmental organizations concerned with environmental problems. The basic industry sectors participating in the conference will include pulp and paper, oil production and electrical generation, the chemical industry and iron and steel.

WICEM will emphasize four major themes: industry experience with environmental problem-solving; opportunities and constraints in environmental management; more effective environmental management; and follow-up processes for cooperation and communication.

ENVIRONMENTAL ASPECTS OF DEVELOPMENT: The Netherlands government and the World Environment Center will sponsor the fourth international conference on environmental aspects of development Sept. 25-27, 1985, in The Hague. "Environment and Development: Opportunities in Africa and the Middle East" will focus on environmental opportunities in African and Middle Eastern development. One key issue to be discussed is protecting investments by protecting the environment. Cost of the three-day conference will be \$425 per person. For more information, contact Frederica Capshaw, World Environment Center, 605 Third Ave., 17th floor, New York, N.Y. 10158, (212) 986-7200.

AROUND THE WORLD

**CZECHOSLOVAKIA** - Vlastimil Kupec, deputy chairman of the North Bohemia Regional National Committee, said Oct. 8 that while industrial pollution is a "troubling" matter in the area, the situation is improving in some respects. Reconstruction of fly ash removal equipment has reduced fly ash emissions by 20% since the beginning of the current five-year plan period (1981-85), he said. In addition, a program of constructing desulfurization equipment has been launched, at places such as the Tusimice-2 power plant, which will use Soviet technology.

**SOVIET UNION** - The Presidium of the Russian Council of Ministers criticized four ministries for failing to clean up the air and water in the industrial city Volgograd, Sovietskaya Rossiya, a daily newspaper published by the Soviet Party Central Committee, reported Oct. 10. The presidium expressed serious concern because the ministries in charge of ferrous metallurgy, petroleum refining, the chemical industry, and tractor construction "still do not display proper persistence in implementing measures to purify the bodies of water and air in certain parts of the city." The presidium also criticized delays in completing water supply, sewage and heating systems in Volgograd (formerly Stalingrad).

-- Atmospheric pollution is a major problem at a giant Siberian power plant designed to supply a large part of Soviet electricity, the Communist Party daily Pravda recently reported. The complex at Kansk-Achinsk in central Siberia burns large amounts of locally mined coal, which results in the discharge of sulfur dioxide fumes. The plant's waste products -- including nitrates and flying ash -- are discharged in quantities that sometimes blot out the sun, the daily noted. Built in the mid-1970s, the complex was considered the best way of converting Siberian coal into electricity. High voltage lines are currently under construction to bring the power to industrial centers in the Urals.

**UN ECONOMIC COMMISSION FOR EUROPE** - A recently published study by the ECE of the effects and control of sulfur pollution concludes that, in susceptible areas of Europe and North America, present atmospheric deposition of acidifying compounds has reached levels at which it generates detrimental changes in water chemistry and in aquatic life. The study notes that since the period 1940 to 1950, fish populations have declined or disappeared from areas receiving acid deposition in southern Norway, south and west Sweden, eastern Canada and northeastern United States. Over half the lakes with a pH below 5 within specific areas of Europe and North America are fishless, compared with about one in seven of those above pH5. If the present rate continues, the study said, 80% of the brown trout will be lost by 1990 in a 28,000 sq. kilometer region that was studied in southern Norway. The study is available from the United Nations Sales Section in New York and Geneva.

**WEST GERMANY** - Two deputies of the antinuclear, environmentalist Green Party were ejected from the lower house of Parliament Oct. 18. One was thrown out for suggesting that Chancellor Helmut Kohl had accepted bribes and the other for using an obscenity toward the deputy speaker of the Bundestag. Uproar broke out in the chamber after remarks by Greens Deputy Juergen Reents in reference to Kohl's report of his trip to China last week and his efforts to expand economic relations with Peking. Reents said Kohl's policy was no surprise from a man "whose rise to head of his party -- as we read about nowadays -- was bought by the Flick concern." The Flick industrial empire has been accused of bribing political parties. Economics Minister Otto Graf Lambsdorff resigned in June, facing charges of accepting money from Flick on behalf of his Free Democratic Party.

-- Federal Economics Minister Martin Bangemann and Czechoslovak Foreign Trade Minister Bohumil Urban have agreed that their two countries will work together to protect the environment. At a meeting in Bonn Oct. 22, the two ministers set environmental protection as the principal agenda item for the next meeting of the countries' joint trade commission.



**YEMEN CONTINUES ILLEGAL  
IMPORTS OF RHINO HORN**

Despite an import ban by the Yemen government, the illegal importation of the African rhinoceros horn is continuing, the World Wildlife Fund reported last week. Yemen is the world's single largest market for the poacher-supplied item.

The ban was instituted in 1982 to counteract a decline of over 50%, between 1972 to 1982, of both the black and white African rhino populations. Conservationists feared that both the African and Asian rhinos would soon be extinct. In Yemen, the horn is prized for use as a hilt for ceremonial daggers, and in several Asian countries -- including Japan, China, Thailand and parts of India -- both the horn and the meat are used as folk medicines.

According to Dr. Esmond Bradley Martin, a U.S. wildlife trade specialist who recently returned from North Yemen, since the mid- to late-1970s, the percentage of horn going into Yemen has currently increased from about 40% to just over 50% of total world trade. After speaking with government officials and traders, Martin reported that very little, if any, rhino is confiscated coming into that country. He said that the law is a very low priority in Yemen because a majority of consumer items are smuggled in illegally and the government says it must stop other imports first.

WWF-US President Russell Train called the trade ban "ineffective." Said Train: "We hoped the Yemeni government would shut down the trade when the ban was enacted in 1982, but nothing of the sort has happened. It is still going on, exported illegally largely from Tanzania and Zambia."

Martin indicated that the actual amount of rhino horn imported into North Yemen has decreased, due to an overall decline in rhino horn on the world market. Poaching and habitat loss have severely depleted the rhino populations. In 1970, there were some 65,000 black rhinos and 3,000 white rhinos in Africa. Estimates are that currently only about 10,000 black and 3,200 white rhinos remain.

Poaching and the illegal horn trade are the most serious threats to the rhino's survival. Specialists estimate that about 8 tons of rhino horn were traded annually during the mid-1970s, the highpoint for the 20th century. Rhino horn exports are illegal from all African nations where the animal is found. On the black market, traders sell the horn for about \$318 a pound. Horn from one adult animal is worth nearly \$2,100. END

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### SLANTS & TRENDS

**THE FILE ON NOXIOUS GAS** is being reopened by the European Commission, WER Correspondent Anna Lubinska reports. In response to the public outcry in West Germany over formaldehyde, the commission has ordered an international study to examine the main sources of formaldehyde, exposure levels, possible effects of exposure and health risks to the population (WER, Sept. 19, 1984, p. 143). Conclusions of the study, together with the results of an epidemiological study now underway in the U.S., will be used as a basis for finding methods of reducing formaldehyde concentrations in the workplace, and inside and outside the home.

**A MAJOR CHANGE IN THE ATTITUDE** of the European Commission towards the issue is indicated by the move. The commission has been intransigent despite pressure from the French and Italians, as well as the European Parliament. Since 1982, a number of Europeans parliamentarians have been pushing the commission to look into the health risks involving the substance and to ban its use. But the commission refused to budge on the issue.

**AN EEC SCIENTIFIC ADVISORY COMMITTEE** concluded last year that formaldehyde was a severe irritant of the eyes, nose and respiratory tract and that emissions should be kept below 0.3 parts per million. At the same time, EEC Environment Commissioner Karl-Heinz Narjes told the European Parliament that there were neither plans to add formaldehyde to priority substances on the occupational hazards list nor to restrict its use even though the commission "was aware that in certain circumstances formaldehyde could present some danger to man."

\* \* \*

**REVERSING A FOUR-YEAR TREND** toward a drop in oil pollution of the oceans, spills, fires and wrecks resulted in a 10-fold increase in the amount of petroleum lost in 1983, according to a report released this month. Oil Spill Intelligence Report notes that 241.8 million gallons of oil were lost last year -- compared with 23.5 million gallons released by accident in 1982.

**MOST SPILLAGE CAME FROM TANKERS.** Although the International Maritime Organization calculated that the rate of tanker accidents in 1983 was the second lowest in 16 years, the loss of oil increased. The greatest loss, 78.5 million gallons came from the Spanish tanker Castillo de Belver, which burned and sank near South Africa, in August 1983. The major single source of loss occurred in the Persian Gulf where repeated attacks on oilfields during the Iran-Iraq war caused blowouts and prevented repairs on wells damaged by storms or military attacks.

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### IAEA PLANS INCREASED WORK IN NUCLEAR WASTE MANAGEMENT

Radioactive waste management remains a highly emotional issue for segments of public opinion in several countries, Dr. Hans Blix, director general of the International Atomic Energy Agency (IAEA) told the opening meeting of the 28th Regular Session of the IAEA General Conference in Vienna Sept. 28.

This public concern has "had a positive effect in prompting utilities and atomic energy authorities to work out policies and plans for the long-term disposal of nuclear wastes." He added, "It is lamentable, however, that legitimate concern has sometimes been replaced by politically or emotionally motivated obstructionism directed against any activity relating to the nuclear fuel cycle, including steps to find suitable repositories for nuclear wastes."

Blix said that international codes and standards for waste disposal might help to increase public confidence that the wastes will be dealt with safely, and noted that over one third of IAEA's Safety Series documents deal with various aspects of radioactive waste management.

He announced that the secretariat of the agency has begun work on a comprehensive report on policies and proposals relevant to the underground disposal of highly radioactive wastes. The secretariat is also completing a code of practice on the management of radioactive wastes from nuclear power plants that will be issued as a Safety Series document. The code of practice will define the minimum requirements for the design and operation of systems involved in the management of wastes produced at nuclear power plants.

The IAEA director said he expected that the code of practice would provide member states, particularly those just beginning their nuclear power programs, with useful general guidance on safety issues in nuclear waste management. He maintained that the need for internationally accepted standards and criteria for the underground disposal of high-level radioactive wastes has been increasingly recognized in recent years.

Finally, Blix noted that the secretariat has begun work relating to underground disposal of high-level radioactive waste and, as a first step, is preparing a comprehensive report on relevant policies and proposals. The aim of this work is to highlight areas of agreement and issues that need to be resolved.

### JUDGE REFUSES TO REJECT SUIT BY BIKINI ISLANDERS AGAINST U.S.

A U.S. federal court judge in Washington, D.C., Oct. 10 refused to dismiss a lawsuit filed by residents of the Bikini atoll who seek \$450 million in damages from the U.S. government for the radioactive contamination of their islands, resulting from 23 nuclear bomb tests conducted in the 1940s and 1950s.

The federal government argued unsuccessfully that the case should be dismissed both because the six-year statute of limitations had run out and because the islanders, as residents of a trust territory, were not entitled to constitutional protections.

Filed over three years ago, the suit seeks compensation for alleged government breaches of obligation. The Bikinians argue that they were assured they could return to the atoll when the tests were over. However, an effort to return them to their homes was aborted in 1978 when radiation monitoring showed the islands are still dangerously contaminated. Unless the government decontaminates the site, estimates show it will be 125 years before it will again be habitable.

## EUROPEANS MAKE PLANS TO BAN PCBs, PCTs

by Anna Lubinska

BELGIUM -- Extremely high levels of polychlorinated biphenyls (PCBs) found in mother's milk have induced three European Economic Community countries -- West Germany, Denmark and Holland -- to demand a community-wide ban on PCBs and PCTs (polychlorinated terphenyls).

The three nations charge that, despite an EEC directive on PCBs in force since 1978, discharges of these substances into the environment and residues found in food have not decreased. PCB levels in breastmilk have become so high that doctors have begun advising mothers to discontinue breastfeeding earlier. PCBs and PCTs are soluble in fats and carbohydrates. They accumulate in mammals, attacking the liver and the reproductive organs, and are suspected cancer-causing agents.

As a result of fires and explosions in electrotechnical plants that contain PCBs, a number of such facilities in West Germany, Sweden, Finland and the United States have been closed down in recent years. When PCBs overheat, they give off polychloro-dibenzo-dioxin (PCDD), a highly toxic substance belonging to the dioxin family.

Continued high concentrations of PCBs could, according to the European Commission, come from products imported from countries outside the EEC that are not subject to the EEC law adopted in 1976.

Production of PCBs and PCTs has virtually stopped in the European Community, and present stocks should start to diminish by the end of 1985. The proposed ban would apply to the use of PCBs in transformers, resistances, induction coils, electric condensers and hydraulic fluids, for which less dangerous substitutes exist. It would basically curtail the use of PCBs as primary or intermediate products. In the initial stage, the ban, which has the approval of industry, would cover the marketing of the substances.

Use of the two substances will, however, be permitted during the phasing out period. Existing plants cannot be pulled down, Commission officials argue, because the operation would be too hazardous. Facilities would, therefore, be allowed to function until they become obsolete, but health and safety measures for the personnel involved will be tightened. Labelling requirements governing the transport and disposal of PCBs are also likely to be made more strict.

## U.S. EPA PROPOSES FURTHER CONTROLS ON PCBs

After a series of unforeseen fires, the U.S. Environmental Protection Agency this week said it intends to put additional controls on 140,000 electrical transformers using polychlorinated biphenyls (PCBs). In 1982, the agency exempted transformers from its ban on PCBs, saying that the chemicals were fully enclosed and posed no threat to public health.

In proposing the new rules, the agency said it was wrong in concluding that transformer fires were not likely to produce toxic PCB byproducts capable of causing health problems. The proposed regulations would require: immediate removal of all combustible materials stored near transformers; clear marking of the units and their location with PCB identification labels; installation of additional electrical protection equipment in the transformers; and the isolation of the transformers from ventilation ducts by July 1988. A hearing on the proposed rules is scheduled for Dec. 26.

### INDUSTRIAL ENERGY EFFICIENCY ENCOURAGED THROUGH BRITISH PROGRAM

by Barbara Massam

GREAT BRITAIN -- A £65 million (\$81.5 million) government boost for industrial energy efficiency was announced this month by Britain's Secretary of State for Energy, Peter Walker. Calling for pioneers in energy-saving techniques, Walker said, "British industry wastes energy on an enormous scale." Between 1973 and 1981, Britain's industrial energy efficiency improved by 16%, in comparison with a 25% to 27% improvement in the United States, Japan and West Germany.

Walker, who last year set up the Energy Efficiency Office within his department, was announcing the third phase of the Energy Efficiency Demonstration Scheme. This seeks to stimulate £5 worth of energy savings a year for every £1 of government money invested in the scheme. For each industrial energy-saving project accepted by the plan, the government supports purchase and installation costs, pays for independent monitoring and disseminates information gathered.

The first phase was achieved in April 1984 by stimulating annual energy savings of £60 million (\$74 million). By December, the second phase target of £120 million (\$148 million) is expected. The third phase investment anticipates savings of £800 million (\$992 million) per year. Walker estimates potential energy savings of £7 billion (\$9.86 billion) per year in the United Kingdom. So far, 250 projects are in operation. The final aim is for 530 projects involving £3 billion of investment in energy efficiency plants, equipment and buildings.

### INDIAN ENERGY STUDY SHOWS USE OF DUNG DECLINING

by Darryl D'Monte

BOMBAY -- An energy study of 15 villages in Gujarat state in western India revealed that use of dung as a cooking fuel is meager -- contrary to what is commonly believed. "There is evidence that the use of dung is declining," says Prof. Girija Sharan, professor at the Institute of Management in Ahmedabad and co-author of the study.

The study found that crop wastes, twigs and wood are considered important energy sources. The landless poor get 73% of their cooking fuel from crop residues and loppings. Even the wealthiest rural families use crop wastes for 57% of their fuel.

The researchers advocate that: (1) the efficiency of stoves, known as "chulhas," be improved since they are currently only 15% efficient; (2) solar and biogas systems also be introduced into the villages; (3) research be done on improving lighting and overall efficiency of kerosene lamps and pumps; (4) farmers learn to repair faults in valves and other accessories in irrigation pumps that run on diesel or kerosene to reduce enormous fuel wastages.

**STOPPING BEE MITES:** The National Science Foundation awarded \$85,000 to Cornell University, Ithaca, N.Y., to study the biology and control of Asian bee mites (Varroa jacobsoni). Mites cripple hives by feeding on bee pupae, sucking blood from between adult bee segments and attacking drone bees that fertilize queen bees. Bees are the most important pollinator for plant crops. In the U.S., for example, at least 50 crops, occupying about 6 million acres, depend on insect pollination. First discovered in 1904 in Indonesia, the mites were found in six nations, including the Soviet Union, Japan and China, in 1960. By 1978, 32 nations reported the pest. Cornell scientists predict that the mites probably will infest the U.S. within the next decade.

### **WEST GERMANS DELAY IMPOSING CURBS ON AUTO EXHAUST FOR THREE YEARS**

by William G. Mahoney

MUNICH -- The West German government, reacting to strong pressure from auto manufacturers, has postponed for three years the obligatory use of lead-free gas and catalyzers in all new cars.

The Christian-Democrat-Liberal coalition in Bonn announced Sept. 19 that the scheduled imposition of the new regulations for 1986 would be postponed until Jan. 1, 1989. They will become effective for large, powerful cars (those with two-liter and larger motors) as of Jan. 1, 1988. At the same time, the government plans, as of July 1, 1985, a reduction in taxes on lead-free gas of about 2%, and an increased surtax on leaded gasoline of about 4%. The government also plans to offer an added incentive for drivers to convert: exoneration from the annual auto tax for four to 10 years, depending on the number of cylinders in the car.

The decision has triggered sharp criticism from environmentalists and others concerned about air pollution.

It has also touched off concern in the smaller neighboring countries of Switzerland and Austria, both of which had timed their plans for obligatory use of lead-free gas on new cars to correspond with their larger neighbor's 1986 date. Neither Switzerland nor Austria wished to become islands of lead-free gas and both are heavily dependent upon tourists from other European countries to maintain their balance of payments.

For the moment, both are remaining with their plans for obligatory lead-free gas by July 1, 1986. But they will now also come under pressure from auto and affected industries' lobbies.

The European Common Market has made a "decision in principle" to introduce lead-free gas in member countries as of 1989, but realistic politicians, looking at the vociferous opposition of French and Italian auto manufacturers and their governments, believe that 1995 will eventually be chosen as the target date.

### **IDB APPROVES \$34.3 MILLION LOAN FOR VENEZUELAN FORESTRY DEVELOPMENT**

Approval of a \$34.3 million loan to help finance a forestry development program in Venezuela was announced recently by the Inter-American Development Bank. The loan will help finance an \$86.3 million project to help meet the country's domestic demand for wood and wood-derived products from the year 2000 onward.

The loan will be used by the Compania Nacional de Reforestacion (CONARE), an agency of the Ministry of Agriculture, primarily to plant new forests in Anzoategui and Monagas states, in the eastern part of the country. Some 180,000 hectares of pine trees on new forest lands will be planted and measures to protect 68,000 hectares of existing forest land will be implemented. The loan will also be used to carry out research on reforestation and forest care methods, and to help CONARE develop new forestation and silviculture techniques.

In announcing the loan, the IDB noted that existing natural forests are not sufficient to meet the anticipated future demand for wood and wood-derived products. To become self-sufficient in wood production, Venezuela must establish an estimated 55,000 hectares in new plantations each year during 1985-89 and 36,000 hectares/year during 1990-94.

## EUROPEAN NATIONS AGREE TO REDUCE SULFUR EMISSIONS

by William G. Mahoney

GENEVA -- Eighteen member nations of the UN Economic Commission for Europe (ECE) agreed late last month to reduce national sulfur dioxide emissions by 30% by 1993 in an effort to reduce acid deposition. The pledges were made at a meeting of the 34-nation group at the Palais des Nations headquarters. Countries committing themselves to the cut were Austria, Belgium, Bulgaria, Canada, Czechoslovakia, Denmark, East Germany, Finland, France, Italy, Liechtenstein, Luxembourg, the Netherlands, Norway, Sweden, Switzerland, the Soviet Union, and West Germany.

But Britain and the United States refused to commit themselves to the agreement, claiming they had already achieved major reductions. U.S. Deputy Assistant Secretary of State Harry R. Marshall Jr. said that while his country "applauds" efforts to curb air pollution, there are too many uncertainties about the cause and effects of acid rain for the U.S to endorse the 30% cut or the time target. He said the U.S. had reduced its SO<sub>2</sub> emissions by 26% between 1973 and 1982.

The British delegate, Martin Holdgate, said his country accepted the 30% reduction as "an aim of policy rather than a formal commitment," but that the target deadline should be the end of the 1990s. He also commented that Britain had already made cuts, claiming the country had reduced SO<sub>2</sub> emissions by 20% since 1980.

The agreement stipulates that there will be follow-up meetings on incorporating the 30% cut into the legal framework of the first Convention on Transboundary Air Pollution. The convention was negotiated in 1979 under the ECE and now has 30 members, including the U.S. and U.S.S.R. If such follow-up talks are successful, delegates said, a new protocol could be signed in Finland next summer. But several delegates expressed fears that the U.S. and Britain might stall such a move.

## LOW-COST SANITATION MEASURES ADVOCATED FOR DEVELOPING COUNTRIES

"Substantial changes will be required if the goals of the International Water Supply and Sanitation Decade are to met" in providing basic sanitation measures to the slums, secondary cities and villages of the developing world, according to David Donaldson, associate director of the Water and Sanitation for Health (WASH) Project, operated by Camp Dresser & McKee Inc.

Speaking at the Water Pollution Control Federation conference in New Orleans, La., Oct. 2, Donaldson noted that about 47% of the world's urban population and 85% of the rural population do not have adequate sanitation measures.

In the past, said Donaldson, emphasis for collecting and disposing of human excreta has been one of using "large-scale, capital-intensive technically complex solutions that require large numbers of highly trained human resources." These high-tech sewerage systems and treatment plants are generally far beyond the resources available in slums and villages. In 1980, the World Bank estimated between \$300 and \$600 billion would be needed for sewerage systems during the 1980s.

Instead, Donaldson recommended low-cost/simplified (LCS) measures, such as pit latrines, septic tanks, small bore sewers, cartage systems and pour flush toilets. "[A] realistic sanitation program may mean finding a less than perfect solution at first, and upgrading it over time," he said, emphasizing that per capita construction and operation should be economically within the reach of the user (construction costs should not exceed 10% of total house cost). "The scarcity of water and the high cost of transporting and/or treating sewage are good reasons for avoiding water-carry systems," Donaldson added.

AROUND THE WORLD

**INDIA** - A new law to check deforestation and extend the area under green cover will soon be introduced, WER Correspondent Darryl D'Monte reports. The New Forest Act will replace the 90-year-old law enacted by the British to safeguard their commercial exploitation of forests. But several organizations fear the law could curtail the rights of tribes, nomads and others who have traditionally used forests in the country without destroying them. The organizations point out that already tiger sanctuaries are being created and villagers are being forced out to make way for the animals.

**JAPAN** - After a week of negotiations between high-ranking Japanese and United States officials, the Japanese whaling fleet is preparing to defy an international ban and begin killing sperm whales, the Washington, D.C.-based Center for Environmental Education reported earlier this month. The whale hunt will represent the first time an International Whaling Commission member nation openly violates a ban on catching whales from a protected population. The U.S., a major supporter of a moratorium on commercial whaling, is expected to impose economic sanctions in response to Japan's decision. Under U.S. law, if the Secretary of State determines that a country's actions are "diminish[ing] the effectiveness" of IWC rulings, the U.S. government must curtail that nation's fishing rights in U.S. waters by at least 50%. The Japanese catch 1.1 million metric tons of fish in U.S. waters annually -- a catch worth millions of dollars to the Japanese economy.

**PARAGUAY** - A technical cooperation grant of \$516,000 to carry out a national soil, forest and water management conservation project in the country was recently approved by the Inter-American Development Bank. The project involves formulation and execution of a national plan through which the Ministry of Agriculture will provide extension services to farmers to carry out management and conservation practices. The UN Food and Agricultural Organization will be responsible for providing consulting and advisory services required under the project. Included in the project are: preparation of a draft of the legislation and regulations required for the national plan, as well as the institutional and financial structure; determination of appropriate soil conservation measures; training of 300 extension agents, paratechnicians and rural leaders; and provision of appropriate technologies to about 7,000 farmers. Total cost of the project is estimated at \$850,000.

**SOVIET UNION** - Scientists at the Water Protection Research Institute have designed a technological scheme for the purification of water drainage at airports. Airports usually accumulate a mixture of dust, combustion products, particles of worn tires and other materials, which contaminate running water and, eventually, nearby water reservoirs. Using the purification system, water drainage is first separated by level of pollution and processed accordingly. The first dirty running water passes through a whole processing cycle involving a settler, a biological pond, an oil collector and other sections of the suggested system. Subsequent cleaner streams of rainwater are clarified and discharged into a collector. All airports now under construction will be equipped with such installations.

**WEST GERMANY** - Pollution of the Rhine River was reduced considerably again last year, though chloride content remained high, according to a report on water and waste in the North Rhine-Westphalia released by the state Ministry of Agriculture in Dusseldorf last week. The report indicates that, particularly within the state's boundaries, drinking water taken from the Rhine is no longer threatened by the presence of heavy metals. On the other hand, levels of chlorohydrocarbons are three to four times greater than normal. The report blames this high concentration of chlorides on the practice of dissolving and dumping salts into the river in Alsace, France. Until this is stopped, chloride pollution will continue to be a problem. Small rivers and lakes are the most affected by pollution. Therefore, the report recommends that priority be given to construction of waste treatment plants and sewer networks in rural regions around the state.



**ESKIMOS BLAME HYDRO-QUEBEC  
FOR DROWNING OF CARIBOUS**

Thousands of migrating caribous drowned earlier this month as they attempted to cross two rivers in northern Quebec, Canada. Although officials of the public utility, Hydro-Quebec, say the drownings were caused by rivers swollen by rainfall at twice the seasonal average, some Eskimo leaders blamed the utility for allowing too much water to spill over a dam that is part of a giant hydroelectric project.

Quebec officials estimated that at least 10,000 caribous had drowned, with the final figure possibly reaching 22,000. The caribous were trying to cross the Caniapiscau and Koksoak Rivers during their annual migration, when they were swept over waterfalls or carried away in the rapids of the two swollen rivers, according to recently published reports.

Calling the accident an "environmental disaster of unprecedented proportions," Eskimo leaders charged the electric utility with letting too much water spill over a dam that regulates the flow on the two rivers. They added that this has never occurred before. A local conservation officer also noted that other rivers in the area were below normal seasonal levels.

Moreover, a Canadian Wildlife Service official said that Hydro-Quebec had been recently asked by a company representing the Eskimos to build a barrier at the place where the drownings occurred in order to prevent the animals from crossing at that dangerous point.

Observers point out that the utility is the area's largest economic entity, playing a significant planning and policy role for several years. Local officials declined to blame Hydro-Quebec for the disaster.

Meanwhile, a utility spokesperson claimed the dam had actually reduced the amount of water passing down the rivers, saying that with the dam the rate is 1,400 cubic meters a second, compared with 1,800 cubic meters before the dam was built. Hydro-Quebec officials also claimed that caribous have previously drowned in large numbers.

Caribous have long provided nutrition for Canadian Indians and for Eskimos and their dogs. In addition, their pelts are used for light clothing, beds and summer tepees, and threads and utensils are made from their sinews and bones. Caribou fat provides heat and light. The animals were part of the George River herd, the largest in North America, with as many as 400,000 caribous. END

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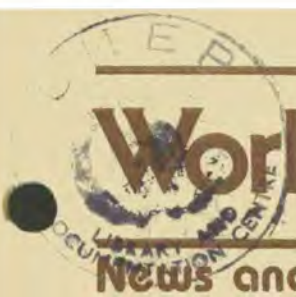
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# World Environment Report

## News and Information on International Resource Management

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### SLANTS & TRENDS

**A 1,000% INCREASE IN ENVIRONMENT** and natural resource management agencies in 110 developing countries has been recorded over the past 12 years, according to a 1984 survey by the World Environment Center. The survey found that destruction of basic economic resources has led to governmental action. While only 26 nations -- both developing and industrialized -- had such agencies in 1972, there are currently agencies in 145 countries.

**ENVIRONMENTAL GUIDELINES, LAWS** and regulations are in place in the majority of countries, center spokesperson Libby Bassett said. But all too often they lack the financial, human and technical resources to adequately enforce them. She noted: "Many environmental agencies have limited authority, although the center survey shows there is a growing political commitment to deal with environmental problems."

\* \* \*

**ANIMAL LIFE WILL BE THREATENED** and millions of dollars worth of timber will be destroyed when Brazil's newest and largest Amazon dam is completed, the World Wildlife Fund says. In its publication, The WWF News, the environmental organization notes that 25 dams are already slated for construction in the Amazon basin alone, and the Tucurui Dam on the Tocantins River, a southern tributary of the Amazon, will be the largest dam in Brazil and the fourth largest in the world.

**RISING WATERS BEHIND THE DAM** will drown 2,000 square kilometers of rain forest and endanger "monkeys, cats, snakes and rodents which have played an integral role in this unique tropical rain forest ecosystem for thousands of years," WWF claims. And of the 177 different commercial species of trees involved, 44 are considered extremely valuable on the international market.

**AS IF THIS WEREN'T ENOUGH**, WWF also charges that, in order to prevent the generation of methane and sulfuric gases that corroded turbine cooling systems of similar dams in Brazil and Guiana when the rainforest was submerged, "teams of workers armed with toxic defoliants were sent in to clear the jungle." The defoliant spray is said to contain one of the lethal ingredients of Agent Orange, 2,4,5,-T. The article cites the Brazilian press, which reports that a search is underway for large cans of defoliants and fungicides left behind by the teams. Some 60,000 people run the risk of drinking water contaminated by cans of defoliant in that region if the canisters are not removed.

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**VILLAGERS IN CHINA EXPERIMENT  
WITH BIOGAS DIGESTERS FOR HOME USE**

[Allan L. Frank, editor of WER's sister publication, Solar Energy Intelligence Report, has returned from three weeks in China with the following report.]

PEOPLE'S REPUBLIC OF CHINA -- The Zhejiang Province Energy Research Institute, located about 150 miles southwest of Shanghai, has been looking into increasing use of biogas digesters using stalks, straw, dung and rural wastes for fuel in Keng Kun Village in Fuyung County. Some 80% of the homes in the village have buried cylindrical digesters, which connect the lavatory and the pigsty.

About 1,500-2,000 kg of waste is fed in at once to last three or four months. Each cubic meter of waste produces 0.15 cu. m. of biogas, says Wu Junhui, an engineer with the institute and a director of the project. Depending on the weather of the user's location, the digesters can be used for about eight months of the year. New digesters of "red mud plastic" are catching on and are especially liked for their simple structure, increased safety and high productivity. Only 19 of the new ones are in use now, while 237 old models are still operated, she said.

Other than hydroelectricity, biogas production is China's greatest renewable resource presently being tapped. Some 6 or 7 million of the traditional high-pressure spherical digesters have been installed, but in the eastern part of the country many were seen overgrown with plants -- evidence of lack of use.

Liang Zhang, a farmer in the village, has designed the new digester that is simpler and safer to use, costs less and is more efficient. Interpreter Li Nianguo, head of the information division of the Guangzhou (Canton) Institute of Energy Conversion, Chinese Academy of Sciences, said that this digester has been installed in 49 of the village homes, 240 homes in the district and perhaps 10,000-20,000 homes in all of China.

**New Digester More Efficient, Cheaper, Safer**

The rectangular digester connects the lavatory and pigsty, said Liang. The digester he first built measures 4 x 2 x 1.25 meters, and has a materials cost of about RMB35-40 (\$14-16). However, the longer digesters built since seem more promising, he said. The digester can produce 0.22-0.33 volumes of gas per volume of digester as long as the waste from one pig per cu. m. of digester is used.

Rather than the spherical digester, which is difficult to build with bricks, Liang uses vertical walls and a concrete roof at ground level, which forms the floor for the pigsty. Because his digester is operated at a low pressure, the air-tightness design demands are reduced considerably. The traditional high-pressure digesters have suffered frequent failures from gas leakage, he said.

The gas from 8-10 pigs' manure in an 8- to 10-cu. m. digester can supply a typical farm family with fuel for preparing three meals, boiling water and cooking the pigs' feed for the day, Liang said. Gas is collected in the kitchen, in a plastic bag suspended by wood frame and ropes over the stove. A weight on top of the bag can be lowered by pulley to force the gas through a plastic hose and into the burners. At present, the bag is made from polyethylene plastic, which can break down in one year. Plans call for using a more durable "red mud" plastic made in China from a Taiwanese patent. The new material uses waste from aluminum processing mixed with plastic, and is expected to last three years.

When cleaning a conventional digester, a person must enter a manhole at the top. If any hydrogen-sulfide or carbon monoxide gases are left in the digester, the person attempting to clean the chamber can be fatally poisoned, Liang notes. He claims the problem has been eliminated with his design. Supplemental cooking is accomplished with a solar cooker. No firewood or coal is needed.

**NGOs PETITION WORLD BANK  
TO HELP CURB PESTICIDE ABUSE**

A petition seeking to curb pesticide abuse was presented to the World Bank Sept. 26 in Washington, D.C., on behalf of over 200 non-governmental organizations. The petition requests that the bank, as primary lender in the Third World, "use its position of global influence to control the growing problem" of abuse in developing countries.

Specifically, the petition calls on the World Bank to:

- o institute strict reviews regarding the safety and necessity of all proposed pesticide use in bank-funded projects;
- o discontinue funding projects using unregistered, banned, severely restricted or extremely hazardous pesticides, unless emergency or urgent circumstances exist;
- o require detailed notification to user countries regarding hazards, restrictions and proper precautionary measures when dangerous pesticides are used;
- o require that all pesticides used in bank-funded projects contain labeling that is in the appropriate language and includes universal symbols alerting users to proper use, hazards, precautionary measures and emergency treatment;
- o develop policies that will encourage less reliance on pesticides as part of an integrated pest management approach to pest control.

**World Bank in Position To Help**

Attorney Angela Blackwell, whose firm Public Advocates is representing the petitioning organizations, told reporters last week that the bank has the structure, through its Office of Scientific Affairs, to institute the organizations' requests. She lamented that loan officers at the bank often are trained by representatives of pesticide companies.

Highlighting the importance of labeling and education, Blackwell cited use of DDT by some Third World parents on their children's head lice. She noted that in 1972 the World Health Organization concluded that an estimated 500,000 cases of accidental pesticide poisonings occur each year, resulting in 5,000 deaths annually. A United Nations committee recently estimated that these numbers should be four times higher.

Esther Peterson, special assistant to Presidents Johnson and Carter for consumer affairs in the White House and currently representing the International Organization of Consumers Unions, pointed out that information on pesticides often does not reach agricultural planners in developing countries. With 50% of bank projects in the agricultural field, Peterson said the organization is a crucial link between planners and users.

Listed on the petition are: International Organization of Consumers Unions; Accao Democratica Feminina Gaucha-ADFG (Southern Feminists for Democratic Action) (Brazil); Bangladesh Free Trade Union Congress; Consumers Union of the U.S. Inc.; Costa Rican Association for The Conservation of Nature (ASCONA); Environment Liaison Centre (Kenya); Forum for World Concern (Philippines); Philippine Peasant Institute; and Sahabal Alam Malaysia (Friends of The Earth Malaysia).

A response is expected from the World Bank this month.

### SOIL EROSION CREATING 'QUIET CRISIS' FOR WORLD ECONOMY

Nearly half the world's cropland is losing topsoil at a rate that is undermining its inherent productivity, a new study by Worldwatch, the Washington-based think tank, reveals. The study estimates excessive loss of topsoil from cropland at 25.4 billion tons annually.

"As demand for food climbs, the world is beginning to mine its soils, converting a renewable resource into a nonrenewable one," warns Lester Brown, Worldwatch president and co-author of Soil Erosion: Quiet Crisis in the World Economy. Such practices as intensification of cropping patterns and the plowing of marginal land often lead to short-term production gains or even surpluses, creating an illusion of progress and a false sense of security, the study notes.

In major food producing nations, pressure to expand exports has led to unsustainable rates of soil erosion, the authors said. A United States government survey shows 44% of U.S. cropland is losing topsoil at excessive rates, with 1.7 billion tons lost beyond levels that would sustain high crop yields indefinitely. The Soviet Union is losing even more soil than the U.S.: efforts to reduce massive grain imports have forced the Soviets to plow marginal lands and reduce dryland fallow. And in India and China -- two other members of the world's "big four" food producers -- massive topsoil losses are also being recorded.

Brown noted that in most cases "the costs of reducing erosion are greater than the short-term gains ... so that it may make sense for society to invest in soil conservation, even if it is not profitable for the individual farmer."

The study did find one hopeful sign -- an ambitious soil conservation program in Kenya, whose record population growth is putting intense pressure on cropland. A program that includes simple strip terraces, cutoff drains and tree plantings, with farmers involved in the design, has boosted farm incomes, showing that conservation is compatible with small-scale farming and a large rural population.

Single copies of the study are available for \$4 from Worldwatch Institute, 1776 Massachusetts Ave., N.W., Washington, D.C. 20036, (202) 452-1999.

### LATIN AMERICANS PRESS FOR GREATER PROTECTION OF NUCLEAR MATERIALS

by Hilary Branch and Lili Steinheil

CARACAS - Representatives of 10 Latin American nations and Spain, meeting here last month to discuss nuclear legislation, urged that countries having little or no nuclear development should consider as indispensable adoption now of nuclear laws and should accompany such laws with legal instruments for enforcement. The 3-day seminar was sponsored by the Interamerican Nuclear Energy Commission and the National Council for the Development of Nuclear Industry (CONADIN) of Venezuela.

The countries called for increased international cooperation to achieve physical protection and safe transfer of nuclear materials. Because current civil law does not meet the special demands of nuclear and radioactive risks and indemnifications, the seminar proposed a legal system of financial guarantees in the event of nuclear accidents involving private enterprise, and suggested that they be keyed to a devaluation compensation in areas of unstable currencies.

"Legal dispositions should be of a kind to guarantee responsibility for damages arising from radioactive wastes over the course of the years, even though the entity responsible for the wastes no longer exists," stressed one resolution. Delegates also saw nuclear waste disposal as a necessary state public service and suggested that disposal plans be made public.

**WEST GERMAN PARENTS ASK EAST GERMAN,  
CZECH LEADERS TO CURB AIR POLLUTION**

by William G. Mahoney

MUNICH -- Several thousand parents in northeastern Bavaria have sent appeals to Czechoslovak President Gustav Husak and to East German head of state Erich Honecker to reduce rapidly transboundary air pollution along the borders with West Germany.

The Association of Parents' Initiatives was organized in the region earlier this year after high levels of air pollution, originating primarily in industrial complexes in nearby East Germany and Czechoslovakia, were held responsible for a wave of respiratory illnesses, chiefly among children.

In its Aug. 29 letter to Husak, the association said that the installation of a filter system at an industrial site at Vresowa had reduced the evil stench from fumes, but that it had increased air pollution through emission of harmful sulfur dioxide. The letter "deplored" the fact that Czechoslovakia thus far had not joined the 18 nations pledging to reduce industrial sulfur dioxide emissions by 30% in the next decade.

In their message to Honecker, the parents criticized the planned 5% reduction of SO<sub>2</sub> emissions by an East German paper mill close to the border as inadequate. The letter also called operation of a nearby garbage incineration plant without smoke filters "irresponsible."

**SWISS DECREE COMPROMISE CURBS  
ON CAR SPEEDS TO CUT POLLUTION**

by William G. Mahoney

BERN -- The Swiss Federal Council last month decreed a compromise cut in maximum speeds for motor vehicles in order to reduce air pollution. Beginning Jan. 1, 1985, and for a trial period of three years, top speeds will be limited to 80 kilometers per hour on secondary roads and 120 kph on autobahns. Currently, maximum speeds are 100 kph on secondary routes and 130 on autobahns. The new decree also cuts from 60 to 50 kph speeds in towns.

The announced "compromise" was an effort to stem opposition from auto clubs, cantonal (state) governments and the general public (WER, Sept. 19, 1984, p.145). But environmentalists immediately charged that the government had caved in to pressure groups and the auto clubs, and many politicians charged the council with being unrealistic to attempt imposing an unenforceable law.

A government spokesperson said that in shaping the compromise solution, the council took into account the protests of the French- and Italian-speaking cantons. He said the compromise also factored in the impossibility of passenger cars passing buses and trucks at the 100 kph speed.

An auto industry representative commented that "this measure is favorable neither for traffic, nor pollution, without speaking of forests. No one has ever been able to prove a link between the forest damage and automobile traffic." And cantonal police have expressed doubts about their ability to enforce such an unpopular measure. Guy Fontanet, president of the Canton Geneva Police Department, commented that the law would be difficult to enforce because "we do not have the necessary strength to carry out controls. The decision is unreasonable and I regret the haste of the Federal Council ..."

The issue is expected to go to public referendum -- as major problems generally do. If so, opinion polls indicate the public is opposed to the curbs.

**AFRICAN DEVELOPMENT CONSTRAINED  
BY DEFORESTATION, DESERTIFICATION**

Erosion of natural resources through deforestation and desertification, population growth, human resource development, and technological change are among the long-term constraints on development in Sub-Saharan Africa, according to a recently released World Bank report.

Toward Sustained Development in Sub-Saharan Africa states that, unless these issues receive "continuing and increased attention, whatever the short-term problems, development in Africa will continue to be frustrated, leading to what the Economic Commission for Africa (ECA) has called a political, social and economic 'nightmare' by the turn of the century."

Rapid population growth and rising demand for food crops and fuelwood has upset the balance of traditional farming, which was used to maintain soil productivity and forest cover, the report notes. Damage has occurred as a result of shortening the fallow period and extending the cultivated and grazed area. Forest cover in many countries is being irretrievably damaged, "with appalling consequences for household fuel supplies, soil fertility, and water supply."

In the Sahel, the report points out, about 1% of the natural forest cover is being lost annually. Fuelwood consumption exceeds new tree growth by a factor of 10 in Mauritania and Rwanda, by five in Kenya, and by two-and-a-half in Ethiopia, Nigeria and Tanzania.

To reduce demand for fuelwood, the authors recommend:

- o increasing the efficiency of biomass use -- improved designs of cooking stoves, more economical use of firewood by industry, conversion of wood to charcoal, and greater utilization of wood wastes, surplus softwood and crop residues;
- o changes in land tenure arrangements to "promote stronger community and individual responsibility for managing resources."

The authors also note that, although substituting commercial fuels such as propane, kerosene and electricity for fuelwood would be economically justified, fuelwood prices seldom reflect replacement costs -- and are not likely to unless those resources are used up, or until governments are able to collect stumpage fees to cover replacement costs.

In order to increase the supply of fuelwood to areas most in need, the report suggests: systematic identification and utilization of biomass supplies in remote areas; establishment of forestation programs in both rural and urban areas; introduction of new tree varieties; and greater use of biomass wastes for fuels through briquetting and improved charcoal techniques.

Management of existing forests, as well as reforestation, appear to be the most difficult areas for action. Because natural forests are not under government control, the report points out that "community involvement is essential." It also emphasizes the importance of research on improving local tree species and integrated programs that recognize the interdependence of crops, livestock and forestry.

To obtain a copy of Toward Sustained Development in Sub-Saharan Africa, contact the World Bank, 1818 H St., N.W., Washington, D.C. 20433, Tel.: (202) 477-1234; Telex: WUI 64145 WORLDBANK or RCA 248423 WORLDBK; Cable address: INTBAFRAD WASHINGTONDC.

AROUND THE WORLD

**ARGENTINA** - A bill to declare the Southern Right Whale a natural monument has been approved by the Senate and sent to the Chamber of Deputies, WER correspondent Pedro Tarak reports. If the bill is passed, it will be the first national legislation in the world converting the whale into a natural monument and thus incorporating the species into the local culture (WER, Sept. 5, 1984, p. 140).

**AUSTRALIA** - A versatile method has been developed in Australia that utilizes timber wastes to produce energy and commercial grade charcoal. In the process, designed by Dr. Paul Fung of the Commonwealth Scientific and Industrial Research Organization, wood residues are burned in a fluidized bed and through carbonization produce charcoal. The resultant volatile products are simultaneously burned to supply heat and power to a sawmill. Fluidized bed carbonization has the advantage that it can carbonize wood residues ranging in size from fine sawdust to coarse chipped wood by a continuous process. It can also handle the wide range of moisture contents normally encountered in timber residues, thus making expensive pre-drying treatments unnecessary.

**COLOMBIA** - The government will invest about \$38 million to improve water supply and sanitation services in the city of Cucuta, in the northeast. The project, which is supported by a World Bank loan of \$18.5 million, is expected to benefit over 240,000 people. The sewerage system will be expanded by the construction of a water stabilization lagoon for the treatment of sewage. Storm drainage collectors will be built, and a section of the Canal Bogota will be lined. The canal is the backbone of the city's drainage system. In addition, a new water production facility will be built. Consultants will be hired to help administer the project and supervise construction. They will also help prepare a feasibility study on consolidating water and sewerage services throughout the Cucuta metropolitan area.

**CYPRUS** - Rotting grape marc has been used to produce temperatures sufficient to provide domestic hot water or for heating greenhouses in experiments conducted by the Higher Technical Institute in Nicosia, Cyprus. Marc is the residue left after the pressing of grapes for wine. Just packing one cubic meter of marc into a slotted wooden rotting box placed off the ground for the air to get into it, as in a compost box, produced an average temperature rise of 30 degrees C in a 20 cu. m greenhouse. This was sufficient to raise nighttime temperatures to the recommended minimum of 10 degrees C. Information on other experiments using grape marc are described in the "Report on the Results of the Experiments Conducted by the Higher Technical Institute on the Applications of Heat Energy Extraction from the Grape Marc," available from HTI, P.O. Box 3423, Nicosia, Cyprus.

**JAPAN** - At the close of the five-day international conference on conservation and management of the world lake environment, sponsored by the Shiga Prefectural Government and The National Institute for Research Advancement from Aug. 17 to 31 in Otsu City, the conference issued the Lake Biwa Declaration. Among other things, the declaration stated that "current [conservation] efforts are far from sufficient when set against the accelerating deterioration of lakes. The conference urged: research in knowledge of lakes, particularly in developing countries; strategies for controlling diffuse sources of pollution, especially those pertaining to agriculture and human waste; environmental impact assessment be institutionalized in the decision-making process; an international liaison organization be formed; and World Lake Year be proclaimed.

**NEW ZEALAND** - Engineers working at New Zealand's geothermal Wairakei power station are immersed in a 3-year research program that aims to reinject geothermal waste back into the ground. Such reinjection will reduce geothermal pollution of the local river, and help maintain the pressure in the underground steamfield.



CALENDAR OF WORLD ENVIRONMENT MEETINGS

Nov. 14-16: World Industry Conference on Environmental Management, Versailles, France. Contact: UNEP, 17 Rue Margueritte, 75017 Paris, France, Tel. 1 766-16-40, Tlx. 650273, or ICC, 38 Cours Albert-I, 75008 Paris, France, Tel. 1-562-34-56. Tlx. 650070, in New York, call (212) 826-8458.

April 17-21, 1985: Globescope, meeting on world environment issues and U.S. role in their resolution, Portland, Ore. Contact: David McGrath, Global Tomorrow Coalition, 1525 New Hampshire Ave., N.W., Washington, D.C. 20036, (202) 328-8222.

May 19-24, 1985: 2nd U.S.-Dutch International Symposium: Aerosols, Williamsburg, Va., U.S.A. Contact: Dr. Si Duk Lee, U.S. Coordinator, 2nd U.S.-Dutch International Symposium: Aerosols, U.S. Environmental Protection Agency (MD-52), Research Triangle Park, N.C., 27711.

May 20-24, 1985: International Conference on Atmospheric Sciences and Applications to Air Quality, Seoul, Korea. Contact: Y.S. Chung, Atmospheric Environment Service, 4905 Dufferin Street, Downsview, Ontario M3H 5T4, Canada, Tel.: 416-667-4980.

June 25-27, 1985: Hazardous Materials Management Conference and Exhibition Europa, Hamburg, West Germany. Contact: TCM Expositions Ltd., 331 West Welsy St., Wheaton, Ill. 60187, (312) 668-8100.

Sept. 9-11, 1985: Ninth International Symposium on the Scientific Basis for Radioactive Waste Management, Stockholm, Sweden. Deadline for submission of paper abstracts, Feb. 15, 1985. Contact: L.O. Werme, SKB, Box 5864, S-10248 Stockholm, Sweden, Phone: Int + 468679540.

Sept. 10-13, 1985: Heavy Metals in the Environment, Athens, Greece. Submit abstracts for papers by Feb. 1, 1985. Contact: Heavy Metals Secretariat, CEP Consultants Ltd., 26 Albany Street, Edinburgh EH1 3QH, U.K., Tel. 031 557 2478.

Sept. 24-26, 1985: Environment Conference, Toronto, Canada. Conference on pollution abatement in pulp and paper industry. Submit paper abstracts by Dec. 28, 1984, to Brian J. Young, Abitibi-Price Inc., Environmental Services, Sheridan Park, Mississauga, Ont. L5K 1A9. Contact: David Paterson, Technical Section, CPPA, Sun Life Bldg., 23rd Fl., 1155 Metcalfe St., Montreal, Quebec, Canada, H3B 2X9, (514) 866-6621. END

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# World Environment Report

## News and Information on International Resource Management

Vol. 10 No. 19

September 19, 1984

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### SLANTS & TRENDS

A FLAP OVER FORMALDEHYDE is brewing in West Germany, WER Correspondent William G. Mahoney reports. Leaked by some government officials to opposition newspapers, a recent study states that the substance causes allergies, brain damage and cancer. But not all government agencies agree with the report: the Federal Environment Office says that formaldehyde causes cancer, but the Federal Health Ministry says that it does not. Moreover, the health agency denied that it held up publication of the study, saying it had ordered a thorough report to be drawn up by all agencies with expertise in the field, with October targeted as the publication date.

CRITICS OF THE SUBSTANCE cite U.S. experiments showing rats that had breathed formaldehyde in massive concentrations for two years developed nasal cancer. But other experts argue that animals, including rats, that breathed formaldehyde in less concentrated solutions did not develop cancer. Concentrations of the product have been limited in the cosmetic and construction industries for years. Now, however, some environmentalists are talking about a total ban of the chemical.

A WEST GERMAN CHEMICAL COMPANY, described as the world's largest producer of formaldehyde, claims that the product has been in use for 90 years without any apparent side effects. B.A.S.F. says the substance is used in about 50 industrial branches, including furniture, cosmetics, textiles, plastics, automobiles, paper, paints, mining and construction, as well as in chemical and medical fields. The company also notes that products using formaldehyde are worth about one-quarter of West Germany's gross national product.

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BRITISH ENVIRONMENTAL LAWS may not be as strict as U.S. laws. But when one looks at the enforcement of the U.S. rules, the two nations strike roughly the same balance between amenity and economic values. Those are the findings of a study by David Vogel of the University of California at Berkeley, presented at the 1984 Annual Meeting of The American Political Science Association earlier this month.

'COMPARABLE PROGRESS' HAS BEEN MADE by both countries in improving air and water quality, protecting the health of their citizenry, and preserving their natural environment, Vogel said. Moreover, over the last decade, each nation has devoted about the same proportion of their resources to controlling pollution. However, Vogel argues that environmental regulation has created much more political conflict between business and government in the U.S. than in Great Britain because of the way in which U.S. environmental regulations are made and enforced.

**PARLIAMENTARY ACID RAIN REPORT  
CALLS ON U.K. TO TAKE ACTION NOW**

by Barbara Massam

GREAT BRITAIN -- Hard financial decisions on combatting acid rain will have to be made in Britain because pleading for more research is "but to procrastinate," according to the fourth report of the Environment Committee of Parliament that was released Sept. 7. The report described the current situation as "intolerable."

A program to remove sulfur dioxide from the emissions of British power stations by 60% would cost up to £400 million (about \$524 million) per year by 1995, says the report. The major indirect cost of introducing these controls would be borne by electricity consumers at an increased cost of between 1.5% and 5%.

The report points out that the United Kingdom is the largest producer of SO<sub>2</sub> in Western Europe, despite having ratified the Convention on Long-range Transboundary Pollution. Yet the Central Electricity Generating Board (CEGB), responsible for about two-thirds of the emissions from its power stations, has made virtually no reductions in its emissions of the gas.

Given that sulfur dioxide pollution has been the subject of international political interest for 15 years, "this shortcoming is to be deplored," the report says. It stresses that the natural environment is seriously at risk -- fish and tree populations all over Europe are suffering drastically -- and the addition of lime to lakes is not a permanent solution. Damage to forests in Europe is extensive, accelerating and of immense economic significance.

Effects of Acid Rain on Buildings

Turning to the human-made environment, the report says that the effect of such pollution on buildings is "well understood," yet there are few results available to establish a cause-effect relationship. The famous London landmark, St. Paul's Cathedral, has been badly damaged by atmospheric pollution and the disintegration is accelerating. Original works of art are being lost there, just as they have been at many old medieval cathedrals.

The Senior Sculpture Conservator had told the committee that the problem of decay had accelerated dramatically since the turn of the century. No technology exists to preserve any stone sculpture in an external environment. There is currently no method of reducing weathering caused by air pollutants except to reduce the SO<sub>2</sub> levels themselves.

"That damage to buildings constructed in materials other than limestone and sandstone takes place has been demonstrated in West Germany," the committee reports. "It is, therefore, beyond doubt that acid rain is damaging British buildings and slowly but surely dissolving away our historic heritage."

The committee concluded that Britain should join the "30 Percent Club" of nations agreeing to reduce acid rain-causing emissions by that amount, and that the CEGB should be required to reduce its emissions of SO<sub>2</sub> accordingly -- with the aim of attaining a 60% reduction by 1995. It also urged the government to make a long-term commitment to air pollution research and to require the polluters to monitor their emissions.

Responding to the report, the CEGB said it will carry out the committee's suggestions when the evidence upon which they are based is proved. The report is "extreme" and contains "fundamental errors," company officials said. The government has already made it clear that it wants more research.

## SWISS PUBLIC OPPOSES PLAN TO CURB AIR POLLUTION BY REDUCING SPEED LIMITS

by William G. Mahoney

GENEVA -- A proposal by the Swiss Federal Council to reduce speed limits on autobahns and secondary roads to fight air pollution and destruction of forests is running into mounting opposition that could block the move completely. The Council, which is the government's executive branch, has proposed cutting the maximum speed limits on autobahns from 130 kilometers per hour to 100 kph, and on secondary roads from 100 kph to 80. This would be done by decree under existing laws governing traffic and the environment.

But Swiss auto clubs, led by its largest, the Swiss Touring Club (TCS), have mounted a barrage of criticisms and have been joined by half of the Swiss Cantons (states) that would be obliged to enforce the new regulations. Moreover, public opinion polls show strong opposition to the proposal throughout the entire country.

Since governmental decisions can easily be reversed by a public referendum in this direct democracy -- and this issue would most certainly be brought to a vote -- indications are that the proposal as it now stands is dead and that some form of compromise will be the only solution.

### Opposition To The Plan

Opponents of the proposal claim: the move would be unconstitutional since neither of the two laws cited by the draft permit such action by the Council; the limitation would have admittedly minimum effect upon the damage to the forests but would pose a major threat to traffic security; and cantonal police could not enforce a law that is poorly motivated and would entail applying severe penalties provided under existing speed limit laws.

A recent poll taken by the magazine Revue Automobile found that 61% of the German Swiss and 78% of the French Swiss were opposed to the proposed speed limits. But of the same 1,197 car license holders polled, 69% of the German Swiss and 59% of the French Swiss said they favored paying for more expensive lead-free gasoline and for catalyzers on their cars. And 81% of the German Swiss and 76% of the French Swiss stated that they felt industrial air pollution played the major role in the damage to forests, but only 40% of the sampling felt that auto exhaust played any role at all.

At the same time, the Swiss Touring Club had its own legal experts study the Council proposal. They found the plan had "doubtful legal basis."

### Study Supports Proposal

Meanwhile, a new study by the Ecological Center at the University of Geneva has recommended immediate steps to reduce air pollution before damages caused by it move beyond the "point of no return." Results of scientific research carried out by Joseph Rabinowitz and Hubert Greppin show that determination of the cumulative effects of acid rain on the total environment could not be accurately determined until 10 to 15 years after the fact -- only after the damage would be irreversible.

Although the study supported the Council proposal to reduce speed limits, it noted that this would be only one step and that its effect would be minimal unless joined by others. It urged attacking pollution at its various sources: reducing sulfur in heating oils, using lead-free gasoline and catalyzers in automobiles.

The study found that 80% to 85% of all nitrogen oxide emissions come from auto traffic. Studying 52 cars -- a cross-section average of cars presently on Swiss roads -- the researchers found that if speeds were reduced by the amounts suggested by the Council, exhaust pollutants would be reduced as follows: 6.7% for nitrogen oxides; 0.5% for hydrocarbons; and 4.6% for carbon monoxide.

## TROPICAL FISH EXPORTS THREATEN ECOLOGY OF COLOMBIAN RIVERS

by Peter Nares

BOGOTA -- Tropical fish exports are posing a threat to the ecological balance of rivers in the Eastern Plains of Colombia. Millions of live tropical fish are shipped annually from the Andean republic to collectors in the United States and Europe and, as a result, the future of a number of the species is now increasingly bleak.

Colombian live fish exporters deny charges that they are endangering wildlife populations. They attribute increasing scarcity of Colombian riverine species to environmental contamination and to uncontrolled aerial fumigation. But whatever the principal cause of the problem, ecologists agree that Colombian ornamental fish species are diminishing in the rivers of the Eastern Plains -- the primary hunting grounds of the fish exporters, who are now transferring their operations to the remote Arauca region, bordering Venezuela.

Under Colombian legislation, ornamental fish are virtually the only wildlife species that can still be exported legally. The export of mammals, birds, reptiles and a limited number of tropical fish species has been prohibited. An exception, however, has been made for common ornamental fish because they are not considered to be in danger of extinction. Also, the live fish-export trade earns Colombia much-needed foreign exchange in addition to providing employment.

At one stage, over 20 Colombian firms were engaged in the fish-export trade, which grew rapidly in the 1970s in response to rising demand by European and U.S. collectors. In 1970, Colombian live fish consignments were valued at \$194,000, but the figure had rocketed to nearly \$3.2 million by 1977 when some 17.2 million specimens were exported. By 1981, export earnings topped \$13.5 million annually, though subsequently there was a drop in shipments because the government reduced export tax concessions granted to the sector. But recently, tax incentives were augmented, and exporters are once again preparing to step up consignments.

### Fish Threatened by Exporters, Pollution

While Hong Kong, Singapore, Thailand, Peru and Taiwan outrank Colombia in tropical fish exports, at least some of the Asian exporters rely to a large extent on aquarium-bred species, and thus they do not deplete native populations. Ecologists are in favor of establishing similar breeding aquariums in Colombia because "fish farms" would enable exporters to remain in business while at the same time they would ensure the survival of imperiled river species. But there has been little progress in this field to date.

Conservationists, opposed to the ornamental fish export trade are particularly concerned at the high fish mortality rate of some inexperienced shippers, who have entered the business to make a quick profit and who lack a scientific background. Daniel Samper, Colombia's leading newspaper columnist, calculates that as many as 75% of the ornamental fish, netted in eastern Colombia, die in captivity prior to delivery to customers overseas.

However, even if export and veterinary controls are tightened, Colombian tropical fish will continue to be threatened by environmental contamination. The Bogota River, for instance, is now "biologically dead" because of pollution from sewage and industrial waste, and an increasing number of other rivers are menaced. Aerial fumigation poses another danger.

But Colombia's fledgling ecological movement is rapidly gaining adherents -- as was seen recently in a strike protesting proposed dredging of the Saldana River. The first major protest of its kind in Colombia, it is likely to set the pattern for further demonstrations, and could force officials to intensify measures to protect both the environment and wildlife.

## STATE CRACKS DOWN ON SPONSOR OF BRAZILIAN BIRD BARBECUE

by M. Cristina Garcia

SAO PAULO -- A bizarre bird barbecue recently took place in the small town of Embu, about 20 miles from Sao Paulo, the largest and most economically developed city in Brazil. The main course of the barbecue consisted of some 2,400 wild birds, including native crown sparrows, song thrushes and small wild doves, served by the town mayor to about 200 people, mostly relatives, friends and political constituents.

Charges now being pressed against the barbecue's sponsors represent the first time that the state is taking a case of environmental abuse to court and asking for indemnification against environmental damages, says State's Attorney Edis Malare.

One of the few municipalities in the Sao Paulo area that has managed to resist being polluted by the nearby national industrial hub, Embu, a town of 120,000 inhabitants, is very well known as an artist's center and as one of the few remaining environmental reserves in Sao Paulo state. Antonio Rodrigues Junior, president of The Embu Society of Friends of Ecology, indicated the shock felt by the community when he said: "Such a disgusting thing just couldn't have taken place here."

Rodrigues denounced Embu Mayor Nivaldo Orlandi's avian feast to the local division of the Brazilian Institute of Forest Development (IBDF), which is the government agency responsible for preservation of both wildlife and forests in Brazil. Acting on his tip-off, IBDF delegate Joao Leite Neto and Regional Park Police Commissioner Wilton Isipon arrived at the scene of the Orlandi family farm while the event was still underway and caught the luncheon's sponsors in the act.

### Reaction Forces State Action

Denouncement of the barbecue was subsequently picked up by several of the most important newspapers in the country, which published photos of the barbecue showing some 200 dozen small birds roasting on spits. Angry reaction by some participants in the event was reported by several television networks, which announced that their cameramen had been welcomed by a hail of rocks while trying to document the extravaganza. Accompanying police were reported to have been virtually thrown out of the Orlandi farmhouse upon informing the proprietors of their intention to collect evidence.

The town populace staged a series of street demonstrations against the mayor and his roast, calling for his resignation from public office, as well as for criminal charges.

Under pressure from local and national groups, Sao Paulo state authorities initiated prosecution some three weeks later. Prior to preliminary investigations, Orlandi admitted that similar cookouts had taken place on the farm several times before. Attempting to avoid charges of illegal capture, Orlandi alleged that "most of the birds came from a southern state" where the hunting season was nonetheless closed for the types of wild birds involved.

Due to the furor over the Orlandi case, prosecution was pursued on two earlier, more serious cases of environmental abuse pending in Sao Paulo. One involves a highly damaging oil spill, which took place on the Sao Paulo coastline about six months ago, involving some 1,500 metric tons of oil -- a volume record disaster for Brazil. The other case involves a spill of sugarcane-based alcohol, which polluted a river system near the municipality of Novo Horizonte, killing several tons of fish.

**SOUTH AFRICA INVESTIGATES REPORTS  
OF WIDESPREAD ASBESTOS POLLUTION**

by Mike Nicol

MUIZENBERG -- The Office of the Government Mining Engineer has launched an investigation into widespread asbestos pollution in South Africa's northeastern Transvaal. According to a report by a team of medical and scientific researchers, the uncovered dumps and abandoned workings of more than 30 asbestos mines in the Transvaal and Lebowa constitute a considerable environmental hazard -- affecting some 500,000 people in these densely populated areas.

The team, operating under the umbrella of the Technical Advice Group, a voluntary body of socially concerned engineers and scientists based in Johannesburg, reported that they found: children play on asbestos tailing dumps near disused crocidolite (blue asbestos) mines; local Black entrepreneurs mix asbestos waste with cement and water to make bricks; and primary school children study in classrooms with the blue asbestos fibers protruding from roughly-hewn walls.

When the wind blows, the blue dust swirls innocuously through the narrow valleys of this hilly region, spills on to the roads and is ground to a fine powder by pedestrians or car tires -- making it even more lethal. Most of the local people are unaware of the danger, say the researchers, and should any of them contract asbestosis, mesothelioma or lung cancer through environmental exposure they will not be eligible for compensation of any kind.

Although the Atmospheric Pollution Prevention Act 45 of 1965 states that a mine owner cannot transfer or otherwise dispose of mining assets until the dumps are properly stabilized to prevent wind-borne pollution or spillage, most asbestos mines in northeastern Transvaal were closed before the law came into effect.

**Legal Protection Is Lacking**

Deputy Government Mining Engineer D.M. Morris has admitted he was horrified to hear of schoolchildren playing on dumps of blue asbestos waste and traversing the mounds to get to and from their homes. "It is a very serious problem and something has to be done about it," he said. But, he added, until "a Supreme Court judge makes the position clear and the Minister of Mineral and Energy Affairs is made responsible, our budget is not likely to be increased."

Says Dr. J. Myers of the Industrial Health Research Group at the University of Cape Town, the recommended acceptable level of blue asbestos concentrations in South African factories, which is not covered by any formal legislation, is 10 times higher than the strictly enforced legal control limits imposed in Britain.

South Africa's maximum allowed concentration is two fibers per millimeter, which E.L. Arni, managing director of Everite, the country's biggest producer of asbestos, points out is the same as in the U.S. He notes that Everite conforms to a fiber level of less than one fiber/mil. and aims at a target of 0.5 fibers/mil.

But Myers counters: "The legal limit in Britain is 0.2 fibers per mil. and the limit in the U.S. is a statutory, strictly-enforced control. So comparing permissible levels of exposure in South Africa and the U.S. by quoting figures is not meaningful or credible."

Earlier in the year, 19 workers at Everite Ltd.'s Brackenfell factory were retired prematurely after contracting asbestosis. Since the plant opened 37 years ago, 35 cases of asbestosis -- including three deaths -- have been diagnosed among an estimated 9,000 workers. The company's personnel director Evert Claasen pointed out that asbestosis diagnosed in recent times relates to excessive exposure to asbestos fiber more than 15 years ago. Since the early 1970s, strict control measures and personnel education has resulted in the reduction of exposure to a level where "no undue risks" exist for personnel.

AROUND THE WORLD

**BELGIUM** - As WER went to press, divers had removed the 14th container of uranium hexafluoride from a sunken French ship off the Belgian coast. Access to the remaining 16 containers of radioactive cargo has been temporarily blocked. The ship, which sank after colliding with a passenger ferry, was carrying nuclear materials from France to the Soviet Union where they were to be processed. (WER, Sept. 5, 1984, p. 135).

**BOTSWANA** - After studying lions in the Central Kalahari Desert of Botswana, Wildlife Biologists Mark and Delia Owens found that under the stress caused by drought, lion society breaks down, prides fall apart and new social groups are formed. Writing in an article for the National Wildlife Federation's publication, International Wildlife, the Owens noted that dry seasons, with no rain at all, last up to nine months. "In order to survive the dry season, the lions change their behavior. Prides fracture into subgroups and leave their territories to pursue smaller, more elusive prey." In the desert, the prides abandoned their territory, and began hunting in twos, rather than groups of five or six. They roamed areas as much as 15 times larger than their rainy season ranges and were forced to eat much smaller prey and go for months without drinking water. When the rains finally fell, the lions once again defended territories and lived in pridelike groups -- though those groups were comprised of non-related lions who had banded together during the drought.

**INDONESIA** - On Aug. 30, the first seminar held within the framework of the U.S.-ASEAN (Association of Southeast Asian Nations) Cooperation Project on the management of river catchment areas ended in the town of Bogor with an agreement to work on strengthening ties between research workers and catchment area management. WER Correspondent Kate Webb reports that the meeting was attended by 45 participants from Malaysia, Thailand, the Philippines, Indonesia, the UN Food and Agricultural Agency and the U.S. Agency for International Development. Spokesperson Bambang Sukartiko said Indonesia had tabled a motion that the U.S. further extend its aid by financing a joint research program among ASEAN members because, he said, the U.S. has similar problems with river catchment areas.

**SOUTH AFRICA** - Although the country has considerable environmental legislation, it exists mainly as parts of other laws and ordinances. There is a need for a coordination of legislation and of various authorities with stewardship over the nation's natural resources, write R.F. Fuggle and M.A. Rabe in their recently published book, Environmental Concerns in South Africa. The book is an indictment of official policies, which, despite the legislation, have created widespread environmental deterioration. Against this background, the authors examine the technical and legal implications of population growth, land-use planning, soil and water resource management, air pollution, solid waste management, and the effects of large-scale habitat destruction on plants and animals. The book, ISBN 0 7021 1404 9, is available from P.O. Box 123, Kenwyn 7790, South Africa for \$50.

**SOVIET UNION** - Two officials of a sugar plant have been sentenced to jail for negligence that led to pollution of the drinking water at Vinnitsa, a city in the Ukraine. According to the Soviet newspaper Literaturnaya Gazetta, two cases of water pollution involved the same plant, which is located in the area bordering Czechoslovakia. Chief Engineer P.P. Melnik of the Turbov Sugar Plant and his deputy, N.I. Letyagin, were responsible for poor maintenance of wastewater retention fields, and this resulted in spills polluting drinking water and killing fish. Melnik was sentenced to four years in jail, but his sentence was later halved by the Ukrainian Supreme Court. Melnik had been fired after investigation of the first pollution case in August 1983 and criminal charges were brought after the second case last December. Because Letyagin had not made corrections to plant operations after the first pollution case, he was sentenced to a year in prison. The director of the sugar plant was reprimanded and demoted.



**WORLD BANK LENDING FOR WATER, SEWERAGE  
PROJECTS TOTALS \$640.8 MILLION IN FY '84**

World Bank lending for water supply and sewerage projects totaled \$640.8 million or 4.1% of total bank lending in fiscal year 1984, according to the bank's annual report, released Sept. 17. The following shows water supply and sewerage projects approved for International Bank for Reconstruction and Development (IBRD) loans and International Development Association (IDA) credits for the year:

Country	IBRD	IDA	Total
Algeria (\$ millions)	290.0	--	290.0
Botswana	22.0	--	22.0
Cyprus	16.8	--	16.8
Egypt	4.0	--	4.0
Honduras	19.6	--	19.6
India	--	73.0	73.0
Jamaica	9.0	--	9.0
Jordan	30.0	--	30.0
Korea, Republic of	78.5	--	78.5
Mali	--	10.9	10.9
Syria	30.0	--	30.0
Tunisia	50.0	--	50.0
Yemen, People's Dem. Rep.	--	7.0	7.0
	<u>549.9</u>	<u>90.9</u>	<u>640.8</u>

Responding to criticism in recent years, the report went out of its way to call attention to the bank's increased concern about the role of women in development. In the area of water supply and sanitation, the report said: "In areas where piped water supply is not available, fetching water is a task usually assigned to women, who are assisted by their children. The quantity of water available for the use of the family is determined by distance (and time) and the capacity of women to carry it."

While listing tasks, other than immediate family use, for which women must also carry water, the report noted that these uses are "frequently overlooked in planning the location of water supplies." It pointed out that "morbidity and mortality related to parasitic and other infections originating from impure water, improper food handling and hygiene practices, inadequate latrines... are extensive in the developing world. Responsibility for proper sanitation and for the inculcation of healthy habits in the young also falls within the women's sphere of responsibility." END

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### SLANTS & TRENDS

AN OIL SLICK, STRONG TIDES and high winds are hampering attempts to salvage radioactive cargo from the North Sea. The cargo is from a French vessel that sank late last month off the Belgian coast. A half-mile long oil spill, believed to be coming from the ship's fuel conduit, must be cleaned up before divers can attempt to raise the radioactive canisters. The 4,210-ton Mont Louis, which sank after colliding with a passenger ferry, was carrying nuclear materials from France to the Soviet Union where they were to be processed.

THREE BARRELS OF LIGHTLY ENRICHED uranium, nine barrels of natural uranium hexafluoride and 18 barrels of lightly enriched uranium hexafluoride are included in the cargo. But French and Belgian officials and salvage company sources emphasized that tests conducted every six hours have produced no sign of radioactive emissions and divers' examination of the containers had uncovered no leaks or damage.

\* \* \*

BANGKOK IS SINKING. Engineers at the Asian Institute of Technology say that the Thai capital is pumping so much water out of the ground from its 11,000 wells that it is sinking as much as three inches annually -- 14 times faster than Venice, Italy. As a result, Bangkok could be below sea level by the year 2000.

\* \* \*

THE PERSIAN GULF'S MARINE ECOSYSTEM is being threatened by pollution. To combat the problem, feasibility studies are being conducted on setting up "pollution dumping" centers in the Gulf area that would collect waste from passing ships, the OPEC news agency reports. The proposed pollution control centers would be developed by taking into account the number of ports in the region and the quantity of oil exported, in addition to the size and movement of the tankers. The Bahrain-based Emergency Center has been asked to prepare studies on establishment of an oil information bank to identify sources of oil slicks in regional waters.

\* \* \*

IRAN'S FIRST SOLAR WATER HEATER has been installed by the country's Atomic Energy Organization in a village in Khorasan province. The water heater is capable of heating water up to 75 degrees Celsius and can store 2,500 liters. Installation of additional solar water heaters is expected in other Iranian villages.

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**WEST GERMAN 'GREENS' INTRODUCE  
BILL TO SCRAP NUCLEAR PLANTS**

by William G. Mahoney

MUNICH -- West Germany's environmental party, the "Greens," introduced a bill in Parliament Aug. 28 that calls for closing down all nuclear reactors in the country within six months.

The measure would phase out 13 large commercial atomic power plants as well as two big research reactors, with a combined capacity of 10,000 megawatts, that currently supply 25% of the nation's electricity. It would also terminate work on 10 reactors now under construction and would halt all planning of future reactors.

A spokesperson for the "Greens" declared that use of nuclear energy as a power source has been a failure and claimed that the country's energy needs could be met without such power by using natural gas and coal. She added that such drastic steps were needed because nuclear power threatens human health and the environment. She also questioned the economics of nuclear power and raised the issue of "unsolved atomic waste problem."

The draft bill is scheduled to come up for debate after Parliament returns this month.

**'THERMAL RUNAWAY' THEORY  
REBUTTED BY AUSTRALIAN RESEARCH**

by Trevor Rees

MELBOURNE -- The so-called "greenhouse effect," caused by increased carbon dioxide in the atmosphere, is unlikely to lead to a "thermal runaway" as has been predicted, according to Ilias Vardavas of the Research School of Physical Sciences at the Australian National University, Canberra.

Vardavas has developed an atmospheric computer model, which suggests that the earth's climate can have two stable extremes. One is during high levels of CO<sub>2</sub> in the atmosphere, when it is hot and humid and tropical conditions prevail around most of the globe. The other is during low CO<sub>2</sub> levels, when more temperate conditions prevail, as they do currently.

Vardavas disputes that there would be a rapid escalation in temperature to the boiling point, which some argue could result from as little as a tenfold increase in the atmosphere's CO<sub>2</sub> levels. He has found that a higher CO<sub>2</sub> level would result in the temperature becoming higher, but remaining stable.

During warmer periods, the convection zone in the atmosphere increases significantly in size, and this increased area of activity enables heat to rise to a higher altitude and to further disperse.

Says Vardavas: "Our atmospheric model, which allows the earth's lower atmosphere to convect this greenhouse heat to higher altitudes as well as radiating it to space, does not predict a 'runaway greenhouse' even for a thousandfold increase in the atmospheric carbon dioxide level." His computer model also takes into account the changing physical processes that occur as a result of minor changes in the sun's output or the makeup of the atmosphere.

**CALL FOR PAPERS:** The Technical Section of the Canadian Pulp and Paper Association is sponsoring its 1985 Environment Conference in Toronto, Ontario, Sept. 24-26, 1985. Those interested in presenting papers should submit abstracts no later than Dec. 28, 1984, to: Brian Young, Abitibi-Price Inc., Environmental Services, Sheridan Park, Mississauga, Ontario, L5K 1A9.

### EUROPEANS ENDORSE ENVIRONMENT OVER PRICES, ECONOMIC GROWTH

Support for environmental protection and environmental activism is widespread in West European nations, and these views showed little evidence of decline in the face of the renewed economic problems of European societies over the last decade, says Russell Dalton of Florida State University.

In a paper prepared for delivery at the 1984 Annual Meeting of the American Political Science Association, held in Washington, D.C., Aug. 30 to Sept. 2, Dalton notes: "If anything, the recent economic problems of Western democracies have heightened the policy importance of environmental groups, as environment activists have challenged economic development projects which they believe might threaten the environment." Dalton based his conclusions on the Eurobarometer surveys, an extensive series of coordinated crossnational opinion polls conducted in all member nations of the European Communities.

Dalton pointed out that in all nations the importance of environmental protection increased over the 1973-1983 period. The average importance score was above 3.5 on a 4.0 scale, with very few Europeans saying that environment is not an important issue. The following table, reprinted from Dalton's paper, demonstrates the changing level of concern about environmental protection:

	1973	1976	1978	1983
Luxembourg	3.40	3.67	3.27	3.64
Italy	3.54	3.56	3.60	3.56
Netherlands	3.39	3.62	3.67	3.46
Denmark	3.30	3.73	3.65	3.79
West Germany	3.55	3.48	3.46	3.63
France	3.41	3.71	3.56	3.45
Belgium	3.31	3.59	3.54	3.38
Britain	3.30	3.40	3.41	3.41
Ireland	3.20	3.39	3.37	3.25
<u>European Community</u>	<u>3.42</u>	<u>3.54</u>	<u>3.52</u>	<u>3.52</u>

Please note: table entries are mean scores based on the coding: (4) very important problem, to (1) not at all important.

Moreover, citing a 1982 survey, Dalton showed that the majority of Europeans endorse the environmental option even when asked to balance their environmental beliefs against the potential costs of environmental protection. In France, for example, 66% of the public favored protection of the environment even if it causes companies to raise their prices, and 62% felt that environmental protection should take priority even if it risks holding back economic growth. In only one country -- Ireland -- did less than a majority prefer environmental protection. The following table shows opinions on environmental and economic trade-offs:

	Environment more important than prices	Environment more important than growth
Luxembourg	72%	67%
Italy	67	73
Netherlands	74	59
Denmark	81	81
West Germany	58	73
France	66	62
Belgium	55	60
Britain	59	55
Ireland	34	33
<u>European Community</u>	<u>63</u>	<u>65</u>

## **BRITISH CONSIDER LAW ON HAZARDOUS SUBSTANCES IN THE WORKPLACE**

by Barbara Massam

GREAT BRITAIN -- A comprehensive legislative package, giving protection from all hazardous substances in the factory, home and in transit, has been proposed by Britain's Health and Safety Commission (HSC). As expected, trade unions have welcomed the proposals but members of the Chemical Industries Association are highly critical.

A recently released consultative document, "Control of Substances Hazardous to Health," contained draft regulations and approved codes of practice. HSC received advice in preparing it from its Advisory Committee on Toxic Substances -- made up of representatives from industry, trade unions and local authorities.

In launching the report, John Cullen, chairman of the commission, said, "I believe the proposals will help employers, safety representatives, workers and enforcing authorities by providing one simple set of regulations applying to all substances hazardous to health." The scope of these is based on lists and directives of the European Community.

Existing legislation, states the document, which concentrates only upon particular substances in particular processes, allows employers and employees to avoid their obligations towards potential health risks.

Schedules attached to the proposed regulations list prohibited substances and prohibited uses of substances. Other categories of hazardous substances are human pathogens, dust of any kind and "any other substance arising in the course of work, to which a person may be exposed and which may create a risk to health" comparable to that arising from the listed hazardous substances. Proposals are also being made to standardize the labeling for warning and information on hazardous substances in the factory, the home and in transit.

### Employer Responsibilities

In conforming with the wide scope of the proposed legislation, employers would be required to assess the amount of exposure to their workers from dealing with hazardous substances, and to then employ control measures, which would apply not only to plant and clothing but also any necessary training and instruction. This would have to be combined with regular monitoring and health checks, and the compilation of health records on each employee. The report estimates that annual tests would cost about 71 (\$93) per worker.

These wide responsibilities that would be placed upon employers have caused most of the controversy. The Chemical Industries Association, rumored to be pressured by the pharmaceutical manufacturers, sees them as "Orwellian" in their implications, leading to bankruptcies and loss of jobs. But, said David Gee, of the largest basic industrial workers union, "these laws will drag employers from the 19th century world of safety law into the 20th century world of health hazards."

Defending the proposals, Cullen pointed out that many of the most efficient manufacturers already used their own protective methods, including employing their own medical staff. Any extra expenditure would have to be weighed against the estimated loss of 187,000 working days from occupational exposure to hazardous substances in the year 1979-80, and over 7,000 injury benefits of short or longer duration over the same period. Some doctors are convinced that further research would show that a much larger percentage of diseases, such as cancer, bronchitis and asthma are occupationally linked.

The commission will now seek comments on the proposals from interested parties, with the ultimate aim of submitting them to the Department of Trade.

### MEXICO PONDERES FATE OF CONTAMINATED STEEL

Mexicans are still evaluating what to do with hundreds of tons of radioactively contaminated steel that resulted from the unauthorized dismantling and junking of a radiotherapy machine late last year. Much of the material was returned from the United States, where contaminated steel rebar and table components had been shipped (WER, Feb. 8, 1984, p. 24). The material is being stored temporarily in Ciudad Juarez and in Chihuahua.

Two U.S. scientists from the University of Oklahoma, Norman, recently visited the Juarez site at the request of Rene Franco, of the University of Juarez, who is conducting a study, for the Juarez Chamber of Commerce, of the temporary site and Mexico's permanent disposal plans. The Chamber of Commerce is concerned because the Mexican government has proposed a permanent disposal site, called a "nuclear cemetery," in Juarez about 10 miles from a heavily populated area and on a site that will be directly in the city's future growth pattern.

The University of Oklahoma team found that the Fenix junkyard, where the steel originated, is still contaminated. Since it is near both a residential area and a shopping center, cleanup of the Fenix site should be undertaken as soon as possible, the scientists recommended.

At the temporary Juarez storage site, the scientists found large quantities of material from Fenix -- table legs and bases, several hundred drums of contaminated soil with cobalt-60 pellets, the head of the radiotherapy unit, the pickup truck where the unit had been dismantled, and a large volume of metallic debris, such as car parts. Though radiation readings were not being taken systematically, there were areas in the site where the sensor went off the scale (200 mR/hr.) at distances of up to 10 meters. The site is fenced on only three sides.

The team proposed that the site be physically secured and posted with a 24-hour guard; that the most highly contaminated materials be removed immediately to Maquixco, Mexico's regular low-level waste disposal site in Hidalgo; and that an environmental monitoring program be established at the site because the material was being blown about by wind, and large numbers of small mammals were moving in and out of the area.

Oklahoma scientist Larry Canter said that it does not appear that the permanent nuclear cemetery for the material was chosen after a systematic site selection process. The scientists therefore suggested appointment of a task force to look at the proposed site and other possible sites for permanent disposal of the less severely contaminated materials.

### INDONESIA WILL ASK JAPAN TO STOP EXPORTING POLLUTION

by Kate Webb

JAKARTA -- Indonesia's Population and Environment Minister Emil Salim says he is going to ask the Japanese environment ministry to consider bilateral cooperation in dealing with pollution in Indonesia. Salim, who has spoken frequently in international forums on the dangers of industrialized countries exporting pollution to Third World nations, gave his pledge to members of the Jakarta legal aid institute (LBH) who returned from a trip to Japan last month.

Achmad Santosa, the delegation leader, said the group had asked the minister to take action because Japanese capital dominates the investment market in Indonesia, and complaints from the regions about industrial pollution were on the upswing. Santosa said the group has made its own request to the Japanese government that the Japanese monitor investors in Indonesia on pollution matters.

**PRAVDA CHARGES ASBESTOS LEVELS  
TOP SAFE LIMITS IN SOVIET UNION**

by William G. Mahoney

The Communist party daily Pravda charged Aug. 27 that asbestos pollution levels are above safety limits in almost all Soviet plants and that some factories cause fallout of tons of asbestos dust on the surrounding rural areas.

The charges came in a report on the development of a new filter system that has been designed to solve the problem. But in describing the new system, the party paper admitted for the first time that there is serious concern about contamination levels. It indicated that asbestos had caused severe illnesses among workers.

Pravda reported that the official Soviet health regulations established a safety norm of 0.6 milligrams of asbestos dust per cubic meter of air in plants producing the material. But, the article continued, until now this level had never been reached in any plant. It said that a single production unit at the giant Uralasbest complex in the Urals pumped out more than 200 million cubic meters of dust-laden air daily, polluting the countryside in the area.

Until now, the Soviet press has avoided discussion of the problem of asbestos pollution although Western experts have repeatedly published studies showing that asbestos dust can cause cancer. The recent report states that the new filter system, currently being tested, would bring contamination levels to below the safety norm.

**BILL TO FURTHER PROTECT SOUTHERN  
RIGHT WHALE INTRODUCED IN ARGENTINA**

by Pedro Tarak

BUENOS AIRES -- A bill to declare the Southern Right Whale (*Eubalaena australis*) a Natural Monument has been introduced by Sen. Miguel Mathus Escorihula. The bill has already cleared a House committee but must still be approved by the full chamber.

The Southern Right Whale is already protected by international and domestic Argentine law. In fact, some 3,000 of these whales currently exist -- far more than had previously been counted. About 600 of them have been identified in Argentine waters, mainly near the Peninsula Valdes area of Patagonia. While the existing protection has been effective, it only covers measures involving the hunting of the whale. No legislation addresses habitat protection, food supply or overall disturbance to the species.

The new bill consolidates preexisting protective measures and attempts to incorporate into the Argentine culture a new object that may symbolize society's respect for all forms of life. The concept of a "natural monument" comes from the 1980 Federal Act on National Parks, Reserves and Natural Monuments. For a copy of the bill, or to send comments, contact Senador Miguel Mathus Escorihuela, Palacio del Congreso, Buenos Aires, Argentina.

**INDIAN POLLUTION CONTROL:** The government is now insisting that state-owned financial institutions require that firms asking for loans provide for pollution control and environmental protection. As part of the Sixth Five-Year Plan, which ends this year, the government has already stated procedures for clearance by the Department of Environment and approval by the Planning Commission for new projects. Deputy Environment Minister Digvijay Singh has suggested that a special tax also be levied on households to curb pollution in urban areas. Two-thirds of such pollution is caused by waste from private homes and not industry, he said.

AROUND THE WORLD

**AUSTRALIA** - A recently invented Australian-made device that records water temperature every hour for a year while left unattended on the sea floor, may have applications in environmental monitoring, WER correspondent Trevor Rees reports. The device, invented by Electrical Engineer Michael Robbins, is designed specifically to measure water temperatures in the Great Barrier Reef Marine Park where, among other things, it could help determine whether the growth of the Crown of Thorns starfish is related to warmer water temperature. However, it could also have other applications, such as monitoring the temperatures of slurries and discharges from refineries and for monitoring estuarine waters downstream from effluents. After one year's recording, the instrument is retrieved from the ocean and connected to a terminal to extract the data. It can then be returned to the ocean for another 12 months of service.

**INDIA** - The newly-created Indian National Trust for Art and Cultural Heritage is examining ways of cleaning the famous bathing ghats, or steps of Benaras, and the stretch of the Ganges alongside it, according to a report from WER correspondent Darryl D'Monte in Bombay. Veer Bhadra Mishra, chairman of the Swatchha Ganga Campaign Committee (Keep Ganges Clean) says that 20 million gallons of sewage and the disposal of human and animal carcasses are playing havoc with the ecosystem of the holy river. He alleges that the stretch from Hardwar, at the Himalayan foothills, to Benaras is not fit for human consumption because it contains toxic materials. Five sewage stations opened a decade ago by the Uttar Pradesh state government, with World Bank aid, are not working. The committee has submitted a scheme for reactivating the Benaras station at a cost of \$6 million.

**INDONESIA** - Entomologists and agriculturalists from 14 countries will carry out a year-long study of insect life in Indonesia's Dumoga National Park next year in the hope of identifying undiscovered species that could lead to breakthroughs in disease and pest control, WER correspondent Kate Webb reports. Organized jointly by the Royal Entomological Society and the Indonesian Institute of Sciences (LIPI), the 150 scientists will erect platforms in the rain forest canopy, stun the insects with disabling gas bombs and gather them in -- still live -- in collecting trays. Research on the specimens, to be carried out by individual scientists when they return to their own universities and research institutes, is expected to continue into the late 1980s, by which time LIPI will be provided with a complete collection of Northwest Sulawesi insects.

**LIBYA** - With the help of U.S. technology and consultants, the government has begun construction of a long pipeline to bring water from an underground lake in the south 1,200 miles to irrigate thousands of acres of land along Libya's Mediterranean coast. Considered one of the world's largest construction projects -- at a cost estimated at \$20 billion -- it involves building two parallel pipelines to tap 270 wells around Sarir and farther south in the Tazirbu region. The lines are to be buried 6.6 feet underground. They will run first to Ajdabiya on the Gulf of Sidra and, from there, one branch will go northeast to Benghazi and another west to Sidra. Together, the two lines will carry 6 million cubic meters of water daily to the coast. The underground lake is estimated to contain enough water to last 50 years at this rate. But the Egyptian and Sudanese governments are reportedly concerned about the project's ecological effects because the lake stretches into their territories and it is still not clear whether the lake will replenish itself or dry up.

**SOVIET UNION** - The first experimental central solar plant in the country will go into operation in the Crimea next year, according to the Soviet news agency Tass. The plant consists of 1,600 heliostats surrounding a 70-m tower that encloses a steam generator. It will have a generating capacity of 5,000 kWe. The Crimea was chosen because sunshine in that area is sufficient to allow the plant to operate for 1,920 hours per year.



**SWISS PUBLISH STUDY ON IMPACT  
OF PACKAGING ON ENVIRONMENT**

by William G. Mahoney

BERN -- The Federal Office for the Protection of the Environment has recently published a first-ever overall study of the impact of commercial packaging on the environment as a guide to Swiss industry in future planning.

Triggering the study and the decision to seek greater cooperation from industry were cold statistics: packaging of all sorts -- aluminum, plastic, paper, cardboard and tin cans -- amounts to 800,000 tons of waste each year, one-third of the total amount of waste handled in this country.

"And this quantity is increasing steadily," commented Director Rodolfo Pedroli.

So the Federal Office, seeing that an overall look at the impact of the various types of packaging on the environment would be necessary before confronting industry, commissioned the Federal Materials Testing Laboratory (EMPA) at Sant-Gall to conduct a full investigation. The results of this study have been published under the title Ecological Impact of Packaging Material.

An Environment Office spokesperson pointed out that, to date, industrial decisions on packaging material were made on the basis of such factors as protective functions, quality and cost. With the publication of this technical report, which examines each particular packing material, the official said he hoped that a new factor will be weighed: the effects on the environment.

In one instance, the report considers the use of paper. It notes the impact on pollution of air and water at each step of paper production -- from the felling of trees to the paper emerging in final form. It takes into account the consumption of raw materials and of energy, as well as computing the solid wastes produced. The report stresses that the volume of waste cannot be measured merely by the highly visible final dumping of used packaging, but must also include the waste produced at each step of production.

Reactions from industry have been positive. Management of one of Europe's largest frozen food producers, Frisco-Findus, stated that packaging producers will have to take the environmental aspect into account because the large firms that purchase the packaging must avoid "negative reactions" from the public, and thus will turn to ecologically friendly materials. END

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### SLANTS & TRENDS

**YES, WE HAVE SOME BANANAS.** They are waste bananas that could be used to make ethyl alcohol. At least that's what officials of the Canadian International Development Agency (CIDA) and the Colombian state of Antioquia are hoping. CIDA and the Antioquia government are each putting up \$170,000 for construction of a pilot distillery in Colombia. Bruce Miller of Toronto's Harvest Fuel said his company has a unit that could produce up to 200,000 gallons of 190 proof ethanol.

**CURRENTLY, WASTE BANANAS ARE BURIED** or dumped in rivers. Miller noted that at least 20% of the banana crop in Colombia, Costa Rica and other banana-producing nations is rejected by exporting firms. Burying bananas leads to a harmful build-up of calcium in the soil, while river disposal kills fish.

\* \* \*

**FOOT-DRAGGING ON PLEDGES** by Mediterranean nations to decrease pollution of coastal waters and beaches has evoked sharp criticism from the United Nations Environment Program (UNEP) this month, WER correspondent William G. Mahoney reports. Seventeen out of 18 Mediterranean countries -- Albania was the exception -- signed a 1976 treaty pledging to take action to curb pollution. But actual legislation is still lacking, despite repeated warnings from 84 marine laboratories in the area.

**THE GOVERNMENTS INVOLVED** "were made fully aware" that 20% to 25% of the beaches are not safe for swimming, and that the beach pollution extends from Valencia, Spain, around the northern arc to Naples, Italy, a UNEP spokesperson said. He added that the Adriatic beaches are even worse.

\* \* \*

**JUMBO DESALINATION PROJECTS** are getting underway in Bahrain and Abu Dhabi. Saudi Arabia has awarded a \$35 million contract for the supply of a reverse-osmosis desalination plant to a British-South Korean joint venture. The plant is being built in Bahrain and will produce 45 million liters of fresh water daily, making it one of the largest plants of its kind in the world.

**THE WORLD'S LARGEST SOLAR-POWERED** water desalination plant is also to be constructed soon in Abu Dhabi. The \$8.17 million project will have a processing capacity of 80 tons per day. It is being jointly financed by the governments of Abu Dhabi and Japan and will be managed by the Engineering Advancement Association of Japan on behalf of the country's New Energy Development Organization (NEDO).

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## SWEDISH STUDY SUPPORTS NUCLEAR WINTER FORECAST

A nuclear holocaust could wreak havoc with the sea level, volcanoes and ice caps on earth and even the paths of asteroids traveling in outer space, a Stockholm International Peace Research Institute report released last week contends.

The report, Environmental Warfare: A Technical, Legal and Policy Appraisal, said a single atomic warhead could be launched to divert asteroids to crash into enemy territory or to raise the sea level of the world by about 25 feet.

It noted that the world's 312 nuclear power plants and other repositories of nuclear material are likely targets for bombings that could spread destruction over wide areas. SIPRI warned of massive flooding from possible blow-up of any of 70 major dams, release of tenacious microorganisms that could cause widespread disease and destabilization of volcanoes and polar ice sheets.

"Such areas would defy effective decontamination and would thus remain uninhabitable for decades," the report said. "No single step will be more supportive of environmental quality than reductions in the risk that nuclear weapons will be used, especially on a large scale."

The nuclear winter theory, postulated by astrophysicist Carl Sagan and other scientists, envisions a scenario in which the smoke, dust and debris thrown into the atmosphere by nuclear explosions would blacken the skies for months, causing temperatures to drop drastically and leading to the extinction of many life forms -- possibly including the human race (WER, Aug. 8, p. 121).

A SIPRI spokesperson said that the report was released to coincide with a review of the 1977 Environmental Modification Convention, known as ENMOD, which opens in Geneva, Switzerland, next month. That agreement has been ratified by 43 nations, including the United States and the Soviet Union. The study urges the nuclear powers and others to strengthen the 1977 convention, noting that the agreement contains major loopholes and does little to prevent the possibility of a nuclear winter.

## GAS ESCAPES DURING NUCLEAR FUEL TEST IN AUSTRALIA

by Trevor Rees

MELBOURNE -- During an experiment to improve the international safeguards for nuclear fuel, uranium hexafluoride gas escaped from the Australian Atomic Energy Commission research establishment at Lucas Heights, near Sydney.

A local report cites a pipe malfunction as the cause of the accident that released the gas through a ventilation shaft into the atmosphere. A spokesman for the Australian Atomic Energy Commission said the quantity of gas discharged was slight and no ill effects were found in personnel working on the experiment.

Meanwhile, in other nuclear safety news, a radioactive consignment aboard a British Airways jumbo jet from Auckland, New Zealand, to Perth, in western Australia, was found to be leaking during its flight. The consignment was a package of iridium 192 used in industry to detect welding flaws.

On its arrival in Australia, the package was found to be emitting radiation at a level five to six times the international standard. A physicist from the Western Australian Department of Health claimed that the five passengers who may have received doses of the radiation from the leaking consignment ran no health risk from their contact.

**COLOMBIAN DEFORESTATION PROBLEM  
TYPICAL OF MANY TROPICAL COUNTRIES**

by Peter Nares

BOGOTA -- Each year an estimated 9 million hectares of forest are felled in South America, with the destruction now threatening the ecological balance of the entire region. The deforestation problem is seen at its worst in tropical countries such as Colombia, where as much as 500,000 hectares of woodland are axed and, at most, 30,000 hectares are replanted annually.

Today, as a consequence of the destruction of the nation's forests, some 21,000 square kilometers -- or nearly 2% of Colombian territory -- are affected by severe erosion. Another 393,000 sq. km. -- or over one-third of the republic -- are eroded to a less serious extent. Inevitably, agricultural production has dropped in the worst hit zones.

This year the government had to temporarily implement water rationing in a number of major cities because of the failure of rains in Andean catchment areas. Water in the country's principal dams fell to a perilously low level, and ecologists caution that further droughts can be anticipated unless urgent steps are taken to preserve the nation's forests.

For years, Colombian conservationists have been calling for firmer government action to protect natural resources. In 1978, for instance, Carlos Gomez, manager of the state hydrological institute, warned that the Magdalena and Cauca rivers were sweeping 3 million tons of sediment into the sea each year because of highland erosion. A few months earlier, the banana-growers of the Uraba district suffered multi-million-dollar losses in the wake of a drought.

**Population Pressures Increase Problem**

But despite ecologists' warnings, Colombian woodland continues to be depleted. In 1960, the country's forests totaled some 55 million hectares. Today, the figure has plummeted to only 35 million hectares and, unless an emergency planting program is launched, the situation will rapidly worsen.

La Republica, the Bogota financial newspaper, cautioned this year: "If we carry on at the present rate, we will have a desert on our hands." Economists have predicted that Colombia may soon have to import wood products because of the increasing scarcity of timber in readily accessible zones. Also, pulp and paper imports could rise in the absence of large-scale reforestation projects.

On the demographic front, agronomists forecast that the migration of peasants to the cities will grow because rural residents will be unable to earn even a subsistence living on critically eroded holdings.

Colombia, with a population of 29 million, has a birthrate of about 2%. It is the nation's population growth that has been primarily responsible for the destruction of the forests. Successive Colombian governments have been reluctant to provoke the propertied oligarchy by introducing major land-reform programs.

Instead, as a politically acceptable alternative, officials have permitted landless peasants to settle in uninhabited virgin forest zones, which have been cleared for food and cash crops. Currently, it is estimated that new settlers are felling some 400,000 hectares of prime forest annually. In addition, over 50,000 hectares are axed yearly for domestic and industrial fuel.

By comparison, only 6% of Colombian timber felled each year is purchased by the pulp, furniture, construction and wood-processing sectors. Population pressure, rather than industrial demand, is the main cause of the deforestation.

(Continued)

COLOMBIAN DEFORESTATION PROBLEM (Cont.)

Industry, in fact, has pioneered several reforestation projects. For example, the chemical pulp manufacturer, Carton de Colombia, has been financing coniferous plantation programs since the 1940s. To meet its own requirements, the company reforested over 17,000 hectares, and it intends to augment its plantation acreage.

But in the public sector reforestation has gotten off to a belated and modest start. Only 170,000 hectares have been replanted in the last 25 years, though some \$40 million have now been allocated for a five-year reforestation development project. A National Forest Plan has been formulated, and landowners can now claim tax rebates for forestry projects.

It is envisaged that about 840,000 hectares will be reforested in the next 18 years. But ecologists point out that in only two years ongoing deforestation will exceed this figure. They argue for a more ambitious planting program and want the government to increase the budget of Inderena -- the state's hard-pressed natural resources agency -- which is charged with protection of forest reserves.

Inderena currently has insufficient staff to police the reserves, and in some areas unauthorized loggers are still able to fell timber with all but impunity. Long-term, however, the main threat to the country's forests will remain the new agricultural settlements of landless peasants.

SCIENTISTS STUDY ANTARCTICA'S FAUNA  
TO GAIN CLUES TO REGION'S ECOSYSTEM

In order to better understand the impact penguins have on the southern ocean ecosystem and how these animals exploit their environment, the behavior, breeding and foraging patterns of king penguins will be studied by scientists from the Scripps Institution of Oceanography, California.

Penguins comprise 75% to 85% of the birds in the southern ocean ecosystem. The king penguin is a species common in sub-Antarctic islands but rarely found on the Antarctic continent. Although they are major predators in that region's ocean food web -- feeding on fish and squid -- few studies have been made of the birds.

Working with British biologists on Antarctica's South Georgia Island, the researchers will monitor the activities of the birds while they care for older chicks and study their behavior while they make trips to sea. Number, depth and frequency of dives; the time spent swimming, diving and out of water; and the rate and distances of swimming will also be measured.

To measure the energy expended, the scientists will use water labeled with two different tracer-isotopes in determining water turnover rates inside the penguin and carbon dioxide production. The average metabolic rate for the birds at the island colony and at sea will be studied.

In other biological studies of Antarctica's ecosystem, researchers have obtained recent data from divers and from deep water photography that suggest that life is abundant and varied near the edge of the Ross Ice Shelf off Antarctica. The researchers previously believed that life was sparse everywhere beneath the shelf -- a massive sheet of ice about the size of France, which averages 1,200 feet in thickness.

About 25 to 30 well-nourished Weddell seals were found near White Island, about 18 miles south of McMurdo Station. Scripps scientists will be studying the relationship between sea animals and their environment in McMurdo Sound, both under and outside the Ross Ice Shelf.

AROUND THE WORLD

**ARGENTINA** - Environmentalists in Argentina, with a grant from the World Wildlife Fund, have launched a study to find out how to best manage the Tupinambis, or "tegu" lizard. The country is the world's leading producer of lizard skins, with more than 3 million lizard hides entering the U.S. in 1981 alone. Observers fear that the popularity of the lizards for "cowboy" apparel could lead to the endangerment or extinction of the species.

**CHILE** - The government has approved creation of a national reserve for the protection of one of the last known populations of wild chinchillas, the World Wildlife Fund-U.S. reports. The proposed Las Chincillas National Reserve will protect the few hundred chinchillas that still live in the rugged mountain ranges north of Santiago. In the early part of this century, chinchilla fur coats became a sought-after luxury and were ruthlessly hunted for markets in Europe and North America. As a result, the little rodents, which were once widespread in the Andes of Bolivia, Peru, Chile and Argentina, are now nearly extinct in the wild. WWF notes that, with the average fur coat requiring 150 chinchillas, the hunting of wild chinchillas is no longer economically feasible. The animal is raised commercially throughout the world.

**CZECHOSLOVAKIA** - The leading daily newspaper of the Czechoslovak Communist Party, Rude Pravo, last month demanded that sanctions be invoked against violators of environmental protection regulations. The article referred to what it called problems in the water supply for both the population and industry. As a result of the drought over the past two years, some 2.5 million citizens and "some spheres of the national economy" have been affected by the consequences of the water supply situation, the paper said. Investments are "lagging behind needs" and water-economy projects have not been put on the first-priority list. It noted that the results are "considerable disproportions in the purification of wastewater which again clearly reduces the quality of water delivered by some water supply systems." Although the surface and groundwater resources are protected by law, experience indicates that practical steps "toward improving water purity are still not sufficient." The paper also called upon industry and the general population to reduce their water consumption.

**INDIA** - A \$54.5 million project to increase the production of fuelwood, timber, poles and fodder in the southwestern state of Kerala will be supported by a \$31.8 million credit from the World Bank's International Development Association. Among other things, the project is expected to result in better conservation of the land. Some 69,200 hectares of forests on private land will be established, supported by government nurseries and technical advice. About 340 million seedlings will be distributed -- particularly to small farmers -- over a six-year period. And about 472 small, family-operated nurseries are planned for the first year of the project, increasing to 1,055 by the fifth year. Plantations will also be established on some 12,000 ha of otherwise unproductive government land. Coastal belts, roadsides, and railway and canal strips -- totalling about 2,000 ha. -- will also be planted with trees. The additional annual production of forestry products as a result of the project is expected to consist of 11.9 million cu. meters of fuelwood, 13.9 million cu. m. of sawlogs and 24 million cu. m. of poles.

**INDONESIA** - The perennial problem of Sumatran elephants, increasingly hemmed in by Indonesia's transmigration projects, has surfaced again with Aceh (North Sumatra) villagers threatening to poison a herd of 30 elephants that have been destroying secondary crops in the area of Uram Jalan. The government says it will prevent the poisoning, but chairman of the environmental group Ria Fauna, A. Gani Sulaiman, says action will have to be swift because the Sumatran elephant population has dwindled to some 300, from 600 in the 1960s.

**LESOTHO, SOUTH AFRICA CONSIDER  
\$2.5 BILLION WATER PROJECT**

by Mike Nicol

MUIZENBERG -- The South African government is considering a massive engineering project to ensure that the country's industrial and commercial center does not run out of water by 1995. The last three years of drought have put both the industrial and domestic sectors in many parts of the country under severe water restrictions, giving impetus for development of a water project that was first advanced by engineers 30 years ago.

In cooperation with Lesotho, the Directorate of Water Affairs is preparing a \$13 million feasibility study to be presented to the respective governments by 1985. If both governments approve the \$2.5 billion Lesotho Highlands Project, it will mean the construction of what will be the three biggest dams in southern Africa and more than 500 kilometers of canals, pipelines and tunnels. Water would then be pumped by a proposed hydroelectric power station through the three Lesotho dams, across the border and into rivers that eventually flow into the Vaal Dam. The Vaal Dam is the main source of water for the Pretoria-Witwatersrand-Vereeniging complex, which is the largest urban and industrial area in the country.

The scheme to tap Lesotho's abundant water supplies is today considered the key to ensuring a continual water source for the PWV well into the next century. But political pressure could jeopardize the plan, and a hydrologist close to the South African government has said that if people were fully aware that their ideals were being frustrated by politicians, "they would be furious."

Commented Claus Triebel, chief planning engineer with the Directorate of Water Affairs: "We are not dependent on the Lesotho plan -- but it would be in the interests of both countries for the project to go ahead."

And Jacques Kriel, former secretary of the old Department of Water Affairs added: "If the non-technical problems could be sorted out, it would be of benefit to all. I am optimistic that the differences can be resolved. What must be closely examined is the planning and timing of the project."

Giving his support to the project, Henry Schwartz, president of the Associated Scientific and Technical Societies in South Africa, said that in coming years there would be a need to build more dams and transfer water over even greater distances than is being considered now. "Eventually," he said, "we may have to desalinate the sea or mine icebergs." END

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# World Environment Report

## News and Information on International Resource Management

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### SLANTS & TRENDS

**COULD A 'NUCLEAR WINTER' OCCUR?** Would firestorms set by even a limited exchange of nuclear weapons result in smoke, soot and ash blocking sunlight and extinguishing life on earth? The U.S. government aims to find out the answers to these questions through a massive scientific study involving over a dozen federal agencies and up to \$50 million over a five-year period. Those answers could change patterns of military spending involving billions of dollars.

**STUDY OF LARGE NATURAL FIRES**, as well as simulations and experiments and possibly the creation of large fires to assess how high smoke plumes rise and how far they spread, could all be included in the program. Among the agencies involved are the National Oceanic and Atmospheric Administration, Department of Energy, National Bureau of Standards, the Agriculture Department's forest service, National Science Foundation and the Department of Defense.

\* \* \*

**ARCTIC OIL AND GAS PRODUCTION** and transportation will be allowed to proceed, subject to stringent conditions designed to protect the northern environment, a Canadian panel has concluded. The Beaufort Sea Environmental Assessment Panel's report, released late last month after three years of study, concludes that energy production would be environmentally acceptable if started on a small scale and then gradually phased in. A gas pipeline should be built through Mackenzie Valley only if the impacts on local communities would be no more than would be associated with small-scale development, the report said. For a copy of the report, contact David Marshall, FEARO, Vancouver, British Columbia, Canada, Tel. (604) 666-2431.

\* \* \*

**COFFEE WASTES ARE BEING RECYCLED** into commercial byproducts by Subproductos de Cafe, a private firm in San Jose, Costa Rica. The plant turns coffee waste into a substance that can serve as the energy component of animal feed. A recently-approved \$1 million loan from the U.S. Agency for International Development, plus additional investment from Subproductos, will bring that operation to full production and provide funds for equipment to extract and process caffeine, alcohol and -- later -- tannin and pectine. The animal feed is sold in Costa Rica, while chemical byproducts would be sold abroad, earning foreign exchange for the country. Benefits from the process include alleviation of pollution from coffee wastes and increased income and price stability for Third World coffee growers.

Leonard A. Eiserer  
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### LINK BETWEEN BRITISH NUCLEAR DISCHARGES AND LOCAL CANCER FOUND INSUFFICIENT

An advisory group to the British Ministry of Health found that it is possible, but by no means proven, that increased levels of radioactivity in the neighborhood of the British Nuclear Fuels reprocessing facility at Sellafield caused an above-average rate of cancer in Seascale, the village nearest to Sellafield.

The six-member independent advisory group, headed by Sir Douglas Black, past president of the Royal College of Physicians, was formed late last year to look into charges made in a Yorkshire Television (YTV) program of Nov. 1, 1983, "Wind-scale - The Nuclear Laundry." The group examined the evidence concerning an alleged cluster of cancer cases in the village of Seascale, considered the need for further research and made recommendations. Its report was released by Health Minister Kenneth Clarke last month.

The report examines evidence of childhood leukemia and other cancers in Seascale. Results suggest an increased incidence of leukemia among young persons there, but findings are based on a small number of cases. The incidence of leukemia in Seascale is described as "unusual but not unique." No evidence was found of general risk to the health of children or adults living near Sellafield when compared to the rest of Cumbria. The advisory group therefore gave a "qualified reassurance" about potential health hazards in the neighborhood.

The advisory group made ten recommendations about further epidemiological research and monitoring, health implications of radioactive discharges and regulatory methods for control of discharges from Sellafield. The government accepted all of these recommendations.

#### More Studies Are Needed

Epidemiological recommendations are: (1) study the records of those cases of leukemia and lymphoma diagnosed among young people up to age 25, resident in West Cumbria, and compare with suitable controls; (2) study the records of all children born since 1950 to mothers resident in Seascale at the time of birth;

(3) Study records of school children attending area schools; (4) ask Northern Children's Cancer Registry to reanalyze their data using 1961, 1971 and 1981 population data; (5) centrally coordinate monitoring of small area statistics around major installations producing discharges that might present a carcinogenic or mutagenic hazard to the public.

Recommended work on health implications of radioactive discharges includes: (1) attention to measuring radiation doses actually received by members of the public in West Cumbria and other relevant areas, including use of whole body monitors, cytogenetic techniques and measures of urinary and fecal radionuclides; (2) more research on gut transfer factors, metabolic differences between adults and children; children's habits in relation to the possibility of unknown critical pathways for contamination peculiar to children; and comparison of biological effects of low dose rate alpha emitters with beta and gamma emitters;

(3) Consideration of upper limits on discharges over short periods of time; removing solvents and particulate matter from discharges and limiting specific radionuclides; (4) critical review of the necessity of discharging significant quantities of alpha, as well as beta/gamma emitters from Sellafield.

Finally, the committee recommended revision of the controls imposed on BNFL to make authorization reviews more frequent; place greater emphasis on collection and consideration of epidemiological data; require formal consultation between the authorizing and health departments; require the government to clearly define the responsibility for monitoring and interpretation of results.

COMPROMISE REACHED ON POLLUTION  
CONTROL AT GERMANY'S BUSCHHAUS PLANT

by William G. Mahoney

BONN -- A compromise on pollution control measures to be taken at a controversial power plant near the East German border ended a serious split in the West German coalition that many feared would erupt into a governmental crisis.

The new plan provides for an early start-up of the lignite-fired Buschhaus power plant, installation of scrubbers by mid-1987 and production cuts at older power plants in the area in order to reduce sulfur dioxide emissions.

The need to reach an agreement brought West German Bundestag members and coalition party leaders back into emergency session last month -- many flying back from vacations in various parts of the world -- to decide the future of the huge plant located east of Braunschweig, only a few hundred meters from the East German border. Rapidly mounting environmental awareness in recent years had led to demands that the plant not be permitted to start production until extra anti-pollution measures were taken to substantially reduce its emission of harmful substances, particularly sulfur dioxide.

The East Germans had a particular interest in the outcome of the controversy at the Buschhaus plant since they would be on the receiving end of most of its pollution. The potential crisis was actually triggered by the international environmental conference held recently in Munich where many countries, including East Germany, pledged to reduce emissions of SO<sub>2</sub> at least 30% from 1980 levels by the year 1993 (WER, July 11, 1984, p. 109).

Evolution of The Crisis

On June 28 -- the day after the Munich conference ended -- the West German Bundestag adopted a resolution calling on the government to make sure that the Buschhaus plant would not go on stream until scrubbers were installed to desulfurize the gas emitted by its furnaces. This would delay the start of operations by an estimated three years. However, at the time, the resolution received the support of virtually all deputies, both of the coalition and opposition parties.

While the plant is not subject to federal legislative control, the government can influence management decisions since it is a major shareholder. And during the last week of July, Interior Minister Friedrich Zimmermann submitted a plan under which the new plant would start production soon without the immediate installation of scrubbing devices.

The plan proposed that, until filters were installed, a number of measures would be taken that would reduce air pollution in the area "almost as much as the scrubbers would." These would include fueling with low-sulfur coal and the gradual closing down of two older power plants nearby.

The Free Democrats (FDP), junior partners in the coalition with the Christian Democrats (CDU) and the Christian Socialist Union (CSU), were split over the Zimmermann plan. Those of the 34 FDP deputies who emphasize environmental protection, along with the opposition Social Democrats and the "Greens," referred back to the June 28 parliamentary resolution and warned party leaders of the loss in public credibility if they changed their minds and dropped demands for scrubbers.

The battle became more heated, even as most of the parliamentarians and party leaders flew off on vacations, and some observers feared a split that could bring down the government. Finally, the Bundestag was called back into emergency session, and on July 31 a compromise was accepted by the FDP holdouts and approved by the Bundestag.

## ENVIRONMENTALISTS FEAR NAMIBIA COULD BECOME NUCLEAR WASTE SITE

by Mike Nicol

MUIZENBERG -- Attempts by the United States and West Germany to dump nuclear wastes in Namibia have been resisted since 1979, South African Prime Minister P.W. Botha said in Parliament recently. But conservationists, who are trying to have parts of Namibia given world heritage status, are concerned that once the country becomes independent it will be greatly tempted by the \$1 billion a year offered for the disposal rights.

The area targeted as a dumping ground for international nuclear waste is the Kaokoveld desert, which is home to declining herds of elephant, rhino and giraffe. Because neither South Africa nor Namibia belong to the World Heritage Convention, funding and technical help cannot be sought from the WHC.

But, argues Nick Carter of the Peoples' Trust for Endangered Species: "If world heritage values transcend all political and geographical boundaries, it is a challenge to international conservationists to begin stimulating awareness and attention to Namibian areas. With the IUCN's general assembly due in November, attention to Namibia is timely."

## UNEP BEGINS NOTIFICATION PROGRAM FOR BANNED, RESTRICTED CHEMICALS

The United Nations Environment Programme (UNEP) last month began implementation of a global information scheme for all exports of banned and severely restricted chemicals in an effort to reduce human casualties and environmental harm resulting from injudicious chemical use.

The scheme, known as the "Provisional Notification Scheme for Banned and Severely Restricted Chemicals," provides that when a country has taken control action to ban or severely restrict a chemical, it should alert designated authorities in other countries of the action taken. When such chemicals are being exported, the countries of destination should again be notified. In this way, says UNEP, authorities in importing countries will be given the opportunity to assess the risks associated with the chemical, and to make timely and informed decisions on it, taking into account local environment, public health, economic and administrative conditions.

UNEP has targeted farmers in developing countries as one group that would particularly stand to benefit from the program. In recent years, these farmers have become increasingly dependent on imported pesticides to help improve their crop yields. A recent survey conducted in Sri Lanka showed that an average of 13,000 people are poisoned by pesticides each year as a result of this increase.

Exports from industrialized countries to the Third World rose from some \$4 billion in 1970 to \$26 billion in 1980, without adjusting for inflation. West Germany and the United States are the two biggest exporters, with 90% of West German pesticide production being exported and 40% of U.S. production exported.

**INDIAN BIOGAS PLANT:** Researchers at the Indian Institute of Technology in Madras, south India, have set up a biogas plant, which uses water hyacinth, a fast-growing plant that clogs waterways and is regarded as a nuisance, WER correspondent Darryl D'Monte reports. The scientists have found that a mixture of cow dung and hyacinth yields three times more gas than plain dung. In addition, the plant can be grown in sewage, and researchers find that the plant can also purify industrial effluent by ridding it of toxic chemicals such as chromium.

### INFANT MORTALITY LINKED TO LACK OF CLEAN WATER, WASTE DISPOSAL

"One-quarter of the world's people lack clean drinking water and sanitary human waste disposal. As a result, diarrheal diseases are endemic throughout the Third World and are the world's major cause of infant mortality," according to Worldwatch Institute, a Washington, D.C.-based think-tank.

William U. Chandler, author of the institute's recently released report Improving World Health: A Least-Cost Strategy, calculates that "[s]anitary water supply could eliminate half of all diarrhea, including 90% of cholera." Yet, he points out, over 1.5 billion people still lack these basic health requirements.

"Fortunately," says Chandler, "several technologies can provide low-cost but safe drinking water and sanitation services. Wells and pumps can be constructed for as little as \$25 per person. Entrepreneurs in India, with government financing, have provided loans and expertise for low-cost and well-designed toilets now widely used in several states."

Chandler also cites World Bank estimates that village water supply systems, assuming the installation of public standpipes to be shared among approximately 140 people, would cost \$20 to \$40 per capita depending on the size of the village. Moreover, surface water, even if it is turbid or contaminated, can be treated, made potable and delivered through public standpipes for as little as \$40 per capita. These costs would include sand filters to remove amoeba cysts that cause dysentery and chlorination to kill any bacterial contamination.

The following chart, reprinted from the report, shows availability of clean drinking water and human waste disposal in selected countries:

Country	Infant Mortality (%)	Share of Population with Service	
		Clean Drinking Water Supply (%)	Human Waste Disposal (%)
Upper Volta	21	31	na
Afghanistan	20	11	na
Angola	15	27	na
Ethiopia	15	16	14
Bolivia	13	37	24
India	12	42	20
Pakistan	12	34	6
Turkey	12	78	8
Indonesia	10	22	15
Tanzania	10	46	10
Honduras	9	44	20
Brazil	8	55	25
Mexico	5	57	28
Philippines	5	51	56
Chile	4.1	85	32
Costa Rica	2.7	72	97
Portugal	2.6	73	na
Soviet Union	2.6	76	na
Cuba	1.9	62	36
United States	1.2	99	99

Copies of the report are available for \$4 (single copy), \$3 (2-5 copies), \$2 (5-20) and \$1 (21 or more) from Worldwatch Institute, 1776 Massachusetts Ave., N.W., Washington, D.C. 20036, U.S.A.

**BLAZING OIL SLICK LATEST ECOLOGICAL  
DISASTER TO STRIKE RIVERS IN RUSSIA**

by William G. Mahoney

MUNICH -- A blazing oil slick on the Volga River threatened to destroy the Tatar capital of Kazan, the Soviet press reported recently.

According to the trade union daily Trud, fire-fighting boats battled throughout an entire night to prevent the wind-driven blazing oil slick from reaching the city. The report, published on July 14, said that the slick -- some six kilometers long and 500 meters wide -- developed after one of the pipelines that run under the Volga broke. Workers shut off the leaking pipe, but the spill had already created the huge slick.

Personnel staffing fireboats sent to the scene decided that they could break up the single massed slick into smaller patches and that these could be set on fire. But a strong wind came up and pushed the separated oil back into one mass, the paper said. Then the single wall of flames was driven towards Kazan, a city about 600 kilometers southeast of Moscow.

Trud reported that the slick now "has been fully destroyed" and no longer poses a threat to the ecology of the Volga River basin.

The report was the latest of a series of ecological disasters to strike rivers in European Russia. Last September an accident at a fertilizer plant spilled thousands of tons of potassium salts into the Dniester River, killing fish and causing water supplies to the Black Sea port of Odessa in Soviet Moldavia to be cut off. That disaster killed almost all life in the river and court proceedings stemming from it are continuing (WER, July 25, 1984, p. 119).

**CONSERVATION: SUBJECT OF ARGENTINA'S  
FIRST PARLIAMENTARY PUBLIC HEARING**

by Pedro Tarak

BUENOS AIRES -- With the return of democracy to Argentina, attempts are now being made to bring the public into the legislative process. As part of that effort, a public hearing was called by Sen. Miguel Mathus Escorihuela to discuss the World Conservation Strategy and to determine priorities for law making in the environmental field.

Mathus Escorihuela has submitted a draft bill to the high chamber, now under review by the Commission for Constitutional Affairs, whereby the organization, meetings and purposes of public hearings are regulated. If passed, the bill will amend the Senate's internal rules.

The public hearing, held last month, coincided with a visit to Argentina of some of the leaders of the International Union for the Conservation of Nature (IUCN-Gland). During the hearing, the organization's Director General Kenton Miller, and Bernardo Zentilli, regional officer for Latin America, and Marc Dourojeanni, scientific advisor for Latin America, argued in favor of designing a national conservation strategy, citing their experiences in other countries.

Delegates from some 70 environmental non-governmental organizations also submitted proposals for environmental legislation. Four areas were described as priorities, including legislation for: 1) compulsory presentation of Environmental Impact Statements for projects with significant impact on the environment; 2) environmental education for elementary, secondary and upper level students; 3) creation of an environmental policy agency; and 4) amendment of the Criminal Code to include a chapter on environmental crimes.

AROUND THE WORLD

**AUSTRALIA** - The government has appointed a royal commission to conduct an inquiry into British nuclear tests held in Australia between 1952 and 1963. The three-person panel will examine measures taken during the tests to protect the population against the harmful effects of ionizing radiation and the dispersal of radioactive substances, as judged by the standards applicable at the time and with reference to current standards. The inquiry is expected to focus on those who were directly involved, including military personnel and civilians employed at the test site and Aboriginies and other civilians living near the site.

**DENMARK** - Environmental groups are charging the country's agricultural sector with using too much fertilizer in order to maintain high crop yields. Many shallow wells are being closed down by local communities because of high levels of nitrates found in the water. The Ministry of Agriculture has issued a report that claims that farmers are not guilty of over-fertilizing. But the government's Environmental Protection Agency is preparing a report that is expected to reach different conclusions. The latest group to join the dispute is the Association of Danish Engineers, which claims that average use of 164 kilograms of nitrates per hectare is at least 30% too high.

**SOVIET UNION** - The daily newspaper Izvestia reported last month that forest fires, nearly always caused by carelessness, are destroying vast areas of Siberia. The number of fires across the south of Siberia has been increasing each year, the paper said. It charged that the fire-fighting services are hopelessly inadequate and poorly organized. The report from the Lake Baikal region said that local officials recently had seen smoke billowing up through their office windows but did not act until the blaze was so huge it threatened inhabited towns. The fires have destroyed thousands of acres of Siberian forests -- leaving areas that will be barren for generations.

**SWEDEN** - Nuclear engineers are conducting a series of tests to determine the most suitable hard rock conditions for long-term storage of highly radioactive waste. Under Swedish law, operation of new reactors is not permitted until a method for the safe disposal of waste is found. The tests are being carried out in a mine near Stripa, a small village in the province of Vastmanland, and may pave the way for spent nuclear fuel to be sealed in copper canisters that would then be stored in a special underground tunnel system some 500 meters deep in granite bedrock. However, before this can be done, areas with very stable rock conditions must be found and examined. The Stripa Project is designed to set the parameters for such long-term repositories, although no waste will ever be stored there. The project was initiated in 1977 as a cooperative effort between the country's Nuclear Fuel Supply Company (SKBF) and the U.S. Department of Energy. Currently, Britain, France, Japan, Canada, Switzerland, Spain and Finland have also joined the project.

**UGANDA** - The government will carry out a project designed to rehabilitate deteriorated water supply and sewerage facilities in seven towns. The \$31 million project will be supported by a \$28 million credit from the World Bank's International Development Association. Rehabilitation of the water supply and sewerage systems will bring relief to about 620,000 people in the capital city of Kampala, as well as the towns of Jinja, Entebbe, Masaka, Mbarara, Tororo and Mbale, which account for 75% of the total urban population. The incidence and risk of diseases attributable to a lack of safe water is expected to drop. A program to improve health education, which includes a pilot scheme for latrine construction, is also included in the project. The water supply program is considered important because a large portion of Uganda's population still depends on unprotected water sources. Completion of the project is scheduled for 1988.

CALENDAR OF WORLD ENVIRONMENT MEETINGS

Aug. 28-31: International Symposium on the Interaction Between Sediments and Water, Geneva, Switzerland. Contact: The Secretariat, CEP Consultants Ltd., 26 Albany St., Edinburgh EH1 3QH, United Kingdom.

Sept. 3-7: International Air and Water Pollution Control Exhibition and Conference, Jankoping, Sweden. Contact: Elmia AB, Box 6066, S-550 06 Jonkoping, Sweden. Tel. 46 36 1190 60.

Sept. 11-14: 2nd International Symposium on Operating European Hazardous (Chemical) Waste Management Facilities, Odense, Denmark. Contact: CHEMCONTROL A/S, Dagmarhus, DK-1553 Copenhagen V, Denmark, Tel. 45-1-14 14 90.

Sept. 17-21: International Association on Water Pollution Research and Control's 12th Biennial Conference, Amsterdam, The Netherlands. Contact: R.A. Conway, Union Carbide Corp., P.O. Box 8361, South Charlestown, W.Va. 25303, (304) 747-4016, or the Association's International Headquarters, Alliance House, 29/30 High Holborn, London WC1V 6BA.

Nov. 14-16: World Industry Conference on Environmental Management, Versailles, France. Contact: UNEP, 17 Rue Margueritte, 75017 Paris, France, Tel. 1 766-16-40, Tlx. 650273, or ICC, 38 Cours Albert-I, 75008 Paris, France, Tel. 1-562-34-56. Tlx. 650070, in New York, call (212) 826-8458.

April 17-21, 1985: Globescope, meeting devoted to world environment issues and the U.S. role and responsibility for their resolution, Portland, Ore. Contact: David McGrath, Global Tomorrow Coalition, 1525 New Hampshire Ave., N.W., Washington, D.C. 20036, (202) 328-8222.

May 20-24, 1985: International Conference on Atmospheric Sciences and Applications to Air Quality, Seoul, Korea. Contributions are invited. Informative abstracts of approximately one page (200-400 words) should be submitted by Aug. 15. Contact: Y.S. Chung, Atmospheric Environment Service, 4905 Dufferin Street, Downsview, Ontario M3H 5T4, Canada, Tel.: 416-667-4980.

Sept. 10-13, 1985: Heavy Metals in the Environment, Athens, Greece. Deadline for abstracts is Feb. 1, 1985. Contact: Heavy Metals Secretariat, CEP Consultants Ltd., 26 Albany Street, Edinburgh EH1 3QH, United Kingdom, Tel. 031 557 2478. END

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### SLANTS & TRENDS

**LUMPS OF TAR AS BIG AS FISTS** are covering beaches this summer in several areas in the North Frisian Islands of Schleswig-Holstein. Especially affected are the large sand bars off Amrum, Sylt and the southern end of Hooge. The German Information Center reports that large oil slicks have washed ashore on Norderoog, an island bird sanctuary, and officials have found dead gulls, ducks and sea swallows completely covered with tar. Although the source is unknown, experts say the onslaught of oil pollution was probably the result of deliberate dumping by ships cleaning their tanks on the high seas.

\* \* \*

**WITH OVER \$160 BILLION** in foreign investment by multinational corporations, and the share of MNCs in total manufacturing output exceeding 40% in some developing countries, corporations should recognize they have a "profound interest" in achieving better environmental protection, a panel of business executives and international specialists reported yesterday. Environmental degradation in Third World countries was found to be "serious and pervasive," and a threat to long-term development.

**SPECIFIC ACTIONS FOR BOTH** multinationals and host governments were recommended in the panel report, which was sponsored by the Washington, D.C.-based World Resources Institute. But the panel concluded that "internationally uniform ambient or emission and effluent standards are not desirable." Instead, it called for self-regulation by corporations and associations, with the hope that "peer pressure" would help correct irresponsible environmental practices (see page 115).

\* \* \*

**RENEWABLE ENERGY IS TOO EXPENSIVE** for the Third World and will not be able to meet the anticipated increase in energy demand of these countries over the next eight to 10 years, according to Bruno Fritsch of the Swiss Federal Institute of Technology in Zurich. Speaking to the Fifth General Assembly of the World Future Society in Washington, D.C., Fritsch said industrialized nations should provide developing nations with technical and financial assistance in developing hydro-electric and nuclear power systems. He noted that in many areas, such as Southern Asia and parts of Africa, people are forced to chop down their forests and burn valuable cow dung. The environmental consequences are severe, he said, leading to erosion and the destruction of arable land.

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**ENVIRONMENT AND DEVELOPMENT**  
**LINK UP IN EUROPEAN POLICY**

by Anna Lubinska

BRUSSELS -- The European Commission intends to study ways in which the impact of future development projects on the environment of developing countries can be better taken into account.

According to an unpublished report, despite the Community being party to a number of international conservation conventions, and the inclusion of environmental considerations in projects undertaken under Lome I and Lome II, intentions have not always been translated into action. Moreover, Community legislation governing environmental protection does not extend to Third World countries.

Aid, says the report, is insufficient to stop soil erosion and deforestation, which are worsened by growing local populations. When rare environmental impact studies of projects are carried out, the results are often ignored. Equally to blame are the insensitivity of decision-makers, on the one hand, and the lack of awareness on the part of local populations, on the other. And poor coordination between potential donors in member states and the Community means that environmental causes can get lost in the process, the report notes.

Action at the Community level has been prompted by two resolutions put forward at the last Environmental Council on June 28 by the outgoing French presidency. These aim at tightening up cooperation with developing countries in environmental matters by a common approach. The French have proposed that a micro-project data bank be set up and coordinated by the European Commission.

The French are also pressing for encouragement of local and regional initiatives between EEC states and developing countries in the field of water supply development and water management. Environment Minister Huguette Bouchardeau has already proposed a system whereby one centime is retained for each cubic meter of drinking water used in the country. The funds -- levied either via voluntary contribution or incorporated in the regular water rates -- would be donated towards water network projects in the developing countries.

France -- using 4 billion cubic meters of water for domestic needs alone -- has, together with Italy and the United Kingdom, one of the highest water consumption rates in the EEC. The French argue that if all the EEC countries pull together, some 20 million French francs could be raised every year.

**BRITISH CEBG TESTS FLASK**  
**FOR HLW TRANSPORTATION**

The British Central Electricity Generating Board (CEGB) crash-tested a flask on July 17 that is the type used to transport spent fuel to nuclear reprocessing plants. A CEBG spokesman said the \$2.1 million test was staged to "prove the integrity of our flasks and to assuage public fear."

Staged on a rail line in northern England, the test involved an unmanned three-car train, traveling at nearly 100 mph, programmed to impact with a metal flask positioned on the tracks. The train derailed, setting off a small fire and sending debris into the air. But, said the CEBG spokesman, "[t]he flask survived the crash intact and we are quite satisfied."

Greenpeace, the London-based environmental group, criticized the test as a publicity stunt that did not simulate the worst possible conditions. "The test was completely unscientific," a Greenpeace spokesman charged. "It is obvious -- as the flask was stationary -- that the test was not as ideal as it could be. If there was a real collision, the flask would be moving."

**PANEL CALLS FOR ENVIRONMENTAL ACTION  
BY MNCs IN DEVELOPING COUNTRIES**

Corporations' concerns for a stable and profitable investment climate, their desire to maintain good working relations with host governments and other groups, and their need to promote long-term utilization of resource bases are among the reasons why multinational corporations (MNCs) should have an interest in achieving better environmental protection in developing countries.

That, at least, was the conclusion of a panel of business executives and international specialists, whose 51-page report, Improving Environmental Cooperation: The Roles of Multinational Corporations and Developing Countries, was released yesterday in Washington, D.C.

The panel report was sponsored by the Washington-based World Resources Institute, which also released the recommendations of an international conference it had sponsored in June on the same topic. That conference convened 46 representatives from business, environmental groups, and developing countries -- such as Brazil, Indonesia and Mexico -- where MNCs currently play a large role, Charles Pearson, director of the WRI project, told reporters.

Among the specific actions that the panel urged MNCs to take were to:

- comply fully with all host-government environmental and health laws and regulations, and establish workplace health and safety standards that could go well beyond local regulations;
- make certain that a corporate environmental policy is firmly supported by top executives, widely circulated in the firm and publicized in the host country;
- carry out -- and make public -- environmental impact assessments for major investments, including analysis of on-site and off-site environmental effects, technologies for moderating adverse effects, social impacts such as resident displacement and worker influx, and ways to manage emergency pollution hazards;
- take responsibility for the environmental behavior of joint venture partners and sub-contractors, and not sub-contract hazardous operations to avoid direct responsibility for worker protection;
- self-regulate their own hazardous exports, individually and through trade associations.

Developing countries, meanwhile, were urged by the panel to:

- make environmental regulations explicit and predictable;
- rely on performance criteria for attaining environmental objectives, rather than mandate procedures or technology;
- strengthen the position of their environmental protection agencies in dealing with planning, finance, and development ministries;
- improve enforcement of environmental regulations, but in doing so treat MNCs the same as domestic enterprises in order to prevent abuses by local firms;
- remove trade barriers and domestic economic policies that impede environmental protection, such as underpricing energy and water or restricting imports of pollution control equipment.

Single copies of the panel report are free from World Resources Institute, 1735 New York Ave., N.W., Washington, D.C. 20006, (202) 638-6300.

## BRITISH LAWS TO PROTECT MARSHLAND NOT PROPERLY ENFORCED, CRITICS SAY

by Barbara Massam

GREAT BRITIAN -- Ninety acres of the largest uninterrupted expanse of wild marshland left in Britain almost disappeared under the plough last month. The situation has increased public criticism of the government's Wildlife and Countryside Act, designed as a comprehensive attempt to protect the country's shrinking natural environment.

Under the act, Sites of Special Scientific Interest (SSSIs) such as Havergate Marshes in Norfolk, were to be designated by the Nature Conservancy Council (NCC), a statutory watchdog for the environment. Voluntary agreements were then to be made under which landowners received compensation for leaving sites untouched.

Without adequate funding and legal sanctions, SSSIs have been lost at an increasing rate since the act came into force. Losses occurred while sites awaited official designation, as a result lack of cooperation from farmers and because of government inertia -- both at the local and national levels. The NCC has complained that it has insufficient staff or funding to keep up with threats to the SSSIs posed by farmers eager to increase their acreage of cereals and other crops that earn high prices or subsidies from the EEC.

The Havergate Marshes have traditionally been used to graze cattle. Earlier this year, several farmers there announced their intention to drain and plough the land for cereal production. Despite assurances by government officials that the marshes would be protected, the Department of Environment would only agree to pay 75% of the estimated £10 million (\$13.7 million) compensation to cover the next three years. The Norfolk Broads Authority, charged with protecting this whole area of unique wetlands, refused to pay more than 10%.

This unresolved dispute left local farmer David Wright with the legal right to proceed with his plans, and on June 12 contractors began digging the trenches for the drainage of his 90 acres of the marshes. But protest meetings by Friends of the Earth and the Council for the Protection of Rural England, questions in the House of Commons, and a campaign by the Observer newspaper put pressure on both the Department of the Environment and the Broads Authority to offer more and on Wright to accept compensation of £258 per acre (\$353.5/acre).

There are signs that the Thatcher government is acknowledging the importance of this and other "green" matters as election issues. Conservationists are lobbying hard for a review of the Wildlife and Countryside Act.

## ENERGY AND CHARCOAL FROM WOOD WASTE DEVELOPED IN AUSTRALIA

by Trevor Rees

MELBOURNE -- A versatile method has been developed in Australia that utilizes timber wastes to produce energy and commercial grade charcoal. In the process, designed by Paul Fung of the Commonwealth Scientific and Industrial Research Organization, wood residues are burnt in a fluidized bed and, through carbonization, produce charcoal.

The resulting volatile products are burnt to supply both heat and power to the sawmill. Fluidized bed carbonization has the advantage that it can carbonize wood residues ranging in particle size from fine sawdust to coarse chipped wood by a continuous process. Moreover, it can handle the wide range of moisture contents normally encountered in timber residues, thus making expensive predrying treatments unnecessary.

**VENEZUELAN DROUGHT RESPONSIBLE  
FOR HIGH LEVELS OF AIR POLLUTION**

by Hilary Branch and Lili Steinheil

CARACAS -- The prolonged drought in Venezuela this year, which lasted until the end of June, brought water rationing to the capital and increased atmospheric pollution.

According to Eugenio Sanhueza of the Venezuelan Institute of Scientific Investigations (IVIC), whose department of Environment Engineering completed a study of the Caracas air, conditions worsen during the dry season. That the air in Caracas, a city of 3 million residents and 813,500 vehicles, is potentially dangerous to breathe is evident to residents every morning when an inversion holds a blanket of contaminants 200 to 400 meters thick over the valley.

"We discovered that in the dry season the air in Caracas showed levels of benzo(a)pyrene nearly 250% higher than the rest of the year, with a peak of nearly 4000 mg/1000 cu.m.," reports Sanhueza.

"BaP is considered to cause lung cancer and the average concentration in Caracas is higher than summertime levels in U.S. northern cities. However, it is not a serious problem in Caracas where we find good atmospheric dispersion all year. Forest and grass fires in the mountains around Caracas were discovered to be the dry season producers of BaP," Sanhueza continued.

The Ministry of Environment has calculated that a daily average of 1,769 tons of contaminants is discharged into the Caracas air, 91% of which is produced by vehicles. In heavy traffic hours, the levels of lead downtown reach 10 to 20 micrograms/cu.m. and carbon monoxide soars to dangerous averages of between 21 and 38 p.p.m. at peak hours.

Levels of primary contaminants are high enough in Caracas to produce significant daily amounts of photochemical oxidants such as nitrogen dioxide. However, the sun's heat normally breaks the inversion by mid-morning and a vertical mixing prevents the formation of classical photochemical smog.

"Contrary to an opinion held by some experts, it is not difficult to seriously contaminate important areas in the tropics," says Sanhueza. He cited the case of Ciudad Guayana, a planned industrial center in iron-rich Bolivar state, to illustrate the adverse effect of trade winds, which were previously considered as factors preventing accumulation of contaminants.

"It is our job to define the atmospheric problems affecting tropical areas. For a start, there is little seasonal variation here in temperatures, wind direction or source of emissions," he said. The Environment Ministry is currently preparing the official regulations on control of atmospheric contamination, disposal of solid residues and control of liquid effluents.

**IVORY COAST ENVIRONMENT:** In a message delivered to the nation on the occasion of the 12th World Day of Environment, the nation's head of state, Houphouet-Boigny, warned against the "incredible ecological waste" in his country. His warning referred particularly to the anarchic exploitation of land and forests, WER correspondent Art Candell reports. In the beginning of the century, Ivory Coast had some 15 million hectares of forest. By 1956, this area extended over 11.8 million hectares and was down to 9 million nine years later. Today, only 4 million hectares -- not including nature and fauna reserve areas -- are considered forestland.

**PROPOSALS FOR SOLVING GLOBAL PROBLEMS  
ISSUED BY INTERNATIONAL CONFERENCE**

A conference of 75 international leaders in science, government, industry and citizens' groups, held recently near Washington, D.C., has issued an Action Agenda of 94 proposals for solving current and future population and resource problems that includes: stabilizing world population at 8 billion by doubling access to family planning services in developing countries; creation of networks of protected natural areas to preserve biological diversity and prevent species extinctions; and intensification of food production on good agricultural land rather than expansion of farming into ecologically vulnerable areas.

In order to combat acid deposition and carbon dioxide buildup, The Global Possible: Resources, Development, and the New Century, a document of the conference by the same name, advocates moving toward energy conservation and improvements in energy end-use efficiency, rapid development of renewable energy sources and forest conservation and reforestation. It also recommends making the "greenhouse effect" a central feature of energy planning, maintaining energy diversity and avoiding policies that commit the world to long-term coal or oil shale use.

To help provide adequate water supplies, the report recommended governments and others prepare national analyses of existing fresh water uses and supplies as well as likely future demands as a basis for future planning. Water users should also be charged rates that encourage efficiency and reflect the costs of providing water on a sustainable basis. And, said the report, greater attention should be given to opportunities for ground water storage for stabilizing inter-year variations in supply.

Single copies of the report are available free from World Resources Institute, 1735 New York Ave., N.W., Washington, D.C. 20006, (202) 638-6300.

**FORECASTS OF A DOOMED WORLD  
ENVIRONMENT 'OVERBLOWN,' STUDY CLAIMS**

The Resourceful Earth, a Heritage Foundation-sponsored response to the original 1980 Global 2000 Report to the President, disputes the forecast of widespread environmental disaster by the turn of the century. The report, edited by Julian L. Simon and Herman Kahn, claims that the world in 2000 will be "less crowded (though more populated), less polluted, more stable ecologically, and less vulnerable to resource-supply disruption than the world we live in now."

According to the study, "threats of air and water pollution have been vastly overblown; these processes were not well analyzed in Global 2000." Recent changes in temperature could be considered a "normal oscillation" rather than a structural change brought about by human activity, including changes in CO<sub>2</sub>. Changes in the CO<sub>2</sub> situation "may reasonably be seen, however, as an argument for increased use of nuclear power than fossil fuel." Nuclear power was also seen as a means of combating acid rain. While acknowledging that acid rain pollution is becoming more intense, the report recommends only continued monitoring at this time.

The report claims that although the world water situation calls for better institutional management through more rational systems of property rights, "water does not pose a problem of physical scarcity or disappearance." And mineral resources are becoming less scarce, "affront to common sense though that may be."

In addition, the conservative study indicates that there is "no statistical evidence for rapid loss of species in the next two decades." While an increased rate of extinction could occur if tropical deforestation is severe, the report notes that "no evidence about linkage has yet been demonstrated."

AROUND THE WORLD

**BENIN** - The country will use \$5.4 million in credits from the World Bank's International Development association to increase its production of fuel and industrial wood. Currently, fuelwood demand is placing a great strain on tree growth in areas that are heavily farmed and populated, and Benin must import about 50% of its industrial sawn wood needs. The project will help set up and maintain about 4,000 hectares of industrial forest plantations; will include several smaller efforts to test improved species and sources of seed; will try out new growing and charcoaling techniques; and will also help increase the technical capacity of the Department of Forest, Water and Hunting.

**HUNGARY** - In what could be the largest environmental protest in the Soviet bloc, 6,000 to 7,000 Hungarians have signed a petition protesting a plan to dam or divert a 138-mile stretch of the Danube River for a hydroelectric project. Work has already begun near Gabcikovo, Czechoslovakia, where the river forms part of the Czechoslovak-Hungarian border. The plan calls for construction of a power plant in Gabcikovo and another at Nagymaros, downstream in Hungary. The area affected consists of lush forests, marshes and grasslands along the river from Bratislava, Czechoslovakia, to Budapest, Hungary. The petition, whose signers include 50 prominent scientists, writers, artists and other intellectuals, is addressed to the Hungarian Parliament and Cabinet, calling on them to drop the project. Signers cite the possibility of serious damage to the drinking water supply, agriculture, forests, and the network of settlements in countries affected.

**INDIA** - The Delhi Energy Development Agency plans a "solar wave" in India's capital, which will start with solar water heating systems in hospitals, hotels and government guest houses. The first project is a 20,000-liter solar heating plant at a mental hospital; similar equipment will be installed for prisoners in New Delhi's largest jail. The agency launched a pilot project in the village of Alipur two years ago where it distributed 37 solar cookers. Encouraged by the response, authorities plan to extend the scheme to 100 more villages at a cost of \$300,000. It also intends to set up ten community solar water heaters. Madhya Pradesh, India's largest state, has just commissioned the country's biggest solar water heater at the Bhopal dairy. It will heat 54,000 liters daily.

**SOVIET UNION** - The government newspaper Izvestia expressed concern about the possibility of a cover-up in the investigation of an environmental disaster that polluted a major river in the Ukraine, depriving cities and towns of drinking water. The paper reported that four officials, arrested on suspicion of negligence, have been freed pending study of the geology of the area, where a dam holding back highly toxic salt brine gave way last year. The Ukrainian prosecutor was quoted as saying that earth movements may actually have caused the dam to collapse, letting loose 160 million cubic feet of concentrated brine dumped by a potash fertilizer plant at Stebnik. The semiliquid wastes spilled into the Dniester River, the source of water for the area that includes the port of Odessa.

**WEST GERMANY** - Parents Against Pseudocroup, a citizens' initiative organized against a form of spasmodic laryngitis that afflicts children in the country's heavily industrialized regions, were incensed by the reaction of Lower Saxony's Prime Minister Ernst Albrecht to a request by the group to reduce air pollution. The German Information Center reports that several weeks ago the four-year-old daughter of a schoolteacher, whose two daughters both suffer from the disease, handed then President Karl Carstens a wreath of flowers and a written request by the group to reduce the air pollution, which they say is the major cause of the disease. Albrecht, who was with Carstens at the time, wrote to the teacher saying, "I am opposed in principle to misusing children for political demonstrations." Citing the mother's own statement that her children's symptoms abate once they travel 30 kilometers from Brunswick, he concluded by asking whether the teacher shouldn't move to the country for the sake of her children's health.

**INDIA'S INDUSTRY GRANTED FIVE YEARS  
TO COMPLY WITH ANTI-POLLUTION LAWS**

by Neelakant Patri

NEW DELHI -- The Indian government will give some 2,000 factories, which were established before stringent anti-pollution laws were passed, another five years to install the necessary equipment to check air and water pollution.

The Department of Environment has identified about 3000 factories as adding to pollution and has persuaded 1,000 of them, so far, to set up facilities to check the pollution. However, because anti-pollution technologies and equipment often require enormous capital outlays, the government has decided to allow a grace period of five years.

Agencies at both the federal and state levels, meanwhile, have launched legal action against 400 factories that are refusing to take the necessary anti-pollution measures.

At the same time, the Department of Industry, which licenses the setting up of industries in India, has made pollution control measures and environmental suitability of location a precondition for issuing new licenses in some 18 high-polluting industries.

The industries identified as highly polluting include paper, refineries, pesticides/insecticides, fertilizers, paints, dyes, leather tanning, rayon, basic drugs, sodium/potassium cyanide, foundry, batteries, acids/alkalies, plastics, rubber, cement, asbestos, and primary metallurgical producing industries such as zinc, lead, copper, aluminum and steel.

The decision to allow more time follows a government review of anti-pollution measures. The government indicated that it felt the present system of environmental conditions imposed in the letters of intent before the granting of licenses was not working satisfactorily.

**ISRAELI CORN STALK FUEL:** A system for burning corn stalks as a lower-cost substitute for heavy fuel oil or coal has been developed by Bateman Engineering, Israel. The system permits the production of high-pressure and/or electricity, with ash as a byproduct for fertilizer. In the past, the stalks had to be shredded and plowed under, or removed from the fields and burned as trash.

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# World Environment Report

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### SLANTS & TRENDS

GETTING BATS OUT OF THE BELFRY and into the hearts of both governments and the public is at least one purpose of a study being conducted by two World Wildlife Federation scientists. In addition to being gentle and highly intelligent, bats play an important role in the production of everything from food supply to surgical materials, the scientists contend. WWF points out that less than 1% of the more than 850 known bat species are vampires.

MEANWHILE, DESTRUCTION OF BATS and their habitats has reached a critical stage in South America. The WWF study -- the first one on the economic importance of bats to Latin American plants -- is considered an important move toward bringing about more favorable treatment of the animals. Notes WWF: "Fruit-eating and nectar-eating bats influence the survival and development of hundreds of commercially important tropical trees, plants and shrubs through seed-dispersal and pollination." The kapok, a silky fiber from the silk-cotton tree, is used to produce surgical bandages, and almonds, mangos, cashews, bananas and avocados are all derived from 'bat-visited' plants.

\* \* \*

BATTERY POLLUTION IN JAPAN has become the apparent legacy of the nation's electronics revolution. Mercury used in the batteries that power calculators, cameras, watches and portable stereos is beginning to seep into soil near garbage dumps. Used to prevent corrosion in many types of batteries, mercury can cause brain and nervous system damage. Although 30% to 40% of the 2.85 billion batteries produced in Japan last year were exported, that figure still represents twice the number produced 10 years before.

TO KEEP THEM AWAY FROM LANDFILLS, many cities are currently trying to collect the batteries separately. But now that Yokohama has collected 605,000 dry cell batteries since January, and Machida has collected 64 tons since 1982, the question is what to do with them. The Ministry of Health and Welfare is studying the problem.

\* \* \*

OLYMPIC ATHLETES BEWARE! With the games less than three weeks away, Los Angeles is being smothered by some of the worst smog it has ever experienced during July. Several first stage alerts -- when the concentration of air pollutants has reached a level where a potential health hazard exists -- have already been called. But a plan for temporarily closing major polluters, cutting traffic and limiting the use of diesel vehicles could be in the works.

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### IWC CUTS QUOTAS, BANS SPERM WHALE HUNT IN '85

The International Whaling Commission, meeting in Buenos Aires June 18 to 23, has reduced minke whale quotas by about 30% and has agreed to prohibit all hunting of sperm whales next year. The new quotas mark an 85% reduction in the number of whales to be taken since 1972, Dean Swanson of the U.S. National Oceanic and Atmospheric Administration told WER.

The new agreement sets the quota for minke whales next year at 4,224, down from 6,655 this year. Minke whales -- the most commercially exploited of all whales -- are hunted primarily by Japan and the Soviet Union and, to a lesser extent, by Norway. The three nations have filed formal objections to a moratorium on all whale hunting that is to go into effect in 1986.

Japanese representatives at the conference requested a quota of 400 sperm whales for the coming year, but were turned down. If Japan were to proceed with the hunting anyway, it could be faced with retaliation from the United States in the form of reduced or prohibited imports to the U.S. of any fish products. Under the Pelly Amendment to the Fisherman's Protection Act, countries found to be undermining international agreements on endangered species conservation or fishery conservation could be subject to such sanctions by the U.S.

Meanwhile, a Filipino whaling company was charged with an infraction of IWC rules for operating a "factory ship" -- a vessel capable of processing whales at sea. According to Roger McManus, vice president for programs at the Center for Environmental Education, evidence of the illegal activity was documented by both the CEE and Greenpeace International.

However, the Philippines government denied that it had violated the rules, claiming instead that it returns its whales to a permanently-anchored barge for processing. Since there are no refrigeration facilities on land near the barge, the government claims that the meat is loaded back onto the whaling vessel for storage until enough meat has been accumulated to return to Manila.

While the credibility of the Philippines explanation was not actively questioned, a Japanese observer will remain stationed on the barge to ensure that the rules are not violated. Although the IWC has no real enforcement mechanism to counter any violations, Swanson pointed out that the Philippines will have to make its decision "in the glare of publicity."

### DEFINING PROPERTY RIGHTS COULD CUT TROPICAL DEFORESTATION

Many of the problems of excessive tropical deforestation are the result of the common property features of forest and forestland, says Roger Sedjo, director of the Forest Economics and Policy Program of Resources for the Future.

In a paper prepared for presentation at "World View '84," The World Future Society meeting last month, Sedjo points out that in many regions, "the forest is viewed as a commons to be utilized at the convenience of some set of the population" such as the local slash and burn agriculturalist, a logging firm, the recent regional immigrant, or the fuelwood gatherer. In these situations, deforestation rates will be "socially excessive" because to defer taking the wood will most likely result in its expropriation by someone else.

The solution, says Sedjo, is to establish property rights, whether private or public, that will create a situation where "the management of the resource is clearly assigned to one management institute and the economic returns of the resource can be captured by prudent management and wise investment and preservation."

**MINISTERS APPROVE WASTE TRANSPORT  
REGS, DATE FOR LEAD-FREE GAS**

by Anna Lubinska

BRUSSELS -- As of Oct. 1, 1985, the transportation of dangerous wastes, such as the dioxin-contaminated soil from the Seveso plant, whose disappearance caused a terrible stir in Europe last year, is to be more strictly monitored and will be subject to notification of the receiving country as well as tougher packaging and labelling conditions.

Under the controversial EEC directive -- finally accepted by environment ministers meeting in Luxembourg on June 28 -- the producer or transporter of wastes must notify the competent authority, which has one month to confirm receipt of the notification and, possibly, object. An even stricter system of permits, favored by the European Parliament and environmental umbrella organization, European Environmental Bureau, was rejected.

In addition to details regarding the shipment's itinerary, safety precautions, exact identification of the waste and the identity of the shipper, the notification must also include details of the ultimate disposal contract for safe elimination of the waste at its destination.

Recyclable wastes such as sludge, ashes, and non-ferrous metal residues will be subject to a simplified procedure. But solvents and used oils, which are frequently recycled, are not included in the directive. The Commission intends to regulate them separately.

Operating costs are to be borne by the producer on a "polluter pays" basis. The producer will also be liable for the safe disposal of the wastes, although EEC decision-makers have until 1987 to work out the exact modalities. The conditions of the directive also apply to third countries outside the EEC.

**Lead-Free Gas Agreement**

Ministers also agreed to introduce lead-free gasoline distribution for use in new cars as of 1989. The European Commission's proposals to phase lead out of gas have already met with criticism from both the oil and auto industries. But the proposal to market two grades of lead-free gas could be amended, according to sources close to the Commission, to a single 96 RON lead-free gas.

Some countries, especially the Netherlands and West Germany, which has pledged to go lead-free by Jan. 1, 1986, want the Commission to abandon its two-phase timetable of 1989 and 1991 to get lead out of gas. The British also support a single move to lead-free gas in all cars. West German State Secretary Dieter Spranger also called for a long-term aim of applying U.S. exhaust emission standards. French Environment Minister, Huguette Bouchardeau, who presided over the meeting, suggested that speed limits (which do not apply on West German freeways) also be tightened to curb emissions.

This was the ministers' first look at Commission proposals. Details will now continue to be discussed by technical aides. The European Commission is also expected to come up with new figures and proposals on Sept. 30, in time for a ministerial decision at the next Environmental Council in December.

Proposals for air quality standards of 200 mg/cubic meter for nitrogen dioxide in the air were also given the thumbs up by ministers, although the proposal has still to be reviewed by the newly-constituted European Parliament. The directive will be the third piece of European legislation governing air quality, after sulfur dioxide and suspended particulates (1982) and lead in air, which comes into force at the end of December 1984. More far-reaching proposals on guide values for NO2 are to be drawn up by March 31, 1985.

**U.K. AGREES TO REDUCE SEA  
DISCHARGES FROM NUCLEAR PLANT**

by Barbara Massam

GREAT BRITAIN -- The British Government has bowed to international concern over the radioactive discharges from its Sellafield nuclear reprocessing plant into the Irish Sea, and agreed to reduce discharges to near zero as "technically feasible."

Sellafield has been a particular focus of attention since last November when the environmental group Greenpeace, while attempting to block the discharge pipeline, reported a leak of radioactive material. The public was subsequently advised to avoid beaches within a 15-mile stretch of the plant and are still advised to be cautious. Research is also now being undertaken into the alleged high cancer rates in surrounding villages.

Other European countries expressed anger at evidence that the Sellafield discharges, the largest single source in the world, were affecting their coastlines. At the March meeting of the Paris Commission, which controls sea pollution from land-based plants, a resolution by the Nordic countries calling for zero discharges from all reprocessing plants was introduced. The resolution was subsequently taken up by the commission at its June meeting in Oslo.

The British government and British Nuclear Fuels Ltd. (BNFL), which operates the plant, had resisted the zero standard on the grounds of cost, leading to higher electricity prices. They claimed that the discharges were within internationally approved limits and were as low as "reasonably achievable." Recently, in an attempt to reduce discharges, they announced a £500 million (\$685 million) investment in a new waste management facility.

Greenpeace continues to collect scientific evidence on the spread and effect of the discharges and to lobby for their reduction to zero. An all-party group of Parliament members announced support for the resolution to the Commission.

On June 6, in a surprise move, BNFL Chairman Con Allday announced a feasibility study into how discharges "as near zero as possible" could be achieved. Moving towards zero discharges, he made clear, "even though there is no rational, cost-effective basis for doing so on risk assessment grounds," would help rebuild public confidence in nuclear power. This, he said, was the most important factor for its future development.

Then, in response to lobbying, William Waldgrave, junior environment minister, sent a letter to Pete Wilkinson, director of the London office of Greenpeace, saying that the British delegation to the full meeting of the Commission in Oslo was being instructed to support the resolution from the Nordic countries.

Although pleased with the response, their next lobbying point, Greenpeace told WER, will be on the implementation date, which they hope will be by late December 1986.

**GERMAN ANTI-AIR POLLUTION INCENTIVES:** The Bonn Cabinet this month agreed to a number of measures designed to offset the higher cost of installing catalytic converters and using lead-free gasoline to help reduce air pollution, the West German Information Center reports. As of next year, owners of converter-equipped vehicles will be exempt from the annual automobile tax for ten years. In addition, a lower gasoline tax will be levied on unleaded fuel, and buyers of low-emission cars can expect either a government grant of between DM800 and DM1,500 or a cut in the value-added tax.

### MUNICH CONFERENCE LAYS GROUNDWORK FOR SULFUR REDUCTION ACCORD

Signatories of the Convention on Long-range Transboundary Air Pollution, meeting in Munich June 24 to 27, agreed to allow the group's Executive Body to adopt a proposal for a specific protocol for sulfur reduction by 1993.

The executive body is expected to select a drafting group at its September meeting, with the possibility that a protocol could be open for signatories by 1985 or 1986, one State department official told WER. By that time, he noted, the U.S. could have more concrete information on acid rain and would be in a position to agree to a specific protocol.

Representatives at the 31-nation Munich conference also emphasized the need for effective international cooperation to combat air pollution but noted that the method and manner of combating acid rain may differ between the North American and European continents.

During the conference, six more countries joined the "30% club," whereby they agreed to reduce their annual national sulfur emissions or their transboundary fluxes by at least 30% by 1993. The six, including Belgium, Bulgaria, Byelorussian SSR, Ukrainian SSR, Luxembourg, East Germany, and Liechtenstein, bring to 18 the number of countries in the club. Countries already agreeing to the 30% reduction are Austria, Canada, Denmark, West Germany, Finland, France, Netherlands, Norway, Sweden, Switzerland, and the Soviet Union.

Meanwhile, as a result of East-West wrangling at the conference, the group's final communique also links environmental protection to the preservation of world peace. The compromise wording was agreed to after the Soviet Union and its allies insisted the final communique mention specifically the nuclear arms race as a threat to global environment.

### CYANIDE SPILL CLOSES PAPUA NEW GUINEA MINE by Trevor Rees

MELBOURNE -- A 1000 tonnes spill of cyanide solution from the Ok Tedi gold and copper mine in Papua New Guinea's Star Mountains has forced its government to shut down the multi-million dollar mine project in order to prevent any further leakage of cyanide into the River Tedi.

The leakage came from the temporary tailings dam that was built in the aftermath of the massive landslide that struck the mine earlier this year. The mine is owned by the PNG government and an international mining syndicate, and only pressing financial considerations induced the government to allow the construction of the temporary dam despite fears that it would be unable to prevent the leakage of cyanide.

First signs of the cyanide contamination were dead crocodiles, turtles and fish in the River Tedi. The incident followed an earlier mishap when a barge capsized, tipping 2,700 barrels of cyanide into the Fly River estuary.

In response to the latest spillage from the mine, the PNG government has ordered the mining company to cease gold processing until assurances can be given that such leakages will not recur. The dilemma facing the government is to reconcile the value of the mine to the country's economy with the ecological damage that is looming from its operations. While millions of dollars are expected to flow into the country's treasury from gold and copper export sales, the price could be considerable ecological damage to the rich fishing grounds of the Gulf of Papua.

**MEXICAN-U.S. AIR POLLUTION PROBLEMS  
FAR FROM SETTLED, RESEARCHERS CLAIM**

Respiratory diseases are the leading cause of death in the developing world, recent World Health Organization studies indicate. For this reason, Harvard University professor John Spengler is urging the industrial nations to increase their efforts to avoid exporting their pollution.

Speaking at last month's Air Pollution Control Association conference in San Francisco, Spengler indicated that the Mexico-U.S. border is one region where such air pollution problems are unresolved. Ciudad Juarez, Mexico, and El Paso, Texas, have a common airshed. Both cities have seen problems increased by rapid growth -- in the last census period, Juarez grew by 67% while El Paso's population rose by 34%.

Both cities suffer from major air problems. El Paso, with a large copper smelter, emits about five times as much lead and twice as much sulfur dioxide as the Mexican city, but Juarez produces about twice as many particulates as El Paso. Carbon monoxide emissions in both areas are about the same and are a major source of complaint.

Howard Applegate, of the University of Texas, told APCA members that high CO emissions have led to concern about exposures of employees on the international bridges. They are now rotated between primary, secondary, pedestrian and administrative areas every 30 minutes.

C. Richard Bath, also of the University of Texas, said that Mexico could help by increasing the subsidized price of regular gas. "Not only would this reduce the incentive for removal of pollution control devices, but it might stimulate alternative methods of urban transportation as well as reduce government deficits." He admits, though, that this move would be politically difficult for Mexico to make, particularly during its current economic woes.

Some binational coordination has begun under the auspices of the Pan American Health Office. Last August, the presidents of the two countries signed an agreement to undertake appropriate measures to prevent, reduce and eliminate sources of pollution to the "fullest extent practical." However, Bath says that until Mexico enjoys more economic health, "very little can be expected."

The mayors of the two cities set up a technical committee last January to explore possibilities for mutual planning in both air and water quality issues. Bath also suggests use of international law to resolve some of the problems. He urges that in cases where a single polluter, such as the El Paso copper smelter, can be identified, federal standards be brought into full play to reduce emission problems. "Only a recognition of the need to adopt a pollutant-by-pollutant approach can eventually lead to cleaner air" in the region, he concludes.

INTERNATIONAL ENVIRONMENTAL POLICY is the title of a recently-released book by Lynton Keith Caldwell, director of the Advanced Studies in Science, Technology, and Public Policy Program at Indiana University. In addition to tracing the emergence of the environment as a subject of international policy and action, the book formulates guidelines for narrowing the gap between current perceptions about the environment and new policies for protecting it. The book surveys the global, international movement for protection of human environment, providing a history of international cooperation on these issues and describing the expanding dimensions of international environmental policy. International Environmental Policy is available from Duke Press Policy Studies, Duke University Press, Durham, North Carolina.

AROUND THE WORLD

**AUSTRALIA** - Environment Minister Barry Cohen last month refuted charges that his country had mismanaged its kangaroo program. Cohen noted that the need to harvest kangaroos was supported by the World Society for the Protection of Animals; that, contrary to media reports, the government did not mislead the U.S. Fisheries and Wildlife Service (USFWS) by exaggerating kangaroo population levels -- those allegations were refuted by a telex from the U.S. State Department; and that the convention of International Trade in Endangered Species of Flora and Fauna, of which 86 countries are signatories, did not regard the kangaroos as threatened. But the USFWS has decided to keep the Red, Eastern and Western Grey species on the threatened list under the U.S. Endangered Species Act.

**CHINA** - New pollution control facilities for a major petrochemical complex will be designed through a joint venture of the U.S. firm Engineering-Science Inc. (ES), and two Japanese companies, C. Itoh and Co. and Osaka Gas Engineering Co. The companies were selected by the China Yan Shan United Foreign Trade Co. and the Beijing Yan Shan Petrochemical Corp. to expand and upgrade a wastewater treatment and reclamation plant at Yan Shan petrochemical complex, southwest of Beijing. ES also reports it will institute air pollution control measures at the complex. The \$15 million project calls for upgrading the existing wastewater treatment facility at the complex and more than doubling its capacity from 19,000 sq. meters/day to 44,000 sq. m/day. Plans also call for the design and installation of air pollution control equipment on sludge burning incinerators at the facility. Completion of the basic design is scheduled for early 1985 and the new pollution control system should be in operation within three years.

**INDIA** - No factories will be permitted within a radius of 1 km of irrigation and drinking water sources in Tamil Nadu state in southern India, according to S.N. Rajendran, minister for environmental pollution control. Any factory costing over \$5 million will have to be cleared by the government. Meanwhile, the Central Board for Prevention of Water Pollution in Delhi has recommended that a stretch of the Ganges used by pilgrims be chlorinated to avoid pollution. During the Kumbh Mela festival in Allahabad every January, as many as 1 million pilgrims bathe in a 3-km.-long stretch of the river on a single day.

**NEW ZEALAND** - Foreign Minister Warren Cooper has released a scientific study showing that radiation levels on Mururoa Atoll, 800 miles south of Tahiti, where France has conducted over 60 nuclear tests are lower than average. Although the new information tends to undermine arguments by nations in the region that testing has endangered the environment, Cooper said that his government will continue to oppose the tests. The study did find that underground testing had damaged the "structural integrity" of the island.

**PANAMA** - U.S. Agency for International Development (AID) has authorized a \$1 million grant to World Wildlife Fund-U.S. to help support Panamanian environmental activities related to the country's development. Project goals include: training workers; educating the public on the need for environmental conservation and development; fundraising for environmental programs; and assisting current programs. WWF will work with the Panama Foundation for National Parks and Environment, Fundación PANAMA, a federation of about 34 environmental groups, and several U.S. private and voluntary organizations.

**POLAND** - The amount of Polish woodland threatened by industrial pollution has nearly doubled since 1975, the Polish media reports. The reports, based on Forestry Research Institute data, indicated that by 1990 the endangered area would amount to over 3 million hectares. Last year, some 7,000 industrial plants were polluting Poland's environment with dust and gases. The reports noted that emissions from over 1,000 of these plants were capable of harming forests, but only 105 firms had installed anti-pollution emission equipment.

**AGENTS CRACK DOWN ON INTERNATIONAL  
BLACK MARKET SALE OF RARE BIRDS**

More than 30 people, including Canadians, West Germans and U.S. citizens, were arrested last month by the U.S. Fish and Wildlife Service in a crackdown on a multimillion dollar, international black market involving rare birds of prey such as Peregrine Falcons.

Those arrested were charged with violating various U.S. wildlife laws, in addition to smuggling, conspiracy, mail fraud and making false statements. In a joint announcement, Interior Secretary William Clark and Attorney General William French Smith said the action culminates a three-year undercover investigation that "exposed a thriving international black market in federally protected birds."

The surveillance and undercover operation, which involved 300 federal and state wildlife officers, "substantiated earlier information that the multi-million dollar illegal black market in birds of prey is a worldwid problem of serious proportions," Clark and Smith said.

The U.S. government noted that "through undercover techniques, the agents were able to infiltrate the networks of individuals involved in illegal raptor taking and trading."

Meanwhile, in what was described as a "closely coordinated enforcement effort," wildlife officials in three Canadian provinces -- Ontario, British Columbia and Alberta -- and the Yukon Territory served 15 search and arrest warrants involving similar charges of black market trading in rare birds.

The birds include Gyrfalcons and endangered Peregrine Falcons. The Gyrfalcon -- an arctic species that is the largest of falcons -- can fly straight up in the air, rather than spiraling as do most birds of prey, then descend on its prey at speeds of up to 200 miles per hour.

Officials estimate that between 1981 and 1984, as many as 400 birds were taken illegally from the wild and offered for sale in the U.S., Europe and the Middle East at prices of up to \$60,000.

"Smuggling techniques included many used by drug traffickers," Clark and Smith noted. These included crossing remote sections of the border by car or truck and carrying illegal eggs in false-bottom luggage or strapped to the body.  
END

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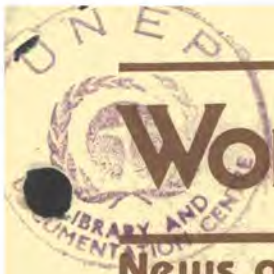
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### SLANTS & TRENDS

**CLOSER EAST-WEST COOPERATION** on clean air policy, specifically acid deposition, could result from the international environmental conference being held this week in Munich. Although 29 countries, including the United States, are represented, European acid rain issues are expected to take center stage. With both East German and Soviet officials attending, some sticky transboundary air pollution problems could move toward resolution.

**THE WEST GERMANS, MEANWHILE**, announced measures to remove sulfur emissions from their coal-burning power plants by 1988. Federal Interior Minister Friedrich Zimmerman said this month that 80% of the plants would be outfitted, while the remainder will be shut down, reducing by half the current 3.2 million tons of sulfur the country's industry releases into the atmosphere each year. Zimmerman also confirmed his government's decision to mandate lead-free auto fuel by 1986.

\* \* \*

**SOVIETS AND AMERICANS** have agreed to revive an environmental information exchange that has been dormant since the late 1970s, Reagan administration officials announced yesterday. The accord was signed this week in Munich by representatives of both countries who were in West Germany attending the air pollution conference.

\* \* \*

**JUST WHAT IMPACT UNLEADED GASOLINE** will have on current European distribution and storage systems is the subject of a recently-released report of CONCAWE, the oil companies' European organization for environmental health and protection. CONCAWE says consumers will be required to contribute to the investment costs of the extra distribution systems required, and may face some inconvenience from the non-availability of the grades required. This will especially affect vehicles requiring unleaded gasoline at the start of the transition period and those needing leaded fuel at the final stages of the transition.

**BOTH CONSUMERS AND INDUSTRY** will also be faced with the danger of the wrong fuel being used, thereby causing engine damage, damage to emission control devices and violating manufacturers' warranty terms. Report No. 2/84, "Effects of The Introduction of Unleaded Gasolines on The Gasoline Storage/Distribution System," is available from CONCAWE, Babylon-Kantoren A, Koningin Julianaplein 30-9, 2595 AA The Hague, Netherlands.

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**FOE OPPOSES MANAGEMENT OF BRITAIN'S  
WOODLANDS BY FORESTRY COMMISSION**

by Barbara Massam

GREAT BRITAIN -- Britain's state-owned Forestry Commission would like to have the right to manage the nation's threatened areas of ancient semi-natural woodland, according to a paper published by the commission June 6.

But the environmental group Friends of the Earth claims the commission "lacks the ecological understanding and expertise and has already been responsible (as an authority and enterprise) for over 70% of all ancient woodland losses since the war."

The commission's paper, "Broadleaves in Britain", suggests that permission for woodland clearance for agriculture, a practice which has ironed out the contours of large areas of British landscape in recent years, should be granted only exceptionally. It also suggests that tree felling in broadleaf areas should be conditional on restocking with similar varieties, and that overall management of such areas should be vested in the commission under guidelines agreed to by the Nature Conservancy Council, a government-aided but independent national watchdog for the natural environment.

While welcoming public acknowledgement and initiatives on the problem, FOE and other conservation groups have strongly criticized the report's statistics on woodland change, which they say bear directly on the suggested solutions.

In claiming that "broadland woodland" has not substantially changed since the war, they argue that the commission totally fails to distinguish between broadleaf plantations and the patches of ancient woodland which are the descendants of Britain's original natural forest. The heritage value of such woodland, says FOE, "comes from its uninterrupted history, its completeness and its irreplaceable plant and animal communities, and this cannot simply be equated with 'broadleaved appearance.'"

FOE quoted statistics showing decreases of 7 to 49% in ancient woodland areas in many British counties since World War II, and even greater decreases in this century as a whole. The group also listed an additional 10 major criticisms of the report's suggestions, including lack of firm legal controls -- as opposed to "guidelines" -- over ancient broadleaf woodland destruction, failure to outlaw the use of herbicides, clear-felling and replanting, drainage and ploughing. They add that there should be public participation in determining the future use of such heritage woodlands.

**THEFT OF RADIOACTIVE PELLET  
RESULTS IN DEATH OF SIX IN MOROCCO**

CASABLANCA -- Six people died from radioactive contamination and 20 others were hospitalized this month after contact with a stolen iridium pellet, the Moroccan daily Al Bayane reported.

The report indicated that the accident occurred when a worker from the Mohammedia nuclear power station, 15 miles north of Casablanca, stole an iridium pellet used in soldering equipment. Apparently unaware of the danger, the man took the pellet home, causing the death of six members of his family and contaminating another 20 relatives and neighbors.

The Interior Ministry confirmed the deaths and said police were interrogating three power station managers on safety and security controls inside the plant. The paper said that it was not clear why the worker stole the pellet.

**COLOMBIAN OFFICIALS LOSING BATTLE  
TO CONSERVE NATION'S FAUNA**

by Peter Nares

BOGOTA -- Officials of the Colombian state wildlife protection agency, Inderena, this month inspected a Bogota warehouse and discovered over 27,000 skins of the Common Spectacled Caiman (*Caiman sclerops*) -- an endangered South American crocodilian distantly related to the alligator. The skins, valued at some \$500,000, are now being investigated because the caiman and other Colombian reptiles are protected species.

The discovery marked the latest round in the belated fight to conserve the rapidly dwindling fauna of Colombia. Until 1973, thousands of birds, mammals, reptiles and their skins were openly exported each year from the country to zoos, collectors and leather merchants in the U.S. and Europe.

Then, in response to pleas by conservationists, the Colombian government finally banned the export of most wildlife species, and -- in theory -- the animal and skin trading was halted. But in practice the business has continued, and in the late 1970s the extent of the trade was such that some species, such as the caiman, are now threatened by extinction in all but the most remote regions of Colombia. One firm alone exported over 870,000 caiman skins in 1973-80, according to the Bogota newspaper El Tiempo.

Though the understaffed Inderena banned the hunting of caimans measuring less than 150 cm. in 1973, the restrictions were later temporarily eased before being reimposed. Significantly, the majority of the caiman skins discovered this month were either young or newly born specimens. The caiman is hunted primarily for its hide, which is sold to overseas leather merchants.

Laws Disregarded

Both before and after the hunting ban, caiman skins have been a lucrative export item. Proof of this is that three Bogota companies had over 530,000 skins of the species in stock when the export prohibition was first introduced.

Despite the prohibition, dealers in the 1970s skirted the regulations by taking advantage of the confused and often contradictory wildlife legislation then in force. Inderena itself was also partly responsible for the confusion. For instance, in 1976, the agency paradoxically authorized the hunting of 290,000 caimans despite its earlier campaign to save the species.

Subsequently, in 1978, a key fauna-protection degree was declared null on technical grounds and, because of this and other legal complexities, Inderena's attempts to suppress the skin-trading have been hampered.

In addition, until 1978 tanners were permitted to import foreign reptile skins for processing for subsequent reexport. Under this provision, over 650,000 skins were shipped to Colombia during the 1970s. As a result, when wildlife officials inspected hide stocks they had no reliable means of knowing whether caiman skins in warehouses were of foreign origin or Colombian.

One dealer is alleged to have circumvented the hunting ban by smuggling out Colombian skins to Panama and then reshipping them to Colombia for processing in accordance with the law.

Reportedly, corrupt customs officials have cooperated with the skin and animal merchants in at least one Colombian free trade zone, to which Inderena inspectors at one stage were virtually prohibited access. Other dealers have violated conservation laws by forging government export documents.

(Continued)

COLOMBIA LOSING BATTLE TO SAVE FAUNA (Cont.)

In one case, a consignment of 5,500 live caimans, 87 boas and 16 vipers was shipped from Colombia to Miami in November 1980 by "Reptiles Tropicales" -- a nonexistent Colombian company, according to El Tiempo. The phantom firm, to effect the shipment, allegedly falsified an Inderena export certificate.

That same year, 3,000 live Colombian caimans were mysteriously exported without Inderena authority to Italy, where almost half of the reptiles died within days. A few weeks after their European arrival, another 1,000 of the reptiles died because of poor management and disease.

In some instances, dealers do not even bother to forge export documents: they simply smuggle out skins and live animals in large cargo consignments. One case was reported from Cartagena in 1981 when a Miami-bound shipment of 3,780 live reptiles and amphibians was confiscated as it was about to be loaded aboard a plane at the city's airport. Nearly 200 of the animals were dead when found.

No early end to the animal smuggling is in sight because Inderena lacks the financial resources to implement meaningful control measures. Caiman-trappers continue to hunt their prey, though these days there is little left to hunt.

'GREENS' SCORE SOME IMPRESSIVE GAINS  
IN EUROPEAN PARLIAMENT ELECTION

by Anna Lubinska

BRUSSELS -- Despite a generally lower turnout at the polls than at the first direct elections to the European Parliament in 1979, the vote this month throughout the 10 EEC countries to elect members of the European Parliament went against national ruling parties, but was a field day for the 'Greens.' Eleven seats in all were carried off by the European ecological parties, several of which had united in a common platform in March earlier this year. This could give them the necessary quorum to establish a political faction in Europe.

The loudest victory was for the controversial German 'Gruenen' which polled 7.7% of the vote, displacing the liberals (FDP) as the key party in the balance between the ruling CDU/CSU and the SPD. They will be sending a total of seven members of Parliament to Strasbourg.

The Dutch elected two Green members, while Belgian francophone Francois Roelants of ECOLO, a former general secretary of the environmental NGO Inter-Environnement Wallonie, and his Flemish counterpart, Paul Staes of AGALEV, will be the first Belgian 'Greens' in the European Parliament. They each polled over 9% of the vote in this linguistically divided country.

The results in France were, on the other hand, disappointing. The Greens, headed by Didier Anger, only polled 3.37% of the vote, which, falling below the 5% electoral hurdle imposed by the French system, left them out of the European Parliament. Observers attribute this poor rating to the absence of Brice Lalonde, head of the Friends of the Earth in France and former presidential candidate in 1981, who left with a number of loyalists to form the Entente Radicale Ecologiste, a new and unusual alliance with Radical leader Francois Doubin and former right-wing cabinet member Olivier Stirn. The ERE list polled only 3.31% of the vote.

No Green seats were won in the United Kingdom, despite the Ecology Party's following, because of the British electoral laws which are based on a system of first-past-the-post rather than the continental system of proportional representation. But elected partners in the European Green alliance are pledged to represent them and their constituents in Strasbourg.

**AUSTRIA, HUNGARY SIGN  
ENVIRONMENTAL AGREEMENT**

by William G. Mahoney

Austria and Hungary have signed a three-year environmental protection accord in Budapest that provides for air pollution information exchange, better waste disposal and noise abatement.

The agreement -- first of its kind between a Western and a Soviet bloc state -- was signed June 7 at the conclusion of a two-day official visit to Hungary by Austrian Health Minister Kurt Steyrer, who oversees environmental affairs.

Steyrer stated that the new agreement would help develop close contacts between Vienna and Budapest in the planning, construction and siting of nuclear power plants.

Domestically, meanwhile, the two countries have run into considerable opposition to proposed hydroelectric plants that environmentalists claim will damage the shores of the Danube River. In May, Hungarian environmentalists circulated a petition to halt the construction of a joint Czechoslovak-Hungarian dam and hydroelectric plant at Gabcikovo-Nagymaros, which began six years ago and is scheduled for completion in July 1990.

And during the past year, in Austria, there have been several large demonstrations against the construction of a plant at Hainburg, a historic wildlife refuge about 30 kilometers east of Vienna on the Danube. The environmentalists, who charge that the plant's construction would destroy some 1,500 acres of the refuge, are faced by such governmental supporters of the project as Chancellor Fred Sinowatz, who insist that the plant would create new jobs and provide necessary cheap energy.

**INDONESIAN GOVERNMENT'S RESETTLEMENT  
PROGRAM THREATENS ENDANGERED SPECIES**

by Kate Webb

JAKARTA -- Some of the environmental problems caused by the Indonesian government's ongoing program of moving millions of people from overcrowded Java and Bali to the country's less densely populated islands were underscored this month with a call to stop the killing of endangered species in Irian Jaya, and a Thai government offer to assist in the taming and schooling of Indonesia's 2,000 wild elephants.

In Irian Jaya province, Environment Officer Wim Romainum told reporters that ostriches, tree kangaroos, birds of paradise, several species of deer and crocodiles faced extinction unless shooting of the creatures was controlled.

Wim said the efforts of some 200 community and student groups had been insufficient, partly because the animal's natural habitat was increasingly being destroyed to provide transmigration centers. The government plans to move some 1 million transmigrants to Irian Jaya during the coming decade.

Meanwhile, the plan to try to train the elephants, which rampage through new settlement areas in Sumatra and Lampung -- once their natural habitat -- follows the limited success of a government elephant drive in Sumatra in 1982-83, under which 200 of the animals were prodded scores of miles away from the new settlements into a game reserve.

**SOUTH AFRICA WILL REQUIRE WASTEWATER  
RECYCLING BEFORE YEAR 2000, EXPERTS SAY**

by Mike Nicol

MUIZENBERG -- South Africa, with its ever increasing population and continuing droughts, will have to resort to large-scale wastewater recycling before the turn of the century. That was the message from a number of speakers at the recent 63rd annual municipal engineers conference in Cape Town.

Setting the tone, T.P.C. Van Robbroeck, managing director of water affairs at the Department of Environment Affairs, commented, "Because water is such a scarce commodity, competition for it will become increasingly fierce as the ceiling of its availability is approached. South Africa has full utilization of all its water resources already in sight and must prepare for the day unconventional water resources (such as reclamation) must be harnessed."

Last year's report by the Science Committee of the President's Council on the country's demographic trends pointed out that the natural resources of the southern continent could only sustain a population of 80 million. Water was seen as the single most important limiting factor.

**Regional Growth Hampered**

Already regional growth is being hampered by insufficient water resources, an official of the Department of Environment Affairs said. Regional water requirements in many cases already exceed total available supplies. Projections point to increased deficiencies in many of the nation's developing regions.

Moreover, the drought has reduced levels in most dams to below 40% with the country now into the dry season. O.O. Hart, senior advisor at the Water Research Commission, pointed out that a dominant factor in the argument for non-conventional water sources was the increasing frequency of droughts. "The 1983 and the looming 1984 droughts will no doubt result in serious decisions being taken by authorities with respect to water supply to critical areas.

"When considering the total water available to the country, our own as well as possible imported water, there seems to be a water excess and not a shortage to domestic and industrial users of water. But it is not cheap to transport water from the Lesotha highlands to Cape Town. Reuse is site specific," he said. He indicated that some areas had no alternative but to recycle water because, in any form, it was "just too valuable to simply use once and then throw away."

**Domestic Requirements**

Currently, domestic and industrial water requirements are 2,600 million cubic meters. That figure is expected to increase to 7,000 million cu. m. by 2000 and to 11,600 million cu. m. by 2020. Meanwhile, irrigation needs will increase from 7,500 million cu. m. to 16,000 million cu. m., or 51% of the total requirement.

The engineers rejected building more dams since some 27% of the runoff entering the major dams is lost by evaporation. Said one Environment Affairs official: "The construction of larger dams, with their greater water surface areas and longer carry-over periods, would increase this wasteful loss still further at a time when the available water resources for the country as a whole are approaching full exploitation."

During the next 40 years, industries and municipalities are projected to return between 60 and 70% of their water intake to the water system. The question in the coming decades will be how to turn large quantities of industrial sewage and mine effluents into an integral part of the country's water supply.

AROUND THE WORLD

CANADA - Over the next three years, \$3.8 million will be added to the Environment Ministry's \$10 million per year climate program in order to help assess how the greenhouse effect will influence the country's climate. Said Environment Minister Charles Caccia, "We must learn more about the greenhouse effect so that we can plan for likely climatic changes. This is especially important in a northern country like Canada where climatic change will have a great impact on cities, agriculture, forestry, water transportation and other aspects of the economy." The research is expected to provide estimates of the effect of carbon dioxide on the climate and aid in the development of techniques for producing monthly and seasonal forecasts.

INDIA - Indian women, who burn such biomass as wood or cow dung, expose themselves to high levels of pollutants -- including carcinogenic substances, according to Kirk Smith of the East-West Center in Honolulu. A survey of 36 rural households in India found that the consumption of benzopyrene was equivalent to smoking 20 packs of cigarettes a day. Smith has received a grant from the World Health Organization to continue this research in India, where 99% of the fuels in villages consist of biomass. At the center, he has created a replica of a typical village where he burns cow dung and wood and monitors pollution levels. His studies reveal that Indian women spend an average of three hours a day cooking, and are exposed to 700 micrograms of particulates per cubic meter, compared to an acceptable limit of 75. Life expectancy of women in India is lower than that of men, while the opposite is true in most other countries.

INDONESIA - Two developments this month appear to have opened up wider acceptance of non-governmental organizations participating in Indonesia's conservation effort. The annual Presidential "Tree of Life Awards," presented June 5 to 12 Indonesians, highlighted small non-governmental projects. Also, the June issue of Prisma, published by the government's Institute for Economic and Social Research Education and Information, was devoted almost entirely to the debate on the place and future of NGO's in Indonesia's conservation drive. In their Prisma articles, both Environment Minister Emil Salim, and Erna Witular, executive secretary of Indonesian Environment Forum (made up of NGOs), point out the estimated 200 NGOs in Indonesia are now known as LSMs -- organizations for community self-help. Salim, a strong supporter of LSMs, states that these organizations in Indonesia, unlike in the West, have not arisen from an anti-government stance.

SOUTH AFRICA - To end confusion in management of the nation's natural areas, the President's Council has recommended that the Department of Environment Affairs serve as the central policy-making, legislative and controlling authority on all conservation matters. Currently, certain areas, such as estuaries, may be controlled by as many as 10 government departments with little coordination between them. The council suggested a hierarchical structure of these agencies with scope for regional and public involvement to rectify lack of coordination. It stated that proclaimed nature conservation areas should be regarded as inviolate unless the survival of the nation was at stake. But some official conservation areas could be opened for multiple land use if natural resources were not destroyed. This would include use of wetlands and mountains as controlled recreation areas.

WEST GERMANY - The German Information Center reports that some successes in the battle against marine pollution have been achieved by the Federal Border Patrol, whose helicopters and patrol boats have caught 50 ships in the act of dumping oil at sea since the beginning of the year. The most recent case involved a large freighter trailing an oil slick 150 meters wide and 10 nautical miles long. After the border patrol secured evidence of the illegal dumping, by video taping the oil discharge and taking samples of the water, the captain confessed. He was taken into custody and released on DM 12,000 bail. The Bremerhaven harbor police have now taken over further investigation of the case.

**GERMAN ENVIRONMENTALISTS ARRESTED  
AFTER PROTEST IN CZECHOSLOVAKIA**

by William G. Mahoney

MUNICH -- A group of 15 West German demonstrators were arrested by Czechoslovak border guards June 8 after they had crossed the frontier and pitched tents to protest air pollution generated in that communist country.

The three women, nine men and three children crossed the border at about 5:00 a.m. Central European time near the northern Bavarian city of Selb. They pitched five tents on Czechoslovak territory and set up banners proclaiming in German and Czech, "We Want to Live" and "Against Air Pollution and Forest Deaths."

The northern Bavarian area along the Czechoslovakian border suffers from heavy air pollution from Czech brown coal power plants. The issue has long been discussed by Czechoslovak and German authorities. The most recent government discussion of the pollution issue took place in late May and early June when seven members of the Bavarian State Parliament Social Democratic faction visited Czechoslovakia. At the end of their visit, they stated in Prague that they were appalled at the extent of forest damage in Bohemia. They added that the damage was much greater than they had feared.

In their talks with Czechoslovak authorities, the group, headed by Bavarian SPD leader Helmut Rothmund, said they had pointed out that environmental protection had to be given top priority. They said they had discussed the problem with experts in Prague and in Most, center of the North-Bohemian brown coal area; sought possibilities of containing the ecological catastrophe; and explored rehabilitation measures that could be taken.

In the case of the demonstrators, West German border police had warned that if they violated the Czech border, they faced detention by Czech authorities. A "contact man" from the group, who remained on the Western side, told police that the demonstrators were aware of the possible consequences of their action.

Five hours after the demonstrators had set up tents, they were detained, then led away by Czechoslovak border guards. Later, in the nearby city of Hof, a group calling itself the "Non-Violent Action Group" claimed credit for the demonstration. Several hours after the demonstrators had been led away, Czechoslovak border guards brought them back and delivered them to the Western side.

END

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### SLANTS & TRENDS

**POSSIBLY LATIN AMERICA'S FIRST** native species breeding center was established recently in Brazil, WER correspondent Charles Thurston reports. Mauro Reis, head of the Brazilian Institute for Forest Development (IBDF), created the center as an aid to the conservation of species and the rational development of native forest regions. It is located on 15,000 hectares in the Amazon, near Manaus.

**CONSERVATION OF ENDANGERED SPECIES**, such as capybaras, white-collared pecaries, white-lipped pecaries, cotias, pacas and turtles, is the main purpose of the center. But scientific research, including substitution of native species for cattle in tropical ranching, will also be carried out. The Center for the Breeding of Native Species of Scientific and Economic Interest (CECAN), which has been on Brazilian drawing boards since 1975, will also study diseases communicable between animals and humans.

\* \* \*

**THE SOVIET UNION IS RESPONSIBLE** for about half of the acidic haze that covers the Arctic during winter months, according to atmospheric chemists at the University of Rhode Island. Results of a study, based on air samples taken from Bear Island inside the Arctic Circle, showed that during the first winter in which samples were analyzed, the Soviet Union was responsible for 40% of the Arctic soot and 20 to 25% of the sulfur in the haze. European countries and the United Kingdom were responsible for the remainder. But the following winter, the contributions were reversed, with the Soviet industries responsible for 80% of the sulfur.

**CHANGES IN WEATHER PATTERNS** can influence the amount of pollution being sent to the Arctic from individual countries. Researcher Kenneth Rahn noted that it is purely coincidental that the pathway to the Arctic originates in the heavy manufacturing area of the Soviet Union. On the other hand, North American weather patterns send much of the soot and sulfur over the Atlantic Ocean, where the rain washes it out of the air.

**THE JURY IS STILL OUT** on whether the Arctic pollution should be cause for concern. What is currently known is that the sulfur destroys plant life and cools the air by reflecting sunlight back into space. The soot, which absorbs sunlight, warms the air and may melt some of the ice and snow. Research on the subject is still in the early stages because, until recently, the Arctic was thought to be clean and pure.

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**WORLD BANK ISSUES FIRST OFFICIAL  
STATEMENT ON ENVIRONMENTAL POLICIES**

WASHINGTON, D.C. -- The World Bank on May 9 formally adopted its first official statement on the environmental aspects of the bank's work. Rather than adopting specific environmental standards, the bank noted that its approach is "tailored to local circumstances and respects the vast differences among its developing member countries."

Because some environmental effects take a long time before becoming identifiable, the bank stated that environmental aspects of projects are considered in a longer time frame -- 25-50 years and more -- than is relevant for most other aspects of cost-benefit analysis.

The principles behind the guidelines were summarized by the bank as follows. The World Bank will not finance projects that:

- cause severe or irreversible environmental deterioration, including species extinctions, without mitigatory measures acceptable to the bank;
- unduly compromise the public's health and safety;
- displace people or seriously disadvantage certain vulnerable groups without undertaking mitigatory measures acceptable to the bank, as outlined in separate notes on involuntary resettlement and on tribal peoples;
- contravene any international environmental agreement to which the member country concerned is a party;
- could significantly harm the environment of a neighboring country without the consent of that country. The bank is willing to assist neighboring members to find an appropriate solution in cases where such harm could result;
- would significantly modify natural areas designated by international conventions as World Heritage sites or Biosphere Reserves, by national legislation as national parks, wildlife refuges, or other protected areas.

In addition, the bank endeavors to ensure:

- that each project affecting renewable natural resources, (e.g., as a sink for residues or as a source of raw material) does not exceed the regenerative capacities of the environment;
- that projects with unavoidable adverse consequences for the environment are sited in areas where the environmental damage is minimized, even at somewhat greater initial costs.

**RENEWABLES IN INDIA:** India will extend attractive cash and tax benefits to firms and individuals using renewable and new sources of energy. The Commission for Additional Sources of Energy, a government body overseeing renewables plans, has decided to reimburse the entire cost of installing solar thermal energy systems on government buildings, public trusts and universities, and up to 75% of the cost in regard to cooperative societies. Individuals setting up their own domestic water heating systems will be paid half the cost, subject to a maximum ceiling of about \$272 per system. Several other financial incentives for passive solar designs and construction in private houses, building societies, universities, schools and colleges have also been decided upon. Encouraged by the success of the family-type biogas program -- some 92,000 plants were set up between April 1983 and March 1984 -- the commission has set the 1984-85 target at 150,000 units.

**EC ACCUSED OF PROCRASTINATING  
ON LEAD-FREE GASOLINE PLANS**

by Anna Lubinska

BRUSSELS -- Meeting for the last time before this month's elections, the European Parliament, sitting in Strasbourg on May 25, criticized long-awaited plans to phase lead out of gasoline in the European Economic Community countries by 1991 as being too slow.

The controversial proposals announced by the European Commission followed months of lengthy consultation between engine manufacturers, oil companies and consumer organizations. The Commission suggested that two grades be sold: 92 RON (regular gas) and 96 RON (super), preferably at a lower price than leaded gasoline to encourage their use.

The EEC countries have up until 1991 to make the switch in all new cars to lead-free gas. All new models of car marketed from 1989 onwards will have to be built to run only on unleaded gasoline. From that date, gas stations will also be obliged to sell both kinds of gas, and the maximum lead content of the leaded variety will not be allowed to exceed 0.15 grams per liter.

Until now, the majority of the EEC countries have stuck to the upper limit of 0.40 grams/liter laid down by a Community directive adopted in 1978. Only West Germany and Denmark made the move to the lower permissible limit of 0.15 gr/l. But countries, such as West Germany, where there has been considerable pressure to eliminate lead and other vehicle emissions can go lead-free from 1986 if they wish.

Other vehicle emissions, which are regularly reviewed, are also to be cut -- by an additional 40%. The Commission has proposed setting the following levels: 45 gr/test for carbon monoxide; 15 gr/test for hydrocarbons and nitrous oxides; and 6 grams for nitrous oxides alone. These will apply to new car models built as of 1989 and all new cars on the road as of 1991. The standards will be reviewed in 1995 to bring them in line with current standards applied in Japan and the U.S.

This gives the industry until 1989 to decide what current technology they want to apply, or whether to try to develop a better technology.

The proposals provoked criticism, not only from the European Parliament, but from the partners consulted. The consumer organization, BEUC, says three years -- by 1988 -- would have been sufficient for auto makers and oil refiners to adapt. It also notes that it is unnecessary to make a distinction, on technological grounds, between new cars and new models of cars, as specified in the proposal.

Meanwhile, it remains to be seen how EEC environment ministers, who have the real say, will react. They are scheduled to meet June 28.

**THAI WATERWORKS:** The U.S. Agency for International Development recently announced a \$5.7 million loan to the Government of Thailand to help maintain and expand water supply systems for cities and towns outside Bangkok. The four-year, \$9.8 million project will help the Thai Provincial Waterworks Authority to plan, design, manage and operate water supply systems under its jurisdiction. With only an estimated 10% of the country's rural population having access to safe water, water-related diseases have a significant impact on health in Thailand -- diarrhea is the third most common cause of death for all ages. The Thai government has assigned high priority to providing safe water and, by the end of the Fifth Five-Year Plan (1986), it expects that a substantial portion of the population will have access to a basic minimum supply of safe water for domestic use.

**SOUTH AFRICANS CONSIDER EXPLOITATION,  
PROTECTION OF ANTARCTICA'S KRILL**

by Mike Nicol

MUIZENBERG -- With South Africa's population expected to reach 50 million by the year 2000, the country might have to begin exploiting the tiny, shrimp-like krill found in the Antarctic to feed its burgeoning nation.

According to Prof. W. Roy Siegfried, director of the Percy Fitzpatrick Institute of African Ornithology of the University of Cape Town, the Antarctic Ocean contains a huge reserve of animal protein that could be exploited on a sustained basis. He pointed out that current catches of krill, one of the world's most abundant animals, were trivial in terms of the size of the resource -- but strict controls would be needed if demand increased.

American biologist Eric Shulenberg noted that krill stocks are being adversely affected by the "last gasp" of El Nino, which has warmed up Antarctic waters, killing off the tiny shrimp. During the last two years El Nino caused widespread warming of the Pacific Ocean which wreaked havoc on fish, birdlife and the weather. Quite how seriously and for how long it will affect krill, marine biologists are unable to say. But krill are the foundation of Antarctica's ecosystems and the main source of food, directly or indirectly, for whales, seals, penguins, and seabirds.

Fears that Antarctica is being threatened by over-exploitation has lead the Cape-based Dolphin Action and Protection Group to launch a Save Antarctica campaign. Comments a recent pamphlet from the group: "Russian and Japanese fleets are catching hundreds of thousands of tons of krill, while others are testing the possibilities of doing so.

"There is no scientific basis for stating safe catch levels as yet. Severe damage may be done before controls become effective. Over-exploitation of krill will threaten the existence of whales, seals, penguins and seabirds on a colossal scale, as will the effects of industrial pollution to which cold Antarctic ecosystems are far more highly sensitive than warmer seas.

"If Antarctica is damaged, the effects on the world's ocean currents and climate may be far reaching -- potentially catastrophic."

Despite the Convention on the Conservation of Antarctic Marine Living Resources, the group warns that over-exploitation can still take place without vigorous action by conservation organizations and the public.

**LEGISLATION TO CONTROL FARMERS' USE  
OF POISONS PROPOSED IN SOUTH AFRICA**

by Mike Nicol

MUIZENBERG -- The endangered Cape vulture, once South Africa's most widespread vulture, will be extinct by the turn of the century if no halt is made to indiscriminate poisoning by farmers, Parliament was told recently. MP Errol Moorcroft proposed that legislation be passed making it an offense for anyone but a conservation official to apply poison to a carcass in the veld.

Moorcroft noted that this year already an estimated 20% of the total surviving population of the Cape vulture has been wiped out. Recently, 42 Cape vultures died of strychnine poisoning -- further endangering the species. While the use of poisons has succeeded in exterminating large predators such as hyenas and wild dogs throughout most of the country, indiscriminate poisoning also has meant that many harmless animals, such as birds, have suffered.

## VENEZUELAN GOVERNMENT REVOKES ORINOCO TIN CONCESSIONS

by Hilary Branch

CARACAS -- Acting swiftly, Venezuela's Ministry of Mines and Energy has revoked the controversial concessions for exploitation of alluvial cassiterite (tin ore) in the Orinoco headwaters and Sierra Parime.

Granted by the previous administration, the concessions covered 2,250 sq. kilometers and would have opened the virgin jungles of the country's Federal Amazon Territory to exploitation for the first time.

The area is the heartland of some 13,500 Yanomami Indians, most of whom have had no contact with modern society and therefore lack defenses against its diseases. Venezuelan ecologists and indigenists raised an outcry against the concessions, which threatened the survival of both the Indians and their fragile habitat.

The vice minister, appearing before the congressional investigation committee to announce the revocation, cited "irregularities." He also expressed concern over "current irrational exploitation" of mining in Bolivar State, in southern Venezuela, and singled out gold mining in a call for more government controls. "Due to the rise in world prices and the voracity aroused by gold, the ministry has been inundated by more than 500 requests for mining concessions ... We cannot grant these haphazardly."

## SOUTH AFRICA ANNOUNCES LOCATION OF ITS FIRST LLW DISPOSAL SITE

South Africa has announced the location of its first low-level radioactive waste disposal site after an investigation conducted by the Nuclear Development Corp. (Nucor).

The site, in the northern Cape area, has been determined to be a suitable disposal area for both low- and intermediate-level wastes. Three farms, totaling approximately 10,000 hectares (24,700 acres), were purchased at Vaalputs, Namaqualand, for construction of the disposal site.

Nucor spokesman Peter Haskins identified the following factors used in determining the site's suitability: distance from any development, low population, low agricultural potential, low mineral potential and a low water table. Geobotanist Wendy Lloyd made a study of area vegetation which will be used as a benchmark to establish any effects the waste site may have on local plant life,

The waste will be sealed in concrete and steel drums and buried about 20 meters (65 feet) under the surface. The drums will be covered with topsoil and the area will be replanted.

South Africa's first nuclear power plant, the French-built Koeberg nuclear power station near Cape Town, began feeding power into the national grid in April and is expected to reach full operating capacity in July. The second 920-megawatt station on the site is expected to become operational next year.

The bulk of the material shipped to the Vaalputs site will be low-level wastes from the Koeberg plant. However, Haskins indicated that Nucor is investigating the possibility of also using the site for high-level waste disposal. Since "this will be no problem until the turn of the century," a high-level waste site is not considered a priority.

**TO SAVE STARVING PANDAS IN CHINA,  
PEOPLE MUST LEAVE THEIR HOMES**

Chinese officials this month announced that more than 2,000 people must leave their homes to provide more feeding area for rare giant pandas that are starving for lack of bamboo -- their staple food -- United Press International reports.

According to Hu Tieqing of the Sichuan Province Wildlife Protection Department, at least 20 pandas have died and more than 500 others face starvation because of a worsening blight that has decimated up to 95% of the arrow bamboo on which the pandas subsist. He described the pandas plight as going "from bad to worse."

The arrow bamboo has been ravaged by so-called cyclical withering in the remote mountain ranges of southwestern China, and it could take at least 10 years for the bamboo stands to recover, Hu said.

Although most of the arrow bamboo has withered and died, the pandas will eat other varieties of the plant, including so-called "walking stick bamboo" that grows at lower elevations.

But Hu indicated that extremely shy animals were afraid to go to lower elevations because of human habitation, so more than 2,000 people, mostly Tibetans, are being forced to leave their valley homes in three areas of Sichuan Province to make way for the pandas.

A huge rescue operation supported by the Chinese government and more than \$200,000 in foreign contributions has been mounted to save the pandas in the western provinces of Sichuan, Gansu and Shaanxi.

An estimated 800 of the world's 1,000 giant pandas live in the rugged mountains of Sichuan. The remaining 200 are in Gansu and Shaanxi.

Hu said the government was spending more than \$2 million this year in the rescue operation and related work and has so far saved 17 of the endangered animals. Another six died after being taken to veterinary centers and 14 were found dead in the wild.

"About 500 giant pandas right now are facing a food shortage in Sichuan out of the 800 giant pandas in the province," Hu said. He said autopsies showed that some of the dead pandas had nothing in their stomachs, while others had only leaves and grass.

**CANADIAN ACID RAIN GROUP PRESENTS  
DRAFT REGS FOR INCO SO2 CLEANUP**

A draft regulation which, if implemented, would require substantial sulfur dioxide emission reductions from Inco Ltd.'s Sudberry smelter was recently presented by the Canadian Coalition on Acid Rain. The regulation would implement a two-phase program to reduce present total SO2 emissions 86.4% at the Ontario plant, which is considered the largest acid rain source on the continent.

Under Phase I, SO2 emissions during each calendar month from the iron ore recovery plant would not exceed an average of 92 tonnes per recovery plant working day, after March 31, 1991. From that time, and up to Sept. 30, 1992, SO2 emissions from the Sudberry complex would not exceed an average of 802 tonnes per smelter complex working day. During the second phase, after Sept. 30, 1992, SO2 emissions would not exceed 182 tonnes per smelter complex working day during each calendar month.

AROUND THE WORLD

**FRANCE** - A Pyrenean Bears Group has been formed in France to protect the brown bear of the Pyrenees, which is threatened with extinction due to poaching, the destruction of forests and the influx of tourists. Less than 20 specimens of the bear currently remain in the Pyrenees. The group aims to: mobilize public opinion in favor of the bear; constitute a pressure group; and collect funds for conservation operations. Among the previously proposed measures being supported are the halting of poaching, the banning of shooting in the vicinity of bears' lairs between Oct. 15 and Dec. 1, financially assisting shepherds in bear areas, keeping roads closed in the vicinity of the bears, adopting forest management methods in keeping with the bears' biological requirements and compensating local authorities for any loss of revenue from timber felling. An appeal for joint action has been launched across the border in Spain.

**GREECE** - The Ministry of Housing, Planning and the Environment has started a research project on sea turtles, *Caretta caretta*, an endangered species. Included in the study is research on turtle migration in the Mediterranean. Some 600 specimens have been marked before being released -- the markers consisting of numbered metal or plastic labels attached to the flippers with the address of the Hellenic Society for the Protection of Nature. Anyone finding these marked turtles can contribute to the project by sending the information from the animal's label to the Hellenic Society for the Protection of Nature, 9 Kydathineon St., GR 105 58 Athens.

**HONDURAS** - A water supply and drainage project, supported by a \$19.6 million World Bank loan, will aid some 521,000 people in the country. The \$42.3 million project will eliminate water shortages in San Pedro Sula, the second largest city. Low income neighborhoods will receive water supply and sewage service under the project, which includes the construction of 18 wells and three chlorination stations. A study will also be prepared on the health hazards of continued use of water from the polluted Rio Sauce for sugarcane irrigation. The project will provide technical assistance to the National Autonomous Water and Sewerage Service to help formulate sound financial policies and to improve planning at the national level.

**SYRIA** - The country is building its first two major urban sewage treatment plants and extending the sewer networks for the cities of Homs and Hama, two important industrial centers, with the help of a \$30 million loan from the World Bank. Currently, the Assi River, which flows through the two cities, is being polluted by raw sewage. The project is considered the least costly means of obtaining acceptable treated effluent to be discharged into the river without creating pollution and the related health hazards. Two types of secondary treatment plants will be built: an activated sludge plant in Homs and a biological filtration plant in Hama. Also established under the project will be sewerage authorities and institutional and financial structures for the sewerage sector. Some 750,000 people are expected to benefit directly from the improved conditions by 1990.

**WEST GERMANY** - Environmental protection is a growth industry, according to Deputy Social Democratic Parliamentary Leader Volker Hauff. The West German Information Center quoted Hauff as saying that the country's eco-industry already provides 250,000 jobs, more than the nation's printing industry, for example. He cited a recent survey by the Ifo-Institute for Economic Research that showed that gains in sales through 1985 were anticipated by 60% of the businesses involved in environmental protection. Nearly all of the new technologies are usable in protecting the environment and "worldwide demand for environmentally compatible products and production methods will rise," Hauff said. He criticized some traditional industries for fighting a rearguard action against antipollution measures and environmentally safe products, in contrast to their Japanese competitors.

**SWISS APPROVE FUNDS TO FIGHT FOREST  
DESTRUCTION; REJECT ANTI-NUCLEAR MEASURES**

by William G. Mahoney

BERN, SWITZERLAND -- The Swiss Parliament voted \$150 million Swiss francs (\$68 million) last month to take urgent measures against the increasing destruction of the nation's forests. At the same time it turned down a host of accompanying amendments attached as riders to the bill by the Socialists and ecologist deputies.

The defeated amendments would have: cut speed limits on super-highways and auto routes to 100 kph from the present 130 kph maximum; cut the limit to 80 kph on major national highways; extended the existing decision demanding catalyzers on all new autos as of 1985; required a massive cut in subscription tickets on public transport; set up obligatory controls of all heating installations; reduced the present ceiling limits on gases emitted by factories and incineration plants; and increased taxes on fossil fuels as well as placing a general tax on all energy.

The National Council (Lower House) passed the measure by 117 votes with no opposition. The deputies turned down the "riders" 109 to 17, with 17 abstentions.

Under the law, the executive arm of government, the Federal Council, will also make funds available for actions against parasites and natural phenomena by 1988 at the latest. Primary targets are all parasites, but in particular the bostryches. Traps and chemicals will be used, and diseased bark will be stripped from trees. The timber industry then will be assisted in finding uses for the dead and sick trees.

The government action followed studies that showed some 14% of all Swiss trees are sick, and of this number, 40% are dead or expected to die.

Meanwhile, the National Council rejected anti-nuclear proposals pushed by leftists, socialists and ecologists that would have established "a future without new atomic power plants" and would have provided energy that would be sure, economical and would also "respect the environment."

The measure was rejected 124 to 48 with seven abstentions. The two-part anti-nuclear proposals are now expected to go before a nationwide referendum -- Switzerland practices direct democracy on major issues -- next September. The referendum will, in effect, decide the fate of the Kaiseraugst nuclear center.

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### SLANTS & TRENDS

ATOMIC RADIATION, AS WELL AS ACID RAIN and polluted air, is killing forests, causing Europe's most serious ecological problem. In a scientific paper presented at a University of Hanover conference, Guenther Reichelt of the Baden-Wuerttemberg State Environmental Federation compared zones of damaged forest around industrial plants and nuclear installations.

'SIGNIFICANT CONCENTRATION' of radioactive atoms were found in the environment near the atomic power plants, Reichelt said, citing experiments and observations. He compared the phenomenon to what he said was the proven increases in the same so-called radioactive nuclides in leaves, pine needles and living wood from atomic bomb test fallout in the 1950s and 1960s. He also noted that such concentrations would have a toxic effect and could also damage living cells.

\* \* \*

AN 'ECO-BANK' TO FINANCE environmentally benign projects and development of energy conservation technology will soon join the 350 banks already represented on the Frankfurt, West Germany, financial scene. Lothar Witte, head of "Friends and Promoters of the Eco-Bank," noted that the bank will be directed by a professional, as required for obtaining a charter. But members of the Eco-pax movement and the Green Party will sit on the bank's board of directors and participate in money-lending policy decisions.

\* \* \*

TELEVISION TRUST FOR THE ENVIRONMENT, a non-profit co-production agency for television and audiovisual programs, was launched in London last month by Mostafa Tolba, executive director of the U.N. Environment Program, in cooperation with Central Independent Television. TVE was founded to assist international filmmakers and organizations produce programs about environmental issues. Already underway is a major film series on the problems of encroaching deserts.

\* \* \*

AUSTRALIA AND JAPAN WILL COOPERATE on research into the management of high level radioactive wastes. Senator Peter Walsh, Australia's minister for resources and energy, said that, initially, cooperation will focus on Synroc, the material developed by Prof. Ringwood of the Australian National University, to immobilize high level radioactive waste. The main agencies involved are Australia's Atomic Energy Commission (AAEC) and Japan's Atomic Energy Research Institute (JAERI).

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**COLOMBIAN TOWNS THREATENED  
BY POLLUTED BOGOTA RIVER**

by Peter Nares

BOGOTA - Two years ago, the inhabitants of the central Colombian town of Tocaima staged a "civic strike" in a bid to force the authorities to improve the local water supply, which is gravely contaminated by industrial effluents in the nearby Bogota River -- one of the most polluted waterways in Latin America. Today, new water treatment installations have been constructed in Tocaima, but upstream, in Bogota, environmental pollution still constitutes a major threat to the health of the city's 5 million inhabitants.

Although tons of uncollected garbage litter the streets and dozens of factories pollute the atmosphere with industrial smog, the understaffed city administration lacks the funds to provide even a minimally acceptable garbage-collection service. Each day the capital produces some 5,000 tons of refuse, and the hard-pressed sanitary service collects less than half of the garbage because it normally has less than 100 retrieval-vehicles in operation. Its fleet would have to be tripled to ensure comprehensive coverage of the city.

Only one-third of the capital's streets are swept by sanitary personnel, and the uncollected garbage on the sidewalks and industrial lots are considered responsible for incidences of gastro-intestinal, respiratory and skin diseases. Unauthorized garbage dumps in the suburbs contaminate the soil and water supplies, and the city's rat population has proliferated.

The environmental threat is worst in districts bordering the Bogota River, into whose foul-smelling waters nearly a million tons of industrial effluents and untreated sewage pour each day. Scientists have isolated hundreds of dangerous substances in the waterway, contaminated by domestic and industrial waste.

**Pollution Medically Intolerable**

Laboratory tests reveal that the river's mercury content is 50 times higher than the medically tolerable level. In the water, 446 mg. per liter of sulphate molecules from detergents have been detected -- a figure 223 times higher than the permitted proportion. The river's selenium content has been calculated at 2.4 mg. per liter against the maximum acceptable level of 0.01 mg. Estimates are that it would cost some \$1.4 billion to purify the river, a sum far beyond the financial capacity of the city administration. For the foreseeable future, the river will continue to pollute both the capital and towns downstream of Bogota.

In Tocaima, for example, contamination from the river was so critical in the late 1970s that a survey revealed that over half of the women in the town suffered from discharges attributable to arsenic and other substances in the local water supply. Of the men, 70% were found to be suffering from bronchial conditions caused by pathogenic agents in the water.

Conditions in other river localities are equally disturbing. Colombian Chemist Alfonso Rey warns that a high proportion of babies in such zones are born with deformities traceable to water pollution. He cites a case in Zipaquirá where, in 1980, a baby girl was born with the physical characteristics of a woman of 90. She lived only a few days prior to her death from arteriosclerosis.

Environmental pollution in Bogota has been caused primarily by the wildfire growth of the capital, whose population has soared from 600,000 to 5 million since 1948. The situation is now so out of hand that it has been suggested that the private sector may have to be called in to supplement state-run utilities. The city administration this year declared a "sanitary emergency" in Bogota, and residents are waiting to see if the move has any practical effect.

**RESOURCE MANAGEMENT SHOULD BE CONSIDERED  
EARLY IN DEVELOPMENT PROCESS, OAS SAYS**

WASHINGTON, D.C. -- The Organization of American States will hold a reception, including a panel and presentations by officials, on June 6 to launch publication of its Integrated Regional Development Planning: Guidelines and Case Studies from OAS Experience, a book produced in cooperation with the U.S. National Park Service and the U.S. Agency for International Development.

Documenting 20 years of the OAS' Department of Regional Development (DRD) experience in regional development planning and investment project formulation, the book includes incorporation of environmental considerations into these processes. Implementation of development is examined in relation to the plans.

DRD has recorded both its successes and failures in order to help practitioners learn what has and has not worked under different conditions in Latin America. It concludes that "neither comprehensive planning nor purely sectoral approaches to planning and project formulation is appropriate for developing countries." Significant activities are often presented in graph or chart form in order to better illustrate the "how to" aspect of the book.

To further illustrate its guidelines, DRD includes six case studies, representing a wide range of social, ecological and institutional settings, and typical regional development problem.

Environmental Considerations

The book points out that so-called "environmental" problems tend to occur "when one sector competes with another for the use of natural goods and services. If resource management is considered early in the planning process, these sectoral conflicts can be minimized, obviating the need for costly environmental impact assessments." It adds that "practitioners will seek in vain here for mention of 'environmental impact assessments' or frequent use of the word 'environment.'"

Instead, DRD argues that resource management considerations should be built into the planning process at an early stage, "playing a role in the identification, selection, formulation, and harmonization of projects." In that way, both the high cost, and adversary nature, of environmental impact assessments can be avoided.

In its planning model the "environmentalist" is a member of the planning team whose task is to: identify the natural goods and services available from the regional ecosystems; identify potential conflicts in the use of these goods and services; and help to resolve those conflicts given the socio-economic policies in force in the region. Says DRD: "If the potential conflicts are identified early in the planning process, before the money is spent or positions are hardened, they tend to be easier to resolve."

While acknowledging that this view of the environment may strike some as either controversial, "or at least nondoctrinaire," DRD claims the approach has worked effectively where tested in Latin America and the Caribbean.

Carrying Out The Study

In designing a study, DRD fields a preliminary mission to get information defining the study area, including: goals; problems; potentials; and a knowledge of the agencies that will conduct the study and implement the results. Other information to be examined involve "the relationship of a region's resource management practices to wider ecosystems."

(Continued)

RESOURCE MANAGEMENT SHOULD BE CONSIDERED EARLY (Cont.)

The execution of the study consists of two phases: development diagnosis and project formulation and preparation of the action plan. The first phase is a diagnosis of the principal regional needs, problems, potential, and constraints; the formulation of development strategies; and the identification of potential investment projects. In the second, DRD notes that the development strategy is refined and Phase I project proposals selected by the government are formulated, usually as pre-feasibility studies, with the participation of beneficiaries and implementing agencies.

At this point, an action plan is prepared to provide the policy framework and rationale for the projects and recommendations for an investment timetable, institutional arrangements and relevant legislation.

Finally, DRD notes that "the greatest development challenge is political -- getting plans implemented under prevailing financial and institutional conditions." The book, therefore, recommends that during the design phase the study be kept compatible with the national system of project generation. Also, implementation agencies should be kept "informed, if not intimately involved."

During the execution of the study, DRD suggests the use of public meetings and the media to generate broad popular and political support. And after the study is completed, seminars should be held with government officials to discuss technical findings and proposals.

"Ensure that funding for implementation is included in the appropriate regional or national budget. Conduct training on the use of the final report. As needed, help the government prepare loan applications for international financing agencies. Above all, try to keep the integrated package of projects from unraveling," DRD says.

INTERNATIONAL CONSULTATIVE GROUP  
ON FOOD IRRADIATION ESTABLISHED

An International Consultative Group on Food Irradiation was established earlier this month. The members of the group include Argentina, Bangladesh, Canada, Egypt, West Germany, France, Hungary, Israel, Iraq, the Netherlands, Mexico, the Philippines, Syria, Thailand and Turkey, with interest in participation being shown by Costa Rica, Malawi and Portugal.

The International Atomic Energy Agency reports that establishment of the group followed major breakthroughs in the field of food irradiation during the past four years. A Joint Food and Agriculture Organization/IAEA/World Health Organization Expert Committee on the Wholesomeness of Irradiated Food recommended in 1980 the acceptance of food processed by irradiation up to an average dose level of 10 kilograms; and in 1983 the Codex Alimentarius Commission, which was established in 1962 to implement the Joint FAO/WHO Food Standards Program, adopted the Codex General Standard for Irradiated Foods.

These developments at the international level, and renewed interest in food irradiation processing shown by the food industry, trade associations and governments, prompted national public health authorities in many states to formulate new or additional rules governing the provision of irradiated foods for human consumption.

A major objective of the group, which will operate for an initial period of five years, is to further the development and possible commercialization of food irradiation.

## **INDONESIA ANNOUNCES PLANS TO REFOREST FIRE-RAVAGED EAST KALIMANTAN**

by Kate Webb

JAKARTA -- East Kalimantan's forestry office has drawn up plans to replant some of the 3.6 million hectares of forestland devastated by the 1982-83 fires, but even if it is successful only a little over one-third of the area will be reforested by 1999.

Hendro Prastowo, head of the regional forestry office, said the blueprint calls for 250,000 ha. to be replanted during the current five-year plan, with 1.3 ha. to be covered by the end of the Sixth Repelita (five-year plan) ending in 1999. He said the government would give priority to areas along the province's main waterway, the Mahakam River, where studies have shown an 80% forest loss and scientists predict heavy silting and river channel changes.

The 1982-83 East Kalimantan fire has been described as the biggest environmental disaster of the century. The area is one of the largest producers of tropical timber in Indonesia, with an annual average production of 5.6 million cubic meters of timber. Since the fires, however, reports reaching Jakarta say that timber mills in the area have had to rely increasingly on log imports from neighboring Malaysian states.

## **ISRAELI SCIENTISTS DEVELOP SOLAR DISINFECTION SYSTEM FOR DRINKING WATER**

by Lore Gross

TEL-AVIV -- A solar drinking water disinfection system, intended mainly for developing countries, has been developed by Profs. Deutscher and Greenbaum of Tel-Aviv University, Israel, with funding by the Netherlands government.

The system treats water for 14 minutes above 60°C, which kills all E. Coli bacteria. It has a capacity of 27 cycles of 10 liters, for a total of 270 liters per day on a clear midsummer day, or 14 cycles of 10 liters on a clear midwinter day. Water flows by gravity from a dirty water reservoir.

Currently, a prototype of the system is functioning on an Israeli kibbutz, and a second one is to be installed at an agricultural school in Kenya before the end of the year. After it has been operating for some time, the design will be finalized, with the emphasis on simplicity. The university will then look for a manufacturer. It also intends to license firms in consumer countries, such as Kenya, which are capable of producing the collectors locally.

The system is comprised of two identical solar collectors. A heat exchange is built of two concentric tubes, one to receive the cold water before treatment for pre-heating, the other to receive hot water after treatment in the collector for cooling. A programmed controller, based on a microprocessor, which can control four systems simultaneously, is the third element in the system. It requires 12 Watts during operation (with sun), and 4 W at rest. The control consists of four magnetic valves, two temperature sensors and water-full sensor, mounted on the collector, with the programmed controller housed in a separate box.

Each collector consists of two parallel copper tubes of five-liters capacity, covered with black nickel Maxorb Solar Foil. Solar radiation is concentrated onto the tubes by rows of long glass mirrors with specially curved cross-sections. Tubes and mirrors are enclosed in a metal box with front and side glass panels. The collector is fixed in position and is adjusted once a month relative to the sun by means of a stick, and the shadow of the stick is adjusted to a minimum at mid-day.

**AUSTRALIAN ATOMIC TEST SITE  
NOT SAFE UNTIL YEAR 2050**

by Tevor Rees

MELBOURNE -- The Australian atomic test site of the 1950s, known as the One Tree site, on the Maralinga land reserve in South Australia, will not be safe for human habitation until the year 2050, according to a British report tabled recently in the Australian Parliament.

The Pearce report details the location of more than 40 pits containing hundreds of contaminated articles stored in steel drums and lead pots. Its revelations have created a very strong response in Australia about the possible fallout over centers of population as a consequence of the British atomic test program during the 1950s. Fears have also been expressed that some wandering Aborigines may have recently entered the prohibited zone in order to find food.

In 1979, an Australian study found small amounts of plutonium, caesium and strontium in the fur and respiratory systems of rabbits caught near radioactive dump pits at Maralinga.

**MASSIVE SCIENTIFIC 'LABORATORY' YIELDS  
ECOLOGICAL DATA ON AMAZON REGION**

What has been called the largest, and possibly the most ambitious, scientific experiment ever conducted in a tropical rain forest is beginning to produce results in Brazil's Amazon rain forest. For the past 4 1/2 years, scientists from North and South America and Europe have been trying to discover how small a wilderness area can become before animal and plant life begin to die off or disappear.

The project, cosponsored by Brazil's National Institute for Amazon Research (INPA) and the Washington-based World Wildlife Fund, is set in some 60 miles of the rain forest. A laboratory-type situation was created when pioneer farmers in the area agreed to clear their pasture lands in a way that left intact several patches of isolated forest, ranging from 2.5 to 2,500 acres.

After collecting samples and observing wildlife since 1979, the nearly 40 scientists are finally beginning to draw some preliminary conclusions:

- When confronted with "trespassers," several dominant bird species in a cramped forest patch flee or perish. The researchers surmise that this is because the birds must spend so much of their time defending their turf that they have no time to feed. The conclusions, based on some 22,000 bird captures, also showed that birds that customarily fly through the treetops are forced, in a reduced environment, into the lower forest, thereby invading other birds' space.

- Provoked by drastically increased exposure to the sun and wind, trees from one 2.5 acre tract showed a startling three- to four-fold increase in the fertility rate.

- In the case of higher mammals, the researchers found that in one of the smaller patches two Saki monkeys starved to death in a very short time because, after exhausting the supply of mature fruit, they kept eating greener and greener fruit rather than crossing a clearing to another forest area. But species of monkeys with more varied diet were able to adapt to the suddenly truncated area, and another species simply left the tract.

As a result of the data collected, Brazil's Special Secretary of the Environment, Paulo Nogueira Neto, is expected to declare the area one of "ecological significance" to Brazil in order to protect the region from developers.

AROUND THE WORLD

**AUSTRALIA** - Scientists are studying the possibility of using fish, frogs, turtles, snails, crayfish and mussels as water pollution monitors. John Waid, a researcher in biological monitoring at La Trobe University, Melbourne, said the monitoring offers a possible system for detecting hazardous chemicals and quantifying them more realistically than by chemical analysis alone. One species of crayfish, the yabby, is being used to test levels of mercury and other heavy metals in fresh water. Radioactive contaminants in rivers can be determined by measuring their concentrations in freshwater mussels, turtles and shrimp. And the common mussel and clam are being used to monitor the distribution of polychlorinated biphenyls (PCBs) in Australian coastal waters.

**AUSTRIA** - The World Wildlife Fund this month launched a campaign to save sites of unique conservation importance in the country. The campaign's immediate aim is to save the last remaining forests on the banks of the Danube, threatened by a proposed hydroelectric plant, and the Lange Lacke wetlands, which are scheduled for drainage and conversion to farmland. A longer-term goal is to encourage national conservation legislation in Austria, which WWF says is "the only major European country with no national park." The Danube forests are threatened by government plans to build a hydro plant at Hainburg, near Vienna. Over the past 19 years, WWF has spent \$1 million to lease the Lange Lacke as a wildlife refuge with the understanding that Austria would enact legislation to protect the area. WWF claims that this has not been done: instead, a farmers' cooperative is planning to develop the site when WWF's lease expires in 1985.

**INDIA** - Bombay is now the country's most polluted city, according to a study by the National Environmental Engineering Research Institute in Nagpur. Nearly 1,000 tonnes of pollutants are emitted by factories, 350,000 cars and other vehicles. A survey of mortality between 1971 and 1979 shows that while deaths due to infectious diseases declined, those due to cardiac and lung diseases were on the rise. Random checks on 1,400 residents showed that 18% had frequent colds, 38% chronic coughs and 10% had breathing problems. The survey demonstrated a clear link between disease and air pollution levels, especially involving sulfur dioxide emitted by the city's textile mills. As a result, the Department of Environment at New Delhi has withheld permission to the Tata group of companies to put up a second 500 MW thermal power plant in Bombay.

**JAMAICA** - As a country heavily dependent on imported oil for energy, Jamaica wants to encourage energy conservation and indigenous energy sources, according to a report from the Renewable Energy Institute. In the near-term (1978-85), the government will stress conservation. Strategies include energy surveys and energy demand modeling, retrofitting and fiscal measures; in the mid-term (1985-90), Jamaica plans to diversify its energy supply and demand and develop economically feasible renewable energy sources; and in the long-term (1990-2000), priorities will be on replacing current power generation methods with technologies such as ocean thermal energy conversion, solar ponds in conjunction with Rankine engines and large-scale hydro-power.

**WEST GERMANY** - Several thousand environmentalists demonstrated in Helmstedt (Lower Saxony), near the East German border, last month. The action was to protest the scheduled start-up of the Buschhaus coal-burning plant, which will operate at reduced capacity but without pollution controls to limit sulfur emissions. Jo Leinen, director of the Citizens' Initiative for Environmental Protection, branded as "criminal" the politicians who voted to operate Buschhaus without outfitting it to comply with clean air standards -- retooling is scheduled for 1988 -- and said they should be tried in court for causing property damage and bodily harm. The Buschhaus demonstration marked the beginning of a nationwide week of protests against the air pollution that is cited as the cause of substantial forest damage, the West German information center reports.

**SWISS MOVE TO BAN PHOSPHATES  
FROM ALL SOAPS AND DETERGENTS**

by William G. Mahoney

BERN -- The Swiss government plans to ban all soaps and detergents that contain phosphates as of Jan. 1, 1986, as "one step forward" in its battle to protect the country's rivers and lakes. The Interior Department made public on May 10 this new change in its regulations on detergents when it circulated the stricter wording to "interested parties," including manufacturing and retailing circles, as well as groups and offices concerned with environmental protection.

The Federal Office for the Protection of the Environment commented that at present some 5,000 tons of phosphates from detergents flow into wastewater annually. Water purification stations are able to eliminate large quantities of phosphates, but a complete ban on phosphates in textile washing material would permit reducing the load an additional 30%, it said.

"Thanks to this measure, the phosphate load in lakes -- which comes for the most part from agriculture -- will be reduced 10 to 15%." In order to insure protection of lake waters, through a sufficient quantity of oxygen at all depths, it is indispensable to reduce the phosphate load, the environmental protection officials explained.

Studies have shown that it is possible to wash without phosphates. If the water is soft, textiles may be washed effectively with products that contain no phosphate substitute. If the water is hard, detergent may contain phosphate substitutes that serve essentially to soften the water.

According to the Environmental Protection Office, substitute substances to be recommended are those that have no harmful effects at the water purification stations or in the lakes themselves. These are the zeolithes (silicates-sodio-alumines). To avoid residues from these in the laundered textiles or in washing machines, an additive, such as nitrilotriacetic (NTA) that is already found in many laundry products, must be used. The office pointed out that Canada already uses this in large quantities because NTA is entirely biodegradable. Further, NTA appears to have no negative influence on lake and river waters.

With the ban on all phosphates in laundry products, requirements covering wastewaters from communities will be tightened. Present permissible level of 1 mg. of phosphorus per liter will now be reduced to 0.8 mg., the office said.

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### SLANTS & TRENDS

**ENLARGED TONSILS AND LYMPH NODES** are found more often in children living in West Germany's Rhine and Main River area than in children growing up in regions with cleaner air, according to the intermediate results of an ongoing study by the Justus Liebig University in Giessen, West Germany. The study's researchers are looking at the connections between air pollution and regional health problems among children. So far the research commissioned by the State Ministry of Labor also points to a retardation of bone formation among boys in the industrially polluted Rhine/Main region, Hesse Environmental Minister Karl Schneider said.

\* \* \*

**JOB PROSPECTS ARE BRIGHT** in the waste treatment field, if you happen to be an earthworm. Introduced into a pile of potato peelings, British scientists have found that the earthworm, *Eisenia foetida*, will consume the peelings at a rapid pace, producing a nutritious and friable compost with increased nitrate content. The earthworm will also reproduce itself to provide animal feed with a protein percentage higher than meat or soybean.

**EXPERIMENTS WITH EARTHWORMS** have been conducted by scientists at Rothamsted Experimental Station, in collaboration with other institutes of Britain's Agricultural Research Service, since 1980. With intensive testing on animal and vegetable wastes done, the Rothamsted scientists are now preparing to exploit the commercial potential of this waste treatment through British Earthworm Technology. B.E.T. will be carried out on a contractual basis with farmers and organizations needing waste disposal techniques. In addition, a wide range of composts and soil conditioners will be marketed, and earthworms will be harvested for animal feedstock and fish bait.

\* \* \*

**WANTED: AN INTERNATIONAL CLEARINGHOUSE** on worldwide natural resources data. Citing the importance of information to their success, 229 information users in 45 of the largest U.S. corporations, trade associations and private information services told a survey, commissioned by President's Council on Environmental Quality and conducted by World Wildlife Fund-U.S. President Russell Train, that they urgently need more and better international data on natural resources. In addition to the clearinghouse, recommendations also included improvement in the credibility of government natural resource forecasts.

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## USE OF HUMAN EXCREMENT TO LIGHT INDIA'S STREETS ALSO AIDS COUNTRY'S SANITATION

by Darryl D'Monte

BOMBAY -- Electricity is being produced from human excrement for the first time in India. A voluntary organization, Sulabh International, has lit street lights in one of the most crowded localities in Patna, Bihar state, with a generator run on gas produced from 40 toilets.

While China has been using human waste in its rural biogas plants for years, India has been relying on gobar, or cattle dung. Given the rapid pace of urbanization in India -- some 140 million live in cities -- and deterioration of living conditions, the production of energy from human waste may solve many problems.

A sample survey, carried out by the United Nations Development Fund, showed that of 800,000 households in 110 Indian towns less than a quarter had flush toilets. Even in New Delhi, which is the best serviced city, only one-third of the population enjoys sanitation.

### Sulabh's Activities

Sulabh International has built no fewer than 300,000 water-sealed hand-flush toilets at the very low cost of \$140 each. In Bihar, it has eliminated scavenging -- the degrading practice of sweepers carrying away "nightsoil" for disposal -- and defecation in public places. In Calcutta, the organization is building 150,000 privies and is being entrusted with similar jobs in southeast Asian countries such as Thailand and Sri Lanka.

In Patna itself, Sulabh started 10 years ago and, as an experiment, charged 10 paise (about U.S. 1¢) for the use of its toilets. The urban poor, such as pavement dwellers and rickshaw pullers, willingly paid to use this facility and the organization was able to maintain its toilets with this fee. Some 2,500 people now use the main facility in the town daily and the charge has been doubled, although women and children have been allowed to use it free.

The biogas plant built at this facility has cost \$8,500 and the power produced -- 289 kWh per night -- is being sold to the Patna city corporation, which will yield over \$5,100 per year. Although there is still resistance to the use of this biogas for cooking, the generation of electricity poses no problems.

### Implications and Other Biogas Use

For a city such as Bombay, where half of the 9 million inhabitants live in shanties or on pavements, the implications of this technology are obvious. Most diseases are spread by lack of sanitation. The provision of cheap, clean toilets on a mass scale, at no cost to the state, will alter living standards drastically. The city corporation is also launching a pilot project to produce biogas from garbage. A state-owned fertilizer plant is putting up the \$7 million recycling unit that will generate 4,200 kilo calories of energy from 100 tonnes of waste daily.

Nationally, the Department of Non-Conventional Energy reports that over 75,000 household biogas plants are likely to be built this year compared to 57,500 the previous year.

Meanwhile, an Indian scientist now living in the U.S. has developed a methane generator that can produce electricity from organic material such as paper, leaves, grass and garbage. He is B.T. Lingappa and his wife, Yamuna, who is a researcher at Holy Cross College in Worcester, Mass., say that one day's waste from Bangalore, India's fastest growing city, can produce nearly 100 MW. As many as 20 generators, each producing 5 MW, could be set up 15 km outside the city and each could supply power to 200 families and 80 small-scale industries. They claim that their system produces power six times more powerful than conventional biogas plants.

**WATER PROBLEMS PLAGUE****EAST, WEST, AFRICA**

by William G. Mahoney

GENEVA -- Spring 1984 appears to have brought with it a plague of water problems for many areas of the world. Some outstanding examples:

- In Athens, in mid-April, 15 Mediterranean governments plus the European Community failed to adopt a common criteria for safe swimming water and for growing shellfish, despite dire warnings that action had to be taken immediately.

- In Moscow, a Soviet minister said last month that water pollution disasters had been happening all over the country and that more stringent controls were needed to safeguard the environment. A Soviet publication, Sovietskaya Rossia, warned that Lake Ladoga, the main source of Leningrad's drinking water, is in danger of becoming contaminated by industrial pollutants.

- An alarming water shortage in Poland triggered frantic governmental reaction last month. In that country, a combination of drought, industrial pollution and government mismanagement of water resources is threatening the food supply.

- The United Nations announced on April 19 the launching of a \$2.3 billion, four-year project to combat drought and desertification in the Sahel. Drought and desertification in the Sahelian countries has cut food production by 50%, interrupted water supplies to the rural population, and wrought havoc on livestock production, formerly always a major source of income in these countries.

**Trouble in The Mediterranean**

Environmentalists consider the failure of the Mediterranean countries to adopt common criteria for safe swimming water and for raising shellfish in what some call the "world's biggest cesspool" a major disaster. Before the meeting started, UN Environmental Program (UNEP) officials were predicting that -- after nine years of scientific research, monitoring and dozens of meetings -- old enemies such as Turkey, Greece, Egypt, Libya, Israel and Syria would set aside their historic differences to attack the common threat of pollution.

But cooperation comes hard without trust and afterwards Aldo Manos, coordinator of the UNEP Mediterranean Action Plan and sponsor of the meeting, expressed sharp disappointment that the nations put off action until September 1985.

When the meeting opened, Mostafa Tolba, UNEP executive director, warned, "if action is not taken, the Mediterranean peoples may doubt how seriously committed you are to safeguarding the future of the Sea ... adopting treaties, holding meetings, publishing studies and recommendations do not constitute the kind of action expected from us. Action is national legislation and its strict application."

**Problems in the USSR, Poland**

In an interview in Moscow's daily Izvestia, Water Conservation Minister Nikolai Vasilyev reported that the huge Dnestr River in the Ukraine was now recovering from a major disaster last year when a million tons of chemicals spilled into it. But he added that although the accident was more serious than most, it was by no means the only case where poor maintenance led to vast amounts of toxic waste being discharged into rivers. "Filter installations do not always have a very high level of efficiency and in some places badly-maintained technology is leading to accidents," he said.

The Sovietskaya Rossia article on polluting of Lake Ladoga said Europe's largest lake was endangered by overflow pollution from Lake Drozdova. The latter is separated from Ladoga only by a thin strip of land and is used by paper mills and

(Continued)

WATER PROBLEMS PLAGUE EAST, WEST, AFRICA (Cont.)

refineries for dumping waste. The article said Drozdovo's current purification system can only absorb some pollutants, allowing others to flow into Lake Ladoga, the main source of Leningrad's drinking water. Without better control of the plants, Lake Ladoga could become a dead-water pond in five years, the paper said.

And in Poland, the prospect of a drought-sunken harvest is taken so seriously that there are reports that the government is preparing contingency plans to increase agricultural imports at the expense of crucial parts and supplies for industry. According to preliminary Western estimates, the 1984 grain harvest could fall to 18 million tons, compared to 22 million tons last year. Poland already planned to import 3.2 million tons of grain from the West this year at a cost of \$550 million. The looming shortfall could more than double that bill at a time when Poland is hard-pressed to meet payments on its staggering debt to the West.

Although drought is an important factor in the present predicament, mismanagement and pollution have also contributed, Western experts say. More than 60% of Poland's largest industrial plants dispose of their liquid waste without treating it. Over half of the towns and cities have no sewage treatment plants.

The pollution reaches deep into the soil and it is estimated that 97% of Poland's wells contain water that is unfit even for animals to drink. Experts charge that Poland's regimes have poured available funds into an industrial modernization program with little money available for protecting water resources.

Aid for African Drought

Finally, in Geneva, the UN Development Program (UNDP) and the UN Sudano-Sahelian Office (UNSO) launched the \$2.3 billion, four-year plan to combat the disastrous effects of drought and desertification in the Sahel. "Overall, food deficits and irregular distribution of the rainfall during the 1983 winter season have been followed by harvests with alarming implications for the member countries," the UN reported. "In Mauritania, Cape Verde and Senegal, the crops have been virtually destroyed."

"The food deficit, totalling 1.6 million tons of cereals in 1983/84, is without parallel," it said. "The cereal production of the entire group of Sahelian countries has fallen by one-half."

Moreover, "the water shortage, the drought that has raged throughout the entire region for more than a decade, has led to a serious drop in the underground water level and to the exhaustion of both traditional and modern wells, with the result that the water supply of the rural population has been interrupted," the UN said. It continued: "The havoc wrought on the livestock population involves serious consequences in so far as animal husbandry has always been a major source of income in all these countries."

The UN plan proposes emergency food and water assistance for populations and livestock and a program to combat the advance of the desert.

OIL SPILL CLEANUP: As a companion volume to its 1981 "Field Guide to Coastal Oil Spill Control and Clean-up Techniques", the Oil Companies' European Organization for Environmental and Health Protection (CONCAWE) has now published a field guide dealing with techniques for the control and cleanup of inland oil spills. The new guide summarizes the alternative strategies open to a response team under a range of different circumstances and considers alternative cleanup methods for oil in the soil, on moving water, on static water and in urban areas. Report No. 10/83, "A Field Guide to Inland Oil Spill Clean-up Techniques," is available from CONCAWE, Babylon-Kantoren A, Koningin Julianaplein 30-9, 2595 AA The Hague, Netherlands.

### OECD ISSUES RECOMMENDATION ON EXPORT OF BANNED CHEMICALS

Any country exporting a chemical it has itself banned or severely restricted should assist an importing country to make timely and informed decisions about the nature of the product. That statement is the core of a recommendation adopted this month by the Organization for Economic Cooperation and Development (OECD) Council.

The recommendation, titled "Information Exchange Related to Export of Banned or Severely Restricted Chemicals," initially covers about 150-200 of the most commercially important of the 80,000 chemicals traded annually -- that is, those that have been "the object of deliberate regulatory action by an exporting country." Not included are those chemicals withdrawn from domestic approval processes or those produced solely for export or those re-exported from a third country.

While the OECD recommendation states that importing countries have the primary responsibility to protect health and environment in their own territories, it stresses that exporting countries should assist them. However, that assistance should take the form of information rather than export control. The dangers to importing countries from banned or severely restricted chemicals, such as PCBs, are clear and have been the subject of intense international discussions for a number of years.

Currently, OECD governments exchange information when they ban or severely restrict chemicals. But the new recommendation for the first time applies the principle of "export notification" to potentially harmful chemicals. It also provides a model for proposals under consideration in other international organizations, including several United Nations organizations.

The information to be provided to importing countries is linked to the physical export of these chemicals. An "alert package" of information will be provided when export "is expected or about to occur." More detailed information will be furnished subsequently at the request of the importing country to enable timely and informed decisions about the chemical. Not only will OECD members receive the information, but so will non-member nations, including Third World countries, which probably have the greatest need for assistance regarding the export of hazardous chemicals.

### KIRKPATRICK NAMED TO 'DIRTY DOZEN' FOR OPPOSING UN ENVIRONMENTAL RESOLUTIONS

The U.S. environmental lobbying group, Environmental Action Inc., last week unveiled its 1984 "Dirty Dozen" campaign, naming the 12 "dirtiest disciples" of President Reagan's "disastrous environmental policies." Among the 12 named was Jeane Kirkpatrick, U.S. ambassador to the United Nations, whose votes in opposition to resolutions on export of hazardous products, chemicals and space weapons and other environmental and arms control issues has "cast the United States as a pariah in the international body."

Among the "dirty deeds" named by Environmental Action was Kirkpatrick's 1982 vote against the World Charter for Nature -- a non-binding resolution that "would merely have provided international guidelines explaining how to protect natural areas." The environmental group also pointed out that the U.S. cast the sole "nay" vote on a 1982 UN resolution called "Protection Against Products Harmful to Health and the Environment." That resolution called for the preparation of a list of products, such as DDT and the herbicide Paraquat, whose consumption or sale had been banned in some countries and which have caused many thousands of poisonings in the Third World.

### CANADIANS WILLING TO 'PUT MONEY WHERE THEIR MOUTHS ARE' FOR ACID RAIN CONTROL

Canadians are willing to shoulder a substantial financial burden, whether from their own pockets or through taxes, to see the acid rain problem solved, according to the results of a Gallup poll, commissioned by the Canadian Coalition on Acid Rain, that was released last week. The poll was conducted last March, at which time 1,046 adults were interviewed.

Pollsters found that 78% of those interviewed were very or somewhat concerned about the acid rain problem, while 18% were not too concerned or not at all concerned. The remainder believed acid rain is not really a problem or did not know.

Meanwhile, 33% of those interviewed said they believed that half or less of Canada's acid rainfall originates in the U.S. But 47% indicated they believed that 60% or more originates in the U.S. However, many scientists say that 50% of Canada's acid rain fallout in fact originates in the U.S.

In terms of "who pays," 22% of those interviewed felt that less than half the cleanup should be born by the government, 32% felt the government should pick up half the cost of a cleanup, 15% felt that more than half of the cleanup should be paid by government and 26% felt that the government should not contribute financially to the cleanup.

At the same time, 35% of those polled said they would not be willing personally to pay anything, 31% were willing to pay \$5 per month, 15% would pay \$10 per month, and 8% would pay \$15 per month or more. Using those figures, the percentage willing to pay \$5 per month would generate \$325.5 million in one year. Those willing to pay \$10 per month would generate \$315 million per year, and those willing to pay \$15 or more would generate at least \$252 million per year. The \$892 million total compares favorably to the government's \$1 billion estimate for annual acid rain cleanup costs for at least the next decade.

### WORLD BANK APPROVES LOAN FOR SEWERAGE, WASTE TREATMENT PROJECT IN CYPRUS

A \$16.8 million loan to support a project in Cyprus designed to modernize the sewerage, drainage and waste treatment systems in Limassol, a major urban and tourist center, was approved this month by the World Bank.

The \$37.3 million project aims to protect the city's water supply from contamination and to eliminate potential health hazards to the population from untreated sewage discharges into the Akrotiri Bay. Intermittent flooding in the rainy season will also be stopped by the construction of a stormwater drainage system. And sewage effluent will eventually be treated and reused for irrigation.

Tourism provides over 20% of Cyprus' foreign exchange, and tourist-related industries account for about 20% of employment in the Greater Limassol area. Approximately two days, or \$3 million, are lost each year because of flooding in the lower town during intense rainfalls.

The project includes construction of a sewerage collection system of about 67 kilometers, a sewage pumping station and a sewage treatment plant. A new storm drainage system will be established and sections of the existing system will be improved. Operation and maintenance equipment will be provided and consultants will be hired to supervise construction.

AROUND THE WORLD

CHILE - A \$2.5 million loan to help finance preparation of pollution control studies in Santiago's Metropolitan Region has been approved by the Inter-American Development Bank, the Chilean development corporation (CORFO) reports. The loan will be used to complete and improve the existing data base on air, water, soil and noise pollution. On the basis on the studies, a system of technical and legal pollution control measures will be established. The project includes: implementation of an information and measurement system that involves procurement and installation of equipment to complete the air monitoring network; equipment and programs for data processing and training of personnel; eight studies on air, water, soil and noise pollution; and contracting of a consulting firm specializing in urban environments to assist the project's coordinating unit. The region covers 14,000 sq. kilometers and has a population of 4.3 million.

DENMARK - Chemcontrol A/S of Denmark, which designs chemical waste disposal systems, is holding its second International Symposium on Operating European Hazardous Waste Management Facilities in Odense Sept. 11-14. Preliminary program includes sessions on collection and transfer stations, transportation systems, disposal methods, flue gas cleaning and safety matters. The symposium fee, including conference materials, hotel, meals and a field trip to Denmark's own chemical wastes plant, is \$1,115, payable to Chemcontrol A/S, Dagmarhus, DK-1553 Copenhagen V, Denmark. Chemcontrol is owned by two Danish engineering companies and Kommunekemi, the central Danish disposal plant for chemical wastes.

INDIA - Tribal leaders and social activists have joined together in opposing two dams on the Indravati and Godavari rivers in central India. The \$400 million Bhopalpatnam project will produce hydro power but will submerge over 70,000 hectares of mainly rich teak forest, while the \$362 million Inchampalli scheme will irrigate land in Andhra Pradesh state by inundating over 100,000 hectares in the adjoining states of Maharashtra and Madhya Pradesh. Recently, tribal leaders ("tribal" is the Indian government's official term for aboriginal settlers) from forest districts of central India joined with Baba Amte, a Gandhian who has devoted his life to the rehabilitation of lepers, to march against the construction of the proposed dams. They argued that the dams would displace 70,000 tribals and deprive them of forests on which they depend for their fuel and fiber.

NORWAY - A new research program called "Pro Mare" will involve a study of the entire spectrum of ecological environments in the Barents Sea and the area around Svalbard. The Norwegian Information Service reports that the entire Norwegian marine-ecology research sector has been mobilized to carry out the 6-year, \$13.3 million project. The results are expected to provide information about the most fundamental natural conditions in the northern polar regions, ranging from plankton at the bottom to polar bears on the top of the food chain, and could be important in the administration of animal and fisheries resources in the region. The Barents Sea is the growth environment for several commercially important species of fish, including cod and capelin. Some of the world's largest colonies of nesting seabirds are also found in the region. Pro Mare is sponsored by the Ministry of Environment, the Norwegian Research Council for Science and the Humanities and the Norwegian Fisheries Research Council.

SOUTH AFRICA - Although marine oil pollution levels off the coast were low, the potential for a problem exists, according to Deputy Minister of Environmental Affairs John Wiley. Numerous sightings of oil slicks at sea and the "chronic" occurrence of tar balls and oil on local beaches amply indicate that oil discharges and tank washing occurred within 50 nautical miles off-shore despite prohibitive legislation. Currently, the most polluted stretches of coast are near metropolitan areas, he said. The most serious pollution threat came from petroleum hydrocarbon, organic waste, foodstuffs such as fish-factory effluent, domestic sewage, hydrochlorines, poisonous heavy metals and radioactive waste.

✓ PROJECT TO INCREASE FUELWOOD,  
WOODSTOVE EFFICIENCY BEGINS IN KENYA

A \$115,000 project to establish fuelwood plantations and to select and promote efficient prototypes of woodstoves for mass production in the Kenyan village of Ruiru-Githunguri is being financed by the United Nations Environment Program and the Bellerive Foundation.

The 18-month project is designed to help the 18,000 villagers select the most acceptable stoves among the different types developed in Kenya and other countries. Particular attention is being paid to the environmental and health aspects of the stoves. The project, which started in March, will also aim at selecting suitable fast-growing fuelwood species and the villagers are being instructed in plantation techniques. In addition, some villagers will be trained in stove-making, installation, maintenance and repair. Instruction will also be given in making briquettes from available agricultural waste.

The key words to solve the so-called "fuelwood crisis" are forest management and fuelwood plantation, and the use of more efficient stoves, said UNEP's Senior Program Officer in Charge of Energy, Yehia El Mahgary. Introduction of other fuelwood substitutes, such as biogas, will also assist in solving the problem, he said.

El Mahgary explained that a well-managed forest will produce 10 times as much fuelwood as an unmanaged forest, while utilizing an additional 10% to 15% of the large amount of heat lost by inefficient stoves could mean a 50% or more decrease in the consumption of fuelwood. In many developing countries, stoves commonly use efficiently little more than 10% of the heat from fuelwood. Experiments have developed stoves utilizing over 30% of the combustion heat.

Moreover, stoves better designed in terms of environmental and health can help to solve serious health problems associated with indoor wood burning. For example, fumes from primitive fireplaces were found to cause cor pulmonale, a heart disease responsible for 17-31% of cardiac deaths in two Delhi hospitals. World Health Organization surveys conducted in India and Nepal show that nearly 1-1.3% of the rural population surveyed suffered from the same disease.

The 1981 UN Conference on New and Renewable Sources of Energy estimated that in 1980 acute scarcities of fuelwood affected about 90 million rural people in developing countries. In Africa, the acute scarcity of wood occurs in Botswana, Chad, Djibouti, Ethiopia, Kenya, Mauritania, Namibia, Niger, Somalia and Sudan. Over 80% of the population in Kenya depend on wood as their major fuel source.

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# World Environment Report

## News and Information on International Resource Management

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### SLANTS & TRENDS

**BIKINI ISLANDERS ARE SUING THE U.S.** in order to force the government to restore the island to safe habitability. They charge that for the U.S. not to clean up would be a violation of its U.N. Trusteeship Agreement to "protect the inhabitants against the loss of their lands and resources."

**ANNUAL APPROPRIATIONS OF \$10 MILLION** for the nuclear cleanup were also requested by the Bikinians when they testified this week before the U.S. Congress. They cited a recent study which estimates that the cleanup would cost \$60 million to \$180 million, depending on the method used. The money would remove the radioactive contamination left from the nuclear bomb tests conducted by the U.S. at Bikini in the 1940s and 1950s.

**BUT WHY ASK NOW?** Basically, the islanders felt compelled to press their claim at this time because the Reagan Administration recently signed an agreement that would, if Congress approves, terminate all pending lawsuits arising out of the weapons-testing program in the Pacific and eliminate any future claims. Known as the Compact of Free Association between the U.S. and the Marshall Islands, the agreement would give semi-autonomous status to the island government but would make no provision for Bikini cleanup.

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**80% OF THE SICKNESS AND DISEASE** in the Third World is linked to unclean water and unsanitary conditions, the World Health Organization concludes. The United Nations targets the number of people in developing countries to be reached with clean water in 1981-1990 at: 1,128 million in Asia and the Pacific; 218 million in Latin America; 414 million in Africa; 38 million in the Arab World; and 35 million in Europe. This information, as well as projections of population, food, water, air and atmosphere has been compiled by the Washington, D.C.-based World Resources Institute for use at its conference, "The Global Possible: Resources, Development and the New Century," being held this week at Wye Plantation, Maryland.

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**BRITAIN WILL CEASE OCEAN DUMPING** of low-level radioactive wastes until an independent inquiry has examined the issue. Environment Secretary Patrick Jenkin told Parliament that he had reached an agreement with union leaders, who have long campaigned against such disposal, to hold off sea dumping until the study is complete.

Leonard A. Eiserer  
Publisher

Bonita Becker  
Editor

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## ACTION TO STOP DESERTIFICATION IN AFRICA INEFFECTIVE, UNEP STUDY FINDS

by Mike Nicol

MUIZENBERG, S.A.-- Arable and range land in the Kalahari Desert region of southern Africa is reverting to desert at an accelerating rate. World action to stop desert creep, agreed upon seven years ago, has been ineffective, the Nairobi-based U.N. Environmental Programme reported, following its two-year assessment.

The Kalahari Desert region includes most of the southern half of Africa -- South Africa, Angola, Botswana, Namibia, Zimbabwe -- and countries further removed such as Burundi, the Central African Republic, Lesotho, Malawi, Rwanda, Swaziland, Tanzania, Zambia, Zaire, Ghana and Madagascar.

In much of this region, the assessment noted, per capita food production was declining long before the present drought began in 1979. "Land degradation has played a key role in lowering agricultural productivity, while rapid population growth has intensified pressures leading to land degradation," it said. Between 1970 and 1980, the region's population rose from 68-million to 90-million, about 3% per year. Simultaneously, production levels fell.

In countries around the Kalahari, says UNEP, cultivation is encroaching on increasingly arid and drought-prone rangelands, causing intensified desertification of marginal rainfed croplands and a reduction of the grazing areas. This in turn leads to intensified overgrazing and desertification.

During the past four years, in Lesotho, 100,000 hectares of arable land have been put out of production through overgrazing and soil erosion. In Zimbabwe, the drought reduced the 1983 maize crop to half that of a normal year and by last October 100,000 cattle died of starvation. And in Mozambique, the drought caused losses of 300,000 tons of cereals, 80,000 tons of beans and groundnuts, and a million tons of casava. By last September, more than 100,000 cattle had died and deaths were continuing at a rate of 15,000 a month.

## EFFORTS TO OPEN SOUTH AFRICAN WILDERNESS AREA AROUSE CONSERVATIONIST IRE

by Mike Nicol

MUIZENBERG -- An attempt by South Africa's National Parks Board to take control of a wilderness area has caused confusion and anger among local conservationists, who claim that the proposed takeover of the largest wilderness area in the country puts other proclaimed areas in jeopardy. The disputed area is the Cedarberg mountain range, 200 kilometers northwest of Cape Town.

The 71,000 hectare area, currently controlled by the Department of Forestry, was proclaimed a wilderness area in 1977 to set it aside as a "remote, untouched and unspoilt" region. The board's plans for the Cedarberg include creation of rest camps on the periphery and mountain huts for hikers within the area. A system of hiking trails would form a major part of the recreation facilities planned.

President of the Mountain Club of South Africa, Colin Inglis, said the club had grave doubts about opening up the region. He said the Cedarberg was a relatively delicate ecological area that had been declared a wilderness to ensure its preservation. Added Dale Parker of the Botanical Society: "Until there is more clarity in official circles on the role conservation should play in our developing society, we see no need for change in the status of the area."

A decision on the Cedarberg's future will be made after the planning committee of the President's Council presents a report on nature conservation in June.

### SOME OF CHINA'S PAST ECOLOGICAL ERRORS ARE NOW BEING CORRECTED, GEOGRAPHER SAYS

Rural development policies during the Cultural Revolution proved ecologically costly to China's large and southernmost island of Hainan, according to Catherine Enderton, a University of California-Los Angeles geographer who was invited to do research there.

In a paper prepared for presentation at a meeting of the Association of American Geographers last month in Washington, D.C., Enderton explains that in making its new development plans for Hainan Island, China hopes to avoid the environmental destruction brought about in 1958 when it sent soldiers and students there to increase rubber production.

Hainan is called China's treasure island. It produces over 70% of the country's rubber. The island's complex environment includes semitropical and tropical forests, agriculture and deserts, all in an area the size of Massachusetts. Hainan lies just off the Chinese mainland in the South China Sea opposite Vietnam and forms the eastern edge of the Bay of Tonkin.

Until recently, foreigners have only rarely been allowed to visit the island. But the Chinese government has adopted an "open door" policy in order to attract foreign investment capital for development projects. With the assistance of Chinese geographers from Zongshan University in Guangzhou, Enderton studied some of the environmental problems caused by previous agricultural development policy, especially the efforts to increase rubber production during the Cultural Revolution (1965-1975), when several dogmatic and simplistic rural development schemes were initiated.

#### Ecology Ignored

In 1968 and 1969, nearly 10,000 Red Guards and other high school and college students were sent from Guangzhou and other cities in south China to live and work on rural Hainan Island. Most of them were assigned to state farms, where they tended rubber trees and "reclaimed the mountains" in order to expand the plantations. Soon after they arrived, the army was put in charge of the farms and ordered to make China self-sufficient in rubber as quickly as possible. Rubber trees were tapped for latex too frequently, until they weakened and died.

The environmental and cultural complexity of the island was ignored. Besides rubber, farmers were to concentrate on growing rice. Productive fruit and coconut trees were cut down and the peasants were forbidden to raise pigs. The quantity of land cleared for rubber production and speed with which the plans were carried out were given more emphasis than the quality of the care given the new saplings, Enderton explained.

Under army orders, the students burned large areas of forest in order to expand the plantations, but a trained labor force to provide the necessary follow-up care for the new plantings was unavailable and most of the young saplings died. The once-forested hills are now covered with tropical grasses. Chinese ecologists estimate that in 1950, when Mao Zedong's army gained control of Hainan, nearly 25% of the island was covered with forest. By the end of the Cultural Revolution, when state farms were returned to civilian control, only 7% was in old forest. Deforestation, floods, soil erosion, diminished agricultural productivity and damaged rubber trees were evident throughout Hainan.

The end of the Cultural Revolution and the ascendancy of Deong Xiaoping's policies are apparently allowing new plans to be tried. Reforestation and afforestation projects are being carried out. New nature preserves have been established. Adequate environmental management is now being implemented and there is an appreciation for the diversity and complexity of Hainan's ecology.

## DUTCH, AMERICANS SWAP INFO ON ENVIRONMENTAL PLANNING

[Editor's note: This is part one of a two-part story on recent Netherlands-U.S. cooperation in the environmental field]

A U.S./Netherlands Seminar on Environmental Management, held last month in Washington, D.C., that compared Dutch and U.S. experiences in environmental planning found that Dutch laws appear to permit more flexibility and planning is therefore more heavily utilized than in the U.S.

According to Dutch seminar participants, in the Netherlands plans are very important to set the agenda for environmental policy. At nearly every level of government plans are issued periodically. They play a significant role in defining priority because there are so few ambient quality or emissions standards in the country. Where such standards do exist, they can easily be revised on the basis of the information in the plan and the choices that were made in preparing it.

A feature of the current Dutch system of plans is its orientation toward the specific medium, as there are usually separate plans for air, water, noise, soil, etc. The Dutch are now working on a major revision of this planning system. It has been proposed to Parliament to have just one integrated, comprehensive environmental plan at each level of government. Such a plan would appear every four years and would focus on the strategic choices to be made in that period.

To arrive at truly integrated plans, three approaches are to be used: a substances approach; a target group approach; and a geographic approach. The substances approach would aim to formulate policies for any important substance, no matter what is being affected. Both the national government and most provinces in Holland are now working on such comprehensive plans.

### U.S. Environmental Planning

Comprehensive environmental planning in the U.S. has been "limited." At the national level, a number of "media-specific" statutes such as the Clean Air Act provide very exacting requirements that limit the Environmental Protection Agency's flexibility and, consequently, the ability to fully utilize strategic environmental plans.

EPA does develop operational plans for meeting statutory goals and has conducted feasibility studies of each of the above mentioned approaches with varying success. The agency is also developing for the first time a public document describing the environmental progress made, the problems that remain, and the agenda it has set to address these problems.

Meanwhile, few state governments have developed or implemented comprehensive environmental plans. This situation is due, in part, to the confines of federal statutory requirements within which the states must work. However, the state of Maryland, participants found, has begun to develop such a plan with the first step being the development of an environmental atlas that uses maps to examine the locations of environmental problems and likely sources.

Maryland has also been involved in the development and implementation of a comprehensive regional plan for the Chesapeake Bay. In some sense, a working strategic plan for the Chesapeake is possible because federal regulatory programs are not addressing a large share of the Bay's problems, the U.S. participants noted.

**COLOMBIAN OFFICIALS EXPERIMENT  
WITH HERBICIDES TO DESTROY MARIJUANA**

by Peter Nares

BOGOTA -- The Colombian government has authorized an experimental fumigation program which may prove to be the forerunner to a nationwide campaign to eradicate the country's marijuana plantations with chemical herbicides. The decision has perturbed Bogotá ecologists who warn that food crops, water supplies and thousands of acres of farmland could be contaminated if defoliants are utilized to destroy the Cannabis plantations.

It is estimated that at least 150,000 acres of Colombian rain forest and scrubland are planted with marijuana and the coca bush, from whose leaves cocaine is processed. Colombia today is the world's largest exporter of narcotics, and reportedly the country's drug gangs supply over half of the marijuana sold annually in North America. In addition, more than 20 tons of cocaine are smuggled each year from Colombia to the U.S. Together, the two drugs earn the Andean nation some \$5 billion annually in export revenue.

For years, U.S. officials have been attempting to persuade successive Colombian governments to eradicate the Andean Cannabis and coca plantations by aerial fumigation. The Colombian marijuana fields are too extensive to be uprooted manually, and machinery cannot be used to destroy the "crop" because the Cannabis farms are located in remote roadless zones.

In Washington's view, the U.S. narcotics trade will be crippled if the Colombian plantations -- the main source of American-marketed drugs -- are fumigated. The U.S. Drug Enforcement Administration (DEA) is assisting the Colombians in their narcotics-control campaign, and last year the Reagan administration offered to fund a \$19 million marijuana-defoliation program in the South American Republic.

**Ecology or Revenue?**

But the Betancur government rejected the offer, and it also banned the use of Paraquat as a marijuana defoliant. Paraquat is a potent herbicide, which U.S. officials say could eradicate the Colombian plantations in a matter of weeks.

Colombian government doctors have warned that Paraquat is a lethal chemical compound and that it could pose a grave medical and ecological threat if it were to be sprayed on marijuana fields. Food supplies and agricultural land could be contaminated by the chemical, they assert.

To this, U.S. officials respond that Paraquat was safely utilized in the 1970s to destroy Mexico's marijuana plantations and that there were no ecological side-effects there from the defoliant.

Bogotá scientists, though, point out that there has been opposition to the use of Paraquat in the U.S. As a result, U.S. authorities there have been able to fumigate only a limited number of American marijuana plantations.

But at least some American officials suspect that the Colombians' hostility to a marijuana defoliation program is founded on more than ecological considerations. The drug trade, they argue, earns Colombia more than the dollar income of all other exports combined, and accordingly, many South Americans see little point in terminating so lucrative a trade. They add that Colombian ecologists are strangely selective in their criticism of Paraquat. While they oppose its use to destroy marijuana, they voice no criticism when Paraquat compounds are sprayed on Colombian food crops and coffee plantations. The chemical is regularly utilized in commercial farming in Colombia.

(Continued)

COLOMBIA TRIES HERBICIDES ON MARIJUANA (Cont.)

Finally, U.S. representatives argue that the Colombian marijuana and coca bush plantations themselves constitute a far greater ecological threat than Paraquat. In the Sierra Nevada mountains of northern Colombia, for example, the drug gangs have felled and burned thousands of acres of rain forest to plant Cannabis. The result has been widespread erosion, a decline in river flows and rainfall and extensive destruction of plant and animal life.

Looking to the future, it remains to be seen whether the Colombian government will give the green light for a major Paraquat fumigation campaign. But bowing to pressure from Washington, Bogotá announced in April that the Colombian police are to initiate a pilot marijuana defoliation program in which another herbicide, 2-4E, will be utilized. The subsequent use of the more potent Paraquat has not been ruled out.

Perhaps significantly, the decision to authorize a pilot spraying program was made only days after the Colombian army revealed that the country's drug gangs have apparently formed an alliance with the communist guerillas active in southern jungle districts. According to the military, Andean drug smugglers are now paying protection money to the rebels, who in return are guarding the plantations of the narcotics traffickers.

Alarmed by this new development, the Bogotá authorities have evidently decided to crack down on the drug trade with every weapon at their disposal -- including chemical herbicides. With the country's security now at stake, it seems the ecological argument against defoliants has suddenly lost force.

**1985 GLOBAL ENVIRONMENT MEETING:** Globescope, a five-day national assembly devoted to global environment issues and the U.S. role and responsibility for their resolution, will take place in Portland, Ore., April 17-21, 1985. The conference will be held under the auspices of the Global Tomorrow Coalition, a consortium of nongovernmental organizations in the U.S. concerned with global trends in population, resources and environment. Co-sponsors include the Environmental Liaison Center (Nairobi, Kenya), Friends of the Earth, Izaak Walton League of America, National Audubon Society, National Parks and Conservation Association, National Wildlife Federation, Natural Resources Defense Council and the Wilderness Society. For more information, contact David McGrath, Global Tomorrow Coalition, 1525 New Hampshire Ave., N.W., Washington, D.C. 20036, (202) 328-8222.

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AROUND THE WORLD

**BHUTAN** - The country is embarking on its first integrated land clearance and reforestation project, using a credit of \$5.5 million from the International Development Association (IDA), the World Bank's concessionary lending affiliate, to fund the \$6.8 million project. Of the forest area of 8,800 sq. km., some 500 sq. km. have been classified as degraded forests. Phuntsholing and Gaylegphug, in the southern region were selected for development under the pilot project. Phuntsholing is near sawmills and a plywood factory, while Gaylegphug has two sawmills, a veneer factory and a furniture factory. The 5-year project is designed to develop systematic programs of renewing forests to support the country's wood industries. It will include the clearing of about 3,800 hectares of degraded forest in Phuntsholing and Gaylegphug. Some 2,800 hectares of the cleared land will be developed into plantations, four nurseries will be established, and access roads will be built.

**QATAR** - Refuse collection and disposal services for 80% of the population are being provided under a scheme devised and run by the London-based Environmental Resources Ltd. The company is operating a comprehensive waste management service for the capital city of Doha, where all but 20% of the population resides. The service includes a 1,400-person labor force and 300 items of mobile plant and equipment, as well as depots, landfill sites and a recently-completed transfer station. The transfer station has a capacity of 150 tons per day and is operated jointly by ERL and the West German specialist BC Berlin Consult, which is the main contractor to the municipality. Since its start, the scheme has more than trebled Doha's waste management productivity.

**SOUTH AFRICA** - The decision by the Department of Environmental Affairs to end whale research in June has caused a furor among marine conservationists, who now fear that the government may withdraw from the International Whaling Commission. Spokesperson for the Wildlife Society, John Greig, said he was astonished at the decision and urged the government to expand its commitment to research, not abandon it. "Research on whales cannot be divorced from research on other marine resources," he emphasized. "Under the Sea Fisheries Act, the Marine Development Branch has a legal responsibility to manage whale stocks." Commenting on his department's controversial decision, Director General Fred Otto said that ending whale research would have no bearing on any decision on whether to leave the IWC. However the question of continued membership was being discussed and a decision would probably be taken before the June IWC meeting. Although South Africa stopped whaling in 1975, research by the authorities has sought to determine which whale species could be exploited.

**UNITED KINGDOM** - The World Health Organization is sponsoring an International Seminar on Environmental Impact Assessment July 8-21 at the University of Aberdeen, Scotland. The seminar will give a comprehensive introduction to EIA, its aims and scope. It will emphasize the methods and techniques that can be used to assess the impacts of proposed major development actions. For more information, contact Sandra Ralston, Seminar Organizer, CEMP, Department of Geography, University of Aberdeen, Old Aberdeen AB9 2UF, Scotland, U.K., Tel. (0224) 40241 ext. 5188, Telex 73458 UNIABN G.

**WEST GERMANY** - Siemens AG has received an order from the Minister of Labor, Health and Social Security of the state of Saarland to set up an emissions-monitoring system. A Siemens Immesa telemetric system consisting of three multi-component measuring stations, six single-component measuring stations and a monitoring center with process computer was put in place. Air pollution in areas affected is continuously recorded and classified according to type and scope in line with the provisions of the federal anti-pollution laws. Three multi-component measuring stations record sulfur dioxide, nitrogen monoxide, nitrogen dioxide, carbon monoxide, ozone, dust, methane-free total hydrocarbons, and methane.

**EUROPE'S 'BATTLE IN A BEER STEIN'  
IS NO MERE 'TEMPEST IN A TEAPOT'**

by William G. Mahoney

MUNICH -- The European Community's "Battle in a Beer Stein" is no mere "tempest in a teapot." Millions of dollars are at stake.

Key to the dispute is what Germans claim is the world's oldest pure food law: an edict dating back to 1516 that German beer can only be brewed from hops, malt, yeast and water. No additives are permitted.

Bavaria, not without good reason, immodestly claims to be the mecca of brewing and beer drinking and is leading the assault on European Community efforts to open Germany to what is called here "foreign chemical beer."

The European Community brought charges before the European Court that enforcement of the old "beer purity law" violates Community free trade regulations. They want the spigot turned in Germany so that foreign beers can flow in competition with the domestic brews.

While the court recently decided in favor of the European Community, the Germans have appealed the decision and are now awaiting a final judgement. The Germans are hoping that the appeal will result in the continuation of the regulation that has been in effect for more than four centuries.

The Bavarian brewers say that the health of consumers has priority over free trade and that "chemical beer" is dangerous to all and even more so to the local populace because they drink more beer per capita than anyone else in the world.

How Dangerous Is It?

German experts charge that foreign beers contain up to 60 chemicals including: sulphuric acid, bi-sulphate, ammonium-chloride, tannin and phosphorous. The foreign brewers, pressing to enter the huge German market, claim that these substances have been found through testing not to be dangerous to human health.

But local beer purists -- who in beer gardens often put their cardboard coasters on top instead of under their steins to keep rain water and dust out -- do not accept such claims. Their counter-arguments: Germans -- and particularly Bavarians -- drink more beer than anyone else in the world. Therefore, they would also be consuming the largest quantities of these chemicals. Thus the potential for future health damage cannot be excluded.

"We have never insisted that Germany do away with the purity law," said Joachim von Berge, a member of the Community Commission. "But we would like that other types of beer can be sold."

But Reinhold Bocklet, a member of the European Parliament and vice president of the "German Institute for Pure Beer," retorted: "In our opinions in this case health protection has priority over the free trade."

**ENVIRONMENTAL MANAGEMENT IN MINING:** A seminar on environmental management approaches in mining and energy, both onshore and offshore, will be held Oct. 21-28 in Chania, Crete. The aim of the meeting is to identify key issues and "best practicable management strategies" in areas such as: environmental assessment; monitoring and auditing; risk and hazard; decommissioning of facilities; resource exploitation in fragile/remote/marine environments; and impacts of alternative energy technologies. For more information, contact Executive Director, CEMP, Dept. of Geography, University of Aberdeen, High St., Old Aberdeen AB9 2UF, Scotland, U.K., Tel. (0224) 40241 ext. 5181, Telex: 74358 UNIABN G. END



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### SLANTS & TRENDS

**UNTANGLING THE WEB** of chemical pesticide use in agriculture could be left to spiders, at least that's what Israeli and U.S. reseachers are hoping. Under a project sponsored by the Binational Agricultural Research and Development Fund, the researchers are using spiders to help farmers increase their output and cut down on their use of chemical pesticides.

**SURVEYING OVER 130 SPECIES** of spiders in the Florida citrus groves, A. Mansour of the Agricultural Research Organization, Neve Ya'ar, Israel, and W.H. Whitcomb of the University of Florida, Gainesville, found that certain spiders were effective in destroying cotton-damaging larvae and scale insects that attack citrus fruit. By using spiders as the first line of attack against these insect pests, farmers could delay spraying their fields with chemical pesticides.

**THE SPIDER SPECIES MOST USEFUL** as predators of harmful insects are now being tested to see how susceptible they are to insecticides used in cotton fields and avocado and citrus groves. Through selective pesticide spraying, the researchers hope to create an environment where spiders can multiply while helping in the fight against crop losses.

\* \* \*

**'WORLDWIDE FOREST DAMAGE** linked to acid rain could lead to timber losses totaling in the billions of dollars," a Worldwatch Institute study released last week determined. However, several other air pollutants also threaten forests, the study found. "As a result, curbing a single pollution source, such as sulfur emissions from power plants, may not be enough to protect forests in the long run." Ozone and carbon dioxide are threats as well as sulfur dioxide.

**'WALDSTERBEN'**-- LITERALLY FOREST DEATH -- is now a household word in West Germany, says author Sandra Postel. There, reported forest damage jumped from 8% to 34% in just one year. The value of trees already lost totals well over \$1 billion, and the wood market will be severely disrupted for decades. In eastern Europe, increased industrialization has resulted in "sick and dying trees," which "now cover 1.2 million acres in Czechoslovakia ..." Even worse, Postel says, is that the damage has been severe enough that seedlings die.

**OZONE AND CARBON DIOXIDE** are threats as well as sulfur dioxide. Postel called for both the installation of scrubbers and for fuel efficiency standards to cut electricity demand by 70,000 megawatts. The fuel standards would reduce SO<sub>2</sub> by 15%, and emissions of NO<sub>x</sub> and CO<sub>2</sub> would be reduced at no extra cost.



**FUELWOOD 'HIDDEN ENERGY CRISIS'  
IS INCREASING, OTA SAYS**

Overexploitation of forests for firewood and charcoal is increasing, according to a report on tropical forest resources from the U.S. Congress' Office of Technology Assessment (OTA).

Several steps were recommended by OTA to alleviate the problem: (1) enhancing the efficiency of wood use and substituting alternative energy sources; (2) improved stoves and more efficient charcoal production; (3) development of non-wood renewable energy sources; (4) widespread implementation of fuelwood plantation techniques; and (5) actions that reduce demand for fuelwood.

However, OTA warned that many of these options face problems and constraints. Effective technology diffusion of improved stoves and more efficient charcoal production requires extensive field testing and careful consideration of social and economic factors. Similarly, widespread implementation of fuelwood plantation techniques is constrained by sociocultural and economic factors, while actions that reduce demand for fuelwood can also reduce incentives to invest in future wood supply.

Although wood is the fourth largest source of fuel in the world, OTA said, knowledge regarding its production and consumption is very imprecise. Most fuelwood is used in tropical nations, and for many it is in short supply, resulting in a "hidden energy crisis."

Tree plantations will have to provide an increasing share of the wood used for fuel, OTA argued. Currently, 80% of the estimated one billion m<sup>3</sup> of wood removed each year from tropical forests is used for fuel. The "sustainability of wood fuel production is inseparable from the sustainability of tropical forests." OTA warned that the rate of tree plantings for firewood production worldwide must increase at least fivefold if fuelwood shortages are to be eased.

**Wood Shortages - Problems Vary By Region**

Wood is the most important fuel in most tropical nations. It is estimated that 1.5 billion people in developing countries meet 90% of their energy needs with wood and charcoal, while another billion meet at least 50% of their energy needs this way. However, some 100 million people are experiencing acute fuelwood scarcity, OTA warned, and another billion are faced by lesser shortages.

Shortages of fuelwood are causing damage to agricultural lands as people use crop residues and manure that would otherwise be used as fertilizer. If the cow dung burned for fuel in Asia, Africa, and the Near East were used for fertilizer, OTA noted, grain production could increase by 20 million tons/year.

The environmental stability of many arid and semiarid regions of Africa is now threatened by deforestation for fuelwood, OTA noted, a situation being duplicated in the Himalayas and the hills of South Asia, and in the Caribbean, Andean Plateau and Pacific Coast regions of Latin America. The situation becomes more alarming when coupled with figures for fuelwood dependence. Wood provides two-thirds of all fuel used in Africa, nearly one-third in Asia, and one-fifth in Latin America.

Deforestation will also affect hydroelectric power. Hydroelectric reservoirs in Pakistan, Thailand, the Philippines, Indonesia, and many other countries are rapidly filling with silt from erosion.

"Technologies to Sustain Tropical Forest Resources" is available for \$10 as Stock Number 052-003-00943-9 from the U.S. Government Printing Office, Superintendent of Documents, Washington, D.C. 20402, U.S.A.

## EEC SEEKS TO BOLSTER WASTE MANAGEMENT PROGRAMS

by Anna Lubinska

BRUSSELS -- Environment ministers of the ten European Economic Community states meeting in Brussels last month granted \$4.5 million for the development of clean technologies that will either use smaller amounts of natural resources or cause less pollution.

The aim is to promote the use of processes which will produce fewer residues, reduce the volume of waste water containing solvents and non-degradable and dangerous chemicals, as well as recovering and recycling valuable substances usually disposed of as wastes. Sectors singled out include the leather, textiles, quarrying, chemical and food industries.

The Community's waste management policy needs boosting. Although it was already part of the first environmental action program of the EEC in 1973, progress on recycling programs has been slow. Meanwhile, the volume of wastes generates increases yearly at a rate of 2-3%. It could reach the 3 billion tonne mark by 1990, according to Commission forecasts. Weakness in the policy was recently highlighted when one of its main components -- a law dating back to 1978 on the disposal of dangerous wastes -- was found to contain a number of loopholes, as well as being poorly applied by the EEC countries.

In addition to the overhaul of obsolete disposal plants and the construction of new and better ones, the Commission now plans to promote the prevention of waste by recycling. Some 70% of wastes are disposed of on land in the EEC. The United Kingdom disposes of 90% of its wastes in this way.

### Extent of The Problem

Currently, the ten Community countries produce twice as much waste as they can safely dispose of: a total of almost 2 billion tonnes every year. The largest part -- 1.4 billion tonnes -- is taken up by agricultural and animal wastes. Recycling as natural fertilizers or transformation into biogas could make these viable. Instead, chemical fertilizers are spread on the land.

The Community also produces 79 million tonnes of domestic waste, mainly in the form of waste water containing detergents. To reduce water pollution, Norway, which does not belong to the EEC, bans the advertising of detergents containing phosphates. Other possibilities include encouraging plants and biomass, which rapidly break down such substances.

But the biggest problem is industrial waste. Of the 150 million tonnes produced annually in the Community, 40 million are chemical wastes and half of these are known to be toxic. The volume of certain wastes such as scrap metal, paper, plastics or glass can be reduced by collection systems, while techniques do already exist in Europe to recover and extract certain heavy metals, acids and solvents from production processes. Commission experts estimate that 80% of wastes disposed of on land could be recycled. But financial and administrative incentives are lacking.

The 1978 EEC directive was supposed to encourage recycling and recovery. Instead, industries have concentrated on destroying or storing waste -- sometimes with disastrous and costly results. Health risks to the inhabitants of Lekkerkerk in Holland cost the Dutch government 200 million guilders when the site had to be dug up in 1979. The soil had been contaminated with dioxin from chemicals dumped there. Efficient disposal or treatment of the waste would have cost the company only several thousand guilders.

(continued)

EEC SEEKS TO BOLSTER WASTE PROGRAMS (Cont.)

A market for products recovered from residues has to be created, says Vera Squarzialupi, member of the European Parliament. Substances used in processes should be monitored and manufacture modified to recover useful by-products along the way. She advocates a Community-wide information system and data bank on waste materials. This should discourage 'midnight movers' from countries such as Holland which dumps waste illegally in neighboring Belgium and the North Sea.

This will require investment and financial incentive. The Community has made a start. In addition to the \$4.5 million released last month, this year's Community budget also includes an extra \$600,000 to be spent on combatting pollution by wastes, promoting recycling and implementing existing directives concerning waste oils, PCBs and waste from the titanium dioxide industry. Another \$3 million in provisional credits are also lined up for the development of new combustion technologies and the use of solid fuel wastes.

According to the EEC Commissioner for Environment, Karl-Heinz Narjes, wastes are a sizeable source of raw materials. The gain from their reuse could be considerable. The European Parliament's Environment Committee claims that waste dumped contains raw materials worth \$10 billion. Its use could reduce the Community's raw material import bill by between \$5 billion and \$7 billion. The sector could also provide between 1 and 2 million new jobs in the European Community, where unemployment has reached 12 million out of a population of 270 million (2-3 million already work in the waste sector).

A Commission policy paper outlining a program is due at the end of 1984. It will look at the problems and costs involved in retrieving valuable secondary materials from the waste stream, the creation of market for them, the role to be played by governments and other public authorities and the question of acceptance. One of the main obstacles to be overcome is the possible psychological barrier as regards the use of waste-derived materials.

REPORT SAYS BALTIC SEA  
IS LESS POLLUTED

by William G. Mahoney

Environmental ministers from both East and West meeting last month in Helsinki agreed that the Baltic, for many years considered to be one of the world's most polluted seas, has seen an improvement over the past decade. The finding came as ministers from Finland, Denmark, Sweden, West Germany, East Germany, Poland and the Soviet Union met to mark the 10th anniversary of the Convention on the Protection of the Marine Environment of the Baltic Sea Area.

All countries present reported on their activities to curb waste discharge into the sea. The ministers found that "the Convention is working" and added that "in many respects the Baltic Sea is at least not deteriorating, but very probably improving."

Their report said that a ban on the discharge into the Baltic of oil, hazardous liquids and sewage has been imposed or is on the way towards imposition by all signatories. It noted that ships are being fitted with special waste treatment equipment.

Finnish President Mauno Koivisto told the group that the Helsinki Convention was the first international convention to take into account all sources of marine pollution. He said that the efforts of the Baltic Sea states in fighting pollution was being closely watched by the rest of the world.

**USE OF 2,4,5-T BANNED BY COURT  
IN ARGENTINA; GOVERNMENT APPEALS**

by Pedro Tarak

BUENOS AIRES -- An Argentine federal court has ordered the government to suspend any further permit allowing the use of 2,4,5-T herbicide, the deadly poison that frees dioxin, after three environmentalists sued last August to have the herbicide banned. The judge also ordered the prohibition of any imports of the herbicide, and the seizure of the product for its subsequent deposit at a special site belonging to the Nuclear Energy Commission.

The product in question is manufactured by Dow Chemical. Although production of the herbicide was restricted in the U.S., in Argentina about 10 distributors had commercialized the product locally, with government approval. The temporary ban on 2,4,5-T is declared until further studies made by the government indicate accurately the degree of toxicity and danger to public health and the environment. Then, either a total ban, such as exists in Sweden, West Germany and Holland, or a restricted use of the product, as in the U.S., will be mandated.

The government reacted to the decision by appealing to the Chamber for its repeal. Officials argued against the legal standing granted by the judge to the environmentalists, saying that these plaintiffs do not have the legal right to sue because they are not affected directly in their properties or person. Standing to sue was, thus, the crucial issue used by the government to avoid citizen interference in environmental and public health matters such as the one concerning this herbicide.

One of the policy goals of President Raul Alfonsín's civilian government was to legitimize standing to any citizen or non-governmental organization for protecting the environment. The Secretary of Agriculture ordered an administrative ban on five still-distributed brands containing 2,4,5-T.

Yet, the appeal has been admitted by the Chamber, and a judicial process is pending. Government officials do not appear to want the legal precedent set by the federal judge -- allowing standing to sue -- to spread to the citizen movements of the nation. The situation indicates that pre-existing bureaucracies have perpetuated despite the existence of a deep democratic change. The contradiction between the democratically-voted ruling party, which favors granting non-governmental groups legal standing, and the administrative bureaucracy, which persists against it, has yet to be resolved.

**SOUTH AFRICA COULD BE HEADED  
FOR SERIOUS ACID RAIN PROBLEMS**

by Mike Nicol

SOUTH AFRICA -- Acid rain with a pH factor of 4.5, and sometimes 4, has been recorded in Johannesburg and Martizburg by retired agricultural engineer Patrick Duggan, after monitoring rain in those cities for two years. His figures show an acid level equal to the Ruhr Valley in West Germany, Europe's worst hit spot. But so far authorities in both cities have denied the figures.

South Africa burns about 70 million tons of coal annually, of which 1% is sulfur. A recent United Nations health report said the country was the most vulnerable in the Southern Hemisphere with regard to acid rain. It also warned that acidic fall-out is not dependent on rain. Although the country's most highly urbanized areas are in dry regions, people can be affected simply by inhaling the sulfur-contaminated air. Moreover, with only six inspectors to enforce it, South Africa's stringent Pollution Prevention Act is largely ineffective, observers say.

**ASIAN GROUP TO DISCUSS FOOD  
IRRADIATION, TECHNOLOGY TRANSFER**

The FAO/IAEA Research Coordination Meeting (RCM) on the Asian Regional Cooperative Project on Food Irradiation (RPM) will be held from April 9-13 in Seoul, Korea. The meeting will focus on the present development of food irradiation and the transfer of the technology to relevant industries in the region.

RPM has been sponsored financially by the Japanese government from 1980 to 1984, to enable scientists from developing countries in Asia and the Pacific to develop technological data on the use of irradiation to preserve and improve hygienic qualities of fishery products, mangoes, onions and spices.

According to the International Atomic Energy Agency, studies have shown the technological and economic viability of radiation processing of these food items. It is the method of choice for eliminating certain pathogenic microorganisms in frozen seafood and frog legs, which are exported in large quantities from the region, as well as for disinfection of tropical fruits. Twenty-eight nations already approved collectively some 45 irradiated food items for human consumption, on either an unconditional or a restricted basis. And some countries in the region, such as Bangladesh, South Korea and Thailand, are planning to establish commercial irradiation facilities.

**WHO FAVORS KEEPING STATUS QUO  
NITRATE LEVELS IN DRINKING WATER**

by Alfred E. Pedersen

COPENHAGEN -- A World Health Organization working group, meeting in Copenhagen, has decided there is no need to recommend any changes -- upwards or downwards -- in permissible levels of nitrate in drinking water. The WHO recommends levels of no more than 45 mg. nitrate per liter of drinking water, slightly under the European Community's own recommended ceiling of 50 mg.

Among other things, the working group questioned whether agriculture really needs all the nitrogen-based fertilizers now being applied to European farmlands. The group heard reports of high nitrate measurements in shallow depth wells used in rural regions, but no significant increases in nitrate levels in municipal water supplies from deep wells. Nitrate is blamed for some of the cases of "blue babies" -- oxygen-starved children suffering from methaemoglobinaemia. But the group found no evidence to blame nitrate as a direct cause of cancer. WHO intends to take another look at nitrate levels in another few years.

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AROUND THE WORLD

**BANGLADESH** - Cheap jute shopping bags imported from Third World countries, such as Bangladesh, where 400,000 were sent to West Germany alone, have been found to contain dangerous quantities of pesticide residues. Extensive tests were carried out on jute sacking after traces of lindane and hexachlorobenzol (HCB) turned up in random samples of corn known to have not been treated with the powerful insecticides. Experts of the agricultural test laboratory in West Germany discovered toxic agents in jute sacking, popularly sold as more ecologically acceptable than plastic bags. In one square meter of jute sacking experts found: 21 mg. of HCB, which can cause liver damage and possibly cancer (West German law permits 0.5 mg. per kg. of food); 8 mg. of lindane (0.1-2 mg. per kg. of food are admissible); residues of heptachlor, chlordane and polychlorinated biphenyls (PCBs), considered to be both carcinogenic and teratogenic.

**CYPRUS** - A \$27 million loan for a project designed to alleviate critical water shortages throughout the country has been approved by the World Bank. Completion of the \$202.3 million project is expected in six years. The country's remaining source of surplus water, located in the southwest, will be tapped to provide domestic water supply in the central and southern areas of Nicosia, Limassol, Larnaca and Famagusta. A 110-kilometer underground pipeline will be built to carry water to Kokkinokhoria, on the southeastern side of the island nation, where important agricultural production is in jeopardy because of a lack of water for irrigation.

**EGYPT** - An International Symposium on Industrial and Hazardous Waste will be held in Alexandria, Egypt, June 24-27, 1985. Sponsors of the symposium, ASTM Committee D-34 on Waste Disposal, Alexandria University, and The Egyptian Academy of Scientific Research and Technology, are accepting abstracts until Aug. 31, 1984. Papers are sought in the areas of: characterization and classification of waste; sampling and monitoring of waste and sites; waste management systems; standards and guidelines; health and environmental effects; specific treatment and disposal processes; safety considerations in waste handling; and risk assessment. A post-symposium seminar on a Nile Cruiser is also scheduled for June 28-July 2, 1985. For more information, contact Richard Conway, Union Carbide Corp. P.O. Box 8361 (770/342), South Charleston, W. Va. 25303, (304) 747-4016.

**ISRAEL** - Under a project sponsored by the Binational Agricultural Research and Development Fund, U.S. and Israeli researchers are working on research to help farmers reclaim the desert by simple furrow irrigation, using brackish water and urban waste water as significant and reliable sources for agricultural use. Researchers are from the Agricultural Research Organization, Bet Dagan, Israel, and from Texas A&M University, College Station, Texas.

**SOUTH AFRICA** - Oil pollution along South Africa's coastline cost the country nearly \$651,000 last year, more than three times the cost incurred the previous year, Minister of Transport Affairs Hendrik Schoeman told Parliament recently. There were 21 instances of oil pollution in local waters last year. The worst spill occurred when the Spanish supertanker Castillo de Bellver caught fire and sank, releasing 250,000 tons of crude oil.

**WEST GERMANY** - Adoption of a new toilet system to reduce the over-consumption of drinking water is being urged by the state of Hesse's Environmental Protection Minister Karl Schneider. He pointed out last month that the new toilet -- approved by the West German Institute for Normalization -- would have a flushing tank of from six to seven-and-one-half liters of water instead of the nine liters found in nearly all German toilet tanks today. In addition, the so-called "savings WC" would permit breaking off of the full flushing action when the toilet was used on "for lesser matters." Estimates are that toilet flushing accounts for 30% of drinking water now used in households.

**'THIRTY PERCENT CLUB' SIGNS  
ACID RAIN ACCORD IN OTTAWA**

Environmental ministers of 10 nations, meeting in Ottawa, Canada, March 20-21, signed a declaration committing themselves to undertake reductions of national annual sulfur emissions by at least 30% as soon as possible, and at the latest by 1993, in their fight against acid rain. They also agreed to urge other Signatories to the Convention on Long Range Transboundary Air Pollution of the UN Economic Commission for Europe (ECE) to take similar action.

The ECE encompasses all of Europe, the U.S. and Canada. But nations attending the conference only included Austria, Canada, Denmark, West Germany, France, the Netherlands, Norway, Sweden and Switzerland. Because these nations are part of the so-called "Thirty Percent Club," those who have already decided to reduce their sulfur emissions by 30%, the chief goal of the joint declaration was seen as a move to pressure neighboring countries -- such as the U.S., Britain and Belgium -- to make similar pledges.

The nations represented in Ottawa recognized that a further reduction in sulfur emissions beyond the agreed 30% is, or may prove, necessary as environmental conditions warrant. Effective reductions of emissions of nitrogen oxides from stationary and mobil sources also will be undertaken by these countries as soon as possible, but not later than 1993.

Further impetus to reduction of air pollution in the framework of the Convention is expected when the multilateral environmental conference is held in Munich in June. All convention signatories have been invited. Moreover, at the second session of the Executive Body of the Convention, which will meet in Geneva in September, the Ottawa Conference participants will call on other countries to join them in their commitment to reduce acid-causing emissions.

**DENMARK TO AID INDONESIA  
DEAL WITH INDUSTRIAL WASTE**

by Kate Webb

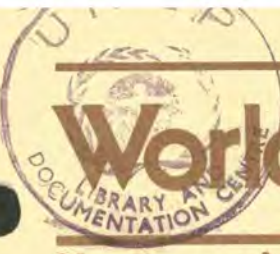
Indonesia's Environment and Population Minister Emil Salim has chosen the Danish government to help deal with the problem of industrial wastes in the greater Jakarta area over the next five years. The greater Jakarta area has a population of over 7 million people, encompassing several large industrial zones.

Announcement of the cooperative agreement was made by Salim following a visit by Danish Foreign Minister Uffe Elleman Jensen. Salim said that the scheme, effective this month, was designed to coincide with "Pelita 4," the years officially designated by the Indonesian government as the beginning of industrialization.

Denmark was the ideal choice, he said, because of its concern over pollution caused by industrial plants in Europe and because of its lack of vested interest in Indonesia. He added that the two countries had also agreed to use a common language at the November conference on industrial and environmental pollution in Paris.

Those Indonesian institutions involved in the cooperation scheme include: industries, public works, environmental research centers (from state universities) and the Indonesian Chamber of Commerce and Industries. Support is expected from the World Bank as well as the U.S. and Canadian Agencies for International Development.

END



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### SLANTS & TRENDS

**WILDLIFE HABITAT CANADA** is the name of a new foundation, created to reverse the losses of essential wildlife habitat across the Canada, especially in wetlands. Destruction of these habitats, particularly in the southern part of the country, has been massive.

**THE FIGURES SPEAK FOR THEMSELVES.** Only 12% of the original 2.3 million hectares of wetlands in southern Ontario exist today. And 60% of the marshes of the St. Lawrence River estuary, 70% of the Fraser River marshes and 65% of the tidal marshes in the maritime provinces have been lost through development.

\* \* \*

**SIX CASE STUDIES WERE USED** by the Organization of American States to illustrate guidelines for regional development planning and investment project formulation. Included in a new report scheduled for publication in June, the guidelines incorporate environmental considerations into the planning process. Both success and failures are recorded to aid practitioners in learning about what has worked and what hasn't in Latin America.

**'ENVIRONMENTAL' PROBLEMS USUALLY OCCUR** when one sector competes with another for the use of natural goods and services. OAS' Department of Regional Development says that if resource management is considered early in the planning process, these conflicts can be minimized, eliminating the need for costly environmental impact assessments. Integrated Regional Development Planning: Guidelines and Case Studies from OAS Experience was prepared in cooperation with the U.S. National Park Service and the U.S. Agency for International Development.

\* \* \*

**WHO WILL TAKE ON ACID RAIN** this autumn when a working group on the issue meets in West Germany. The meeting signifies the first World Health Organization study of the human health aspects of the problem. The working group will study acid rain effects on pH values, corrosion of metal waterpipes and whether acid rain plays any part in the extensive soil leaching now being observed. Up to 30 countries are expected to be represented at the meeting.

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**EUROPE'S STAINED GLASS, TREASURES  
THREATENED BY ACID RAIN, ECE SAYS**

by William G. Mahoney

GENEVA -- A recent study warns that acid rain is destroying Europe's stained glass treasures, some of which date back more than 1,000 years.

A European Commission for Europe (ECE) report, which was presented earlier this month to a special working group established by the Convention on Long-Range Transboundary Air Pollution, states that acid rain is having "a disastrous effect" on the continent's stained glass treasures and could destroy them totally if action is not taken. The convention is an East-West treaty, which entered into force in 1983. It reflects ECE membership of the leading industrial states.

The study comments that stained glass windows and other objects were generally in good condition up until the turn of the century. But in the last 30 years, the "deterioration process has apparently accelerated to the extent that a total loss is expected within a few decades if no remedial action is taken."

Glass from the medieval and post-medieval period (8th to 17th centuries), said the report, is particularly endangered because of the process used in its production. Sulfur dioxide or sulfuric acid has an etching effect on the stained glass. The surface corrodes and the resulting salts form a crust that speeds the decomposition process, causing the colors to peel off. Then the glass substance finally splits and disintegrates into minute particles.

According to the study, sulfur compounds also seriously damage leather and paper objects. "Old organically-treated leather reacts with sulfur dioxide as does paper, with the result being cracks and embrittlement. Paper produced after 1750 seems to be particularly susceptible to damage."

The working group is discussing what steps can be taken to counteract this specific danger, acting within the overall framework of combatting acid rain.

**INCIDENCE OF WATER-BORNE DISEASE  
ALTERED BY AGRICULTURAL IRRIGATION**

The impact of agricultural irrigation development on the health of rural communities was the subject of a study for the World Health Organization carried out by the London-based Environmental Resources Ltd. (ERL). The study resulted in a series of practical guidelines and recommendations for the WHO on how the environmental health impacts of such developments may be assessed and potential health problems minimized.

Cases reported in recent years show that agricultural irrigation projects can alter the distribution and incidence of water-borne diseases, such as malaria and schistosomiasis. ERL found that projects of this type are often designed by rural engineers who have little, if any, knowledge of the health issues that may be involved for people living and working in irrigated agricultural areas.

By examining the potential adverse health effects before development, it is possible to build into the development proposals mitigating measures that could contribute significantly better health standards in many agricultural areas of the world, the ERL study revealed.

ERL focused particular attention on means of avoiding the creation of habitat for carriers of disease, and also on measures to ensure supplies of water for drinking and other uses, that are free from contamination. Detailed study of local ecological and social conditions was found to be particularly important.

## CANADA GOES IT ALONE ON ACID RAIN; HOSTS TOP-LEVEL CONFERENCE

Canada's federal and provincial ministers of the environment this month agreed to proceed with strengthened Canadian sulfur dioxide abatement measures without waiting for the United States to act. The Canadian government this week is also hosting an International Conference of Ministers on Acid Rain to commemorate the first anniversary of the entry into force of the Economic Commission for Europe (ECE) Convention on Long Range Transboundary Air Pollution.

The Canadian abatement plan will be directed toward cutting sulfur dioxide emissions in Canada 50% by 1994, using 1980 as a base year for emissions levels, and the environmental ministers reaffirmed their commitment to achieving the environmental target for wet sulfate deposition of 18 lbs./acre/yr. (20 kilos/hectare/yr.). Previously, federal and provincial governments had committed themselves to a unilateral reduction of 25% by 1990. This program is going forward. But a second 25% had been contingent on complementary action by the U.S.

### U.S. Support for The Plan

Speaking at a press conference in Washington, D.C., on March 13, Ontario Environment Minister Andrew Brandt said that he had received positive reactions to his country's plan for dealing with the acid rain problem from U.S. environmental groups, Congress, the coal lobby and the Environmental Protection Agency and that he hoped the "U.S. will follow our lead" in dealing with the "most serious environmental problem in the history of our two countries."

Brandt, who was co-chairman of the ministers' meeting, said details of the Canadian plan are not yet in place but a commitment has been made for a working group of federal and provincial ministers to determine how the governments will finance the supplementary measures necessary to reach the agreed upon goals.

In response to the question of why there are no scrubbers on Canadian electrical utilities, Brandt explained that only low sulfur (2%) coal is being used and that the coal is only being used approximately one-third of the time, as a back-up to other energy sources. He said that his country is moving toward greater use of nuclear energy as a main source of power. Therefore, said Brandt, "it doesn't make financial sense to put on scrubbers as it does in the U.S."

### Canada Hosts Acid Rain Meeting

Meanwhile, as WER went to press, Canadian Environment Minister Charles Caccia was hosting an international meeting in Ottawa of the environment ministers of eight countries to address the need to reduce emissions causing acid rain. The group is considering the effects of acid rain on forests in Europe, reviewing individual national strategies to reduce long range transboundary air pollution and considering new approaches to solving the acid rain problem.

Attending the conference are ministers of Austria, Denmark, Finland, France, Norway, Sweden, Switzerland and West Germany. These countries previously endorsed a decision to reduce emissions by 30% by 1993, based on 1980 emission levels.

In 1979, Canada's environment minister, along with senior ministers from other ECE countries signed the Convention on Long Range Transboundary Air Pollution, the only multilateral agreement on air pollution. The convention came into force on March 16, 1983, and by February 1984, it had been ratified by 30 nations.

Among the articles contained in the convention is one dealing with the provision for exchange of information regarding effects research, control strategies, and control technologies. It states that planners of any new sulfur producing installations must take account of transboundary pollution.

NGOs CRITICIZE DRAFT UNEP  
PESTICIDE GUIDELINES

by Anna Lubinska

BRUSSELS -- Non-governmental organizations, including the Pesticides Action Network (PAN), the Sierra Club, the International Union of Consumers Organizations, the European Environmental Bureau and Oxfam, have described the latest United Nations Environment Programme's draft guidelines on the trade and management of potentially harmful chemicals, in particular pesticides, as a step backwards.

The guidelines were instigated by earlier resolutions by the UNEP Governing Council and the European Parliament, which called for a trade ban on such chemicals and an end to the double standard practiced by European companies exporting pesticides to third world countries. Under such a ban, an export license would only be granted if the importing country raises no objection or, in a tougher version of the ban, if it makes a specific request after being made fully aware of the risks involved.

At present, less than half the developing countries have national laws controlling the import of pesticides while EEC laws governing pesticide trade specifically exclude exports to the Third World.

Exports of chemicals from the OECD countries to the developing countries rose from \$4 billion in 1970 to \$26 billion in 1980.

In sharp contrast, this notion of informed consent has been replaced in the draft by that of exchange of information. This provides that exports of potentially harmful chemicals be subject to prior authorization, based on notification of the receiving country.

What The Guidelines Mean

The guidelines also apply to chemicals that are banned or severely restricted in the country of export. Other categories, such as chemicals that have not been registered for use in the exporting country or have been voluntarily withdrawn, are thus not covered, the NGOs complain.

Marc Pallemaerts, speaking on behalf of the NGOs, told representatives of developing countries at a meeting in Brussels that there has been a clear shift in position. The guidelines fail to specify clearly defined goals, he said, by putting too much emphasis on the removal of barriers to trade in these chemicals as opposed to environmental and health protection.

According to the guidelines, a national authority should be designated to collect and provide information, receive notifications and carry out monitoring and surveillance of the trade and use of pesticides. This would include making sure classification, packaging and labeling conform to international standards and that precautionary information is passed on to users.

Developing countries are themselves first to admit that the necessary control structures are lacking. Technical and material assistance should be provided with the help of the UN and governments, say the NGOs, to set up systems.

The authors of the guidelines, meeting in Holland for further discussion at the end of this month, see the guidelines as a first step towards a new international law, or alternatively as the basis for provisions for a future convention or treaty. NGOs fear this will be used as an excuse by exporting countries to procrastinate. Instead they advocate that governments start work on national laws immediately. So far, only two EEC countries, Holland and West Germany (incidentally, the major exporter of pesticides) have taken that initiative.

**SOLAR ENERGY FOR FOOD PRESERVATION  
TO HELP RURAL WOMEN IN PARAGUAY**

by Judith Kelly

SAN LORENZO -- The use of simple solar energy technologies for food preservation and cooking will now be put into practice in rural Paraguay. Twenty extensionists, many of whom head regional offices, recently participated in a hands-on, two-week course at the National Agricultural Extension Service at San Lorenzo, Paraguay.

The concepts introduced -- solar food drying techniques and "fireless" cookery -- will be incorporated in the national rural home extension program, sponsored by the Division of Home Extension. Rural farm families, particularly rural farm women, will be the key beneficiaries of these new techniques.

In Paraguay, farm families work small land holdings and are the major source of national agricultural production. Women work in the fields with the men to raise cotton or other crops, but are also expected to provide food and prepare meals for their large families.

Also, the seasonal abundance of fruits and vegetables in this very hot, humid climate, means that much of the bounty is lost to rot or insects. With solar drying techniques, a great variety of these foods can be saved with their vitamin content intact. Preserving these nutritious foods for use later in the year is not only an economic saving, but in keeping with the Home Extension Division's twin goals of improving the nutritional intake of rural Paraguayans and promoting the use of locally-produced foods.

**How The Technology Works**

During the course, the extensionists each built their own simple solar food dryers from commonly available, inexpensive materials, demonstrating how rural farm families could easily afford these technologies. The participants also learned how to rehydrate the solar dried foods and use them in popular recipes, as well as how to construct and use solar ovens.

The "fireless" or "haybox" cooker uses simple materials (e.g., cotton, grass, or paper) to insulate a container in which food has been heated to a boil. The cookpot can then be left unattended to finish cooking without a fire-source. For rural farm women, starting a vegetable or meat stew in the early morning and placing it in the "fireless cooker" would mean a hot meal ready to eat at midday when they returned from the fields.

This would not only save food preparation time, but also cut down the amount of firewood or other fuel needed. In Paraguay, where heavy deforestation means a scarcity of fuel sources, the fireless cooking technique could help reduce the amount of fuel needed for cooking and also reduce the time spent in search of fuel.

The head of the Home Extension Division at the National Agricultural Extension Service, Ana Schapovaloff de Radice, told the participants: "This opens up a new alternative in your mission of orienting the rural woman in improving her role as a housewife and administrator of family resources. Conserving fruits, vegetables and other foods so that they can be used all year -- using the sun's free energy -- is something we must value since it represents an economic, permanent supply of food."

The course was sponsored by the U.S. Peace Corps in Paraguay, with guest trainers from Farallones International of Occidental, Calif. For more information, contact the Division de Educación para el Hogar, Servicio de Extension Agricola/Ganadera (SEAG), San Lorenzo, Paraguay.

## RAPID POPULATION GROWTH, STRAIN ON RESOURCES PREDICTED FOR INDONESIA

by Kate Webb

JAKARTA -- Indonesia's population will rise to at least 216 million from the current 158 million by the year 2,000, with larger and larger numbers of people crowding major cities, according to the country's Minister for Population and Environment Emil Salim.

Salim, speaking to the American Chamber of Commerce, said the government hoped to bring the current annual population increase of some 2.3%, or 3.5 million, down to below 2%, but even at that rate the pressure on natural resources will be enormous. Jakarta's population, now officially estimated at 7 million, is expected to reach 12 million by the year 2000, he said. The overall population of those living in urban areas is expected to reach 48 million by 1988.

With those figures in mind, the minister said, great attention must be focused by the government on the quality of life. Priority must be given to saving the country's forest and water reserves, preventing undesirable environmental impacts from rapid development, and boosting environmental education.

In a call to industry, especially to foreign companies exporting equipment and technology to Indonesia, Salim called for what he termed "clean technology."

Responding to questions about why Indonesia had not yet introduced basic standards, such as stipulated by the Environmental Protection Agency regarding imported equipment, Salim said that the government still did not have enough knowledge to draw up a list. He argued that foreign equipment exporters should police themselves. But sources close to Salim say that the minister has been urging the various government departments to introduce basic environmental standards.

## GOVERNMENT AIDS VENEZUELAN GROWERS AS VIRUS DECIMATES ORANGE GROVES

by Hilary Branch and Lili Steinheil

CARACAS -- An estimated 370,000 citrus trees in Venezuela have died from the citrus tristeza disease ("quick decline"), caused by a virus that is sweeping the major production centers of Aragua, Carabobo and Yaracuy states. Although at present orange production is down only 10%, projections give a deficit of 760,000 tons of oranges over the next ten years.

Citrus tristeza is transmitted by several aphids, the most deadly being *Toxoptera citricida*. Two years after this pest first appeared in Venezuela in 1976, citrus tristeza was detected in orange plantations. The government set up a Citrus Phytosanitary Commission in 1978 to implement emergency measures.

The severity of the viral attacks, which interrupt the flow of sap from leaves to roots and cause the trees to wither, depends not only on the strain of virus, but the susceptibility of the citrus species. Venezuela's orange growers traditionally used bitter orange as grafting stock but estimates are that 65,000 acres of groves will have to be replanted with more tolerant stock.

Fusgari, a government foundation providing agricultural services, anticipated the arrival of tristeza (which originated in Spain) by several years and has provided growers with viral-free plants grafted onto less susceptible stock, such as the Cleopatra tangerine or Volkamerican lemon. These, however, are vulnerable to other viruses. Citrus nurseries were ordered to eliminate all saplings grafted onto bitter orange stock and they received compensation. Also, a phytosanitary control belt has been established around the affected areas.

**NEW ZEALAND RIVER DESIGNATED  
FOR PROTECTION UNDER NEW LAW**

by Peter Lawless

WELLINGTON -- The Motu River last month became the first in New Zealand to be given the protection of a National Water Conservation Order. The conservation law was passed in 1981 to protect the country's wild and scenic rivers.

Flowing through the precipitous Raukumara ranges in the East Cape region of the North Island, the Motu has attracted the attentions of both developers and conservationists. Plans to construct dams for hydroelectric power generation were abandoned during the course of the hearings for the Conservation Order. The river will now remain untamed by dams, and any diversion of water or discharge of wastes which could destroy its natural character is prohibited.

Responding to the decision, Dr. Ian Shearer, minister for the environment, said, "New Zealand enjoys a unique heritage in the variety of its natural waters. We have already committed a good proportion of these to specific uses. New Zealand must not end up with 'wall to wall' hydro dams."

**AROUND THE WORLD**

**BURMA** - A contract to complete a water distribution system analysis and improvement plan for the city of Rangoon has been awarded by the Asian Development Bank of Manila, Philippines, to the U.S. firm Metcalf & Eddy. The analysis will be the basis for detailed design of the first phase of a \$160 million, three-phase improvement program to serve 2.5 million people in Rangoon. Improvements will include distribution pipelines, pumping stations, storage tanks and associated equipment. Design of improvements is scheduled to begin in June.

**CZECHOSLOVAKIA** - Radio Prague reported last month that Czech firms found violating nuclear safety regulations are facing extremely high fines. The Constitutional Law Committee of the Czech National Council had debated a government draft law on state supervision of nuclear safety. It said that the Czechoslovak Commission for Atomic Energy "is authorized, among other things, to impose fines of up to 1 million crowns (\$10= 1 crown) on those organizations that threaten or violate nuclear safety."

**DENMARK** - The government has refused to cancel its ban on non-reusable beer and beverage containers -- primarily beer cans -- despite opposition from the European Community. The community says the Danish ban constitutes a trade hindrance, which is forbidden under community rules. The Danish Environmental Ministry denies this and says its decision is based solely on environmental considerations. The European Commission is expected to file suit against the Danish Government.

**UNITED KINGDOM** - The Atomic Energy Agency (UKAEA) is conducting a series of studies on decommissioning nuclear power reactors, using the Windscale advanced gas-cooled reactor. Three stages of decommissioning have been identified: (1) plant shutdown, fuel removal, coolant removal and safety measures; (2) the installation is reduced to minimum size without penetrating those parts which have high levels of induced radioactivity; and (3) complete removal of the reactor and all other plant waste off-site, followed by return of the site for redevelopment or general use by the public. According to UKAEA's William H. Lunning, author of a chapter in the recently-published The Economics of Nuclear Energy, while decommissioning has not "been a primary consideration in the past," more attention is now being given to design and specification of reactor materials to ease future problems of dismantling, and to power station layout to facilitate land reutilization.

**SOVIETS STALLING AGREEMENT  
ON MUNICH ENVIRONMENT TALKS**

by William G. Mahoney

MUNICH -- West German officials in Bonn have revealed that the Soviet Union has tossed a wrench into the planning for an international environmental protection conference in Munich this June. The Soviet Union has let Germany know -- indirectly in Geneva -- that it will not participate in the planned conference if the Federal Office for the Protection of the Environment, headquartered in West Berlin, will have an official role.

At first, the Soviet Union orally agreed to take part in the Munich Conference June 24-27. But in the past weeks Soviet delegates to specialized United Nations agencies in Geneva made it known to their West German co-participants that if the West Berlin Federal environmental office participated, their country's delegates would not be present.

The Soviet stand reflects a permanent position: West Berlin should be considered a permanent independent, four-power controlled entity and not a part of the Federal Republic.

When the Federal Environmental Protection Office was founded and located in West Berlin in the early 1970s, the Soviet Union protested. They followed this protest by refusing to ratify an environmental protection agreement between them and Bonn because it provided for the inclusion of West Berlin.

This stand, that the Soviets describe as a matter of principle, has raised another matter of principle for West Germany: can a foreign country be permitted to influence the composition of a West German delegation? And if so, what would be the implications for future relations?

The issue is now being debated at the highest levels in Bonn. The West German position is that the Munich Conference is not being organized by the Federal Office for the Protection of the Environment, but by the federal government itself. They say it will not be a meeting of environmental protection specialists, but a political meeting held at the ministerial rank. Bavarian Office for the Protection of the Environment will be making technical and other arrangements for the conference. The Federal Office would not appear "in a formal manner."

While the diplomatic chess game continues, the Bavarian Office for the Protection of the Environment is pushing ahead with arrangements for the meeting.

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### SLANTS & TRENDS

CHINESE OFFICIALS ARE ALARMED over the increasing environmental devastation that is accompanying the nation's efforts to quadruple economic output over the next two decades. Since 1978, the published reports of the nation's scientists and policy makers have become increasingly critical and candid, reports a recently-published book, by Vaclav Smil, on China's environmental crisis.

THE BAD EARTH DOCUMENTS and evaluates the major environmental problems that are currently undermining the quality of life in China. These include: critical water shortages and the pollution of water with heavy metals; carcinogens in the air at levels far exceeding acceptable standards; accelerating erosion; siltation of major rivers and lakes; massive deforestation; disappearance of rare animal species; advancing desertification; an acute rural energy crisis; mismanagement of agroecosystems; and irreversible losses of farmland.

\* \* \*

A BAN ON LOW-LEVEL RADIOACTIVE MATERIAL disposal at sea was extended late last month at a meeting of an international organization that regulates the sea dumping of wastes. A spokesperson for the International Maritime Organization's London Dumping Convention said that the voluntary ban on low-level waste dumping that was passed last year will remain in effect through September 1985. At that time, a report on the safety of such dumping is scheduled for completion.

THREE EUROPEAN NATIONS -- Belgium, the Netherlands and Switzerland -- have complied voluntarily with the ban. And Britain, which had been responsible for 90% of all nuclear dumping at sea, was forced to drop plans to dump 2,500 tons of material when its transportation unions refused to handle the waste.

MEANWHILE, BRITAIN, JAPAN AND U.S. are among nine nations that are conducting research into the possibility of packing high-level waste into torpedo-shaped canisters and firing them into deep patches of seabed sediment. That practice was opposed by convention delegates from Argentina, Canada, Ireland, West Germany and the Pacific atoll of Nauru, who say such action would be unsafe and morally repugnant. But those delegates failed to win a ban on such research.

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**TOTAL HOG POPULATION OF HAITI  
DESTROYED TO FIGHT DISEASE**

by Arthur B. Candell

Port-au-Prince -- The Caribbean Republic of Haiti and its neighboring country, the Dominican Republic, sharing the island of Hispaniola are perhaps the first countries in the world to deliberately wipe out an indigenous species of animal. This drastic action was selected as one of the available options to eradicate a virulent disease exclusive to members of the porcine family called African Swine Fever (ASF).

ASF has apparently always existed in the African wart hog as a benign virus with little, if any, effect. But sometime about the turn of the century, domestic pigs took sick at an alarming rate, with a mortality figure of almost 100%.

The disease made its appearance in the Western hemisphere in the 1960s, where it appeared simultaneously in Brazil and the Dominican Republic. The Western hemisphere outbreak was extremely lethal and spread rapidly. It soon appeared in Haiti and Cuba. Cuba, with an excellent health program, contained the disease to a small area near Guantanamo and it soon was wiped out. Cuban authorities blamed Haitian refugee "boat people" for introducing ASF into their country. The Dominican Republic contained its pigs in delineated areas, and with the help of foreign aid, it has been declared disease-free.

After Haiti was informed that the disease was rampant in its country, the government remained unconcerned, until ASF threatened to crop up in the northern hemisphere -- Mexico, Canada and the U.S. -- and it threatened the billion dollar pig industry. The Interamerican Institute for Agricultural Cooperation (IIAC), Canada, Mexico and the U.S. funded a vast program to wipe out ASF in Haiti by totally eradicating all pigs. The project, ponderously called "Projet d'Eradication de la peste porcine Africaine et Developpement de l'Elvage Porcine en Haiti," is known by its acronym, PEPPADEP.

Carrying Out PEPPADEP

Because Haitians consider pigs as depositories of wealth rather than simply as food, the formidable task of educating the rural Haitian peasant as to why his pig had to be killed was undertaken.

Marie-Therese Sebrecht, co-director of the Information Division of PEPPADEP said, "The first phase was nine months of intensive field work explaining the disease and motivating the peasants to allow them to kill their pigs. We explained that we would pay them the market value for each pig killed and further, allow them to keep the pig for food. The disease has been proven to be non-transferrable to humans."

Phase 2 was the actual slaughter, said Sebrecht. "This was done by knocking the pig out with a stun gun and slitting its throat. The 'hit men,' accompanied by paymasters and armed guards, immediately reimbursed the peasant. We killed 385,000 pigs and paid out over \$9 million. Phase 3," continued Sebrecht, "was the disinfecting and cleaning up of the former ASF regions. Roadblocks were set up, vehicles sprayed with disinfecting solutions and stray, wild pigs carefully rounded up and killed."

Haiti was finally declared ASF-free in January 1984, three years after the start of the program, which, said co-director Dr. Leland Bartlett, "was administered by 20 foreign experts, employed 300-400 people and cost \$19 million." Specially bred, disease-free pigs were imported from the U.S. These were placed in areas throughout Haiti. So far, none have evidenced ASF. The next step is restocking. Hybrid, good quality pigs will be supplied to Haiti by various foreign-aid missions and either given or sold to the peasants at nominal cost.

**EUROPEAN PARLIAMENT CALLS  
FOR GREATER PROTECTION OF NORTH SEA**

by Anna Lubinska

Brussels -- The European Parliament meeting in Strasbourg in January voted unanimously in favor of intensifying efforts, possibly by means of a custom-designed North Sea convention, to stem increasing pollution of this rich north European marine environment.

The proposal, by Dutch representative Johanna Maij-Weggen, is timely. During the recent bad weather in Europe there were numerous reports of cargo "going overboard," including 80 barrels of a highly toxic herbicide. Ship owners were accused of taking advantage of stormy conditions to carry out flushing operations.

Flushing oil into the sea is a violation of the Marpol convention, which came into force in October 1983. The convention is designed to prevent pollution by ships. Tougher fines of up to about \$50,000 have already been introduced by the West German government, applying to both West German and foreign flagships and rigs operating in territorial waters. Concern in West Germany over North Sea pollution is growing and the Bonn government intends to hold a conference at the ministerial level, involving all the coastal states, on the issue in the fall.

Much of the 400,000 tonnes of oil polluting the North Sea is due to drainage systems carrying used motor and industrial oil from land-based sources, although occasional major spills, such as the Amoco disaster in 1978, are far more spectacular.

**Effects of the Spills**

According to the deputy mayor of Brest, apart from damaging the tourist industry and running up a hefty cleanup bill, the 220,000 tonnes of oil from the Amoco Cadiz that polluted 380 kilometers of coastline have had long-term effects on the breeding of fish such as plaice and sole. Scallion and shellfish populations have been wiped out. In the following season, 4,690 tonnes of oysters were unsaleable and inshore fish also showed signs of undernourishment.

Current oil-cleaning budgets, which can be considerable (U.K. and France each spend between \$8 and \$20 million per year, according to OECD), rarely stretch to providing compensation to fishermen, oyster farmers or hoteliers.

A quarter of the indigenous sea birds in the North Sea area are said to die prematurely as a result of oil pollution. Other victims include the grey whale, dolphins and porpoises. But oil is not the only cause. The other major sources of pollution are organic and inorganic chemicals.

Greenpeace, the environmental organization, estimates that 25,000 tonnes of manganese, 14,000 tonnes of lead, 45,000 tonnes of zinc, 1,120 tonnes of cadmium and 1,000 tonnes of mercury flow down to the North Sea every year, carried by the rivers Ems, Elbe, Weser and Rhine. Some 170,000 tonnes of nitrates and 11 million tonnes of sewage sludge -- largely untreated -- are carried down daily. Of the EEC countries, only West Germany and the United Kingdom treat their sewage.

North Sea waters are renewed roughly only every two years when they flow northward to the Arctic Ocean. Meanwhile, the waste -- both organic and inorganic -- becomes a problem. Organic waste, which is a source of bacterial and viral infection, encourages algae to bloom. The breakdown of extra organic matter uses up valuable oxygen in the water, asphyxiating animal and plant life.

(continued)

PROTECTION OF NORTH SEA AGAINST POLLUTION (Cont.)

Organic chemicals such as polychlorinated biphenyls (PCBs) used in transformers and as additives to inks, plastics and oils, have been known to affect the hormone balance in seals. Up to seven times as many PCBs have been found in cod from the southern part of the North Sea as northern waters. Pesticides (from agricultural run-offs) accumulate in crabs and shellfish. Heavy metals, while they tend not to affect the fish themselves, do accumulate, eventually turning up in the human body. Cadmium accumulated in the kidney can cause Itai-Itai disease. Bacteria in water convert mercury into methyl mercury: harmless to fish but lethal to humans.

The North Sea is traditionally rich in such commonly consumed varieties of fish as herring, mackerel and sole. In 1974, Europeans ate their way through 1.3 million tonnes of fish -- one third of the annual North Sea catch. The remaining two-thirds were processed into fish meal (and fish oil) fed to pigs and poultry similarly destined for the dinner table.

Between 1972 and 1976, 902,000 curies of radioactivity are reported to have been released from the British reprocessing plant at Sellafield alone. This flows into the North Sea by the process of sea currents, which carry it northwards from Cumbria to Scotland and down the east coast of England.

Over the last twenty years, at least eight different international conventions to halt pollution of the seas by banning dumping of dangerous substances have been drawn up. European directives have been issued limiting the discharge of mercury, cadmium, waste oils, PCBs and titanium dioxide. Various national laws exist too among the EEC member states. Some are more liberal than others. Denmark and the Netherlands tend to be the most rigorous. While on the one hand conventions and national laws may overlap, in certain cases lack of ratification or poor supervision of implementation leaves gaps, says Maij-Weggen.

The Maij-Weggen resolution proposes a beefed-up convention incorporating current legislation that would ban flushing, induce states to set up more cleaning facilities in ports, a system of port arrest for offending vessels, compensation for damage to fishermen's nets and a ban on dumping of untreated sewage. Supervision and coordination, as well as issuance of licenses and fines would be undertaken by a central body. It also suggests that the interested parties: industry, the fishing sector, scientists and environmentalists be brought together in an advisory capacity.

PRAVDA CHARGES CHEMICAL PLANT  
POLLUTING CRIMEAN COAST RESORT

by William G. Mahoney

The Soviet daily Pravda has demanded that a chemical plant in the Crimea be closed and dismantled because it is polluting a coastal resort. The Jan. 18 report stated that waste from an herbicide factory was polluting the Black Sea coast around Saki, a resort visited by many thousands of Soviet citizens annually to take mud cures.

Pravda reported that the chemical waste was killing the very organisms in the mud that made it curative. The paper said that the minister of the chemical industry had denied that the plant was causing pollution but also pointed out that the opposite stand had been declared by a council of ministers commission, by Ukrainian government bodies and by the Communist organization in the Crimea. The article quoted a report issued in Saki a year ago as saying "the further joint functioning of the chemical production facilities and the resort is impossible." Therefore, Pravda said, "the plant must be dismantled..."

**BRITISH FIRM FOUND RESPONSIBLE FOR SEA  
DISCHARGE OF RADIOACTIVE MATERIAL**

by Barbara Massam

London -- Public fears about safety at Britain's nuclear reprocessing plant -- Sellafield, in Cumbria -- have been confirmed by two highly critical government reports. Both are in response to an abnormal discharge of radioactive material from the nuclear plant, Windscale, to the sea last November.

The reports are by the Radiochemical Inspectorate of the Department of the Environment and by the Health and Safety Executive (based on preliminary investigations by Her Majesty's Nuclear Installations Inspectorate). The Radiochemical Inspectorate report puts blame for the incident and subsequent environmental contamination on the managers of British Nuclear Fuels Ltd.

As a result, disciplinary action has been taken against some staff members, and the company's board is being reorganized to cover apparent deficiencies in the "management of liquid radioactive waste; communication between staff; record keeping and the monitoring and investigation of the wider environmental impact." Moreover, there is a possibility of subsequent police action since details of the incident have been referred to the Director of Public Prosecutions for possible license violations under the Health and Safety at Work Act and the Radioactive Substances Act.

The escape of radioactivity occurred during a shutdown period for plant cleaning. About 4,500 curies of radioactivity in liquid, solvent and solid forms were transferred to a sea discharge tank and a "significant proportion" subsequently discharged to the sea itself.

The Health and Safety Executive examination blames "human error" and inadequate operating records and procedures. Both reports urge a thorough overhaul of management and monitoring of equipment.

Response to the Reports

The government claims that steps already taken -- including the introduction of on-line monitors and automatic shutdown -- would prevent a repetition of the November escape.

However, public concern is likely to remain for some time. Observers note that the incident was first reported by the environmental group, Greenpeace, after a rubber dinghy its members were using to monitor radioactivity off the Cumbrian coast was suddenly surrounded by radioactive debris.

British Nuclear Fuels Ltd., which had sole responsibility for the operation of Sellafield, did not report the discharge until several days later and subsequently understated the likely contamination of local beaches. Now the government has barred the use of certain beaches to the public until further investigations have shown them to be safe.

When he announced publication of the two critical reports in the House of Commons, the Secretary of State for the Environment, Patrick Jenkin, reaffirmed the government's confidence in Sellafield, stressing that £100 million (\$140 million) was being spent by British Nuclear Fuels Ltd. to reduce discharge to the environment. He said this would involve more on-land waste disposal (despite the fact that it too is generating protests).

Meanwhile, the Irish government, concerned about the possible contamination of Irish coastal areas, wants all marine discharges from Sellafield banned as soon as possible. It has also demanded that it should be informed immediately if any further incidents occur.

**DAMAGE FROM INDONESIAN FOREST FIRE  
EVALUATED BY WEST GERMAN EXPERTS**

by Kate Webb

Jakarta -- Fifty percent, or about 20 million cubic meters of the commercial growing stock in primary forests in the Indonesian province of east Kalimantan were destroyed by forest fires, which ravaged the area in early 1983, according to the West German Institute of Forestry.

The Institute said inventory data showed that almost 3.1 million hectares, covering 800,000 ha. of virgin forest, 1.2 million ha. of logged forest, 550,000 ha. of secondary forest and 550,000 ha. of peat swamp forest, had been affected by the fires which raged out of control during a lengthy drought that also killed much of the wildlife in the area.

Difficulties faced by the 50-odd concessionaires in the devastated areas have already forced the Indonesian government to allow the import of logs from the neighboring Malaysian state of Sabah as feedstock for plywood mills in the area. The German experts said that the Indonesian government and the World Bank, which provides the main funding for Indonesia's transmigration project, should reconsider current plans to open migrant settlements in unaffected areas in view of the fire damage. Under the transmigration project, millions of families are moved from densely populated Java and Bali to new settlements in the less densely populated regions.

Specifically, the Institute suggested that those settlements earmarked as virgin forest lands, which had been unaffected by the fires, should be relocated in the burnt-out areas where land could be cleared relatively easily and the loss of nutrients in the soil compensated by fertilizer from a large urea fertilizer plant located in the area. A change in plans, however, could be difficult since the bank funds had already been allocated.

During a visit to the devastated area last December, WER found that many voluntary settlers had already moved into the burned-out tracts and were attempting to grow dry rice, pepper and cassava.

The Institute also recommended that Transmigration Authorities should set aside funds to include more forestry experts in its planning operations, and said that the Markham River and other vital waterways in the province could experience extreme changes in water levels and increase run-off erosion and the sedimentation load on all rivers.

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AROUND THE WORLD

**AUSTRIA** - Swamp forests bordering the Danube River, one of Europe's most celebrated waterways, are steadily shrinking, the World Wildlife Fund in Geneva reported last month. The area, which is home to a number of rare and endangered species, including the few remaining white-tailed sea eagles, is threatened by construction of a major power plant. Reports from WWF-Austria show that riverine forests have diminished to 20% of their former size. WWF has declared the plight of the sea eagles and the preservation of the "jungle" of Hainburg to be among its main priorities.

**BRAZIL** - Officials have begun investigating whether the use of herbicides to clear a strip of jungle for a power transmission line may have been the cause of 40 deaths in the Amazon region two years ago. Tailândia farmers and other farmers in Pará state were affected by poisoning between December 1981 and June 1982 but the extent of their problems has only recently become known. Published reports suggested that the use of the herbicides Tordon 101 and 105, manufactured by Dow Chemical, was to blame for the deaths. The company's subsidiary, however, said the accusations were "unfounded and implausible." It also claimed that the herbicides had been approved for use in Brazil and were not harmful.

**EGYPT** - In an effort to eliminate the Mediterranean fruitfly (Medfly) and to thereby increase the quality and quantity of fruit and vegetable production in the country, a new facility was opened last month by the International Atomic Energy Agency and the UN Food and Agricultural Organization. The facility, a pilot plant for mass-rearing of the Medfly, will normally hold 8-10 million flies. It was constructed to develop and test materials and methods for effective and economic rearing of the flies that will be used in a large facility, to be built in El-Amriya, near Alexandria, to produce about 1 billion Medflies weekly. The flies will be rendered sterile by radiation prior to release in infested areas in large numbers. Wild females that mate with sterilized males cannot reproduce and the target species should be eliminated within a few generations. Known as the Sterile Insect Technique, the project is expected to reach its goal within four years. The technique eliminates the need for aerial and ground spraying of insecticides. Total cost of the project is estimated at \$30 million, of which the Egyptian government is paying \$8 million in cash.

**HUNGARY** - A water purifying device, which requires 50% less investment expenditures, has been developed through the cooperation of several Hungarian universities and research institutes. Based on the invention of engineer Imre Gyulavári, the small-sized prefab pipe system is made of synthetic materials and works with 50-100% higher efficiency. Adapted so far to 32 waste water types, the equipment purifies drinking water and industrial sewage, recycles the outlet water of ore-dressing plants and separates oil and fat contamination in food factories and car service stations.

**INDIA** - The standing committee of India's Central Board of Forestry has recommended setting up a separate Department of Forests at the federal level as a means of ensuring that forests are properly conserved and developed. At present, forests come under the Agricultural Ministry, which takes a commercial view of their value.

-- Madhya Pradesh and Maharashtra states in western India have decided to refer a controversial hydro project on the Indravati River to an expert task force which will reach a decision on its environmental impact. The \$40 million Indrasagar scheme in Bastar, a district with the highest proportion of aborigines in the country, threatens to submerge 69,000 hectares of rich forest and displace the people from 52 villages. Encouraged by the federal government's decision to halt another project -- the Silent Valley in Kerala -- environmentalists hope to stall this scheme.

**SWISS SEEK TO CURE SICK FORESTS;  
PONDER CUTTING AUTO SPEED LIMITS**

by William G. Mahoney

Geneva -- The Swiss government in Berne is readying urgent action to curb dying forests, and among steps under discussion is cutting back maximum permissible speeds on superhighways and federal roads. The decision to act promptly and decisively was triggered by the publication of a study by 1,400 foresters in late 1983 that found that every 25th tree in Switzerland is in danger of dying or affected to the degree that it would not survive the next two to five years.

The study, known as the Sanasilva-Studie, also noted that another 14% of trees are affected, but could not be considered beyond saving. All tree species are affected, it said, but firs and white pines are most severely stricken.

Great regional differences were found in the study. One example: a comparison of two so-called "city cantons" -- Basel and Geneva -- showed that in Basel 70% of the trees are sick, while in Geneva, there is no serious damage. The study also noted that the air pollution load level that trees can withstand was already exceeded by the year 1960.

These alarming findings forced the federal government to promise it would submit proposals for reduction of air pollution within the next month. A spokesperson said that among proposals is one that would reduce the maximum permissible speed on the autobahns from 130 to 100 kilometers per hour (81 mph to 62 mph) and from 100 to 80 kph (62 to 50 mph) on federal roads. These speed reductions were demanded by the Social Democrats.

A separate study published in mid-February demonstrated that most car engines expel a less harmful exhaust at 100 kph than at 130 kph, and almost all motors have a less harmful exhaust at 80 kph than at 100. But observers say the timing for action to cut speed limits would be politically unfavorable.

**INDIA HOSTS POLLUTION CONTROL EXPO;  
FINALIZES POLLUTION PARAMETERS**

by Darryl D'Monte

Bombay -- India recently held its first international exhibition of pollution control equipment here in the country's industrial capital. Among the 40 Indian and foreign companies participating in "Envirotech-84" were Indian fertilizer manufacturers, some of the worst offenders in polluting the atmosphere in recent years.

The state-owned Rashtriya Chemicals and Fertilisers Ltd. has been blamed for causing the worst contamination in the eastern suburbs of Bombay.

Digvijay Singh, India's deputy environment minister who inaugurated the exhibition, said that parameters for air and water pollution in 18 industries are being finalized. He noted that Indian industry -- the 12th largest in the world by output -- is still reluctant to install anti-pollution equipment, but the government is attempting to set up an agency to loan them funds. The World Bank, along with the government-controlled life insurance corporation, already extends such assistance.

Countries such as China are interested in importing equipment from India since the technology would be appropriate. Once the air pollution parameters for Indian industry are established, observers predict that there will be great interest in producing pollution control devices domestically.

# World Environment Report

## News and Information on International Resource Management

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### SLANTS & TRENDS

**OLYMPIC ATHLETES IN SARAJEVO** breathed easier last week as a result of a major anti-pollution program, supported by the city's residents and the World Bank, that has converted Sarajevo from the world's most polluted city to one safe for both athletes and spectators, as well as residents. Over the past decade, the bank and city authorities have worked together to carry out two projects to reduce air and water pollution.

**LIGNITE AND COAL** had been used to power factory furnaces and heat homes as the population grew from 75,000 in 1945 to over 350,000. This resulted in a thick smog of sulfur dioxide pollutants, particularly in the heavily populated area near the Miljacka River that is surrounded by steep mountains. The World Bank approved a \$38 million loan to provide for a pipeline and service lines to connect Sarajevo's homes and factories to the nation's natural gas network. Work is still going on to convert heating and cooking equipment in homes to the gas.

**WATER POLLUTION WAS ALSO A PROBLEM**, with distribution pipes badly corroded and an overtaxed sewerage system allowing sewage to seep into the water supply. A \$45 million World Bank loan provided water supply and sewerage for an area about twice that covered by the old system. The city also cleaned up the Miljacka River and within the last year, fish have returned to the part of the river that runs through the city.

**SARAJEVO RESIDENTS ARE RESPONSIBLE** for helping to bring about the changes. In 1973, the voters responded favorably to a referendum on financing the projects. They overwhelmingly approved the imposition of an assessment, ranging from 1.5% to 2.5% on their gross incomes to pay for better health facilities and an improved water and sewerage system.

\* \* \*

**MOSCOW IS 'SERIOUSLY CONCERNED'** over acid rain and would like to give new impetus to international cooperation on environmental problems. According to the Soviets, yearly damage to the country's agriculture is as high as \$580 million. The acid rain affects up to 15% of the harvest in some 160,000 square miles in areas west of Moscow. Officials also noted that the Soviet Union imports 10 times more atmospheric pollution than it exports as a result of prevailing easterly winds bringing pollution from both Eastern and Western Europe.

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## MULTI-BILLION DOLLAR NUCLEAR FUEL INDUSTRY PROPOSED FOR AUSTRALIA

by Trevor Rees

Melbourne -- Establishment of a multi-billion dollar nuclear fuel industry, sited in Australia, to service the entire Western Pacific region as well as other nuclear nations, has been proposed by Ted Ringwood, a professor at the Australian National University.

Ringwood advocates a Western Pacific consortium, funding a \$A4 billion reserve (\$1=approx. \$1.0689 \$A) that would generate income of more than \$A1.5 billion a year through waste disposal work, enrichment and reprocessing.

Under the proposal, waste material would be either returned to its country of origin as Synroc -- stable synthetic rock -- or buried in canisters of Synroc in deep drill holes in Australia. These drill holes would be 1-meter in diameter and could hold all the nuclear waste produced in Britain over a four-year period.

Ringwood has developed a new form of Synroc -- Synroc F -- which can incorporate spent fuel that has not been reprocessed to remove plutonium. He says that this is extremely stable and leach-resistant and would mean that untreated waste could be incorporated directly into Synroc.

An enrichment plant, handling 9000 tonnes of uranium and producing 1,500 tonnes of enriched product annually would cost about \$A6 billion to establish, and a fuel fabrication plant would cost another \$A250 million, Ringwood says.

## CAMPAIGN TO GAIN WARMTH, ENERGY FROM RUBBISH LAUNCHED IN ENGLAND

by Barbara Massam

England -- Warmth and energy from rubbish is the theme of the W.A.R.M.E.R. campaign launched in Britain on Feb. 3 at the House of Commons. Sponsoring the launch, M.P. Peter Rost said that it costs Britain £600 million (\$8.4 million) to collect and dump its annual 30 million tonnes of rubbish.

Of that amount, 20 million tonnes is domestic rubbish which, if converted, has an energy value equivalent to 4 million tons of oil. At present, Britain lags behind some other European countries in converting only 5% of this.

The campaign is funded by the World Resource Foundation, a non-profit group that seeks to promote cost-effective energy. Its leading member, Swedish industrialist Dr. Hans Rausing, presented its first award at the time of the Warmer launch. A silver waste-paper basket stuffed with rubbish went to the firm Associated Heat Services for the development of a £750,000 (\$1,050,000) mobile boilerhouse which converts rubbish into energy for home and industrial premises.

The Warmer campaign is backed by parliamentarians, the Institute of Wastes Management, the Combined Heat and Power Association and the Keep Britain Tidy Campaign. It will coordinate with these groups in collating and exchanging information with scientists and specialists in other countries. Its major aims are to publicize and promote the arguments for "Dustbin Energy" in a world of diminishing mineral resources and provide an annual Warmer scholarship for research into energy from waste.

For more information, contact Warmer Campaign Office, Wadhurst, East Sussex TN5 6NR, England, Telephone: 0892-882155.

## CONTROL OF PESTICIDES EXPORTS CALLED FOR BY GLOBAL NETWORK

Utrecht, Netherlands -- Urgent measures to halt the uncontrolled export of banned and hazardous pesticides to Third World countries was called for this month at the first global meeting of the Pesticide Action Network International (PAN International). The four-day meeting, supported by the Dutch government, also urged positive action to implement sustainable, less-pesticide dependent systems in agriculture, vector control and other areas of pest management.

In a letter to U.S. Environmental Protection Agency Administrator William Ruckelshaus, PAN called upon the U.S. government to prevent the "dumping" overseas of the recently banned pesticide EDB and of EDB-contaminated foodstuffs.

A spokesperson for the organization, which encompasses over 300 environmental, consumer, religious, development, labor and agricultural groups in 49 countries, noted that hazardous pesticides cause at least 400,000 poisonings annually, as well as widespread environmental harm.

Dr. Prayoon Deema, inspector general of the Ministry of Agriculture in Thailand, stated that numerous examples of pesticide misuse are occurring daily. He noted, "The death of 12 Indonesian villagers by DDT-contaminated food, the poisoning of 20 schoolchildren by spraydrift of the herbicide paraquat over their school in the Brazilian city of Tubarão, and the agricultural and ecological crisis created by pesticide dependence in the 1-million-hectare Gezira cotton scheme in Sudan where pest control costs have increased 600% in nine seasons. Such unnecessary, widespread suffering and destruction could have been avoided if proper safeguards were in place and available alternatives implemented, including biological control and integrated pest management."

### Third World Marketing

The 31 representatives of the PAN network documented that, not only are hazardous pesticides sold without control in the Third World, but irresponsible, misleading marketing practices by transnational corporations increase the likelihood of misuse, a PAN spokesperson said.

"Pesticides restricted in industrialized countries to qualified and well-protected applicators are freely purchased over the counter by illiterate villagers who have no protective clothing," said Elsa Nivia, professor of chemistry at the National University of Palmira, Colombia. "Pesticides are often sold in empty coke bottles with no warning labels, and empty pesticide drums are used to collect rainwater for drinking," she added.

"These problems are not limited to the developing countries," said Amadou Kanoute of Environment and Development Action in Senegal. "Ironically, the very pesticides banned by industrialized countries and exported to the Third World are often applied to crops which return to the countries from which the pesticides originated. A circle of poison has been created that affects us all."

PAN is now developing programs in response to the imminent publication of a draft U.N. Food and Agriculture Organization Code of Conduct on the trade and distribution of pesticides, and the upcoming expert meeting of the U.N. Environment Program on pesticide exports in the Netherlands. The organization is seeking international acceptance of the principle of positive informed consent by importing countries as a precondition for the export of pesticides banned, severely restricted, withdrawn or unregistered in their country of origin.

For information on participating in the PAN program, contact David Chatfield, PAN-North America, c/o Friends of the Earth, 1045 Sansome St., San Francisco, Calif., U.S.A. 94111.

**EXPERTS APPEAL TO INDONESIA  
TO SAVE SAGO FORESTS**

by Kate Webb

Jakarta -- A team of international experts on sago products and sago development, attending a conference in Jakarta Jan. 16-21, called on Indonesia to take immediate action to save the country's sago forests, which have dwindled from 7 million to 1 million hectares over the past 40 years.

Meeting Chairman, Prof. Sahari of the Indonesian government Bureau of Technology, said that experts expressed "grave concern" that unless action was taken sago forests would become extinct. He noted that a recent survey showed only 1 million hectares of sago left in Indonesia, as opposed to 7 million at the outset of World War II. The Eastern Sumatran province of Riau, for example, which used to export 30,000 tonnes of sago annually, now has no trees left.

Although Indonesians in far flung islands are spurning sago as a staple food in favor of rice, Sahari said that production should be urged for industrial purposes such as glue. However, he said that as head of Indonesia's "Project for The Utilization and Efficient Processing of Sago," he had only recommendatory power, and no funds earmarked for sago preservation.

Other recommendations by the conference, which was organized by the Indonesian Bureau of Technology and the U.N. Food and Agriculture Organization (FAO), included the development of sago use for production of food such as noodles and bread as well as for use in industrial glues. Attending the conference were experts from the Netherlands, Japan, Brazil, Papua New Guinea, Britain and the U.S.

**SUIT INVOLVING NEW VENEZUELAN  
LAND-USE LAW BROUGHT TO SUPREME COURT**

by Hilary Branch and Lili Steinheil

Caracas -- A suit was brought before the Supreme Court of Venezuela to void several articles of the Organic Law of Land Use, which was passed by Congress last August. Article 17 of the law stipulates the way in which government-administered lands -- such as national parks, animal reserves and protected areas -- may be legally established, followed by the procedure for removing their special status.

According to the previous Forestry Law of Soils and Waters, "Once a National Park is created, no part of it can be separated for different objectives, without prior approval of Congress." The new law, however, provides that partial or total separation of the areas may be made "with the knowledge of the National Commission of Land Use." This, in effect, by passes Congress, leaving the ultimate fate of the nation's parks in the hands of the President and his appointed cabinet.

Represented on the Commission, which is presided by CORDIPLAN -- the National Planning Board -- are the Ministries of Defense, Interior, Development, Agriculture, Energy and Mines, Transportation and Communications, Urban Development, and the Environment, which has charge of the executive secretariat. The Environment Ministry's legal department has brought no action itself but told WER that the ministry is interested in seeing Article 17 reformed by means of congressional modification of the law in order to clarify the situation.

Tomás Blohm, president of the Venezuelan Audubon Society, points out that Article 17 is in conflict with the Washington Convention for the Protection of Fauna, Flora and Natural Scenic Beauties of the Americas, to which Venezuela has subscribed for more than four decades.

RESOURCE MISMANAGEMENT THREATENING  
GLOBAL ECONOMY, WORLDWATCH FINDS

Increasing economic demands on the world's natural resource base and the lack of policies to encourage conservation and efficiency have contributed to the "worst worldwide economic crisis in a half century," according to a study released Feb. 11 by the Washington-based research group, Worldwatch Institute.

The study, "State of the World - 1984," found that dwindling oil supplies, and their effect on world oil prices, continue to pose the most immediate threat to sustained economic progress. But the depletion of soils by erosion may be a more serious long-term threat.

Worldwatch President and study director, Lester Brown, warned that "under pressure of ever mounting demand for food, more and more of the world's farmers are mining their topsoil. Soil erosion has now reached epidemic proportions, and its effect on food prices could ultimately be more destabilizing than rising oil prices."

In seven key areas, the report found, at least a few countries are making some progress in formulating strategies for sustainable development. But only in the area of reducing dependence on oil is worldwide performance close to adequate. Areas where the study found inadequate progress included: conserving soils, stabilizing population, protecting biological support systems such as forests and demilitarizing the world economy.

Soil Conservation and Food Production

Said Brown, "Mismanagement of the world's soils now poses the most serious threat to long-term economic progress. The world is losing unprecedented amounts of topsoil, and no major food producing country, industrial or developing, has responded effectively to this threat to sustainable agriculture."

Close to half of the world's cropland is losing topsoil at a debilitating rate, the study found. Brown noted that the U.S. crop surpluses, sometimes cited as a sign of a healthy agriculture are at least partly the product of plowing highly erosive land that should not be cropped.

Although world food reserves in the early 1980s have climbed to their highest level in a decade, Brown said "they have done so for the wrong reason -- a lack of progress in raising the purchasing power and per capita food consumption of the world's poor." World grain output per person, gaining steadily from mid-century to 1973, has increased little or none since then, Brown pointed out.

North American agricultural output surged ahead during the late 1970s and early 1980s, while that in Africa and the Soviet Union lagged, the report found. "In Africa, food production per capita has been falling since 1970, slowly dragging that continent into a crisis," Brown said. "But the forces leading to this deterioration in Africa -- rapid population growth, soil erosion, and underinvestment in agriculture -- may lead to a decline in per capita food production in other regions as well, such as northeastern Brazil, the Andean countries, Central America, the Indian subcontinent and the Middle East."

Population Pressure

"Depletion of the world's topsoils makes efforts to stabilize population more urgent than ever," Brown said. "Though world population growth has slowed from 1.9% in 1970 to 1.7% in 1983, this decade-long ebbing of the growth rate has not reduced the actual number added." The annual population increase, roughly 70 million per year in 1970, had edged up to 79 million in 1983, the study found.

(continued)

MISMANAGEMENT THREATENING GLOBAL ECONOMY (Cont.)

Increased population has put added pressure on the earth's biological support systems. Brown noted that "each year the world's forests shrink by an area roughly the size of Hungary, and deforestation now threatens the majority of Third World countries with long-term economic and ecological consequences."

One notable exception is South Korea, which has successfully reforested its once-denuded mountains and hills, planting in trees an area two-thirds that in rice, the country's food staple. Although national successes are rare, scores of promising local initiatives, such as in the Indian state of Gujarat, may be adapted by others to assure future firewood supplies, Brown said.

In addition to the excessive demands on forests in the Third World, the report found that forests in the northern tier of industrial countries are now threatened by acid rain and air pollutants. Poland, Czechoslovakia, East and West Germany, and the U.S. are the countries most obviously affected. One-third of West Germany's forests show signs of damage, and some 500,000 hectares of forests in Czechoslovakia are dead or deteriorating.

ACID RAIN POLLUTING FORMERLY  
PRISTINE ARCTIC, WWF SAYS

by William G. Mahoney

Geneva -- The World Wildlife Fund reported Feb. 9 that one of the world's last pristine areas, the Arctic, has now become the latest victim of acid rain. Investigations by Norwegian scientists have revealed concentrations of sulphur dioxide in the Arctic comparable to levels recorded in southern Norway, WWF said.

Tests in Svalbard, Norway's northern archipelago, have uncovered alarming winter values of sulphur compounds: up to five micrograms of sulphur dioxide and particulate sulphate per cubic meter. The report said that measurements made on the Greenland icecap indicate artificial sulphate deposition there may exceed the deposition from natural sources by two-and-a-half times.

According to Dr. Brynjulf Ottar, director of the Norwegian Institute for Air Research, "It appears that most of it is coming from the industrial areas in the southern part of the Soviet Union. Visibility is especially affected in March and April."

This reduced visibility in the Arctic has resulted in what scientists term "Arctic haze." WWF said that this new phenomenon, once unknown to polar skies, now pervades the entire polar cap during the winter and early spring months and clears up by the end of April. Recent monitoring flights suggest the haze, which can restrict horizontal visibility to between three and eight kilometers, probably covers an area almost equal in size to the North American continent.

"Until now," WWF said, "the effects of Arctic haze on the environment remain unknown. It is certain, however, that the phenomenon is increasing and that it is, in part, man-made. The presence of soot or black graphite carbon particles in the Arctic, which can only be created by combustion, indicates an influx of air from industrialized areas."

Scientists are concerned not only about the possible effect on plant and animal life in the Arctic, but they are also worried about the climatological effects of air pollution. Preliminary studies, according to WWF, indicate that Arctic haze absorbs a substantial amount of solar energy during the early spring months. Scientists fear this absorption could result in a heating of the Arctic atmosphere and consequently effect a change in the global climate.

AROUND THE WORLD

AUSTRALIA - At an expected cost of about \$A7 million, Australia will take part in the Louisiana world exposition -- Expo 1984 -- in New Orleans, according to the Minister for Home Affairs and Environment, Barry Cohen. The theme of the Expo is "World of Rivers -- pure water as a source of life," and Cohen says Australian participation is especially appropriate "because of its reputation as a world leader in water technology."

ECUADOR - The Inter-American Development Bank has approved a \$28 million loan to Ecuador to help finance expansion of the drinking water system in Quito, the country's capital. Included in the project to rejuvenate and expand the present water system are plans for the expansion of the current treatment plant, installation of meters, construction of new storage tanks, pumping stations and distribution lines.

HUNGARY - The Hungarian Presidential Council late last month took steps to tighten regulations governing water pollution in the country, especially around Lake Balaton, a major tourist attraction. According to Radio Budapest, the council passed a new law reducing the amount of oil and fat per liter that firms could legally dump into public drains and rivers. The council also increased the limit of fines handed down for infringing these regulations. Firms will be expected to construct adequate purification plants, rather than just pay the increased penalties. The radio report said the new law would empower the government to restrict plant operations, or, if necessary, to order the temporary closure of any firm found guilty of polluting the environment.

SOMALIA - Nomadic herders are reportedly very pleased with the first solar pump installed by the Somali Unit for Research on Emergencies and Rural Development at Ainabo, the site of one of the country's oldest and most famous wells. Traditionally, the herders gathered water in goat skin bags, passing it by hand to the top of the well, and into the watering troughs. More recently, several diesel pumps have been necessary to meet the increasing needs of the nomads, so that by 1981, 200 liters of diesel fuel per day were needed to run the pumps around the clock. Last year, an Oxfam America solar pump was installed at Ainabo to work along with the diesel pumps so that the two systems can back each other up.

SOVIET UNION - Leading scientists from Leningrad's Institute of Oceanography have called for exploitation of the world's oceans as an alternative and pollution-free energy source. They issued a paper that stated that power stations utilizing the differences in temperature at different depths offer the most realistic and economical means of producing electricity on a large scale. Power stations would consist of a series of pipes filled with vapor that would expand in warm water and contract in cold. The cycle would drive a turbine. The scientists noted that in the Pacific Ocean, for example, there is a 24 degree celsius difference between the warm surface water and the temperature at a depth of 500 meters. The system could work in reverse in the Arctic Sea, the report explained, exploiting the difference between cold air temperatures at the surface and the warm water beneath the ice cover. The scientists pointed out that a completely different concept, using barometric pressure, could be applied in areas where sea water and fresh river water meet.

TANZANIA - Police in Dar es Salaam have arrested 22 people in connection with a forest fire last September in the southern part of the country that destroyed 11,000 acres of prime paper trees. The 22 were accused of being "agents" of a foreign power who were bent on sabotaging all aspects of the Tanzanian economy.

**RADIO WARSAW: ONLY 25% OF CITIZENS  
NOT THREATENED BY POLLUTION**

by William G. Mahoney

Radio Warsaw reported Jan. 30 that only one Pole out of four today lives in an area not threatened by environmental pollution, and it estimated the costs of this blight at about 400 billion zloty annually (official rate: \$1=83 zloty; street rate: \$1=750 to 800 zloty).

Participating in a lengthy radio roundtable discussion on environmental protection were representatives of the Polish Office for Protection of the Environment, including Zbigniew Peszko, director of the Economic-Financial Department, and Janusz Zurek, director of the Department of Science and Development.

The program's announcer opened with the statement that merely 65% of the rivers in Poland had water of the "useful category." He said that the Wisla, which runs through Warsaw, is polluted through its entire length. And only 2% of the Odra River's length has waters that meet necessary standards. Also noted was that 50% of the country's cities and towns -- among them Warsaw and Lodz -- had no sewage purification plants.

One of the roundtable participants declared that the country's economic reform plan did "not take into account the interests of environmental protection in its overall extent."

But an expert participating in the program noted that this year 35.3 billion zloty were allocated to environmental protection and 50 billion zloty to protection of water. This, he said, is 30% more than the amount set aside last year. Another expert commented that this allotment increase was "necessary" but that the actual needs were higher.

Another participant added that parts of Warsaw on the right bank of the Wisla would get a sewage purification plant by 1990, at the latest, but that the left bank plant would only be built after the one on the right bank was finished.

A speaker noted that Polish plants were forced to pay fines -- for such violations as exceeding the limits of water consumption -- of 30 million zloty (unofficial rate, about \$37,500) last year. Such low fines, he commented, posed no threat whatsoever to the firms involved. Therefore, the problem is one for lawmakers to solve, he said.

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# LOW LEVEL NUCLEAR WASTE CLEANUP

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## THE CONFERENCE

This timely conference will bring together the relatively few who have had experience in the cleanup of low-level radioactive waste (LLW) and those in industry and government who could benefit from the lessons learned to date.

Experts with hands-on experience at major waste disposal sites will present a series of five case studies describing what it takes to do a cleanup job efficiently and economically. Other speakers will focus on: the federal government's strategy for cleanup; the roles played by the DOE, NRC, and EPA; how to negotiate with the government; community relations planning; liability considerations; and promising site cleanup technology in the developmental or demonstration stage.

To reserve your place at the conference, simply fill in and mail back the Registration Form on the back of this program. Or, call CEEM at 703-250-5900.

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## THE REGULATORY SITUATION

**John E. Baublitz, Director/Remedial Action Projects Division, Department of Energy:** A report on the federal government's strategy for cleanup of LLW and uranium mill tailings and DOE's strategy for enforcement.

DOE, EPA, and the NRC have each published regulatory requirements for the cleanup of LLW and mill tailings. A representative of each agency discusses what the requirements are, how they may change in the future, and how they impact on industry. Members of the panel:

**Steven Miller, Attorney, Department of Energy**

**William T. Crow, Chief/Uranium Fuel Processing Section, U.S. Nuclear Regulatory Commission**

**Arthur Whitman, Environmental Scientist, Department of Energy**

**Stanley Lichtman, Environmental Scientist, U.S. Environmental Protection Agency**

## SITE CLEANUP NEGOTIATION STRATEGY

**Steven A. Tasher, Partner, Donovan, Leisure, Newton & Irvine:** How to prepare for and carry out site negotiations with federal, state and local officials.

## SITE CLEANUP LESSONS LEARNED: Five Case Studies

Experts with hands-on experience at the major waste disposal sites in the country will report on the managerial, legal and technical lessons learned at these sites. The case studies:

**Grand Junction Remedial Action Program, G.A. Franz, Supervising Health Physicist, Colorado Department of Health Formerly Utilized Sites Remedial Action Program (FUSRAP)—Middlesex Site, Paul E. Neal, Task Manager, FUSRAP, Bechtel National, Inc.**

**Licensed Facility Decommissioning—Edgemont Site, Thomas K. Donovan, Project Manager, Tennessee Valley Authority (TVA) and Charles H. Langdon, NEPA Admin., TVA.**

**Low Level Active Disposal Site—Cannonsburg, David Ball, Senior Project Engineer, UMTRA Program.**

**Government Owned Facility—Niagara Falls, Charles G. Miller, Deputy Project Manager, Bechtel National, Inc.**



## **COMMUNITY RELATIONS PLANNING**

**John F. Schlatter, Public Relations Representative, FUSRAP, Bechtel National, Inc.:** A report on lessons learned from extensive experience in site cleanup negotiations with local communities and public interest groups.

**Ruth Weiner, Chairman, Cascade Chapter, Sierra Club:** How industry can best meet the concerns of public interest groups.

## **LATEST SCIENTIFIC INFORMATION ON HEALTH EFFECTS**

**Sidney Marks, Associate Manager, Environmental, Health and Safety Research Projects, Battelle-Northwest:** A report on the latest scientific information on health effects from human exposure to low level radiation and how the information can be used in performing risk assessments.

## **NEW DISPOSAL TECHNOLOGIES**

**Colin McAneny, Geologist, Geotechnical Laboratory, U.S. Army Corps of Engineers Experimental Station:** New cleanup treatment concepts in the development and demonstration stage that show promise of improving the effectiveness, efficiency and economics of site cleanup.

## **LIABILITY CONSIDERATIONS**

**Omer F. Brown, II, Partner, Schwartzstein & Brown:** The best approach to risk assessment—mandatory insurance requirements, premiums, exclusions; available insurance coverages and prospective new coverages.

## **SPECIAL PRESENTATIONS**

**Senator Alan K. Simpson (R, WY):** The senator who has sponsored major nuclear waste disposal legislation gives the outlook for future congressional action.

**Mary White, Program Manager/Technical Measurements Center, Division of Remedial Action Projects/Department of Energy:** A report on the new DOE Measurements Program, what it is designed to achieve and how the information will be used in setting rules and standards.

**Michael Naughton, Project Manager/Low Level Waste Program, Electric Power Research Institute (EPRI):** An evaluation of recent EPRI studies concerning sources of contamination in nuclear power plants and the economics of different cleanup options.

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# **LOW LEVEL NUCLEAR WASTE CLEANUP**

Registration Fee: \$495

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Yes, I will attend the "Low Level Nuclear Waste Cleanup" conference to be held at the Sheraton Crystal City Hotel, Arlington, VA on April 16-17, 1984.

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A B C D E F G H I J K L

# World Environment Report

News and Information on International Resource Management

Vol. 10 No. 3

February 8, 1984

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## SLANTS & TRENDS

✓ IN A DEAL WORTH ABOUT \$5.45 BILLION, the Chinese government last month signed a letter of intent to rent storage space for nuclear waste with three West German companies. Final approval of the agreement must still come from the West German government, and authorization would also be required by the U.S. if the spent reactor fuels sent to China were originally enriched in America.

'BLACKMAIL' IS WHAT ENVIRONMENTALISTS are calling the arrangement. Said one scientist with the Environmental Defense Fund, a country with more serious economic problems is being asked to carry an environmental burden that more economically secure nations would not tolerate.

\* \* \*

DUGONGS, TAMARINS, AND GIANT PANDAS are experiencing difficult times. But things are looking up for the California condor and the world's aye-ayes. All five species were recently named in the World Wildlife Fund's list of the 10 "endangered species of the year." Rather than point out the rarest or most endangered species, the list focuses on species who last year experienced an important turning point or key period in their survival. See story on page 21.

\* \* \*

SEA DUMPING AND EFFLUENT DISCHARGES of low-level nuclear waste will probably increase, according to a new text, Wastes in the Ocean, edited by P. Kilo Park. This will be especially true for commercial-scale reprocessing plants. Deep ocean or other marine repositories may be established for high-level wastes.

LOW-LEVEL RADIOACTIVE WASTES have been disposed of in the oceans for over 30 years. From 1946 to 1970, the U.S. accounted for dumping of about 107,000 containers of waste into the oceans. European disposal began in 1949 with dumping by the U.K. But other European countries did not start to use oceanic disposal for solid wastes until 1967 when the Nuclear Energy Agency organized a cooperative waste-dumping effort. A total of some 100,000 metric tons of material has been dumped as packaged wastes by European countries since 1949. Coastal discharges from nuclear fuel reprocessing facilities at Windscale and Dounreay in the U.K. and from La Hague in France provide the major radionuclide input into the shallow seas.

Leonard A. Eiserer  
Publisher

Bonita Becker  
Editor

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**PARTY PAPER CHARGES MAGNESITE PLANT  
IS BADLY POLLUTING EASTERN SLOVAKIA**

by William G. Mahoney

Munich -- Bratislava's Communist Party daily, Pravda, charged in a lengthy expose last month that a magnesite plant was so seriously polluting Eastern Slovakia that life in the area was becoming unbearable.

"A journey from Revuca to Jelsava via Lubenik causes distress," the paper reported. "Tree stumps wrapped in a cloak of stone-gray surroundings behind a veil of dust; every now and then a deserted house or garden. Desolation -- the consequence of man's imperfect activity ..."

"In the last decade, the Jelsava plant of the Slovak Magnesite Works has not only significantly affected the economic development of Jelsava and the entire district of Roznava, but, regrettably, also its living environment. For many of its inhabitants, the city has become unbearable. They have found, and are finding, a solution by moving out. Between 1970 and 1980, the population of Jelsava dropped by 18.6%."

The article then noted that the task of "forestalling excessive pollution" from magnesite production in the area "by 1975 at the latest" was enshrined in a Slovak Government resolution of 1970. A number of resolutions of the East Slovak regional and Roznova district party bodies, aimed at building effective dust and particle filters and thereby eliminating the causes of "the impaired and constantly deteriorating living environment of Jelsava," were also cited.

Nevertheless, the article continued, because none of these government and party resolutions were consistently fulfilled, Jelsava is "still among those territories with the most severely affected living environment in the Republic."

**Pravda Voices Citizens' Concerns**

According to the paper, the situation was so bad that the city's National Committee even felt obliged to appeal to the Bratislava Pravda editorial office, pleading "help us save our city. We all work just as honestly and responsibly as millions of working people in our Republic and do not understand why we have to suffer so much. Why is a matter of such priority as the construction of a dust collecting system being constantly postponed?"

The electric filters currently in use intercept only about 86% of the magnesite dust. Therefore, the dust concentration per square kilometer in the Jelsava area increased from 288 metric tons in 1978 to 348.3 metric tons in 1980, and up to a record 420.3 metric tons last year. As a result, it said, about 1,500 hectares of forests and 4,290 hectares of agricultural land are "permanently impaired" in the Jelsava-Lubenik area.

Charged Pravda, "The truth is, that while gradually modernizing and expanding production in the Jelsava Slovak Magnesite Works, our society has been spending millions of crowns to keep the influence of the production activity on the living environment at the minimum. The question is whether these investments have always been carried out in good time and quality; whether they have been and are now up to the demands of the technology; and whether systematic attention has been, and still is, paid to good quality maintenance and operation."

The paper reported the delayed installation, in Jelsava, of the highly effective amertherm dust collection system that was due to be operating by September 1982. It quoted a Party official as saying that now even the new deadline -- June 1984 -- is in jeopardy. "The merry-go-round of bringing up excuses and 'objective reasons' cannot help eliminate the dust problem," it said.

**WEST GERMANS JEOPARDIZE EUROPEAN  
HAZARDOUS WASTE LAWS**

by Anna Lubinska

Brussels -- Demands made by the West Germans to be allowed to impose stricter national legislation governing the transportation and disposal of dangerous industrial wastes torpedoed delicate high-level talks by EEC environment ministers in Brussels at the end of last year.

There had been hopes here in December that the ten ministers could at least come to an agreement on common procedures, which would govern the strict monitoring of the 3 million tons of toxic wastes that cross Europe's borders each year.

The European Commission has suggested free, but strictly controlled, circulation of waste throughout the Community. A country would, however, be allowed to refuse to take on waste if adequate justification were provided. Nine EEC countries appear to want that too -- with the exception of West Germany.

West Germany is the only EEC country that already requires import and export permits for wastes, including written notification of acceptance from authorities in the receiving country. The question of transit of wastes across West German territory is to be regulated at the end of this month.

According to Commission officials, a strict permit system within the EEC goes against the grain of the Rome Treaties, which stipulate the free movement of goods, labor and services throughout the Community. They fear this could set a precedent that would be later extended to dangerous substances, and eventually chemicals.

**The West German View**

The West Germans, however, do not consider 'wastes' as 'goods'. "We cannot accept that our strong measures are replaced by the weak ones as proposed by the European Commission," a Brussels-based West German diplomat told WER.

West Germans are the major movers of wastes in the EEC: 80,000 tons every year. Sixty-thousand tons come from the Netherlands alone. The West Germans are also insisting that waste be disposed of in the country of origin. There are 43 incineration plants and over a hundred special treatment plants on West German soil. West Germany also has a waste storage capacity of 80 million cubic meters, estimated to be good for another 10 to 15 years. But public opposition to the construction of further facilities is growing.

Other EEC countries, however, notably Holland and Denmark, as well as Belgium and Greece, are in no position, either ecologically (due to a high water table, for example) or economically (due to small country size), to start building their own plants or dumps. Hence the eagerness for access to plants in other EEC countries.

But unanimous agreement is required before an EEC regulation can be adopted. As one Commission official put it: "if there is no consensus, there will be no law."

The Seveso dioxin scandal of March 1983, and various other incidents unearthed in West Germany and Belgium as a result, have shown the need for Community-wide harmonized legislation. In the meantime -- bowing to strong public pressure -- West Germany (and France) are already preparing to tighten up national laws. While the West Germans accuse the Commission of being too rigid, they could find themselves facing accusations of protectionism before the European Court of Justice for action incompatible with existing European law.

### PAKISTAN PROCEEDS WITH \$100 MILLION WATER SUPPLY, SEWERAGE PROJECT

The Water and Sanitation Agency of the Faisalabad Development Authority has recently hired three firms to provide engineering services for the Greater Faisalabad Water Supply, Sewerage and Drainage Project. The project, which will cost an estimated \$100 million, will involve major infrastructure improvement for one of Pakistan's rapidly growing industrial centers.

Faisalabad is Pakistan's third largest city, with a population of 1.5 million, and is the center of the country's textile industry. Located 87 miles west of Lahore in the heart of a rich agricultural area, the city is located near the center of a saucer-like basin and often experiences problems with a high water table. Moreover, monsoon rains averaging 39 inches occur during the July-through-October period.

The project, which is being funded by the Asian Development Bank and the Government of Pakistan, provides for the expansion and upgrading of the existing water supply system, sewerage facilities and drainage works to serve the area through the end of this century. A new well field will provide a potable water supply of 38.8 million gallons per day and will involve the installation of 81 miles of 55-inch diameter transmission main from the well field to the city of Faisalabad.

The sewerage system will provide for preliminary treatment of domestic and industrial wastes at two facilities with capacities of 11.8- and 23.8 million gal/day, along with the construction of 35 miles of sewer lines, 25 miles of sillage mains, and five sewage pumping stations. Proposed drainage improvements involve construction of 19 miles of drainage channels and pumping stations.

Engineering design, including tender services and award of contract, is being undertaken by two Pakistani firms -- Indus Associated Consultants Ltd. and Republic Engineering Corp. Ltd. -- and the U.S. firm, Engineering Science.

### HAIR SAMPLES HELP DETECT ENVIRONMENTAL POLLUTION IN ZAIRE

A Zairean researcher is studying hair samples in order to learn to protect both the people and the environment of his homeland. B. Matu Lumu, research director of the Kinshasa Regional Nuclear Research Center, has been researching environmental contamination for the last four months, under a Fulbright grant, at Los Alamos National Laboratory in New Mexico.

Lumu brought hair samples from people living in Zaire's capital, Kinshasa, as well as samples from the various mining districts, rural areas, and the equatorial zone. He has been using the laboratory's research reactor to analyze the samples for mercury, antimony, cobalt, selenium, arsenic, copper, vanadium, chromium and other toxic materials.

"When I get back to Zaire," says Lumu, "I hope to be able to establish a relationship between the mineral content in the hair and the body content" in order to check for pollution or contamination. Using this information, it would be possible to monitor workers to determine any hazards they face.

Zaire, with a population of about 25 million, has several areas rich in ores, including copper, manganese, coal, tungsten, cobalt, and gold, as well as several others. The country also mines its own uranium, and is the world's leading source of industrial diamonds.

✓ 'ENDANGERED SPECIES OF THE YEAR'  
NAMED BY WORLD WILDLIFE FUND

A special list to honor 1984's Endangered Species of the Year was released this week by the World Wildlife Fund. According to the group's president, Russell Train, this year's list is not an attempt to point out the rarest or most endangered species, but rather an effort to focus on 10 species which last year experienced "a key period or turning point in their survival -- for better or worse."

This year's list includes: golden-headed lion tamarin, black-footed ferret, California condor, dugong, kouprey, giant panda, Laramie false sagebrush, aye-aye, a Mexican cycad and the giant Gippsland earthworm.

The key changes for the 10 species are as follows:

- The golden-headed lion tamarin, whose wild numbers in Brazil are precariously low -- less than 1,000 -- has had bad times recently. The species was dealt a severe setback late last year when 29 were shipped illegally to Belgium and offered for sale there by a wildlife dealer. Three of the rabbit-sized monkeys are believed to have died and two others sold to collectors. Scientists have called the tamarin one of the world's rarest monkeys and this latest incident, said WWF primatologist Russel Mittermeier, "is a severe blow to its future in the wild."
- Things are looking better for the California condor. Two years ago, the bird was down to its last 20 members. But last year, the condor made great strides towards recovery. The ancient bird's world population increased by more than 30%, thanks to a highly controversial captive-breeding project. Eight young California condors, four of which are the first hatched in captivity, are now growing rapidly.
- Conflicts in the Mideast have taken their toll on the Persian Gulf's marine life. Oil spills from wells damaged in Iraq-Iran shellings may have wiped out the Gulf's entire population of dugongs, or sea cows. Helicopter surveys last year spotted over 50 dead dugongs washed ashore along the Gulf.
- For the kouprey, one of the world's largest and rarest wild oxen, last year should have been a better year. Long assumed to be extinct, the kouprey had not been seen anywhere in its war-torn habitat of Southeast Asia since the early days of the Indochina War. However, in 1982, a search party reported spotting five of the six-foot tall animals grazing in an area studded with land mines in northeast Thailand near the Cambodian border. A rescue research team was to have gone back into the field during 1983 to capture some of the rare wild oxen for captive breeding. But plans were cancelled due to the danger of land mines and border skirmishes in the area where the kouprey had last been seen. The fate of the oxen is now unknown.
- China's giant panda is experiencing bad times. Estimated at no more than 1,000 in China, the panda is being threatened by a bamboo shortage that could wipe out a quarter of the panda population through starvation. The Chinese are planning temporary facilities to hold and feed the pandas until bamboo growth is sufficient to feed the animals (WER, Jan. 25, 1984, p. 14).
- 1983 may have marked the year of the demise of the cycad, *Ceratozamia hildai*, an endangered plant found only in Mexico and a type of plant highly prized by collectors. Only discovered in 1978, more than 1,200 of the plants were imported into the U.S. in 1982. Botanists suspect there weren't any more than that in the wild to begin with.

(continued)

ENDANGERED SPECIES OF THE YEAR (Cont.)

● Representing the plant kingdom on the list is the Laramie false sagebrush. Related species of the plant are being used in cancer research as they have demonstrated antitumor activity in animals. Once thought to be extinct, the sagebrush was rediscovered in 1978, apparently confined to a 460-acre site in Wyoming slated for mining. However, last year the mining company transferred development rights to a state conservation group, thereby protecting most of the only known population of Laramie false sagebrush in the world.

● A wild baby aye-aye, one of the world's rarest animals, was sighted last year for the first time in more than a decade. A type of primate, the aye-aye is confined in the wild to special nature reserves in Madagascar. So little is known about this rare lemur that there are no accurate population figures, but the sighting has given scientists new hope that more may exist than had originally been suspected.

● In the final slot is the giant Gippsland earthworm, a 10-foot long, gurgling worm. The earthworm, along with some 600 other invertebrates made the front page of the Wall Street Journal in 1983 following publication of the Red Data Book on Invertebrates, a book describing the world's threatened animals and plants published by the Swiss-based International Union for Conservation of Nature. The giant Gippsland earthworms are confined to a small area in Victoria, Australia. They move through their burrows with a "gurgling, sucking sound," aided by the secretion of a milky fluid that is being studied as a source of rheumatism relief for humans. The earthworms could disappear as a result of modern agriculture.

SOVIET REACTOR CONTROVERSY: The Ignalina plant, the world's largest nuclear power plant that went on stream late last year, may represent a serious environmental hazard, according to a Lithuanian report. Hot water used to cool down pipes that carry radioactive material at the 6,000 megawatt plant is to be led directly from the plant into a lake, without first passing through cooling towers. The lake leads into the Daugava River, which flows into the Baltic Sea. And scientists point out that if there is a leak in the reactor's piping system, radioactive water will be pumped into the lake directly without being able to be contained in cooling towers first. According to the report, the hot water from the plant will cause the lake temperature to rise at least 4 degrees, changing the zoological basis of the lake and killing most of the life in it.

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AROUND THE WORLD

**BAHAMAS** - Bahamas Electricity Corp., the national electric utility, is studying how renewables can aid its long-range power supply requirements and what potential generating alternatives it is able to use. BEC has retained R.W. Beck and Associates to conduct the study, which is funded by the Inter-American Development Bank. It will include an assessment of existing facilities, forecasting of future requirements, a study of generating options, and alternative delivered fuel costs. From this work, a power system plan, including financial forecasts and sensitivity analyses, will be developed. One aspect of the study program is an assessment of the potential for energy conservation and solar appliances in the Bahamas. Residential and industrial customers are being interviewed by BEC personnel to obtain needed information.

**CANADA** - Environment Minister Charles Caccia said that U.S. President Ronald Reagan's decision to study acid rain rather than begin an emissions-control program is a "serious setback" for Canada. He said that enough evidence already exists to justify the start of a program to limit emissions of sulfur dioxide from factory smokestacks. The foreign office in Ottawa also issued a statement saying, "We are deeply disappointed at the failure of the U.S. government to take concrete action to deal with the problem of acid rain."

**JAPAN** - A series of meetings dealing with joint U.S.-Japan environmental projects are being held in Japan. The Feb. 7 -8 meetings, which are being held in Tokyo and attended by U.S. EPA Administrator William Ruckelshaus, are the result of a bilateral U.S.-Japanese agreement on environmental cooperation first signed in 1975. That agreement established 14 joint projects in such areas as sewage treatment technology, solid waste management, the control of air pollution from vehicles and industrial and commercial sites. Oversight for the projects is provided by the Joint U.S.-Japanese Planning and Coordinating Committee, which is co-chaired by Japanese Environmental Agency Minister Minoru Ueda and Ruckelshaus.

**MEXICO** - An international conference, designed to bring together architects, engineers, planners, designers and researchers to exchange information on passive and low-energy ecotechniques applied to the design/building of housing, will be held Aug. 6-11. The following major ecotechnical fields will be included: solar systems and components, using passive and low energy alternatives; water saving and reuse, including rain water; recycling of refuse and waste, both organic and inorganic as well as solid and liquid; intensive food production in housing complexes; bioclimatic design methods applied to housing; and use of appropriate regional building materials and construction methods. PLEA 84 MEXICO is jointly sponsored by Mexico's Secretaria de Desarrollo Urbano y Ecologia (SEDUE) and Instituto del Fondo Nacional de la Vivienda Para Los Trabajadores (INFONAVIT) and the U.S. government. For more information, contact U.S. Dept. of Housing and Urban Development, Office of International Affairs, Washington, D.C. 20410, (202) 755-5770.

**PANAMA** - Agreement is expected shortly between a Panamanian group and U.S. Solar Corp. on a licensing arrangement for the assembly of solar collectors and systems made in Florida. The unassembled components would be shipped from the U.S. for consumption in Panama and Costa Rica.

**WEST GERMANY** - West Berlin authorities last month issued their first smog alert in two years when sulphur dioxide and carbon monoxide concentration in the air reached dangerous levels. The alert, in the first of three possible stages, included appeals to stop further pollution by reducing heating in buildings and use of private cars. People with heart and circulation problems were warned to remain indoors.



### RADIOACTIVE STEEL FROM MEXICO DISCOVERED IN THE U.S.

Radioactive contamination was found in several hundred tons of steel shipped from the Aceros de Chihuahua S.A. plant in Chihuahua, Mexico, to the U.S. in late-December and early-January. Investigators discovered that the Aceros plant bought scrap from the Finex junkyard in Juarez, Mexico, where they found the remains of a cancer-treatment machine stolen from a Juarez storage facility four or five months ago.

The 6,800-pound cancer-treatment machine was owned by a clinic in Juarez. Included in the machine was a container with a cobalt 60 isotope. But thieves took the machine for scrap, and while tearing it down, ruptured the shielded isotope container.

Contamination was discovered by accident on Jan. 18 when a multiple delivery truck carrying some of the steel stopped at Los Alamos National Laboratory in New Mexico and triggered the radiation monitor at the exit gate. The truck was carrying reinforcing rods for concrete construction. Later, five truckloads of contaminated rods were stopped at the Mexico-U.S. border at El Paso. Published reports indicate that some of the scrap metal was also sold to a foundry in Juarez, where a firm makes thousands of table bases for restaurant suppliers. Some 500 tons of the contaminated rods were identified and collected in facilities throughout the southwestern part of the U.S.

But if anyone has suffered serious damage from the radioactivity, said one U.S. Nuclear Regulatory Commission official, it is the thieves. So far, they have not been located. Meanwhile, radiation levels from the metal have been recorded at from one to 350 milliroentgens per hour. The federal limit for nonoccupational exposure is 500 milliroentgens per year. U.S. officials say the dangers of short-term exposure are not significant.

### USE OF NUCLEAR TECHNIQUES TO IMPROVE BUFFALO PRODUCTION IN ASIA DISCUSSED

Use of nuclear techniques to improve domestic buffalo production in Asia was the topic of a meeting held in Manila, Philippines, from Jan. 30 to Feb. 3, and sponsored by the International Atomic Energy Agency (IAEA) and the U.N. Food and Agricultural Organization (FAO).

The water buffalo is a multi-purpose animal, providing nearly 40% of the total amount of milk and a major part of the meat and farm power in Asian countries. Since 1979, the Joint FAO/IAEA Division of Isotope and Radiation Applications of Atomic Energy for Food and Agricultural Development initiated studies aimed at identifying the constraints on buffalo production, and simple and cheap changes in existing patterns to alleviate these constraints.

Through the application of radioimmunoassay techniques for measuring reproductive hormone levels, suckling has been identified as one of the major factors hampering the production of calves and consequently, of reducing milk output from buffaloes. IAEA officials say that if research results are implemented, the small farmer could expect not only to increase from seven to 10 the number of calves obtained from each cow, but also the amount of milk produced.

Work on buffalo nutrition showed that milk yields and animal weight increased through use of ammoniated rice straw supplemented with cheap and locally available non-conventional feedstuffs, such as tree legumes and tea waste.

END

# World Environment Report

## News and Information on International Resource Management

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### SLANTS & TRENDS

**DRESSED IN PENGUIN SUITS**, representatives of the environmental group Greenpeace last week demonstrated in the snow in front of the U.S. State Department to protest the Antarctic conference being held inside by Antarctic Treaty Consultative Parties. Greenpeace says it is concerned that permanent damage to the delicate polar ecosystem and its unique wildlife habitat will result from a new agreement to govern the "exploration and exploitation of Antarctic mineral resources."

**NEGOTIATORS FROM THE 16 NATIONS** that are parties to the treaty are currently discussing activities that could lead to substantial oil exploration under the South Pole's continental shelf and to the extraction of solid minerals on the continent itself. The environmentalists are asking for a binding moratorium on such activities until all interested nations can work out a more international approach to the problem. The subject is scheduled for debate this year by the UN General Assembly.

\* \* \*

**ACID RAIN THREATENS SOUTHERN HEMISPHERE** nations as well as industrialized areas in the north. International Union for the Conservation of Nature, a sister organization of the World Wildlife Fund, said danger levels of acid in the soil had been recorded in areas of Brazil, South Africa, Australia and Thailand.

\* \* \*

**EVEN IF IT MEANS HIGHER PRICES** or restricts economic growth, most Europeans support environmental protection measures, a survey of citizens in the 10 member states of the European Community has found. Sixty percent of the 9,700 individuals polled said protecting the environment was more important than keeping prices under control and 59% said it was more important than economic growth.

**GLOBAL ENVIRONMENT WAS MORE IMPORTANT** than immediate surroundings to most surveyed. Over 90% said they worried about at least one of nine environmental problems. Top three concerns were: damage to sea life and beaches by tanker spillage or discharge; disposal of industrial chemical waste; nuclear waste disposal. But only 55% said they had complaints about local environment, with only 22% expressing concern about more than two of six topics covered by the survey.

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**CZECHOSLOVAK DISSIDENTS WARN REGIME  
RISING POLLUTION THREATENS SPECIES**

by William G. Mahoney

Munich -- The Czechoslovak dissident human rights group, Charter 77, has warned the Communist regime in writing that present pollution endangers humans and threatens entire species of animals in the countries. The warning was a 28-page study recently completed by the Czechoslovak Academy of Sciences -- but not published by Communist Party authorities -- that pinpointed the alarming effects of environmental pollution.

Charter 77 obtained a copy of the study and forwarded it to Premier Lubomir Strougal on Dec. 12, 1983. The secret study stated that the quantity of waste products in Czechoslovakia was ten times above the worldwide average and solid wastes caused by ore mining amounted to an annual 35 metric tons per capita.

The Charter 77 accompanying letter informed Premier Strougal that only a fraction of the national armaments expenditure would suffice to avert "ecological catastrophes." The letter added that "citizens are not aware of the dangers of this development because details on it are not published, especially on the deterioration of the population's health, on the hazards to health and life, on noxious substances contained in foods and water."

**Results of the Study**

The study itself stated that 30% of all fish, 60% of amphibians, 30% of snakes, 30% of birds, 35% of mammals and a majority of deer lead a threatened existence. In addition, the survey noted that only 20% of all species of butterflies have been preserved. And by the turn of the century, the study predicted that between 45% and 60% of all forests in Czechoslovakia would be "directly damaged" by acid rain.

Moreover, the study commented that increasing use of artificial fertilizers in agriculture is expected to affect not only the quality of products but also that of water economy.

Waste waters are increasingly flowing into rivers, the study stressed. It noted that some Czechoslovak cities, such as Hradec Kralove and Usti nad Labem in northern Bohemia were said to be still without water purification plants.

The drinking water situation and the "inadequate" technologies involved in preparing it were also criticized by the study. Citizens of such cities as Prague-Polodi, Usti nad Labem, Hradec Kralove and Brno-Pisarky are using drinking water that could be considered a health hazard, the study said.

And serious pollution was also said to come from uranium ore mining and from power plants fired with brown (soft) coal. Data contained in the study indicated that children's health in the region of northern Bohemia was seriously affected by soft coal mining. There, it found, infant mortality was 12% higher than elsewhere in Bohemia, and in the Bohemian Most district, the percentage of sick children amounted to 36% of the total number.

**WATER IN DEVELOPING COUNTRIES: Water Supply and Sanitation in Developing Countries** (Book 3) is aimed at assisting those involved in technical and administrative work connected with water supply and sanitation projects in developing countries and working with limited resources. The manual includes chapters on economic and social conditions; role of development banks in international funding; water supply and sanitation; and low-cost technology. To order a copy, send £12 (or £18 for air mail) by sterling draft drawn on a London bank or by U.K. check to The Institution of Water Engineers and Scientists, 31-33 High Holborn, London WC1V 6AX, England (Telephone: 01-831 6578).

## EC CALLS FOR MEASURES TO REDUCE ACID RAIN

by Anna Lubinska ✓

Brussels -- The European Commission has called for radical reductions by 1995 of air pollutants emitted by coal and oil-fired plants. But the measures, prompted by growing concern here over the acid rain problem, have yet to come under the scrutiny of the 10 environment ministers of the European Economic Community.

The commission proposal sets an overall target for reducing total annual emissions of sulphur dioxide by 60% and nitrogen oxides and dust by 40%. Community emission standards will apply to new plants with a capacity of over 100 megawatts from 1985, while smaller plants (50 to 100 MW) will be expected to comply by 1990.

Based on West German national air quality regulations adopted in mid-1983, the standards will be tightened up even further after 1995. They have already been characterized as tough by industry.

Existing plants will not, however, have to apply specific standards, although to meet the overall reduction target plants will have to undergo some modification. Temporary exemptions will also be granted in the case of countries that are highly dependent on indigenous high-sulfur fuel (such as lignite) or whose 1980 emission levels (1980 is to be the base year) are relatively low.

Stack heights will also be limited to approximately 650 feet. The EEC countries will have up to the end of 1986 to draw up their emission reduction programs.

### Sources of the Problem

Coal-fired plants are said to account for some 80% of all sulphur dioxide emissions and 40% of nitrogen oxide emissions in the Community.

According to the commission, the costs of emission reduction at source roughly correspond to the costs of environmental damage, which cautious estimates place at between \$1.4- and \$4.2 billion per year for the whole Community. These estimates, however, do not take health hazards or damage to historic buildings into account.

The measures, it is hoped here, will encourage the Eastern European countries, which like the EEC countries are signatories to the 1979 ECE Geneva Convention on Long Range Transboundary Air Pollution, to take similar action. Non-EEC countries are said to be the cause of some 15- to 25% of acid rain in the Community.

The new proposal should fan the already heated debate on the EEC framework directive on air pollution from fixed sources, which environment ministers threw out at their meeting on Dec. 16. Agreement was hampered above all by the fact that the British could not accept that emission value limits be fixed at Community level.

The British are also far more reticent as to the source of increased rainfall acidity in the United Kingdom. A recent report commissioned by the Department of the Environment recommends further research. It goes so far as to suggest that an increase in the concentration of nitrates might be a bigger problem than the sulphur dioxide emissions from refineries and combustion plants on which the European Commission's attention is currently focused.

**SURVEY FINDS NATIONAL PLANS VARY  
FOR RADIOACTIVE WASTE REPOSITORY R&D**

[Editor's note: This is the final part of a two-part story on radioactive waste storage programs in selected countries around the world.]

Geologic waste repository research and development tends also to vary country-by-country, the Pacific Northwest Laboratory survey found. R&D performed by member states of the European Community is funded partially by the Commission of the European Communities (CEC) under the CEC's "indirect action" program.

**Geological Media Selected for R&D**

<u>Argillite</u>	<u>Crystalline Rock</u>	<u>Evaporite</u>
Belgium	Canada	Denmark
Italy	Finland	West Germany
		Netherlands
	France	
	India	
Japan	Japan	
	Spain	Spain
	Sweden	
	Switzerland	
	UK	
	USA	USA

**Backup Rock Types:**

Argillite - Canada, France, UK  
 Crystalline Rock - Italy  
 Evaporite - Canada, France, Italy, UK

Under the CEC plan, West Germany and the Netherlands handle salt repository technology development; Belgium and Italy are studying clay technology; France and the United Kingdom have the granite repository assignment; and Denmark and Ireland play supporting roles. The following table shows the current state of the disposal R&D program.

**Repository Design Parameters**

<u>Country</u>	<u>Geology</u>	<u>Design Concept</u>
Belgium	Clay	In-floor disposal (-225m); short term retrievability
Canada	Granite/Gabbro Plutons	In-floor disposal; 20-year retrievability
Denmark	Salt	Deep boreholes (-1200 to -2500m)
Finland	Granite	In-floor disposal
France	Granite	In-floor disposal
West Germany	Salt	In-floor disposal
India	Granite/Gneiss	
Italy	Clay	
Japan	TDB	In-floor disposal
Netherlands	Salt	Gallery/deep boreholes
Spain	Salt/Granite	
Sweden	Granite/Gneiss/Gabbro	In-floor disposal (-500m)
Switzerland	Granite	In-floor disposal (to -2500m)
UK	Granite	
USA	Salt, Basalt, Tuff, Granite	In-floor disposal; 50-yr retriev.

### SRI LANKA PROMOTES 'COCONUT POWER' WITH BRIQUETTES MADE FROM HUSK DUST

Sri Lanka is promoting "coconut power" as a replacement for fuel oil in small industries that does not put a strain on firewood supplies, the Business Times reports. A private tobacco firm in the island nation off the southeastern coast of India is producing briquettes from coconut dust, derived from the outer husk of the fruit where the coir is removed to make ropes and mats.

Trial runs in a boiler have shown that this 'coconut power' is ideal for smaller industries, such as brick-making and tile works, laundries, bakeries and potteries, and for larger industrial enterprises, such as tobacco drying. This is good news for the nation, which presently spends 42% of its annual budget on imported fuel.

Ceylon Tobacco says some 4 million tons of the material have been piling up in areas for at least 30 years, and the company has already set up a pilot plant that is capable of producing 4,000 kg of coconut briquettes per day.

It is estimated that "coconut power" could replace some 80,000 tons of fuel oil every year, one-quarter of Sri Lanka's fuel oil requirement. Another savings will be in trees, as some 60% of the energy consumed in the country is so derived. Experts think this dependency could be cut in half during the coming decade.

The briquettes cost about three times as much as firewood, but have the advantage of being substantially less expensive than either fuel oil or electricity. In addition, they burn faster than wood and, on a weight basis, provide half as much energy as diesel oil.

### LARGE ENERGY SAVINGS EXPECTED FROM NEW SLUDGE PASSES AT CANADIAN SEWAGE PLANT

The Ontario (Canada) Ministry of the Environment is funding the installation of four membrane sludge presses at the Duffin Creek Sewage Treatment Plant that are expected to save up to \$800,000 annually in energy savings when start-up begins later this year.

Installation will cost about \$1.5 million to \$1.7 million but energy savings are expected to recoup the capital costs in about two years, says Dave Filman, head of Proctor & Redfern's Wastewater Division, which is the consultant to the treatment plant.

Although installation of the presses is already done in Europe, the Duffin Creek installation will be the first in North America to dewater polymer conditions and sludges, Filman notes. The presses were manufactured in the United Kingdom by Edward Jones Ltd. and supplied by Asdor Ltd.

Located in the Town of Pickering, the Duffin Creek facility is the treatment component for the York-Durham Sewerage Scheme, the largest sewerage project in Canada and one of the largest in the world. The huge sewer line serves several political jurisdictions along its 132 kilometer length and the Duffin Creek plant is projected to be expanded in phases, as populations increase and more municipalities connect to the system and abandon their local treatment plants.

For more information, contact Filman, Proctor & Redfern, 45 Green Belt Dr., Don Mills, Ontario, Canada M3C 3K3, (s16) 445-3600.

✓  
**CHINESE GOVT., ENVIRONMENTAL GROUP  
 WORKING TO SAVE PANDAS FROM STARVATION**

The World Wildlife Fund has committed \$200,000 to rescue China's giant pandas that are facing starvation because of a critical shortage of bamboo, their principal food, it was announced last week. George Schaller, director of the Animal Research and Conservation Center, New York Zoological Society, told reporters that the fund has a three-point program to save the pandas.

The program includes placing the pandas in holding stations, supplementary feeding of the animals in the wild and transferring the pandas -- one at a time -- to new habitats.

The Chinese government is also working on saving the pandas, Schaller said. The government is building holding stations, setting up county committees to rescue pandas and offering the equivalent of \$100 to any Chinese citizen who finds a suffering panda and helps rescue it.

Schaller explained that currently only about 1,000 wild pandas remain in the world, mostly in a small and rugged area of China's mountainous Sichuan Province. The pandas are threatened because of a cyclical die-off of bamboo, which makes up 99% of a panda's regular diet. Every 40 years, the type of bamboo pandas eat flowers and dies, with new shoots emerging from the seedlings. But the bamboo takes about five years to get to edible size, threatening the pandas with starvation unless they find other food.

Moreover, because the pandas have been forced into a limited area due to the expanding human population, they now have primarily one kind of bamboo left to eat.

Half of the pandas' total range is affected by the bamboo die-off, and a quarter of all the wild pandas in the world "face a real emergency," Schaller said. During a similar die-off in 1974-76, 138 panda bodies were found, but their deaths could not be directly linked to the bamboo shortage.

**SOLAR PHONES IN COLOMBIA:** In the first program of its kind in Colombia, the state telecommunications corporation, Telecom, is installing solar-powered radio telephones in the country. By the end of the year, a total of 2,950 units are expected to be in service.

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AROUND THE WORLD

CHINA - The Chinese national news agency, Xinhua, reported this month that the country's first ever environmental publication has just been launched. It said that the weekly China Environmental Journal would be distributed both in China and abroad. The story said that the journal, published by the Ministry of Urban and Rural Construction and Environmental Protection, would publicize the country's environmental protection policies, laws and regulations. The news agency added that it would also report on China's successes in prevention and control of environmental pollution and restoration of ecological balance, and disseminate Chinese and foreign knowledge of environmental protection.

-- As a result of poor ventilation around their coal stoves, 22 people in Peking have died of gas poisoning since November. Coal is the principal fuel for heating and cooking in China.

GUYANA - Solarex Corp., a leading manufacturer of photovoltaic systems, will provide solar power to two Guyana health care facilities, one of which will be among the largest photovoltaic installations in South America. Under an agreement recently signed with the country's Ministry of Health, Solarex will design, manufacture, and install the PV systems. The project includes a 20.1 kilowatt system to provide power for the 10-bed Kumaka District Hospital in northwestern Guyana and a small 3.5 kilowatt system for the Sand Creek Health Facility in the southwestern part of the country. The solar-powered health care facilities will bring primary and advanced medical care to these remote regions of Guyana. The systems are scheduled for completion by mid-1984.

HUNGARY - The Hungarian news agency MTI reported that some 9,600 million forints (.0225 cents U.S. = 1 forint) worth of secondary raw materials will be recycled in the country in 1984 -- about 50% more than in 1980. The reclamation of by-products and waste materials is demanded in a government program, which stipulates that the proportion of recycled waste is to be increased from the current annual rate of 3% to 5% by 1985. To meet the government program objectives, 113 investment projects have been started at a cost of 8,400 million forints and 80 were completed in 1983. In Budapest, a steel waste processing plant capable of handling 75,000 tons per year and a plastic waste reprocessing plant have already been put into operation. A spinning plant using waste yarn has been completed in Mpalc. Ninety-two plants to process cinders from the Danube Iron Works and the OZD Metallurgical Works will be completed later this year, while another 28 company waste recycling projects will be launched.

SOVIET UNION - The government has issued a new edition of the "Red Book," listing 247 endangered species protected under Russian law. The book covers in detail protected fauna of the Russian Federation, which stretches from the Baltic to the Pacific and is the largest of the Soviet Union's 25 republics. In his report to the last Communist Party Congress, President Yuri Andropov said more attention had to be paid to ecology.

ZAMBIA - With the aid of a \$22.4 million credit from the World Bank's International Development Association, the country will expand and improve its timber plantations and processing facilities. The project is designed to help end the depletion of forests as well as raise production and reduce log imports. Annual production will rise by 20,000 cubic meters of lumber and 11,000 cubic meters of poles. The project area is in the Copperbelt Province in the northern part of the country. Plantations are just outside the towns of Kitwe and Ndola and have a combined area of about 43,500 hectares. The project will finance the management of existing plantations over five years, and provide for replanting and new planting of a total area of 5,300 hectares.



**ENVIRONMENTALISTS CHARGE BRITISH  
AVOIDING ACID RAIN RESPONSIBILITIES**

by Barbara Massam

United Kingdom -- British environmentalists have accused the government of avoiding its responsibilities over the problem of acid rain. A government-commissioned report by a leading water pollution laboratory is "deliberately obscure," representatives of Friends of the Earth say. FoE says that the report, by Warren Spring Laboratory at Stevenage, Hertfordshire, plays down the responsibility of the Central Electricity Board as principal polluter and ignores the amount of pollution Britain exports to other European countries.

A week before the Warren Spring report was published on Jan. 9, the outdoor-life journal, Footloose, called for swift government action over the acid rain contamination of over 120 Scottish lochs and rivers, 11 lakes and streams in the Lake District, and widespread loss of fish in Welsh upland waters.

The Warren Spring report acknowledges the increase of pollution in Britain itself, estimated to cost agriculture £25 million per year (about \$35 million) in stunted plant growth. However, it repeats the government's previous arguments that the relationship between the emission of sulphur dioxide from fossil fuel burning and acid rain is still not fully understood and more research is needed before proper investment can be made in anti-pollution measures, which could increase electricity costs by 10% to 15%.

Last Dec. 15, FoE organized S.T.A.R.T. (Stop Acid Rain Thursday), a day of demonstrations outside St. Paul's Cathedral and CEBG offices with dead Christmas trees and emblems of countries affected by acid rain. Members said Britain should acknowledge its role as major European polluter with its 4.25 million tons of sulphur dioxide (1982 figures), and the CEBG its 60% part in this.

There is ample evidence to act now on improving methods of washing and cleaning sulphur emissions, FoE argued. The cost should be viewed against the cost of meeting the environmental problems acid rain creates. Britain should follow the seven European countries and Canada, which have agreed in principle to the proposal of the United Nations Economic Commission for Europe that sulphur dioxide emissions should be reduced by 30% by 1993.

**FOE WARNING ON GREENHOUSE  
EFFECT RAISES SID HACKLES**

The Society for International Development, meeting in Washington, D.C. last week, was in no mood to accept exhortations from Friends of the Earth to "do something now" to counter the "greenhouse effect," which is not expected to bite hard until the next century. Several groups recently issued dire predictions of a coming greenhouse effect --rising temperatures around the world due to a build-up of carbon dioxide in the atmosphere from consumption of fossil fuels.

While many SID members did not question the seriousness of the problems raised by Rafe Pomerance and Anthony Scoville, they did argue with Pomerance's conclusion that "the solution is clear: total commitment to a more efficient energy economy." The solution defies reality, several noted.

One questioner from the World Bank asked the FoE speakers how they would advise the minister of energy from a developing country who wanted to use coal for his energy source, since it was cheapest. Scoville agreed that developing nations would have little choice but to use the lowest-cost energy, but he warned against total dependence on one source. Both Scoville and Pomerance urged development of alternative sources such as photovoltaics.

END

# World Environment Report

## News and Information on International Resource Management

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**PROPOSAL FOR MASSIVE BRAZILIAN-U.S.  
ALCOHOL FUELS PROGRAM PRESENTED**

A proposal for creation of a \$20-billion, joint Brazilian-U.S. program within Brazil for production of alcohol for mixing with U.S. gasoline was presented in Washington, D.C., last month by Brazilian Engineer Jaime Rotstein, chairman of Sondotecnica S.A. Speaking before the Organization of American States, and at a conference conducted by the Georgetown University Center for Strategic and International Studies, Rotstein suggested that 10% of U.S. gasoline needs could be met through the program.

Under Rotstein's "protoproposal," which he says leaves plenty of room for modification, the U.S. would consume 700,000 barrels of alcohol per day in a 1:10 alcohol-gasoline mix. Of that amount, 500,000 bbl. would be supplied by Brazil, another 100,000 bbl. would come from Caribbean sources, and U.S. producers would supply the remaining 100,000 bbl.

Rotstein told reporters that the program, which has enthusiastic backing from the Brazilian government, would: help reduce the amount of lead in the environment through use of alcohol fuel; strengthen U.S.-Brazilian relations; help reduce Brazil's more than \$90 billion foreign debt, of which some \$40 billion is owed to the American banking community; and reduce dependence on Middle Eastern oil. The alcohol could even be used to create a "U.S. Strategic Alcohol Reserve."

He also pointed out that in West Germany and Great Britain environmental ministers have called for a further reduction in the content of tetra-ethyl lead in the gasoline. This could be accomplished by putting alcohol into gasoline, thereby creating additional markets in Europe for the alcohol.

Program Costs

The price of the alcohol supplied would be equal to the price of petroleum at each particular period, plus the cost of refining. Brazil has produced alcohol in parts of São Paulo state for \$28/bbl., says Rotstein.

And at about \$30 per barrel, he says the 500,000 bbl/day of alcohol could be produced from sugarcane grown on 7 million hectares of land in the central part of the country, without dislocation of food production. He noted that the program would be implemented independent of Brazil's national program, and would involve private Brazilian and U.S. companies.

Brazil would pay for its share of the project in the form of land to be ceded on a gratuitous use basis and would pay off the rest out of its share of the profits. Moreover, Rotstein noted that the program would provide opportunities for purchasing U.S. industrial and agricultural equipment with World Bank, Inter-American Development Bank and Import-Export Bank loans. The \$20 billion from the U.S. would be spent over a 10-year period.

According to Charles Ebinger, director of energy and strategic resources at the Georgetown center, the proposal has generated interest from the U.S. government. The center, he said, received calls from the offices of the Secretaries of Energy and State saying that Rotstein's plan "deserved a hearing."

Ebinger said there is a "strong possibility the Brazilians intend to make this a sizeable initiative," including placing a permanent representative in Washington, D.C., to help direct a substantial lobbying effort. To get Congress to approve the plan, support would probably have to come from bankers, U.S. growers and the major oil companies.

## SURVEY FINDS NATIONAL PLANS VARY FOR STORAGE OF RADIOACTIVE WASTE

[Editor's note: This is part one of a two part story on radioactive waste storage programs in selected countries around the world.]

What kinds of plans are being made for storage of radioactive waste in countries with nuclear energy programs? According to a survey prepared for presentation at last month's Civilian Radioactive Waste Management Information Meeting by K.M Harmon of Pacific Northwest Laboratory, national plans for interim storage "vary significantly."

Harmon notes that many countries are preparing for at-reactor (AR) storage until the fuels can be sent to a reprocessing plant or a geologic repository. In some cases the AR storage could mean a storage period of 50 years -- national authorities say that even this long a time will be quite safe. Other nations are planning to supplement AR pool storage with dry storage in casks of cast iron, steel or concrete or in convection vaults.

### Geological Disposal

The survey, which is to be used as an aid to the U.S. Department of Energy in planning for U.S. participation in international information exchange activities, shows that long-term plans for geologic waste disposal fall into three categories:

In some cases countries are designing geological repositories to handle canisters of vitrified high-level waste (HLW), but not spent fuels. These are the countries committed to reprocessing in their own plants, in foreign plants, or in both. In the second category are countries that are developing repositories that can handle either HLW canisters or spent fuel packages, or in some cases both. And, in one country, Spain, a decision has been made against reprocessing and plans are being made for disposal of spent fuel but not HLW canisters.

### Geological Disposal Parameters

<u>Country</u>	<u>Wastes To Be Accepted</u>	<u>Total Waste Cooling Time Before Emplacement (years)</u>	<u>Earliest Time for Repository Operation</u>
Belgium	HLW	50	Mid-1990s
Canada	HLW or spent fuel	50	After 2010
Denmark	HLW	40	2040
Finland	HLW or spent fuel	TBD	2020
France	HLW	TBD	1993
FRG	HLW (& spent fuel?)	30	2000
India	HLW	30	TBD
Italy	HLW	50	TBD
Japan	HLW	30	2020
Netherlands	HLW	10	TBD
Spain	Spent fuel	10	TBD
Sweden	HLW & spent fuel	30	2020
Switzerland	HLW (& spent fuel?)	35	2020
UK	HLW	50	2040
USA	HLW	10	2000

Most repository designs are based on the mined gallery concept, in which the waste or spent fuel packages are placed in shallow holes in the floor of the gallery. Retrievability is required in a few cases.

(continued)

RADIOACTIVE WASTE STORAGE (Cont.)Institutional Aspects - Who Pays

The survey describes 11 nations that have set up national companies or special government agencies to locate, build and operate radioactive waste storage and disposal sites.

Four of the companies -- in Finland, Germany, Sweden and Switzerland -- were organized in response to the enactment of national "stipulation" laws which make continued use or construction of nuclear power facilities contingent upon the development of satisfactory plans for managing the spent fuel and reactor wastes.

Harmon also points out that in nearly all countries disposal of radioactive waste is "funded on the principle that the producer pays."

In addition, over half of the countries indicated that disposal of LLW/ILW is seen as the most pressing problem. National authorities said that spent fuel and/or conditioned high-level wastes can and should be stored retrievably for periods of 30 years and more and that development of a HLW repository, while necessary, is less urgent.

<u>Country</u>	<u>Company or Agency Acronym</u>	<u>Most Pressing Objective</u>	<u>Source of Funds</u>
Belgium	ONDRAF	ILW	Producers
Canada	----	Spent fuel/HLW	KWH tax
Finland	YJT	LLW/ILW	Utilities
France	ANDRA	LLW/ILW/TRU	Producers
West Germany	DBE	All wastes	Utilities
Italy	Nucleo	LLW/ILW	Government
Netherlands	Covra	LLW/ILW	Utilities, govt.
Spain	ENRESA	LLW/ILW	Government
Sweden	SKBF	All wastes	KWH tax
Switzerland	NAGRA	All wastes	Utilities
UK	NIREX	LLW/ILW	Producers
USA	OCRWM	HLW	KWH tax

FIRST MAJOR WASTEWATER FACILITY BEING PLANNED FOR COLOMBIA

Planning for Colombia's first major wastewater treatment facility is now underway, according to a representative of URS Corp., one of the firms planning and designing the project. The 150-million-gallon-per-day primary treatment facility will be located in Cali, about 240 miles from Bogotá and at the confluence of the Cauca and several other rivers, where pollution impact of municipal and industrial waste is a subject of increasing concern.

The project will be constructed by Empresas Municipales de Cali (EMCALI), a public corporation that provides a broad range of essential services for Cali and adjoining areas. Planning and design are being done by the URS Corp. of San Mateo, Calif., in joint venture with Ingesam Ltda of Colombia.

The \$2.2 million planning study, including computer modeling, is scheduled for completion at the end of this year. Data from the study will be used to upgrade the existing sewage collection system and to design and construct the new sewage treatment system. URS will also participate in financial planning and institutional analysis, and will conduct a technology transfer program for Colombian project personnel.

### HONG KONG LOOKS AT PROPOSAL FOR TREATMENT OF FARM MANURE

As part of a campaign to end the dumping into streams of farm manure generated at the rate of 2,000 tons daily in Hong Kong, a proposal for treatment and disposal of the manure has been submitted to the government by Environmental Resources Ltd., in association with Watson Kawksley Asia and HFA Hong Kong.

Most of the excreta produced by the area's vast population of pigs and chickens is discharged untreated into streams which are used for irrigation and flow into areas used for fishing and bathing. Moreover, these water courses are subject to overflow, thus creating an environmental hazard over vast areas.

The proposal calls for a combination of treatment methods -- dry handling of wastes on small farms and wet handling on large farms, combined with properly managed disposal. Some liquid/solids separation can be carried out on-site, depending on the size of the farm and local conditions.

Although several methods for recycling the manure were explored by the consultants, ranging from soil conditioning to methane production, these methods "could not provide a general solution," ERL said, primarily because there is no developed market for the product.

The proposed nine-year program would cost some \$36 million and would provide for the treatment of animal wastes collected from farms, the resulting sludge being disposed of with municipal waste at landfill sites.

Farmers would be unable to bear the full cost of the program, the consultants advised, and some government support would be necessary. The consultants also recommended establishing sites for relocating farmers who, for reasons of space or accessibility, could not comply with the controls.

### WORLD BANK AIDS YEMEN IN REDUCING WATER SHORTAGES

The People's Democratic Republic of Yemen (PDRY), located in one of the world's most arid regions, will launch the first stage of a long-term water supply master plan with a credit of \$7 million from the World Bank's International Development Association (IDA). The project will help reduce chronic water shortages in the Wadi Hadramawt region, a large valley in the center of the country.

Water now available to the 50,000 people in the project area is often contaminated. Present sources of drinking water are shallow, hand-dug wells that have very limited capacity. The project is expected to increase the supply of potable water to meet demand up to 1995.

The \$16.1 million project includes the construction of a wellfield and a reservoir in Seiyun, the country's third largest town, and the establishment of water distribution networks in Seiyun and surrounding villages.

Also included in the project are water supply studies for other parts of the Wadi Hadramast; detailed design of a second stage of the water supply master plan for Greater Aden, the nation's capital; and detailed design of sanitation plans for Seiyun. The program provides for construction of transmission pipelines from Seiyun to neighboring villages and of operations facilities for the Public Water Corporation, the project's implementing institution.

### RESEARCHERS TO STUDY POLLUTION FLOW BY TRACING ANTARCTIC WINDS

Antarctica has the cleanest air on earth, and is a unique natural laboratory for studying human impact on the atmosphere, but even there, pollution has been detected. Researchers from Los Alamos National Laboratory in New Mexico will be studying how wind currents flowing toward the South Pole are carrying by-products of civilization to that area, and how these same winds may affect worldwide weather and climate.

This month, laboratory researchers will begin releasing tracers of heavy methane over the ocean about halfway between Christchurch, New Zealand, and Antarctica at an altitude of from 18,000 to 20,000 feet. The methane will travel on wind currents toward Antarctica, where air samplers staffed by scientists from Great Britain, France, Japan, Australia and the U.S. will collect specimens for analysis by Los Alamos scientists.

Once analyzed, the samples may provide answers to questions of how rapidly the tracers were transported and the paths they took, as well as to the distribution and concentrations of methane. This information could be extrapolated to predict continental, oceanic, stratospheric, volcanic, and anthropogenic pollutants to Antarctica.

### MEXICAN ENVIRONMENTAL POLICIES CREATING MARKET FOR POLLUTION CONTROL FIRMS

The De la Madrid administration's policy on the environment in Mexico is creating a positive environment for manufacturers of pollution control equipment and instrumentation, according to Charles Crowley of the U.S. Trade Center in Mexico. The center will be the site of the ECOLOGIA 84 trade show April 3-5.

The current administration in Mexico, says Crowley, has already taken the first step towards establishment of a comprehensive pollution policy by consolidating all official responsibilities for environmental concerns under the recently created Undersecretariat of Urban Development and Ecology (SUDE). SUDE has already publicly stressed the need to revise Mexico's entire environmental legislation.

Moreover, for the first time in Mexico's history, ecology is being addressed in the five-year National Development Plan, and the government has earmarked a \$460 million loan, from the World Bank and other sources, for environmental cleanup. The 1982 Federal Law for Environmental Protection drastically increased fines to a limit of 10,000 times the minimum daily wage rate in Mexico City for both water and air pollution violation. Industry experts are working with the government to define acceptable levels of air, water and solid waste pollutants.

Crowley notes that although sales of pollution control soared in the 1979-81 period to almost half a billion dollars, total domestic consumption of pollution control equipment and instrumentation dropped an estimated 38% in 1982 due to the economic crisis, lax enforcement of regulations and uncertainty as to the new government's environmental policy. But he predicts that the market for such equipment will grow rapidly and steadily after an initial surge in 1984. By 1985-86, the market should reach about \$178 million, of which imports will account for approximately 52%.

U.S. firms interested in participating in ECOLOGIA 84 should contact Charles Crowley, Project Manager, U.S. Trade Center, Box 30878, Laredo, Texas 78041, (905) 591-0155, telex: 01773471 - USTCME.

AROUND THE WORLD

CHINA - The main cause of smog in Peking is the concentration of small, inefficient industries within the central area, according to Zhu Zuxi of the city's environmental protection department. The official English language China Daily reported that the burning of soft coal in factories and houses is contributing to the city's air pollution. Peking is plagued by an estimated 190 days of smog each year.

GREECE - Applying its strictest anti-pollution measures ever, the government this month banned half of all private cars and taxis from the central part of Athens and ordered factories to curb fuel use. The orders were an emergency effort to clear the smog as unseasonably warm, windless weather aggravated the city's pollution problem. The measure, which remained in force from Jan. 3 to 5, extended from five to 36 square miles the zone in the central city where traffic is restricted. Based on their license plate numbers, private cars are permitted to drive through the zone only every other day. For the first time taxis were also included in the alternate-day ban. In addition, 115 factories in the metropolitan area were ordered to reduce fuel consumption by 30%, and central heating was turned off in government offices, banks and schools.

MALI - The World Bank's International Development Association will provide the nation with two credits, totalling \$10.9 million, for a project that will provide reliable supplies of clean water to about 230 villages. The project is designed to increase the availability of drinking water in the country's western districts of Kota, Bafoulabe and Kenieba. These areas experience dry weather spells that last for approximately nine months every year, forcing villagers to rely on a few distant rivers and ponds that are often contaminated. Only an estimated 18% of the rural population has access to safe water from modern sources, and more than 7,000 villages still must rely on contaminated water.

MEXICO - Mexico's state oil company, Pemex, and the Environment Ministry have signed an agreement which provides for the cleaning of all the coastline contaminated by the oil company's operations. The agreement was signed after vessels of the Mexican Navy and Pemex took part in a cleaning operation in the Veracruz area.

SOUTH AFRICA - In a major U.S. export drive, approximately 500 water specialists will travel to South Africa next Nov. 12 to 17 to conduct 40 technical seminars on alternative sources of water supply. The International Conference on Ground Water in Johannesburg is being coordinated by the National Waterwell Association of the U.S. and the Borehold Water Association of South Africa. The leading African food producer, South Africa is in its third year of the most severe drought in two centuries. The conference will feature seminars dealing with the technology of ground water development, water well construction, waste disposal, water treatment and desalination, irrigation application and water source energy systems. For more information, contact the National Water Well Association, 500 West Wilson Bridge Road, Worthington, Ohio 43085.

SOVIET UNION - In response to a demand from President Yuri Andropov that industries pay closer attention to pollution control, the Communist Party daily Pravda reported that heavy industrial pollution is killing off thousands of acres of forest near the auto-manufacturing city of Togliatti on the Volga River. Pravda noted that "bitter smoke" hung permanently over the area's hills and woodlands, and it predicted that ecological damage would soon create a wasteland there. The report blamed the installation of outdated industrial technology without proper filters in new factories for much of the polluted air. It also pointed out that lack of dumping space meant that waste from the auto factory was generally burned, sending toxic fumes into the air.



### ACID RAIN TAKING HEAVY TOLL ON WEST GERMAN FORESTS

West Germany's acid rain problem has assumed crisis proportions, according to recently published reports. The Ministry of Agriculture indicated last fall that one third of the nation's 17 million acres of woodland are damaged by the wind-and-rain-carried pollutants, and that during the last year the area of diseased trees has more than quadrupled.

Calculations made by the country's scientists show that acid-rain damage to trees, lakes, rivers and cultural landmarks could exceed \$1.5 billion per year.

The damage is particularly evident in the Black Forest, where woods of fir, spruce and pine have been ravaged by wind-borne pollutants from French and West German industrial centers. Experts say the illness has increased fivefold in less than 18 months, so that nearly half of the entire forest is affected. Moreover, as more young trees succumb to the acid rain, the long-term survival of the forest comes into question.

But the acid rain problem is not limited to West Germany. Substantial tree damage has also been reported in Austria and Switzerland. And in East Germany and Czechoslovakia, entire forests have been wiped out by pollution from coal-burning plants in Eastern Europe.

Some action has been taken by the Kohl administration to correct the problem. Starting in 1986, lead-free gasoline will be introduced for new cars with catalytic converters to reduce nitrogen oxide emissions. Also, foresters are experimenting with the breeding of more pollution-resistant trees and a greater diversity of species, as well as with the use of fertilizer and lime to save stricken trees. In addition, the government is seeking establishment of continent-wide emissions standards.

### JAPANESE, NORWEGIAN REFUSAL TO END WHALING RESULTS IN U.S. PRESSURE

As a result of Japanese and Norwegian refusal to observe an international moratorium on whale killing that is scheduled to begin in 1985, the Reagan administration has begun applying heavy economic and diplomatic pressure to Japan, and U.S. conservationists are boycotting Norwegian fish products.

The U.S. has slashed the amount of fish the Japanese are permitted to take from U.S. territorial waters by over 100,000 tons. The action is the result of a promise by the Reagan administration to use all legal means to persuade Japan to end whaling. In return, Congress agreed to approve a new international fisheries agreement.

In objecting to the U.S. action, Japanese officials point out that their country is not violating international or U.S. law and should therefore not be penalized. They note that whaling is an important source of employment and food and also dispute that many species of whales are in danger of extinction.

Norwegian diplomatic sources say that the conservationist boycott has not hurt sale of Norway's fish products in the U.S.

Officials are now studying an approach that would create a new category of whaling that would permit Japan and Norway to continue some harvesting of whales in coastal water. However, deep-sea whaling would be banned.

END



# World Environment Report

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## 60% of all Europeans favor eco-protection over growth

BRUSSELS--Over 60 percent of 9,700 citizens questioned in the European Economic Community favor environmental protection above economic growth, according to a first-ever opinion poll on the environment by the European Commission.

Surprisingly, high priority was given to the environment in areas with a high unemployment rate. This was also true in areas with a high level of economic development. Furthermore, Europeans are generally satisfied with their local environment, although they tend to be concerned about their national environment on such issues as pollution of rivers and the disposal of dangerous wastes.

The survey was made public here on the occasion of 10 years of European environmental policy. The European Commission's environmental service was created in 1973 by Michel Carpentier, now deputy director in the energy field. It was upgraded to Directorate-General status in 1981, but has been hampered -- far more than other sectors -- by financial restraints based on political decisions which, judging by the results of the survey, do not seem to reflect the will of the European public.

Evaluating 10 years of EEC environmental policy, Karl-Heinz Narjes, the European Commissioner responsible for environmental protection, consumer affairs and nuclear safety, dismissed criticism that only 70-90 laws have been passed in the environment field over the past decade. "More decisions have been taken than we could have hoped for," he said. "The number of directives is not a yardstick; what we are interested in is an efficient framework of regulation. But the legislators have been dogged by limited legal instruments, budgetary constraints and understaffing." Laws adopted at the EEC level affect 260 million citizens of the Community via transposed legislation.

Only two articles in the Treaty of Rome (the EEC "constitution") can be used to support environmental action. Decisions based on them require a unanimous vote by the Council of Ministers, the EEC's decision-making body. "This," said Narjes, "is a burden, especially for environmental policy, since unanimity often means the lowest common denominator, which weakens decisions. This damages the Community's environmental credibility."

(Continued)

"What is needed is a formal legal basis in a rewritten treaty," added Ken Collins, chairman of the European Parliament's Environment Committee. "Environment is being tackled from the wrong end." He believes environmental policy should be more closely linked to other policy areas. "It makes no sense to limit environmental activities to repairing the damages wrought by other sectors of Community policy." The EEC Common Agricultural Policy has been criticized for draining wetlands which later turn out to qualify for protection as wildlife habitats.

Parallel consultation -- draft laws are discussed by the European Parliament, the Economic and Social Committee and the European Commission before debate by ministers, who have the final say -- causes delays and misunderstandings. There is confusion over which draft is being discussed. "The Community must rescue itself from this morass of wasteful procedures," Collins stated.

"However, it is lack of enforcement within the member states once the laws have been adopted that is the real problem," he asserted. The lack of commitment in member states was amply demonstrated by the failure of the 10 environment ministers at the end of November to reach agreement on a number of pressing issues.

These included the controversial directive on the transfrontier transport of toxic waste (which gave rise to the Seveso dioxin loophole) and an air quality framework directive on limiting emissions into the atmosphere from coal-fired plants, considered one of the major sources of acid rain.

Agreement was reached on only one issue, environmental impact assessment. However, its scope had been whittled down to nine categories of projects from 40. All the other decisions were postponed until December 16, when a special environmental council was to be held.

ANNA LUBINSKA

## Belgian enforcement poor on EC eco-laws

BRUSSELS--Government officials have given up trying to solve the cyanide mystery which incensed the Belgian public this past summer.

Despite water protection laws dating back to 1971, cyanide poisoned 80,000 fish in the river Meuse this July. More worri-

some, the river supplies drinking water to five million people in Belgium and nearby Holland.

Factories in the southern steel producing region traditionally release wastes into the Meuse, considered the second dirtiest river in Europe. Why the river didn't clean itself as usual is a mystery. Some believe the unusually hot summer disrupted the natural cleaning process.

The official inquiry, dogged with silence, has now petered out. Ferbatil, the company suspected of dumping the cyanide, is a subsidiary of the Belgian steel giant Cockerill-Sambre, which directly or indirectly employs most people in the Liege region.

Economics alone are not at the bottom of such flagrant violations of environmental laws. According to Valmy Feaux, environment minister of Wallonia, the southern French-speaking region of Belgium: "Fines are so low that companies prefer to pay up rather than clean up. The existing laws are not dissuasive enough, and there is not enough money available from the central government."

Despite the fact that Belgium hosts the majority of the EEC institutions, it, together with Italy, has the poorest record in applying EEC environmental legislation.

According to a European Commission official, lack of structures and competent people at the national level have meant that Belgium does not apply nationally what it promulgates internationally.

Environmental responsibilities have been dispersed since the 1980 state reform which gave greater power to the two regions: Flanders in the North, and Wallonia in the South.

National environment minister M.F. Aerts is, for example, in charge of nuclear policy, while the regions are responsible for energy policy. The regions have sole responsibility in areas such as land planning and mineral exploitation, but they overlap with the central government in environment, rural renewal, nature conservation and water policy. Cultural heritage and tourism are handled on yet another level: the linguistic communities (French or Dutch speaking).

This splinter effect causes much extra red tape and haggling over responsibilities.

Benoit Jadot, of Inter-Environment Wallonie, a watchdog organization that groups some 70 environmental associations in French-speaking Belgium, told WER that "one of the biggest barriers to a successful

environmental policy is the fact that there is no chance at the moment to get funds transferred from the national to the regional budgets. The regions therefore have no access to tax incentives, such as housing renovation schemes or pollution fines."

Another reason for lack of progress is that regional environmental budgets have hardly increased since the mid-1970s.

As a result of lack of funds and dispersed responsibilities -- not to mention the fact the regional governments are just three years old and environmental policy just 10 -- the ensuing uncoordinated action has produced either patchy legislation or a total disregard for environmental laws.

Earlier this year the search throughout Europe for the Seveso dioxin wastes unearthed 8,000 illegal dumps in Wallonia and 3,000 in Flanders, including quarries and caves close to natural water supplies. A nationwide inquiry revealed that they were being used by foreign "midnight movers." The discovery has obliged both Regional Executive Councils to tighten up laws (dating back to 1973) on the transport and disposal of toxic waste. Recently, the port of Antwerp was closed to dioxin, in yet another attempt to clean up the country dubbed as the "trash can of Europe."

ANNA LUBINSKA

## Pollution causes high death rate in Poland

MUNICH--Environmental pollution is a direct cause of the high death rate in Polish Silesia, Radio Warsaw reported recently.

The report charged that up to 430 of each 100,000 residents die prematurely in that region of Poland because of "degradation of the natural environment." It said that the death rate there is 50 percent higher than the national average; circulatory system diseases are higher by 15 percent; there are 30 percent more cancer cases; and almost 50 percent more pulmonary tract sicknesses. Infant mortality, the report claimed, is 13 percent above the national average.

The radio program carried a series of interviews. A woman journalist, who had written a series of articles under the title "Death in Silesia," said that the situation was caused by the high degree of industrialization in the region, adding

that the necessary steps to protect the environment had not been taken.

A doctor said that "speaking generally, it seems to me that the concept of treating Silesia as a closed industrial region is a very wise one. People should come here to work only for about 20 years. Silesia is not a place for children to live. Pregnant women, the elderly, or people with first indications of cancer should undergo intensive care in an unpolluted environment."

The commentator concluded the program by saying: "The report in June 1981 on the state of the environment in the Katowice voivodship (district) contained the following words -- unless environmental pollution is eliminated, further housing construction in almost all towns of the voivodship will require social acceptance of a shorter life, more frequent medical treatment, and acceptance of the risks regarding the extent of the development of the future population."

WILLIAM G. MAHONEY

## Some pollution solutions. . .

A WELL-KNOWN AUSTRIAN ARTIST has donated a 10-color "Save the Rain" poster for a Norwegian group's campaign against acid rain.

At a ceremony in Oslo, the artist Hundertwasser participated in a tree-planting ceremony with Environment Minister Rakel Surlien -- as a symbolic warning against the damage to forests that can be caused by acid rain.

PHILIPS CARBON BLACK LIMITED engineers in Durgapur, West Bengal, India, designed and commissioned a system of three giant dryers and boilers to process carbon monoxide before it is discharged into the atmosphere. The process heat is used to raise steam to run the PCBL boilers, saving 700 metric tonnes of furnace oil.

PCBL achieved a three-fold gain: checking air pollution, conserving energy, and reducing production costs.

CHINA WILL REMOVE ALL POLLUTING FACTORIES from the discovery site of the half-million-year-old "Peking Man" at Zhoukoudian, 48 kilometers southwest of Beijing, China's capital. Factories will be ordered to leave within a definite period under the supervision of the local county government. The site, listed as one of the major national relics, is visited by about 200,000 local and foreign visitors a year.

## German Army bases used for energy R&D

MUNICH--West Germany is using its Army bases for alternate energy research.

It began in 1977-78 when the government decided to use the military as a guinea pig to determine what alternate energy sources would be most cost-effective.

The Ministry for Research made 2.5 million marks (about US\$1 million) available for an initial project under which solar energy collectors would be set up at five German Army installations.

Now the Research Ministry has made an additional 5-7 million marks (US\$2-2.8 million) available for work at 20 additional garrisons. The exact amount spent will not be known until the work has been completed.

The Army Kaserne (barracks) at Fahl in the Black Forest is typical, according to the Defense Department's monthly magazine "Focus on Germany." It reported that the Fahl Kaserne was selected for a pilot project to utilize solar heat and natural warmth from the surroundings. It is in a mountainous region, on the side of the Feldberg, so the average annual temperature is somewhat below that in the flatlands.

Experts think that this mountain facility has an advantage. Since more heating is necessary during a year, the facilities will be used more intensively and for longer periods, the report said.

Solar collectors will not be used at Fahl; instead there will be absorber facilities. Although they will be installed on the roof of only one troop billet, they will be able to provide other buildings with central heating and hot water. Absorbers take all warmth from the surroundings, not only from direct sun rays but also from the air and other objects in the area that emit heat. They function by heating a liquid, usually salt water.

A large part of the project management is being handled by the city building office in Freiburg, under a contract with the Federal Government. The goals of the first phase are modest. All that was sought was a savings in the oil needed to heat water at one building at each kaserne.

The second phase will emphasize absorber facilities with heat pumps. These will not only heat water but will often make a contribution as well to the heating of buildings. The savings here are much greater. It is estimated that the kaserne at Fahl

will save some 33,000 liters of heating oil a year, worth about 25,000 marks (US\$10,000).

The Freiburg Building Office reported that the pilot project in Fahl cost some 850,000 marks (US\$340,000). This includes 70,000 marks (US\$28,000) that had to be spent for the devices to measure results.

The Defense Department publication asked: "In view of such an enormous expenditure, it is fair to ask whether the project is effective, whether it is worth it. The answer is that this is just the sort of project that needs to be supported with public funds. It leads to technologies that would be developed much later at best, and possibly never developed."

A spokesman for the Bonn Research Ministry believes that the test series with the Army should prove particularly effective in easing the way for manufacturers of solar technologies to enter the market.

WILLIAM G. MAHONEY

## Swiss solar energy used in wine making

GENEVA--European wine producers, for the most part hard-headed businessmen, are watching a new Swiss project that they describe lyrically as "capturing sunlight in a bottle."

It began in September when solar heat on an industrial basis was inaugurated at the small wine-growing village of Hallau, near Schaffhouse.

There, in an international project, 500 square meters of solar captors will save local vinters 20,000 to 25,000 liters of heating oil a year. The installation, "Solarin," is a pilot project of the International Energy Agency, carried out under the direction of the Swiss Federal Energy Office.

The new and still uncompleted installation permits the vinter to wash his bottles, pasteurize his grape juice, sterilize his piping and heat his plant with water heated by the sun to 120 degrees celsius.

At a cost of about one million francs (about US\$452,490) the project will be completed in about two years. The largest part of the financing is being provided by the Swiss Federal Government, with support from private firms and from the University of Geneva.

The experts state that "this is the first

time that such a high temperature has ever been produced from solar heat, usable for industrial purposes."

They said that the solar cells, located on a flat roof, can produce up to 300 kilowatts of industrial energy, or water which could reach a temperature up to 140 degrees C. -- and this without a heat pump. This could save the vintner approximately 30 percent of his annual heating oil costs.

Surplus energy produced over weekends or during very sunny days will be stockpiled in two 35,000-liter reservoirs, which corresponds to a reserve of 200 liters of heating oil.

But Federal Energy Office experts restrain their enthusiasm by pointing out that such an installation is not yet a money-making proposition. The solar installation alone cost some 600,000 francs (about US\$271,493). The energy produced by this experimental solar heating plant will not become competitive unless gas and oil prices begin to soar again.

SPECIAL TO WER

## UK doubles spending on hot rocks process

LONDON--Britain is planning to spend twice as much on hot rocks.

Since 1977 10 million pounds (\$15 million) has been invested in the geothermal research project. Pioneered by the Camborn School of Mines, Dorset, their technique is to create a network of rock fractures between two boreholes. Water piped down one borehole through the fractures emerges from the other as hot water or steam.

The technique has so far been applied to a depth of 2,000 meters at a quarry site near Falmouth in Cornwall. The new research will go deeper. An extra 1.5 million pounds (\$2.25 million) is to be given for related background studies by the Institute of Geological Sciences.

The amount of potential energy which could be generated from existing dry rock resources has been estimated as at least 2,500 terrawatt hours of electricity, the equivalent of 10 years current electricity consumption. It could be used for electricity generation, direct industrial processing or combined heat and power schemes.

BARBARA MASSAM

## More on energy. . .

INDIA'S SOUTHERN RAILWAYS WILL BE THE FIRST in the world to use solar energy to power signals at stations, eliminating the conventional kerosene signal lamp. The system should improve visibility.

Similarly, the Oil and Natural Gas Commission (ONGC) will use solar energy for operating its offshore drilling platforms on Bombay High.

Bharat Heavy Electrical Limited (BHEL) will supply and commission the photovoltaic panel system to be installed on the offshore platforms. The Control Equipment Division of BHEL has entered into an agreement with ONGC to supply the panels. The total cost should be about US\$1 million.

BHEL completed work on a pilot plant to manufacture photovoltaic panels in just 18 months.

SRI LANKA is promoting coconut power, the Business Times reports. A private tobacco firm in the island nation is producing briquettes from coconut dust. The dust comes from the outer husk of the coconut where the coir is removed to make ropes and mats.

Ceylon Tobacco says some four million tons of the stuff has piled up in areas for at least 30 years. The company has already set up a pilot plant that can produce 4,000 kilos, or 8,800 pounds, of coconut briquettes a day.

The briquettes cost three times as much as firewood but substantially less than fuel oil and electricity. They burn faster than wood and on a weight basis provide half as much energy as diesel oil.

Trials have shown coconut power is ideal for smaller industries like brick-making and tile works, laundries, bakeries and potteries, and for larger industrial enterprises such as tobacco drying. This is good news for Sri Lanka, which spends 42 percent of its annual budget on imported fuel.

It's estimated that coconut power could save the country 80,000 tons of fuel oil every year, a quarter of Sri Lanka's fuel oil requirement.

Another saving will be in trees. Some 60 percent of energy consumed in the country comes from trees, and that could be cut in half during the next decade.

## Chaos and apathy cited in Colombia

BOGOTA--Colombia's environment is in disastrous shape because of inadequate sanitation, public apathy concerning ecological issues, and institutional chaos in managing natural resources, insisted Colombian Ecology Society President Eduardo Plata Rodriguez in an address to the Second National Congress of Ecology.

The Congress, which met in the central colonial town of Villa de Leiva, analyzed Colombia's current environmental situation and drew up a list of recommendations aimed at averting disaster.

The purpose of the Congress was to commemorate and emulate the Botanical Expedition of Jose Celestino Mutis, whose bicentennial is this year (WER, May 15, p. 6). The expedition studied Colombia's natural resources and their optimal use. The 150 scientists and professionals who participated in the 1983 Ecology Congress did likewise. They took inventory of native flora; analyzed erosion, soil conservation and rational use of natural waters; and proposed tough enforcement of existing environmental legislation.

The experts revealed disconcerting statistics indicative of Colombia's current environmental deterioration. For example, some 500,000 hectares of forest are razed annually, but only 50,000 are replanted.

Other statistics demonstrate the dangers of erosion. Sixty-four percent of Colombia's lands suffer from "sliding sediment." Because of damaging agricultural practices, erosion has reached a level of 650 million cubic meters per year. This carelessness in using the soil is transforming vast tracts of land into deserts. About 7,200 square kilometers of territory are now undergoing desertification, and 10,000 square kilometers more are already classified as deserts.

Recommendations drafted in response to the distressing state of the nation's ecology were sent to Colombian President Belisario Betancur.

Echoing the resolve of the first Ecology Congress (held last year in Bogota), the 1983 Congress urged Betancur to establish a Ministry of Ecology or some other high-level government mechanism, such as an administrative department, to coordinate official management of natural resources (WER, August 30, 1982, p. 5).

The Ecology Congress recommended that laws be written to conserve soil and halt

desertification, and to control the indiscriminate use of agricultural pesticides. Also, the Congress urged enforcement of wildlife protection laws forbidding commercial trade in native fauna.

Concerning parks, the Congress told Betancur that more funds should be budgeted for the upkeep of reserve lands and gave him a list of new sites that should be declared as parklands. In addition, they recommended that a legislative effort to reduce the size of the Sierra de la Macarena park be stopped. (The 11,313-square-meter park, in the "llanos" or plains region, is one of the world's largest biological preserves.)

Finally, the Congress suggested international cooperation in two separate projects. They urged that a study of Colombia's Amazon jungle region be undertaken and coordinated with the investigations of other Amazon Basin nations. And they insisted that management of water resources be planned jointly with nations that share Colombian river basins.

LORE CROGHAN

## Colombia has serious water supply problem

BOGOTA--"Darkness isn't fatal, but lack of safe water is," said a Colombian sanitary engineer.

He was speaking to the nation's environmental and sanitary engineering organization ACODAL, at its recent Congress here.

The government's representative agreed. "Water service is a second-class sector in Colombia," said Minister of Health Jaime Arias Ramirez in another speech. "In painful contrast to our electric sector, it is slow-growing and disorganized. The government must at least double its annual investment for the construction of water facilities." In the meantime, he noted, 10,000 Colombians die every year from intestinal diseases caused by lack of clean water supplies.

Arias Ramirez promised to reorganize the inefficient state organization INSFOPAL (Instituto de Fomento Municipal), responsible for supplying water to towns with over 2,500 inhabitants (excluding the nation's five largest cities). INSFOPAL's director,

Nelson Amaya, recently resigned after the organization lost a \$25 million construction credit from the Interamerican Development Bank.

ACODAL also cosponsored a related conference, with the Universidad de los Andes, that addressed the specific issues of treating the highly polluted waters of the Bogota River (WER, April 15, p. 3). During this conference, participants evaluated the results of the \$4 million study of waste water treatment for the city of Bogota, the river's single largest polluter. The study, made by the consulting firms Black and Veatch (U.S.) and Hidrestudios (Colombia), proposed a treatment plan that would cost \$1 billion in its first stage. (The government originally estimated that cleanup of the entire river would cost only about \$240 million.)

"It's not certain that we could ever collect this kind of money for a water project. And if we could, the money would be better spent on priorities, like running water and sewerage systems," commented Colombian engineer Sergio Barrera, the professor who organized the conference. Bogota's citizens would have to pay for the river treatment through taxes, which seems unfair, he noted, when such a large percentage of the urban population lacks basic water services.

The regional environmental agency CAR (Corporacion Autonoma Regional de la Sabana de Bogota) and the water company EAAB (Empresa de Acueducto y Alcantarillado de Bogota), which oversee the Bogota River cleanup, have offered no official comment yet on the billion-dollar proposal.

LORE CROGHAN

## Mercury killed 23 at plant in Venezuela

CARACAS--Two hundred former workers at a Venezuelan government urea plant are seriously affected by mercury poisoning, and 23 have died.

These are the most direct, incontrovertible results of the country's worst case of industrial contamination. Although the plant was shut down in 1967, the long-range ecological effects of dumping 40 tons of mercury have yet to be determined.

The petrochemical complex in Moron used mercury in the production of sodium dichloride from 1956 to 1967. It dumped its

wastes into a creek draining to the sea, with consequent contamination of coastal waters.

A document addressed to the Environment Ministry was signed by union workers, students, merchants and neighborhood associations representing some 200,000 inhabitants in the danger zone from San Juan de los Cayos to Puerto Cabello on the Golfo Triste. In it they expressed concern about the genetic effects of mercury, citing a high incidence of miscarriages and deformed fetuses at the district hospital in Puerto Cabello. The Environment Ministry was asked to study the mercury levels in local fish, coconuts and other foodstuffs. The inhabitants have been requesting government action since 1975 with little satisfaction and no effective solutions so far.

HILARY BRANCH  
LILI STEINHEIL

## Tropical diseases studied in Amazon

CARACAS--A research center -- the first of its kind here -- has been set up in Venezuela's Amazon territory. It will specialize in research on tropical environmental diseases and will devise practices to raise health standards in the Amazonian communities.

Venezuela's President Luis Herrera formally established the center recently by signing a decree giving its objectives and funding. Actually, the Simon Bolivar Amazon Center for the Investigation and Control of Tropical Diseases has been operating for more than a year.

The people most seriously afflicted by these diseases -- such as onchocerciasis (river blindness) and malaria -- are 13 Indian tribes living in the area, a total of 40,000 people. Some 90 percent suffer from intestinal parasites and 10 percent have malaria.

Now a part of the Ministry of Health, the Amazon Center is the product of years of work by field and laboratory investigators backed by the Central University, the National Council for Scientific and Technical Investigation, France's Ministry of Investigation, the Territorio Federal Amazonas government and the Corporacion Venezolana de Guayana.

HILARY BRANCH  
LILI STEINHEIL



## Israel tightens up on marine pollution

JERUSALEM--The marine pollution section of Israel's Environmental Protection Service (EPS) was recently granted increased authority. Its expanded 10-man section -- the EPS's first enforcement unit -- may herald transformation of the EPS from a staff unit into a real line enforcement agency.

The marine pollution section now has authority over legislation and enforcement, ad hoc treatment of existing environmental nuisances, surveys and research.

An essential component of its work plan is responsibility for implementing the Marine Pollution Prevention Fund, whose major source of income is a fee recently imposed on all ships calling at Israeli ports and on oil terminals. The fund is expected to bring in about \$600,000 a year and will provide the wherewithal for pollution prevention, clean-up expenses and purchasing equipment.

In the near future, the unit will also assume responsibility for enforcing the national dumping law, due to come into effect January 1. The Prevention of Sea Pollution by Dumping Law forbids the dumping of any waste from a vessel or aircraft, except according to permit. Its passage will enable Israel to ratify the Dumping Protocol of the Barcelona Convention.

Israel's new dumping law gives inspectors the authority of police officers. They can enter any vessel or aircraft suspected of being loaded with waste for the purpose of dumping. A person convicted of dumping wastes can get one year in prison or a fine of about \$20,000. All fines levied will go into the Marine Pollution Prevention Fund.

SHOSHANA GABBAY

## Five million trees planted around oasis

HOFUF, Saudi Arabia--A sea of sand has already claimed 32,000 square meters of this oasis in eastern Arabia. To halt its encroachment, five million trees have been planted here in the past 20 years.

Project director Yousef al-Abdul Wahid told a local newspaper Al-Bilad that the trees now cover 500 square kilometers of

the Al Nasa oasis, where the sand is advancing at a rate of 10 meters a year.

Forty wells supply water for the project whose second phase, now underway, envisages four defensive lines of trees to shelter the region's villages, farms and roads.

In this second phase, water will be provided by ground moisture in a system known as "dry irrigation," which saves money since it does not require such common maintenance techniques as fencing, digging artificial lakes and canals, and building pumping stations.

ROBERT FRAGA

## Uranium mining worries Australia

Australia's governing Labor Party voted 55-46 in closed caucus on Nov. 7 to proceed with development of South Australia's Roxby Downs, the world's largest uranium mine.

Uranium mining, and the related issue of the environmental effects of mill tailings, has been a controversial issue in the country for some time. Although Australia has no nuclear power plants, it has 22% of the world's known uranium reserves.

But Prime Minister Robert Hawke faces strong opposition from within his own party. Several state branches of the party have opposed the decision, and have vowed to seek a national party conference to reverse it. They are supported by coalitions of environmental and peace groups throughout Australia.

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# World Environment Report

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## Ecologists create jungle islands in the Amazon

MANAUS--Manmade islands are being carved out of the Brazilian Amazon in a unique international effort.

"It is probably one of the largest ecological experiments ever undertaken internationally," said Richard O. (Rob) Bierregaard, project field director.

The purpose is to understand what happens to the species of surviving tropical forests when deforestation takes place around them. This is accomplished by isolating one, 10, 100 and 1,000 hectare islands in jungle areas cut down for cattle ranching.

The project is a joint effort of World Wildlife Fund-U.S. and Brazil's National Institute for Amazonian Research (INPA). It is called Minimum Critical Size of Ecosystems Project (MCS), but the name turns out to be a misnomer. It implies that the 20-year-long experiment will eventually determine what the minimum size of an ecosystem should be to save all species within it.

But, as Bierregaard told WER, "The areas we're dealing with are so small compared to the real minimum critical size of an ecosystem that we'll never be in a good position to estimate how big such an ecosystem should be." Right now, he said, the best-educated guess is that it should be at least 200,000 hectares. What they are finding out is how an ecosystem changes in response to the changes forced upon it.

The idea for the project began in the mid-1970's when World Wildlife Fund scientist Thomas Lovejoy realized there was an "extraordinary coincidence" of possibilities falling into place. He had researched in Brazil and knew INPA. Also, there was a new Brazilian law requiring that 50 percent of any Amazon development project be left in forest.

There had also been for some years scientific experiments, discussions and disagreements over the loss or equilibrium of species on islands surrounded by water. This then was elaborated to include islands of forest surrounded by clearing. So, as Bierregaard said, Lovejoy had "an audacious idea" -- to rearrange the geometry of the 50 percent of forest left standing so as to create large and smaller islands, near and far from the "mainland" to see what happened.

In 1979, they "traipsed around the forest with a

(Continued)

couple of Brazilian woodsmen" and picked their potential islands.

Then teams of researchers descended on this steaming Amazonian capital to travel several hours north to what was still virgin forest. They studied and counted bird, butterfly, tree, seedling, ant and primate populations before the first tree was cut. Then, between June and August 1980, the first two reserves were isolated, of one and 10 hectares. By the summer of '83 five islands were cut from the jungle, one of 100 hectares.

"We're studying now in what we hope will be the 1,000 hectare area," Bierregaard said. This will be a one-of-a-kind; the smaller reserves will be replicated to see if the changes that take place are similar. All in all, he said, they are looking at 20 to 25 potential new islands. And there is hope that when the cattle ranchers have finished their cutting they will leave the project a patch of 7,500 to 10,000 hectares.

The study started small but has grown up to a more than US\$400,000 budget for fiscal 1984. When WER visited its headquarters in Manaus, there were about 15 people working on the project. "Last month," said Bierregaard, "we moved 50 people between Manaus and the project area, from VIPs to research assistants and graduate students."

The work they have done is impressive. They have captured more than 20,000 birds (which they let go after noting vital statistics that are then entered into the project's computer). Judy Rankin, an American who works for INPA, has collected more than 70,000 samples from 28,000 trees. It's the most extensive tree inventory ever made in the Amazon. And thanks to their Brazilian crews, "We've probably got the most complete collection of snakes in the Amazon," Rankin said. The project as a whole, she continued, "has to be one of the most complete biological inventories in Latin America."

The results of their studies so far are anecdotal, but already the smaller reserves are drying up, trees are falling or dying on the windward sides, there are not nearly as many birds, and, Bierregaard said, "It's boring to go there now."

"After 20 years or more, the one and 10-hectare reserves will eventually cave in," Bierregaard believes, "but the 100 and 1,000-hectare reserves will be a goldmine for research where the foundation has already been laid."

LIBBY BASSETT

## UN votes to save food crop genes

ROME--Genetic materials of the world's food crops will be preserved and made freely available -- if world nations abide by a resolution adopted here recently by the Food and Agriculture Organization's highest governing body.

At its recent conference here, the FAO launched an International Undertaking on Plant Genetic Resources, which is not legally binding. It asks governments to commit themselves to safeguard plant genetic resources and to ensure this unrestricted availability for plant breeding and agricultural development.

The FAO undertaking aims at strengthening the capabilities of developing countries to survey and safeguard their own resources, to breed improved crop varieties and to develop their own infrastructures for seed production and distribution.

At the heart of the undertaking, FAO said, is a commitment to develop an internationally coordinated network of national, regional and international centers to hold collections of important plant species. This would then become a comprehensive global network and information system on plant genetic resources, to be coordinated by FAO.

Immediately after the conference, the FAO Council acted on the resolution and established a new FAO Commission on Plant Genetic Resources. The commission is open to all FAO member nations and will review the development of international cooperation in this area.

SPECIAL TO WER

## Haiti finally agrees to set up two parks

PORT-AU-PRINCE--Haiti has finally agreed to establish two national parks, following years of urging by foreign environmentalists concerned with the near-total destruction of Haiti's forests.

Haiti's consent follows the commitment of US\$200,000 by the U.S. Agency for International Development under the terms of the Caribbean Basin Initiative, and an offer of technical assistance by the University of Florida and the U.S. Peace Corps.

The two parks of about 2,500 hectares each are in underpopulated mountain regions.

They contain some of the last indigenous trees which have not given way to the relentless machete of the peasant in his quest for fuel. One park will be in the Massif de la Selle range and the other, to the south, in the Morne Macaya region of the Massif de la Hotte.

The two areas contain several endangered species, mostly birds. These include the almost-vanished Black-Capped Petrel and the Morne la Selle thrush, locally called the Musician Bird for its hauntingly beautiful song. The latter is so rare that, although its song has been heard, there have been no reported sightings in over a decade.

The two parks are also watersheds, the source of several rivers which now flow intermittently due to deforestation in the area.

Although several private organizations have shown concern over Haiti's runaway deforestation and have started tree planting and educational programs, the Haitian government has indicated little awareness or concern over the alarming degradation of its environment, leaving concerned foreign sources to fill in, should they so desire.

ARTHUR B. CANDELL

## Southeast Asians act to manage forests

BANGKOK--A new campaign to save the dwindling forests of Southeast Asia by regional joint management was announced here recently.

Its architects are the International Union for Conservation of Nature and Natural Resources (IUCN) and the Japanese government. The purpose is to create joint forestry management projects for Malaysia, Indonesia, Philippines, Singapore and Thailand. They form the Association of Southeast Asian Nations, or ASEAN.

IUCN and its affiliate, the World Wildlife Fund (WWF), have begun a worldwide effort to save tropical forests, but the focus is on Southeast Asian countries, where the most serious threat to the world's forests exists.

IUCN assistant director Mark Halle, here on a tour of ASEAN countries, explained Japan's involvement in the project. As a leading timber importer, Japan had contributed to ASEAN national incomes by buying timber, but it had failed to make

an equivalent contribution towards helping ASEAN develop its capacity to manage its forests.

Last November, Prince Philip of Great Britain, the president of WWF, visited Japan and stressed the need for that nation to accept more responsibility for conservation in the nations from which it imports timber.

The Japanese reaction had been favorable, Halle said, and it agreed to provide a large amount of funding for this purpose. Now both WWF and IUCN are encouraging ASEAN to forward their forestry project proposals to Japan as it is prepared to give them favorable consideration.

TONY OLIVER

## New Thai plan to conserve forests

BANGKOK--A five-part plan has been drawn up by Thailand's Royal Forestry Department to conserve the country's rapidly dwindling forests, Chamnong Phothisaro, its new director-general, announced recently.

The plan provides greater support for private sector involvement in reforestation programs in national reserves which have been seriously depleted. At the same time, rules and regulations that could obstruct implementation of the overall plan will be reviewed by the department.

The department will provide an annual budget of Baht 200 million (US\$8.73 million) for allocating 2.4 hectare plots in deforested areas to families that have been practicing shifting agriculture. This allocation of one plot per family is aimed at encouraging families to settle down and thereby preserve other threatened forest areas.

The department itself plans to replant nearby 19,000 hectares of deforested land during fiscal 1984 (1 October 1983 to 30 September 1984).

Finally, illegal timber poachers will, in the future, receive more severe punishment than is meted out at present. During fiscal 1983, the department seized illegally felled wood, in the form of rough logs and prepared timber such as planks, worth a total of Baht 134 million (US\$5.85 million).

TONY OLIVER

## Global pollutant guidelines drafted

NAIROBI--The UN Environment Program (UNEP) is working up a set of global guidelines on land-based pollution of the seas, which it will press individual governments to endorse and incorporate in their own national laws.

Peter Sand, head of UNEP's environmental law unit here, told WER he was optimistic that international agreement could soon be reached on the legal guidelines. They are a direct consequence of the successes already achieved in the Regional Seas program, he said, such as the recent formal adoption of the Mediterranean protocol (ratified last August) and agreement on a similar treaty for the Southeast Pacific by Colombia, Ecuador, Panama and Peru.

Experts from many countries met in Geneva earlier this month to work on the new global guidelines, which were drafted by UNEP. The United States, which has refused to sign the Law of the Sea Treaty because it does not accept the concept of international sanctions in undersea mining, nevertheless is cooperating in drawing up the global guidelines against marine pollution from land-based sources.

Most marine pollution -- 85 percent -- comes from land-based sources. While international agreements are already in force covering pollution from oil tankers and other seaborne causes, so far there has been no convention against pollution from the land.

Many governments have been unwilling to accept regulation of this kind, Sand said, but once global guidelines are agreed they will be under pressure to observe them.

CHARLES HARRISON

## Iran caps one well and another blows

KUWAIT--Bad oilspill news followed some good news in the Persian Gulf last month. The good news was that the Nowruz spill that began last March during the continuing Iran-Iraq war seems to be partially under control. The bad news is that there is a new spill.

The new problem sprang up in the Feridoon Field, located halfway between Ku-

wait and Bahrein. On November 13, the Kuwait office of the Regional Organization for the Protection of the Marine Environment (ROPME) learned from the Iranian ambassador to Kuwait, Dr. Ali Shams Ardekani, that there had been an accident. An explosion on a Norwegian-owned rig was threatening the Iranian crew working on the rig. Since then a slick has been sighted -- one report said it was 2 by 4 kilometers wide -- which suggests that oil is spilling from the well in significant quantities.

This accident once again threatens the fragile Persian Gulf ecosystem. However, concerns that the gulf coast would become a strand of tar balls interspersed with dead fish have not been realized.

One reason is that Iran said in September that it had capped Well No. 3, the largest of the damaged wellheads in the Nowruz Field. This report was initially greeted with skepticism, but a month later Khaled Fakhro, head of the Bahrein-based Marine Environment Mutual Aid Center (MEMAC), said that although the menace had not been eliminated, "the situation has definitely improved." Further down the coast, the head of Qatar's Environmental Protection Committee, Dr. Kush-Kush, confirmed in November that fewer tar balls were washing ashore.

The three-year-old war between Iraq and Iran hampered earlier efforts to bring the gushing wells under control. It also made cooperation to combat the spill, or even to keep it under surveillance, impossible. Since last spring 500,000 barrels of oil are believed to have fouled the gulf from the three Nowruz wells. The environmental damage done, particularly in terms of such phenomena as fish reproduction cycles, will take years to assess.

SPECIAL TO WER

## UK nuclear dumping may affect Irish Sea

DUBLIN--The Irish are worried about Britain's nuclear discharges into the Irish Sea.

The Irish Fish Producers' Organization, which represents most of the country's fishermen, asked all its members to submit specimens of fish caught in the Irish Sea. The organization was reacting to increasing concern about the effects of effluent from Britain's Windscale Nuclear Station.

Irish parliamentary representatives called for a government statement on the situation, despite statements by the

country's nuclear agency that there is no major danger. The Irish Fish Producers' Organization said it was confident tests would show that there was no danger in Irish fishery products.

British Nuclear Fuels, which runs Windscale, meanwhile has decided to reduce its present discharges into the Irish Sea to one-fifth over the next few years.

However, Irish parliamentary representatives alleged that Windscale is accepting nuclear waste from other international locations and dumping it not only into the Irish Sea also at a location a few hundred kilometers off the southwest coast of Ireland.

TOM MacSWEENEY

## Britain backs big tidal energy project

LONDON--Britain's plans to harness the tides for energy are getting a firm financial and technical foundation.

Three years ago, the Department of Energy reported that a barrage across the estuary of the River Severn was technically feasible, and it selected two positions for study (WER, April 7, 1980, p. 5).

Last spring the Department said it would fund half of a 500,000 pound (US\$825,000) assessment of the shorter of the two crossings, which runs across the Bristol Channel from Sand Point on the Somerset coast to Lavernock Point on the Welsh coast.

The Severn Tidal Power Group will provide the other half of the study costs. The group consists of major British engineering and construction firms: Sir Robert McAlpine & Sons, GEC Power Engineering, Taylor Woodrow Construction, Northern Engineering Industries and Balfour Beatty.

"Private sector involvement at this early stage will ensure that the commercial implications of the projects are realistically evaluated," Nigel Lawson, Secretary of State for Energy, told Parliament. He said funds had been given on the understanding that no government commitment would exist after completion of the two-year study.

The Severn estuary has an exceptionally large tidal range and a barrage across it would be one of the biggest civil engineering projects ever undertaken, at an estimated cost of between 3 billion and 9 billion pounds (\$4.95 billion-\$13.95 billion). Electricity generated could satisfy 5-10 percent of Britain's total demand.

BARBARA MASSAM

## More on oceans. . .

A BRITISH UNION BOYCOTT (WER, Aug. 30, p. 8) has forced a Swiss Federal research institute to abandon plans to dump about 200,000 liters of radioactive waste into the Atlantic Ocean.

The Federal Reactor Research Institute at Wuerenlingen announced it had been forced to indefinitely postpone plans to dump light and medium radioactive waste because the British transport union decided not to handle the cargo. Since Britain has the only vessel equipped and authorized to handle nuclear wastes, both Switzerland and Belgium have been forced to shelve planned dumping, a spokesman said.

The Institute said that the decision did not create dramatic problems because Swiss nuclear centers have sufficient stock-piling facilities to absorb the load for several more years.

TO AVOID BEING LABELED a "flag of convenience" territory, Hong Kong is planning to join the 1973 International Convention for Prevention of Pollution from Ships, which aims to eliminate the discharge of oil and other pollutants from vessels. "If Hong Kong does not comply with all the requirements of the international conventions to which U.K. is a party, it could lose its status as a port of British registry," a government spokesman said.

MALAYSIA'S FISHING INDUSTRY is paying the price for mistakes made over the last few years. Uncontrolled trawling with the destructive deep trawl Apollo net in the late '60s and '70s has led to substantial drops in yields. This is particularly bad for a country where 90,000 fishermen operate and where 75 percent of the protein consumed is fish.

The Apollo net was introduced by West Germany in the '60s, ironically as part of an aid program.

The other serious problem has been pollution, particularly from rubber factories and palm oil mills. By 1979, 42 major rivers were declared "dead" by the Ministry of Science, Technology and Environment.

One reason nothing has been done to help solve matters has been the low priority the fishing industry is given in Malaysia's development plans. During the Third Malaysian Plan only 46.8 percent of the money allocated for fisheries was used. If overfishing is not stopped, the whole industry "may collapse in the near future," the Ministry of Agriculture warned.

## Egypt is funding alternative energy

CAIRO--The financial squeeze brought about by the continued slump in Egypt's oil revenues does not seem to have affected Cairo's determination to develop a relatively large-scale program of alternative energy sources.

The government has been setting aside some of its oil revenues for an alternative energy fund, which now stands at \$700 million. Most of the savings are earmarked for an ambitious nuclear energy program, but Maher Abaza, Minister of Energy and Electricity and a long-time proponent of nuclear power, recently said that the development of new and renewable sources of energy was as important as nuclear power.

To support a rapidly expanding industrial and agricultural base and an estimated population of 70 million (from a current 46 million) by the end of the century, Egypt's energy requirements will almost triple from 24.2 million tons of oil equivalent (MTOE) to better than 62 MTOE by the year 2000.

Oil will remain Egypt's prime energy source well into the next century, providing around 30 MTOE. Coal and gas will account for 11 MTOE, hydropower 5 MTOE and nuclear power 11 MTOE.

The first of Egypt's eight 1,000 megawatt nuclear power plants will be built by a French consortium, headed by Electricite de France, at Al Dabaa 160 kilometers west of Alexandria. Some Egyptian officials say nuclear power will supply up to 40 percent of Egypt's commercial energy needs by the year 2000. Those less enthusiastic point out that at \$1 billion per unit, and given the unlikelihood of a significant increase in the price of oil, such a deadline is unrealistic.

Less spectacular, but equally ambitious, is the stepped-up drive towards new and renewable sources of energy. The government is making convincing efforts in the development of energy sources such as solar, wind and biomass which, combined with conservation, could save the country a total of 108 MTOEs through the year 2000.

Emphasis is being placed on domestic solar water heating and conservation in

industry and commerce. Incentives to encourage conservation and switch to renewables include the gradual increase of the price of electricity, oil and gas to "realistic international levels" by removing subsidies, said Abaza. The government's goal is to remove subsidies entirely by the end of the century. Accordingly, the government has outlined three general five-year plans to pursue, with specific details to be filled in as the need arises.

Work has already begun on the first five-year plan, which divides projects into categories. Category 'A' projects include upgrading national capabilities, assessing resources.

Category 'B' projects apply, develop and demonstrate new and renewable energy technologies.

### INTERNATIONAL FINANCING

Egypt's alternative energy program is being financed by the relevant ministries and through programs funded by international bodies such as the UN Development Program, the European Economic Community and the US Agency for International Development.

Of \$60 million required for the program's initial phase, \$32 million has been committed by international organizations. The Egyptian government will raise the remaining \$28 million by establishing a revolving fund to which nationalized industries and government agencies are expected to contribute in proportion to their expected energy savings.

To coordinate the numerous bodies involved in the renewable energy program, moves are underway to establish a Supreme Council for New and Renewable Sources of Energy under the authority of the Ministry of Energy and Electricity.

Also under consideration is the establishment of an Egyptian Renewable Energy Development Organization (EREDO). Cessen, a subsidiary of Italy's Ansaldo, carried out a feasibility study on the formation of EREDO. Financed by the Italian government and the EEC, the study estimated EREDO could be established for 9.7 million European Currency Units (US\$9.2 million), of which the EEC would contribute 7.7 million, with the balance coming from the Egyptian and Italian governments.

JOHN M. BRADLEY

## Peru produces an energy policy

LIMA--To formulate a long-term alternative energy policy, the government of President Fernando Belaunde recently set up a policy think-tank within Peru's Ministry of Energy and Mines.

The advisory body's immediate task is to set up a national energy council consisting of representatives from different energy sectors and interest groups.

The council's president is Felipe Thorndike, former vice-president of Petroperu, the state petroleum company. His committee will have consultative powers only, as all final decisions will be the minister's.

In the absence of a centralized energy policy, renewable energy research has been conducted primarily by Itintec, the Institute for Industrial Technological Research and Technical Standards. It was set up by the military government in the 1970s and gets 90 percent of its funding from an obligatory deduction of 2 percent of the profits of Peru's industrial companies.

In its research projects, Itintec has concentrated on the application of renewables in rural areas, where energy demands are lowest but relative needs are greatest. Only one-tenth of Peru's rural population has access to electricity, for example.

Using simple technology and local materials, Itintec carried out the following pilot projects:

- Prototype windmills to drive water pumps. Native technology has already provided over 1,000 rustic windmills in Piura, built out of tin, wood and cloth.
- Family-size biogas digesters of Chinese design and also semi-industrial-type digesters, using manure and straw. Biogas has also been successfully used in stationary internal combustion engines. Itintec studies show that Peru has a biogas potential of 22 million barrels of oil per year.
- Fruit and vegetable drying using solar chambers. About a quarter of Peru's good production is lost during transportation to market -- avoided if the produce is first dried. The design is based on readily available materials such as steel sheets, wood and glass panes.
- Solar water heating for domestic and industrial use. In Arequipa, two factories now produce solar panels out of 100 percent Peruvian materials.

- Use of solar cells for desalination and irrigation, in conjunction with a system of windmills, for pumping groundwater.

Ricardo Giesecke, one of the new advisory group's members, said alternative energy should use simple technology, local hardware and create jobs. Because of this, solar energy is unlikely to have a large potential in Peru except for specific uses, such as water heating and windmills. At present there are about five companies in Peru selling solar hardware, all set up in the last five years.

The Energy Council's long-term aim will be an integrated energy policy using hydropower, oil, gas, coal and biomass.

Giesecke says that once a policy is determined, outside private sector investment is a possibility, but, "They will have to wait 10 or 15 years to get their money back."

GAIL MOSS

## Brazil to help Haiti on renewable energy

PORT-AU-PRINCE--Brazil has agreed to help Haiti develop alternative sources of energy.

Haiti's minister of Mines and Energy Resources, Claude Mompoint, signed the US\$70 million long-range accord recently in Brasilia.

Brazil will help Haiti in several areas. It will introduce methods to compact bagasse (sugarcane waste) into high-calorie briquettes.

Perhaps more important is the proposed utilization of Haiti's lignite (brown coal) resources.

From colonial days to the present, Haiti has relied only on wood and imported oil for energy, although feasibility and geological studies dating back to the start of the century urged Haiti to take advantage of its lignite.

In 1921, following perhaps the most detailed geological survey of Haiti undertaken to date, Wendell P. Woodring, geologist-in-charge of the U.S.-sponsored survey, said, "The Republic of Haiti contains probably the most extensive deposits of lignite in the West Indies."

Since Woodring's findings, foreign governments and international organizations have urged Haiti to investigate and use its lignite as an alternative or supplement to wood. Their pleadings until now had gone unheeded.

ARTHUR B. CANDELL



## More on energy. . .

COMPASS -- a new direction -- is shorthand for the OECD's comparative assessment of the environmental effects of energy systems. Systems is the key word, said Ian M. Torrens, head of the OECD's Division of Resources and Energy in the Environment Directorate (the OECD is the 24-nation Organization for Economic Cooperation and Development). COMPASS doesn't look at energy sources; it looks at the end use, for energy services can be provided in a variety of alternative, efficient ways. It has studied space heating and cooling in the residential/commercial sector, and found that it's possible to increase energy efficiency, save money and fulfill environmental objectives. The next phase of COMPASS will focus on transport and industrial end-uses of energy. The ultimate objective is to help define environmentally favorable energy strategies for OECD countries.

THE EEC SOLAR ENERGY research and development program has established 15 experimental solar power stations in Europe to test the effectiveness of photovoltaic power systems in different climatic regions. They are in Ireland, France, Germany, Italy, Belgium, Greece and Britain. The station on Fota Island in Ireland's Cork Harbor is the largest in Ireland and Britain. It's 160 feet long, 60 feet high (49 x 18 meters); half the power goes to a 250-head dairy farm, the rest goes to the Electricity State Supply Board for national distribution.

Sheep will benefit from solar collectors being installed in Tibet. Already the Himalayan nation is making use of solar water heaters and stoves. Now regional authorities are formulating a long-term solar program for electricity generation, vegetable production in greenhouses, heating sheepfolds and shearing sheep. Chinese experts say Tibet is second only to the Sahara in solar energy potential, the Xinhua news agency reported.

A NEW INFORMATION CENTER FOR SOLAR and other renewable energies opened recently in Colombier near Neuchatel, Switzerland. It is for technicians and apprentices entering the building trades, to bring them up-to-date on modern techniques.

The installation, Infosolar, is located within the headquarters of the Neuchatel Cantonal (State) Center for Professional

Training in the construction Trade. Financial support comes from: the Federal Energy Office; National Fund for Energy Research (NEFF); Canton Neuchatel; and professional and scientific groups.

THE JAPANESE COMPANY MATSUSHITA set up a pilot plant in Pune, near Bombay, India, to make solar irrigation pumps. It will be permitted to make them on a mass scale if it succeeds in making arid land fertile, the Indian government said. The company hopes to make a breakthrough in Asian markets if the experiment proves successful.

INCREASED USE OF AGRO-INDUSTRIAL WASTES in the Philippines helped the country to save 400 million pesos (US\$37.7 million) in foreign exchange in 1982. Orlando Galang, director of the Bureau of Energy Utilization (BEU), said the use of agro-industrial wastes for energy last year surpassed the combined utilization of geothermal and hydro sources. They accounted for 13.7 percent of primary energy consumption and reached 13.1 million barrels in fuel oil equivalent. The pulp and paper, sugar, tobacco, coconut and logging industries found it profitable to use bagasse and other wastes because of the shorter payback period (less than two years). The companies used wood wastes, coconut husks, black liquor wastes, firewood, coconut shells and charcoal.

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# World Environment Report

News and Information on International Resource Management

Vol. 9, No. 22

NOVEMBER 30, 1983

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## Countries and companies negotiate on pesticides

NEW YORK--A dialogue between Latin American governments and agrochemical manufacturers has been going on -- largely unheralded -- for five years.

"It was unique because it was the first time that a regional grouping of countries engaged in dialogue with the whole of an industrial sector from around the world," wrote Project Director Frank Penna of The Policy Sciences Center in a case study for the Charles F. Kettering Foundation.

Penna and the Policy Sciences Center acted as an intermediary in the dialogue between GIFAP, the international organization representing national associations of agrochemical producers, and high officials from six Latin American countries, representing all nations in the region.

There have been some real results. In February 1979 both sides met in closed session and an open plenary, and "there were frank, often bitter discussions of all the issues of sales practices, patents, local manufacture and appropriate technology," Penna wrote. "Surprisingly, there was unanimous agreement on the priority of some of the environmental issues." These were improving the safe use of agricultural chemicals in formulation, application and labeling.

The next two years were spent in researching the situation, and the results of interviews in eight Latin American countries were distributed to both sides.

The two sides met again in February 1981. After three days of "candid meetings," nearly 100 possible courses of action emerged. Of them, six were chosen as being of priority.

Within a year, several concrete actions had been taken on a voluntary basis, Penna reported.

- Colombia developed plans for residue analysis laboratories and for safe aerial application of pesticides.

- Argentina hired a noted expert to draft a new plan for a model public health program.

- Brazil entered negotiations with the World Bank to finance a nationwide safety training program for pesticide use on all crops.

- Mexico, in collaboration with the UN's Food and Agriculture Organization, set up a meeting of 28 Latin American and Caribbean countries to standardize

(continued)

regulation criteria on agrochemicals. The agenda included legislation, registration, labeling, application and residues.

- Governments invited technical experts from industry (through GIFAP) to official meetings.

- The World Bank expressed interest in supporting these governmental programs -- and began considering safeguards to be built in as conditions of its own loan agreements.

- Through GIFAP a handbook was produced outlining a code of safe practice for formulation plants. It was distributed to all governments in Latin America, and 10,000 copies were sold out worldwide in five months. Governments said they used it to devise laws and regulations.

- GIFAP revised its overall policy priorities to focus on safe use of pesticides in developing countries.

Funders of the project were the UN Environmental Program, U.S. International Communication Agency, Rockefeller Brothers Fund, U.S. Agency for International Development, Xerox Fund, Ralph E. Ogden and Charles F. Kettering Foundations.

The process started by this project still goes on. As one international observer noted, "There are still problems remaining with safety and on the distribution of chemicals to the ultimate user, and they need resolution." LIBBY BASSETT

## Pesticide do's & dont's. . .

DEATH AND DISEASE from pesticide poisoning are on the increase throughout the world. The World Bank believes that developing countries, in particular, are exhibiting some alarming problems arising from their increased use of pesticides. Education on the dangers of pesticide storage, transport, use and disposal is made difficult by the fact that many end-users cannot read the instructions and cautionary information.

In an attempt to help solve this growing problem, the World Bank's Office of Environmental Affairs has produced a wall chart depicting the "do's" and "don't's" of pesticides that is especially designed for those who are illiterate. It has no writing, only drawings to make its points, and it is now being field tested in many parts of the world. For further information: Dr. Donald King, Office of Environmental Affairs, The World Bank, 1818 H Street, N.W., Washington, DC 20433, USA.

## Soviet Union admits ecological disaster

MUNICH--In the Soviet Union, a major ecological disaster has killed more than 2,000 tons of fish, thousands of cows and birds, triggered havoc in the Ukrainian and Moldavian regions, and interrupted drinking water service to millions of people in cities and towns, including Odessa.

The Soviet daily *Izvestia* confirmed that thousands of people were evacuated and major industries were forced to come to a halt in September after a 600-kilometer section of the Dniestr River became polluted with raw potassium salt when a waste dam wall at a fertilizer plant collapsed.

It said that eight persons, including the designer and builder of the dam, are now facing trial. A top level commission, headed by the Soviet Minister of Land Reclamation and Water Resources, is investigating the disaster.

The minister, Nikolai F. Vasilyev, said dozens of "prominent scientists" from Moscow, Leningrad, Kiev, Kharkov, Odessa and Rostov-on-Don have been sent to the area near Poland and Czechoslovakia to direct clean-up operations and to provide alternative water sources for the residents of the affected towns and cities.

*Izvestia's* interview with Vasilyev was unique, since for years the Soviet regime has claimed that pollution accidents only occurred under capitalistic systems, that such disasters could not happen under socialism.

Triggering the article were readers' questions about the safety of drinking water in such large cities as Odessa and Kishinev. The paper assured readers that, although the drinking water in such areas was not as amply available as usual, it was perfectly safe to drink. It then reported that there had been an accident at the waste dam at the Stebnikovsky Fertilizer Plant, eight kilometers south of Drohobich. It said a 60-meter section of the waste dam collapsed September 15, unleashing 4.5 million cubic meters of potassium salt slush, which burst into a neighboring valley. A six-meter-high wave rushed 22 kilometers to the Dniestr, washing away roads and a railroad track en route.

When the potassium wave hit the Dniestr, salinization became so bad that the river's salt content quickly exceeded that of sea

water. *Izvestia* added that even now large deposits of salt are embedded in the river bottom.

Before the accident, the Dniestr was considered "the cleanest river in the European part of the USSR." The preliminary clean-up is expected to take at least several months.

The pollution was finally stopped at the 48-kilometer-long Novo-Dnestrovsky Reservoir, about 500 kilometers downstream. At the reservoir the surface water is now relatively free of salt, but the bed is badly polluted, Vasilyev said.

The cause of the accident is negligence, Vasilyev charged, adding that a special regulatory body demanded in December 1982 and again this May that the waste dam be improved, but nothing was done.

WILLIAM G. MAHONEY

## France finally OKs Rhine River cleanup

BRUSSELS--After years of delay, France's National Assembly has finally ratified a convention to clean up the Rhine River.

In 1976, France, West Germany, the Netherlands and Switzerland signed the Bonn Convention to reduce contamination of the Rhine. One of the biggest offenders was France's potash mining area in Alsace, which dumped on average six million tons of brine into the Rhine each year.

The French parliament had refused to ratify the convention because of strong local opposition in Alsace, where people feared that salt injected instead into deep shafts might infiltrate their groundwater supply.

France's ratification of the convention this October unfortunately coincided with a complaint lodged by the Dutch against the Alsatian mines (MPDA) for continuing to dump salt wastes into the Rhine despite the fact that their license to do so was revoked by a court ruling this past June.

The Dutch have reason to cry "foul." Salt potash is only one component of the 23 million tones of toxic sludge that end up each year in Rotterdam harbor. Although the Dutch throw their industrial waste into the Rhine estuary, they claim theirs is only a small part of the total. Most, they say, comes from Swiss, French and German industries that line the 1,000-kilometer-long Rhine.

It costs Rotterdam 44 million guilders

(US\$22 million) a year to dredge the world's largest harbor to keep it open to shipping. A quarter of that is spent on getting rid of contaminants. The sludge had been dumped in the North Sea or spread on land, but it is so badly contaminated now that neither of these methods is safe.

The city of Rotterdam has plans for a vast waste disposal facility to be built west of the city. Officials estimate the total cost would be 160 million guilders (US\$81 million) to keep the harbor clean for the next 20 years. A city environment official has demanded that up-river countries foot their share of the cleanup bill.

This request is not unreasonable. A few years ago the French received 93 million francs (\$13 million) from the other riparian states to find alternatives to dumping the Alsatian wastes into the Rhine. They are still looking.

Last month, in Rotterdam, a self-styled international water tribunal with a jury of eminent politicians and scientists "put on trial" companies accused of dumping phenols, pesticides, organochlorines and heavy metals into the Rhine, Neckar and Weser rivers. Among those charged were Shell, Philips Duphar, Bayer, Hoechst, Boehringer, BASF, Ciba-Geigy and British Nuclear Fuels (accused of discharging radioactive elements into the Irish and North Seas). All of the companies involved declined to participate in the week-long proceedings.

ANNA LUBINSKA

## Another border solution. . .

EAST GERMANY'S Minister for Environmental Protection Hans Reichelt has announced two new agreements with West Germany to reduce border air and water pollution.

The announcement was made following four days of meetings in Munich between Reichelt and the Bavarian Minister for Environmental Protection, Alfred Dick.

Both ministers expressed satisfaction over the detailed information exchanged and said that the exchange would be continued on a regular basis.

Reichelt signed an agreement with West Germany aimed at alleviating water pollution problems in the Roeden River, which flows from East to West Germany. Under the agreement, West Germany and Bavaria will help pay for the construction of a sewage purification plant in the East German town of Sonneberg.

## Sahelian nations learn grim news

BRUSSELS--The Club du Sahel has been told that, for all its efforts, life in the Sahelian nations of West Africa has gotten worse.

The Club du Sahel was set up in 1976 during a major drought and famine that killed at least a quarter of a million people. It is comprised of eight member states -- Cape Verde, Chad, Gambia, Mali, Mauritania, Niger, Senegal and Upper Volta -- of the CILSS (Permanent Interstate Committee for Drought Control in the Sahel) and donor institutions. Its purpose is to promote self-sufficiency and food security in the region by the year 2000.

However, at the fifth conference of the club, the situation was considered grim. Despite some successes (some countries have implemented national food strategies, for example), self-sufficiency in food has diminished. Only one-third of the region's 30 million people can feed themselves -- and life expectancy is just 40 years.

At the same time export crops are down, and have not been counter-balanced by industrial development.

Drought and desertification continue to claim precious grazing land -- 1.5 million hectares are affected every year.

Only 25-30 percent of the rural population has clean water. Of the 3.3 percent of total aid that goes for water problems, just 1.4 percent is for rural communities, said Mr. Kabore of the CILSS Secretariat.

Wood accounts for between 60 and 90 percent of energy consumption, yet only 1.5 percent of aid (about US\$3 million) is spent on forestry. Dr. Diallo of CILSS said that 300,000 hectares of forest are lost every year in each country, while only 10,000 hectares are planted.

Dr. Diallo criticized programs which favor "studies and trips" above actual progress. CILSS is now proposing a multi-disciplinary program to incorporate soil protection, reforestation and adaptation of natural vegetation.

The key is mobilizing local populations, and there has not been much success in this so far.

Aid now averages about \$1.7 billion a year, said Jacques Giri of the club's Secretariat, but priority areas still get too small a portion.

One third of all funding goes for food

aid, budgetary support and technical assistance; 13 percent goes for transport infrastructure; while only 4.5 percent has been spent to develop rainfed cereal farming, which accounts for 95 percent of cereal production.

ANNA LUBINSKA

## Uganda acts to save its wildlife areas

KAMPALA--A team of independent observers recently completed an environmental fact-finding mission to Uganda. They found that after nearly a decade of war, famine and anarchy, the current government is interested in working out a National Conservation Strategy. The national strategy would be built on the broad base of the World Conservation Strategy, actively promoted since 1980 by the International Union for the Conservation of Nature (IUCN), World Wildlife Fund and several UN agencies.

The UN's Food and Agriculture Organization has had an active presence in Uganda since 1980; it was one of the first international organizations to return after Idi Amin was routed by the Tanzanians in 1979. Aid and technical assistance have also come from the European Economic Community and from many smaller groups, such as the New York and Frankfurt Zoological societies, the People's Trust for Endangered Species and the African Wildlife Leadership. All have been working together on vital preliminary surveys and research in an attempt to reconstruct Uganda's once-famous national parks.

It might seem that aid for national parks, especially in Africa, implies a concern for animal rather than human welfare. But before Amin's bloody reign, tourism in Uganda was second only to coffee as a foreign exchange earner, pulling in US\$40 million a year.

During the '70s the destruction of wildlife in Uganda was horrendous. The elephant population fell from over 30,000 to under 3,000, and in the first months following Uganda's "liberation" by the Tanzanian army, 14,000 animals were killed in Queen Elizabeth Park alone. The parks and game staff who lived through it agree that heavy poaching and wanton killing really became a major problem during the Tanzanians' punitive takeover. Persons who were ill-paid, ill-fed, ill-disciplined, far from home

constraints (wildlife is important to Tanzania's well-being too), but very well armed, killed for meat, amusement and greed. They slaughtered the larger game for ivory and skins, sold by local profiteers.

#### REMARKABLE PROGRESS

But by September 1982, the parks project could report remarkable progress. Ruthless prosecution of poachers in the form of shoot-to-kill orders cut poaching by 90 percent. Rangers are once more paid and uniformed, and the ruined infrastructure is gradually being repaired or replaced. The savannah tree cover has flourished with less domestic and wild animal pressure, and elephants are beginning to come back.

Other conservation-oriented services are doing less well. The Departments of Game, Fisheries and Forests are still crippled for lack of equipment. The resources for which they are responsible are still subject to uncontrolled exploitation. The lakes, particularly hard-pressed Kyoga, are being fished out by a desperate population growing at a rate of 3.5 percent a year in spite of, or perhaps because of, war and famine. The forests are fast disappearing: 32 percent forest cover in 1960 had swindled to 12 percent by 1977, and the worst was to come. Former cattle and coffee farmers, fleeing to the protective hills, turned to charcoal production or became shifting cultivators, starting cycles of flooding, erosion and the drying of once-perennial springs. The few fuelwood plantations that have been established are mainly exotic softwoods (eucalyptus, pines) that are poor preservers of watersheds and soils and useless to primates and large mammals.

In the lowlands water supplies are rarely a problem, for it is there that the white Nile begins. Developers are keen to harness this hydroelectric reserve, augmenting the Owen Falls dam with another just above the famous Murchison Falls within Murchison Falls National Park. There are several good alternative sites elsewhere, and the independent environmental observers believe an environmental impact assessment will be of help in this situation.

WENDY VEEVERS-CARTER

## Kenya begins unique ecological survey

NAIROBI--A team of British and Kenyan scientists has begun a unique ecological survey: of a reserve in northern Kenya that has had virtually no human habitation in the last 10,000 years.

The 27 scientists, from Britain's Royal Geographical Society and the National Museums of Kenya, chose the 1,000-square-kilometer Kora natural reserve because it is now coming under pressure from people moving into the area.

It is also likely to undergo significant changes in future years as the Tana River, which flows along the northern border of the reserve, is developed for hydroelectric generation, altering its water levels.

"To talk about a rational use of land and other natural resources, we need to know precisely what species exist there. We have chosen Kora for this study because we know very little about this area, and about the Tana River, which is Kenya's largest," said team leader Dr. Malcolm Coe, a professor of zoology at Oxford University.

The UN Environment Program (UNEP) is cooperating in the project, and satellite and aerial photographs are being taken each month to build up a complete year-round picture of the effects of changing climate patterns.

Coe said this is the first large area of Kenya where a comprehensive ecological survey has been undertaken, and he believes it will provide invaluable information for future generations of scientists.

CHARLES HARRISON

## More on Africa. . .

MALI, one of the poorer countries in Africa, spent 60 percent more on importing petroleum products in 1980 than it made in exporting merchandise. To turn this situation around, the government is using a \$7.6 million credit from the World Bank's International Development Association to produce two million liters of fuel alcohol from waste molasses. The molasses is a by-product generated at two sugar and distillation facilities located about 300 kilometers northeast of the capital, Bamako. The fibrous waste from sugarcane, bagasse, will be used to generate power for the sugar and alcohol producing operations.

## Ecology a plank in Venezuelan elections

CARACAS--Environmental protection is a plank in the platforms of both major parties as they wind up their campaigns for Venezuela's presidential elections on December 4.

The incumbent Christian Democrat party plans to carry forward a new land-use plan, recently enacted as law.

The opposition Accion Democratica party promises to go even farther. Ecologist Pedro Lava presented the AD environment program recently.

It includes a proposed environmental protection agency, staffed by experts from existing government bodies and scientific institutes. It would define objectives, standardize permits, supervise and control activities and centralize legal requirements, Lava said.

Legally required environmental impact studies would be contracted to national universities to guarantee objectivity and uniformity of standards, he continued.

Other parts of the plan include economic incentives for agroindustries and small and medium-sized industry, such as tax exemptions for pollution control equipment.

Lava promised tighter controls over chemicals and more community control over environmental programs.

HILARY BRANCH  
LILI STEINHEIL

## Ecologists active in Argentina's election

BUENOS AIRES--Argentina's new president, Raul Alfonsin, was heavily supported by the environmental movement here during his campaign.

His party, the Union Civica Radical (a social democratic party), had three main environmental policy goals:

- coordinated environmental assessment leading to a National Plan of Environmental Preservation.

- two draft laws -- one including "environmental crimes" in the Criminal Code, the other allowing citizens to sue any violator of environmental laws, including the government.

During the campaign an Environmental Working Group of the Radical party under-

took three important activities, which received wide press coverage. It went to court on two class actions to protect the environment. The first had to do with capturing dolphins (WER, August 30, p. 4) and the second to restrict 2,4,5-T (WER, Oct. 30, p. 4). These cases created the legal mechanism for future popular or class actions.

The third activity was the preparation (with the other four major parties) of an Environmental Multiparty Meeting, held on September 28. This was the first time environmental issues obtained the political endorsement of the major parties.

Finally, the Radical party's environmental team lobbied politicians and local party committee members to stimulate people to organize themselves to solve the environmental problems that affect them where they live and work.

The Radical Environmental Working Group realizes that most members of its party, and most Argentinians for that matter, still have little understanding of environmental values. The working group hopes to prove that development can be combined with environmental protection, even in a country impoverished by seven years of dictatorship.

PEDRO TARAK

## Swiss eco-groups get legislative rights

BERN--The Swiss upper house of Parliament approved a draft bill giving environmental organizations major rights in an environmental law protection that does into effect in 1985.

The issue was not pro or con environmental protection as such. Rather the opposition centered on the issue of states' rights. Swiss Cantons (states) jealously guard their rights vis-a-vis the Federal Government. Although the new environmental protection law is Federal, application of its terms is a Cantonal matter.

The draft bill now certain to receive Federal Government approval will give national environmental associations that have been in existence at least 10 years the right of recourse against any governmental decisions involving the new law. Opponents of the draft charged that this impinges upon Cantonal jurisdiction, since it would give national groups the right to challenge Cantonal decisions.

The new law demands that any projected installations -- such as the building of a factory -- that might endanger the environment first be accompanied by a separate environmental impact study. If a Canton, say for economic reasons, approved the factory, national environmental associations could challenge this approval if the study indicated noise or atmospheric pollution levels near the proscribed ceilings.

As the draft reads, large established environmental protection groups will now have the right to challenge any Cantonal application of the new Federal environmental protection law.

Some fear that this will open the door to similar demands by other organizations involved in other fields -- thus diminishing Cantonal rights further. Others predict that the result will be lengthy court battles that will delay vital construction and other operations.

WILLIAM G. MAHONEY

## Asbestos settlement reached in Norway

OSLO--An amicable compromise settlement was reached here when 3.7 million kroner (US\$500,000) in compensation was awarded to 29 Norwegian asbestos victims and their survivors. The settlement was between the Norwegian cement concern Norcem and a trade union representing the plaintiffs.

The compromise ended a two-year-long struggle and court actions by the trade union, Norsk Kjemisk Industriarbeiderforbund, against Norcem and its subsidiary Norsk Eternit Fabrikk (WER, Nov. 15, 1982, p. 3).

The original claims totaled 4.2 million kroner (\$567,000) and covered loss of supporters, loss of income and future occupation. The individual compensation to be paid will vary from 30,000 to almost 300,000 kroner (\$4,500-\$40,500).

Norcem, which stopped using asbestos some time ago, agreed to pay similar compensation over the next 20 years if other proved asbestos victims are discovered among company workers.

The parties agreed that the compromise "was reached out of consideration of human interest." It frees Norcem and its former managers of further responsibilities.

The plaintiffs agreed to drop court actions against local and government labor protection agencies. Originally, they claimed the agencies had failed to carry out proper inspections which could have discovered the ill-effects of asbestos much earlier.

"We have reached our main goals. A compromise like this is better than tough and long-lasting court proceedings which include so many tragic factors," said lawyer Karl Nandrup Dahl, who represented the plaintiffs.

SPECIAL TO WER

## South Africa lax on safe asbestos levels

CAPE TOWN--South Africa is the world's major producer of blue asbestos, but an American occupational health expert said safety levels in its mines and factories are about 15 years behind those in Britain.

Barry Castleman, who has studied and written extensively about asbestos in the workplace, charged also that large corporations were using South Africa as a base to export asbestos to countries where there were few or no regulations or controls. For example, in 1980, when West Germany announced it would be phasing out asbestos, the machinery and equipment of an asbestos textile factory was dismantled and moved to Cape Town, where a "new" factory, Kapasit Asbestos, was set up.

Early next year a change in the local job-safety laws will limit the permissible level of all fibers to 2.0 per cubic centimeter of air, which is 10 times higher than the current UK standard for blue asbestos, regarded as the most dangerous fiber.

A spokesman for Everite, which has the largest share of the local asbestos market, said they had been constantly improving control standards since the early '60s. Still, he said, they were searching for fibers to replace asbestos. This because they recognized that:

- fine asbestos dust was a danger and they wanted to eliminate it "where humanly possible."
- control mechanisms were costly in economic terms.
- it was demanding for management and workers to conform to control procedures.
- asbestos reserves were finite.

MIKE NICOL



## News notes . . .

AMAZON DESTINY is the topic for discussion at the First International Seminar aimed at producing a basic planning document for the region. The seminar will be held in Bogota, Colombia, December 5-6, and will bring together experts on environment, development and the Amazon. The second seminar will be next year in Brazil. For information: Dr. Julia Allen Field, President, Academy of Arts and Sciences of the Americas, 3551 Main Highway, Miami, FL 33133, USA. Tel: (305) 446-5835.

274 CARACAS, VENEZUELA, COMPANIES are relocating their factories, or have already done so.

Under a 1975 decree, 91 companies were ordered to leave the metropolitan area because their activities were judged incompatible with city life due to noise, water or atmospheric contamination. Of these, 27 have not yet complied. However, 210 firms under no legal obligation to move requested transfer and will thus receive tax benefits.

SINCE 1974 NORWAY HAS INVESTED more than 6.4 billion kroner (US\$864 million) on environmental and energy saving measures within Norwegian industry, according to Rakel Surlien, the environmental affairs minister. This comes to about \$21 per person per year.

These investments included 4 billion kroner to reduce industrial effluents, 1.55 billion kroner to improve the working environment, around 0.75 billion kroner for energy saving and the remainder for the industrial exploitation of waste.

A major goal has been to reduce sulphur dioxide discharges, particularly in areas where the SO<sub>2</sub> concentration is high. The discharge of heavy metals into fiords and inland waters has been reduced by 70 to 90 percent since 1974.

CHINA IS SHIFTING ITS ENVIRONMENTAL FOCUS from simple control to prevention, according to a spokesman of the Chinese Society of Environmental Sciences.

By 1985, the Chinese government will require pollution-control facilities for all new construction projects and environmental impact statements for all development and construction projects that will greatly affect the environment, Chen Xiping, vice-president of the society, said.

To date, impact statements have been com-

pleted for 20 large and medium-sized projects, and are underway for 41 more, including the gigantic Baoshan Iron and Steel Complex in Shanghai, China's first nuclear power plant in Zhejiang province, a copper producing center in Jiangxi province and the Shangxi coal producing center.

THE INDIAN GOVERNMENT has set up two bodies to monitor the management of the country's land resources: The National Land Board will be at the apex, with the National Land Resources Conservation and Development Commission to recommend policies to it. Last year, about 60,000 hectares of fallow land in five states were restored to cultivation out of a total of 9.5 million hectares throughout the country.

THE CHAIRMAN OF THE PHILIPPINE National Pollution Control Commission, General Guillermo Pecache, has proposed that his agency be merged with the National Environment Protection Council. President Ferdinand Marcos is considering his proposal.

TAIWAN recently established an Environmental Protection Bureau headed by the Interior Minister. It will set up pollution control center, a special pollution task force and study toxic substances. The burning of used cable has caused dioxin poisoning in southern Taiwan.

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## Nuclear aftermath : biological havoc

WASHINGTON--The life-destroying forces of even a limited nuclear war are much greater than previously predicted, leading U.S. and Soviet scientists agreed. Those who survived would face months of subfreezing cold, hunger, widespread pollution, lack of water, all in a world of near darkness.

It "could result in the end of civilization in the Northern Hemisphere," said Standord University biologist Paul Ehrlich. The biological repercussions would be felt in the Southern Hemisphere as well.

These were the conclusions of some of the top scientists in the U.S. and Soviet Union, who "met" here in a face-to-face satellite hookup during a Conference on the Long-Term Biological Consequences of Nuclear War. It was the first time that US and Soviet scientists had exchanged scientific information via satellite.

The conference was the result of studies done over the past two years on the atmospheric impact of the dust and smoke particles that would be generated in nuclear war. Over 100 physicists, atmospheric scientists and biologists from the US and other countries examined the new evidence in a series of meetings held earlier this year.

The findings of the first day of the conference were satellite-relayed to Moscow for review by Soviet scientists. The two groups then presented their conclusions to the public at the end of the second day.

The conference was co-sponsored by 31 national and international scientific and environmental organizations, and its satellite feeds were picked up by several European countries and Japan.

Using computer models of dozens of nuclear war scenarios, the scientists determined that previous studies had grossly underestimated the consequences of even a limited nuclear war.

The scientists now believe:

- Sunlight at ground level would be only a few percent of normal in the Northern Hemisphere for several weeks, severely limiting plant growth and disrupting food chains.

- Smoke, dust and radioactivity would be propelled to the Southern Hemisphere by disrupted air circulation patterns.

(continued)

- Months of subfreezing weather would destroy crops and freeze surface fresh water.

- Radiation doses would be 10 times previous estimates.

- Although the oceans would not freeze, there would be severe storms and marine life would be radiated.

- Massive firestorms would generate large amounts of deadly toxins.

- Ozone depletion would increase exposure to ultraviolet light, leading to widespread blindness.

- Tropical plants and animals unable to cope with cold and dark would face extinction.

Dr. Carl Sagan, the Cornell University scientist who presented the paper on atmospheric and climatic consequences, urged policymakers to consider these findings seriously: "There is a tendency to put it, the impact of nuclear war, out of our minds, not to think about it. But if we are to deal intelligently, wisely, with the nuclear arms race, then we must steel ourselves to contemplate the horrors of nuclear war."

LIBBY BASSETT

## Pacific nuclear policy. . .

THE 14th SOUTH PACIFIC FORUM, held recently, failed to declare the Pacific a nuclear-free zone.

Member countries agreed in principle on the concept, but Australia and New Zealand are also signatories to the ANZUS (defense agreement) Pact, which includes the United States.

The Forum will continue to protest France's nuclear testing on Mururoa Atoll, and US and Japanese nuclear waste dumping. However, no formal declaration was adopted because, Forum members said, the time was not right.

An Australian proposal suggested prohibiting the making, storage and testing of nuclear weapons, and the dumping of nuclear waste. But nuclear-powered and armed vessels and craft would be allowed (apparently to avoid compromising the ANZUS treaty).

## Policies differ for greenhouse

WASHINGTON--The earth is heating up, two leading U.S. research groups contend, though they differ on strategies to cope with the so-called "greenhouse effect."

The greenhouse effect is caused by increasing amounts of carbon dioxide (CO<sub>2</sub>) in the atmosphere due, generally, to the burning of fossil fuels. While the airborne CO<sub>2</sub> lets the sun's rays in freely, it reflects heat from the earth. As the amount of CO<sub>2</sub> increases, more heat will be reflected, raising the earth's temperature, particularly at the poles.

Computer-model studies of the greenhouse effect were released recently by the Environmental Protection Agency and the National Research Council.

EPA warned that the warming, which will start within a decade, will have a "catastrophic" effect. It suggested huge tree plantations to absorb the CO<sub>2</sub> or a worldwide tax on fossil-fuel use. President Reagan's science advisor called the EPA report "unnecessarily alarmist."

The NRC study committee, on the other hand, urged "caution, not panic," suggesting continuing research and expanded monitoring rather than major changes in energy policy at this time. The EPA agreed that more research was needed.

Both agree that levels of CO<sub>2</sub> in the atmosphere will "most likely" double by the end of the next century. They agree that temperatures might be raised by as much as 4.5-5 degrees Celsius (8-9°F). However, the NRC believes it will not go quite that high.

There is also agreement that the level of the oceans will rise by anywhere from half a meter (2 feet) to two meters (7 feet).

All of this will significantly change rainfall and agricultural patterns, but whether this will, in the long run, be beneficial or destructive is yet to be determined.

SPECIAL TO WER

## SCAR on research in Antarctica

CAPE TOWN-- People have "their heads in the clouds" if they think the Antarctic will be an untouched wilderness, said Dr. R.M. Laws, director of the British Antarctic Survey.

It is not a view to appease conservationists, but it was the dominant message at the fourth international symposium on Antarctic biology, held here by the Scientific Committee on Antarctic Research (SCAR) recently. Attended by some 180 delegates from 14 countries, the conference paid specific attention to the region for its potential as a major food source.

Dr. Laws, chairman of a SCAR working group, believed that the uncontrolled exploitation of krill and fish, exploration and drilling for oil, the mining of minerals and tourism were the biggest threats facing Antarctica today.

There are fears that when the Antarctic Treaty expires in 1990-91 there could be a rush to carve up that unique icy wilderness. But Dr. Laws argued: "Scientists will be in a strong position to identify potential threats to this unique environment."

He felt that present conservation regulations in the Antarctic were as good, if not better, than those anywhere else in the world. When SCAR has prepared its Atlas of Antarctica's protected and sensitive areas it should be a valuable aid for controlling development. MIKE NICOL

## Global biosphere plan developed

NAIROBI--For the first time, 300 scientists from more than 50 countries met to produce an action plan for international collaboration on conserving key natural areas.

This first International Biosphere Reserve Congress was held recently in Minsk, Byelorussia, and convened by the Soviet Union, UN Environment Program and UNESCO.

The concept of biosphere reserves is about a decade old. It goes beyond the traditional idea of natural reserves and parks by advocating improved land

management, environmental training and education and the monitoring of changes in the earth's biosphere. Today, there are 266 designated biosphere reserves in 62 countries.

In their plan of action, the scientists called for coordinated research projects, promoting local participation in managing the reserves and upgrading management to correspond with multipurpose objectives. This plan will now go to the governing bodies of UNESCO, UNEP, the UN Food and Agriculture Organization and the International Union for the Conservation of Nature and Natural Resources (IUCN).

SPECIAL TO WER

## Belgium stops illegal trade

BRUSSELS--Belgium, Europe's major trader in wildlife, has finally ratified the Convention on International Trade in Endangered Species (CITES).

Belgium signed the convention 10 years ago but continued carrying on a flourishing trade, including one in endangered species. Experts estimate this trade brought tiny Belgium \$30 million a year.

For years, environmental lobby groups and members of the Belgium parliament have pressed the government to tighten controls at its port of entry.

Now, it appears that Belgium's ratification of CITES is timed to coincide with the date (January 1, 1984) on which it would have been forced to implement the convention through a European Economic Community (EEC) regulation.

The regulation, which is in parts stricter than CITES, will also apply to four other EEC countries not parties to CITES: Greece, Ireland, Luxembourg and Holland. Spain will thus be the only West European country not bound by either the EEC rule or CITES, and it has a large trade in rare plants and animals and their products.

The European Community is not as yet a signatory of CITES, but its application for membership was approved at the last meeting of the convention in Botswana last spring.

ANA LUBINSKA

## Jobs vs life in Valley of Death

CUBATAO--When babies began to be born without brains, some people in pollution-plagued Cubatão decided to mobilize.

Unprecedented for this southeast Brazilian community of 85,000, a core of citizens have organized a grassroots environmental movement. Their target: 22 petrochemical and iron smelting plants, among them U.S., French and Italian multinationals, that daily spew out 1,000 tons of toxic waste.

For 30 years residents had accepted living in what they call the "Valley of Death." Once a semi-tropic paradise, polluting industries have turned Cubatão into a chemical hell. Open sewers foam with hot industrial detergents, the stench of sulphur hangs in the air and the sky is constantly gray. Dead scrub blankets once-green mountain slopes, and fish pulled from fetid city rivers are stunted, blind mutants. The birds and butterflies have long since fled.

The townspeople have not been so fortunate, especially those of Vila Parisi, a factory-encircled favela (or slum) of 15,000 on the edge of town where the highest contamination level and highest poverty level intersect.

Some residents have blotchy complexions from the acidic air -- a condition known locally as alligator skin. Over one-third of the children and one fifth of the adults have chronic respiratory problems, according to a leading medical researcher. In recent years, food stores have peddled pollution masks, and children still receive daily doses of oxygen at Vila Parisi's first-aid station.

When the first petrochemical plant set up shop 30 years ago, the unemployed and their families began pouring into Cubatão.

In 1972, factory worker Manoel Santos and his wife Maria settled in Vila Parisi because they couldn't afford to live elsewhere. Two years ago, Maria, 36, the mother of three, gave birth to twins. One lived 20 days; the other was just a lifeless torso.

But they are not part of the budding environmental movement because, as Manoel puts it, "If I help industry out of town, I lose my job. With no job, I can't feed my children and they'll die a lot quicker

from starvation than pollution."

In the last three years, others who felt the same way have reconsidered. Within this time, the infant mortality rate has, according to one study, risen to 35 percent. Former hospital administrator Romeu Magalhaes estimated that since 1980 at least 40 of these deaths have been due to anencephaly -- a partial or total absence of the brain -- a condition known locally as frog-face, because as Magalhaes described it, "the skull is soft and looks like it's been flattened by a giant hammer."

Magalhaes verified 13 such deformities at Cubatão's local graveyard in 1981 and, based on this data, Dr. Reinaldo Azoubel, embryologist at the University of São Paulo, calculated the incidence of this defect to be one case per 200 in 1981. Azoubel said the normal incidence of this disease is one case per 5,000 as set by the World Health Organization.

Dojival Santos, Cubatão city councilman and head of the Association of Victims of Pollution and Bad Living Conditions (AVPM), said, "Only after they began giving birth to these monsters, as some people there call them, did people begin to wake up to the gravity of the problem."

AVPM started with a few people in 1981 and now numbers 70 active volunteers and 250 local supporters, including one of the town's three Catholic churches where AVPM holds meetings. The priest of this church, Father Nivaldo Vincente, regularly addresses the problem of pollution and poor living conditions during Sunday sermons because, he said, "the congregation must learn to not only look up to God but around them as well."

As a first step AVPM assembled and interviewed parents of deformed children--an event covered by the national press and TV networks. In 1982, they invited prominent Brazilian scientists to Cubatão to forge an alliance with the local community and draw wider attention to the problem. This October, they sponsored a similar "congress" followed by a march and demonstration.

Said Dojival: "We're not an ecology movement whose purpose it is to beautify the environment. We can't separate environmental destruction from its social consequences. We are here to let people know that when the plants and trees suffer, it is a sign that we are suffering as well."

CETESB, the regional environmental protection agency, has in the last four

years issued a modest \$155,000 worth of fines to polluting companies. City Council President Florivaldo Cajé called them token slaps on the wrist.

"Petrobrás, the state oil monopoly, is responsible for 23 percent of Cubatão's pollution and it has never been fined," Cajé asserted.

Petrobrás Administrative Superintendent Luiz Nobregae Silva argued, however, that AVPM has scared people into thinking industry is the cause of the town's health problems.

"Environmentalists say industrial releases are the main reasons for people getting sick here, but this is nonsense," he said. "Malnutrition is the primary factor, and alcohol and smoking are also more important factors."

Attempts by previous city councils to restrict the spread of industry in Cubatão have run into roadblocks not only from government and industry, but from irate citizens afraid of losing their jobs in a country overwhelmed with debt.

The federal government has proposed solutions for Cubatão but has refused to fund them. Paulo Nogueira Neto, head of Brazil's Special Secretariat of the Environment, stated, "With \$10 to \$30 million, we could clean up Cubatão in maybe five years -- 10 years at most. But times are hard.

"People think that without new industry, unemployment, now at 15 percent, will rise," said Dojival. "They do not prefer pollution to unemployment. They prefer neither but they have been backed into a corner."

MICHAEL KEPP

## Indonesia has Minamata Disease

JAKARTA--Eight Indonesian children have irreversible brain damage from eating mercury-contaminated fish, said the chairman of a private research group here.

M. Nashihin Hasan, chairman of Wahana Lingkungan Hidup Indonesia, said the children, from the fishing village of Muara Angke, ate fish contaminated by industrial waste.

In August, the Group of 10 environmental group cited evidence collected by a Japanese expert, Dr. Masazumi Harada, saying that the children had symptoms similar to Minamata Disease and that the heavy metals pollution of the Indonesian bay exceeded levels found in Minamata Bay in the 1950s. Several people living around that Japanese bay suffered permanent nerve and brain damage as a result of eating mercury-laden fish. The disease was named after their affliction.

Nashihin said that the State Minister of Environment and Population Affairs, Emil Salim, had been informed about the findings of the groups. The minister, he said, expressed the view that the situation was "not yet critical."

The local press estimates that 7-8 million people derive 80 percent of the seafood they eat from the mercury-contaminated bay.

KATE WEBB

## More on Indonesia. . .

50,000 FAMILIES A YEAR are expected to migrate from the most overcrowded areas of Indonesia across the Java Sea to Kalimantan (or Borneo), increasing the current population of 7 million by more than 5 percent a year. It's part of the Indonesian government's program to relieve the population pressure on Java through transmigration -- a not-wholly-successful program to date. But, according to the Asian Development Bank (ADB), because of expanding economic opportunities as well as available land, Kalimantan already has a large-scale immigration. An urgent priority now is developing commercial energy supplies to sustain the expansion of social and economic activities.

Therefore, the ADB is providing Indonesia with a technical assistance grant over 10 years to help plan and formulate programs of rural and renewable, non-oil energy supply development. Consultants will be recruited by the Bank to look into rural development and energy planning, such as mini-hydropower, biomass and other renewable options and technologies.

For further information: Asian Development Bank, 2330 Roxas Boulevard, Metro Manila, Philippines.

## Europe calls for export controls

BRUSSELS--The European Parliament has called for strictly controlling the export of pesticides to developing countries. Two member states, Germany and Holland, are in favor. But European Environment Commissioner Karl Heinz Narjes is wary of meddling in the internal affairs of non-EEC countries. The debate could be a long one.

During its October session in Strasbourg, the European Parliament, which represents the electorate of the 10 EEC member states, voted in favor of tightening regulations concerned with the export of banned or restricted pesticides, in particular to developing countries where controls are often lax or inadequate.

The resolution includes:

- better notification of the importing country as to the risks involved,
- explicit consent from the importing government,
- more rigorous packaging and labelling requirements in the language of the importing country,
- better training and information on the use of pesticides.

The European Parliament is not empowered to pass laws but it can try to influence member states. In the case of pesticides, both Holland and Germany campaigned during last June's environment council for a Dutch proposal. It would prevent the future mass dumping of pesticides, banned or restricted in Europe and the U.S., by institutionalizing a system of informed consent and stricter monitoring in the developing countries.

Until now, EEC controls on the use, labeling and packaging of pesticides, introduced in 1978 and 1979, have specifically *excluded* exports to developing countries.

In the '70s, the use of pesticides was promoted by multinational companies as a solution to famine in the developing countries. It soon became apparent that the "green revolution" meant large cash-crop monocultures, whose produce was destined for export. In the meantime, these pesticides, often labeled in a foreign language, if labeled at all, have been used by illiterate farm workers

who have received no warnings on handling. This has caused poisoning and even death.

Europe accounts for 61 percent of the pesticides exported to the Third World, including organophosphates such as malathion and parathion, and organochlorines such as aldrin, dieldrin, endrin, heptachlor, lindane, endosulfan, camphchlor, chlordane and FFT. They were among those whose use was banned in the EEC in 1978. The UK, which opposes the Dutch initiative, is the second largest European exporter with a world market share of 12.2 percent. West Germany, which leads with a 25 percent market share, endorses the Dutch proposal, and intends to tighten up its own plant protection law, which governs the marketing and labeling of pesticides, later this year.

The Dutch have made it clear that if Europe lets them down they will introduce a national executive order on pesticide exports.

ANNA LUBINSKA

## Toxic-transport inquiry hampered

BRUSSELS--Political footdragging by The European Parliament is hampering attempts to find out how the transport-of-toxics laws are being circumvented.

The committee of inquiry was set up this June after European officials had spent months trying to locate dioxin-contaminated waste shipped from Seveso, Italy.

Beate Weber, initiator of the inquiry, said its work is being thwarted by organizational hitches: lack of space, lack of time for meetings. The time must be now, she said, for European elections are scheduled for next June, and the results of the inquiry must be put before the plenary in Strasbourg next March.

An attempt to get the ball rolling at its October meeting, by inviting an EC official whose area is toxic substances, led to an embarrassing blank. He admitted he was not up on the issue. Other meetings have been set up, along with a visit to Seveso, the northern Italian town contaminated by a pesticide factory explosion. Another field trip is scheduled to Ciba-Geigy in Switzerland, where the dioxin will be incinerated.

"Instead of visiting the Ciba-Geigy

plant, we should be talking to the police and customs officials to see where the difficulties lie in tracking down the transport of wastes," Weber asserted.

ANNA LUBINSKA

## Dutch to further restrict PCB use

THE HAGUE--Holland's environment minister, Dr. Pieter Winsemius, has decided to further restrict the use of PCBs (polychlorinated biphenals).

His Ministry of Housing, Physical Planning and Environment is preparing a change of the Substances and Processes Decree of the Chemical Waste Act which will modify the definition of PCB-containing waste, in liquids and in equipment.

With the decree changed, marketing PCBs in closed systems will no longer be allowed. Earlier action was aimed at eliminating the application of PCBs in so-called open use by voluntary action in the private sector. The government could not buy any equipment containing PCBs.

In the proposed decree change, it will be possible to buy PCBs only in small quantities to maintain currently existing equipment.

PCBs are used in transformers and in other electrical equipment. They have been eliminated for use in the U.S. since 1970 as the Environmental Protection Agency considers PCBs mutagenic and carcinogenic.

The Dutch minister plans to speed the process of eliminating PCB use through a mixture of financial incentives and regulatory measures. But, he said, even when the new policy becomes effective in the summer of 1984, people will live with major PCB applications until the year 2000.

"Only by altogether banning the use of PCBs will we be able to eliminate the risks inherent to the material. But we must realize the implications of such an action on some of our industries," he said.

Minister Winsemius hopes that the European Community will follow his action. There are indications that the EC Commission will prepare proposals for a review of all PCB regulations in the Community by 1984.

CAREL B.M. WIEMERS

## Belgium funds eco-development

BRUSSELS--Belgium has adopted an innovative law that provides \$200 million to developing countries with high morality rates so that they can "recreate a life-sustaining environment."

Adoption of the law makes Belgium the first European Economic Community country to react to a resolution adopted by the European parliament in 1981. This resolution, sparked by the Nobel Laureates manifesto against hunger, called for a special fund of \$5 billion to save 5 billion lives.

The goals of the Belgian law -- to provide elementary health care and the means for development at a basic level -- could be achieved in two to three years in selected countries not yet chosen, sources told WER. Possible recipients include Burundi, Upper Volta, Sierra Leone, Senegal and the Sahel.

Jean Fabre of Food and Disarmament International, a non-governmental organization heavily involved in the campaign that led to the bill, told WER how this fund differs from regular Belgian development aid.

"The intentions of the fund are to encourage development at an elementary level: sanitation, a small local hospital. It will provide the infrastructure to ensure 'survival.' The most important thing is to establish the conditions for development, to create a life-sustaining environment, both from the ecological and infrastructure points of view. The survival fund should allow for totally new action. A country like Belgium has traditional links with certain countries such as Rwanda or Zaire. All sorts of interests are established with regular clients over the years. The new fund will be able to operate more freely. If the money is made available, the law could be very effective."

Belgium's present annual development budget is \$400 million but, said Fabre, a third of that goes for bureaucracy. The onus now rests on the Belgian government to allocate the extra \$200 million and enact the law. Its backers hope to promote similar action in other countries, starting with Italy and France.

SPECIAL TO WER



## Drugs destroy Colombian ecology

BOGOTA--Environmental damage can be caused by cultivating drug crops.

An "International Conference Concerning the Effects of Drug Addiction on Society" was organized by Colombia's Academy of Medicine and included the Colombian Ministries of Health, Education and Justice, the United States Embassy, and Bolivian and Peruvian scientists. Several hundred guests attended.

Eduardo Plata Rodriguez, former president of the Sociedad Colombiana de Ecología (the Colombian Ecology Society), analyzed the harm that cannabis and coca cultivation does to Colombia's ecosystem.

"Slash-and-burn" clearing before planting drug crops causes deforestation, erosion, destruction of flora and fauna, the breakdown of food chains, and changes in soil, water and air, said Plata Rodriguez. (A NASA scientist, Wayne Mooneyhan, said erosion from planting drug crops was so bad that a "sediment plume" extends 15-20 kilometers into the sea near Santa Marta.)

Plata Rodriguez added that chemical wastes from processing drug crops also contaminate Colombia's waters.

The successful sale of processed drugs encourages farmers to switch from food cultivation. With more land devoted to drug crops, nutritional levels have decreased in the countryside.

He recommended that the ecological problem be handled with socioeconomic solutions. For example, the Colombian government should guarantee profitable markets for non-drug crops and provide farmers with easier access to credits. Also, standards of living should be improved in the countryside, through government installation of basic infrastructure and services like paved roads, electricity, running water and health clinics. Vice Minister of Justice Nazly Lozano noted that many wealthy drug traffickers install such infrastructure themselves, thereby winning the loyalty and cooperation of rural inhabitants.

Scientists at the conference could give no precise figures to indicate the extent of the problem, although one scientist guessed that at least 100,000 hectares are planted in coca in Colombia.

LORE CROGHAN

## Brazil exports alcohol knowhow

SAO PAULO--Brazil is providing alcohol know-how to Pakistan for a program expected to begin with the construction of a 30,000 liter-per-day pilot plant next year. Brazil advocates the transformation of Pakistan's annual production of 600,000 tons of molasses into 130 million liters of alcohol. The alcohol would be mixed into the country's gasoline. The program will lessen Pakistan's oil import bills as well as better utilize its molasses, now at the mercy of low international market value.

The study for the alcohol program is being conducted on a government-to-government basis, under the coordination of the São Paulo State Secretary of Industry, Commerce, Science and Technology (SICCT). The study is also being conducted under the auspices of the United Nations as part of its alternative energy program for Third World countries, and financing for development of the program is expected to be furnished by both the UN and the World Bank.

The Pakistan alcohol program will be the first step towards an alternative fuel strategy which is expected to embrace biomass and solar technologies as well.

CHARLES THURSTON

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## Australia's tough-talking new environment minister

NEW YORK--Barry Cohen talks tough. He has to, for he's involved in some big environmental battles. As Australia's new Minister for Home Affairs and the Environment, he and his Labor government have already won one battle, are in the midst of another and may well be facing their biggest yet.

The first fight is widely regarded as the most important and controversial conservation issue in Australia's history. It was the battle to "Save the Franklin," one of the last wild rivers in the world. The fight raged for over three years and in the process ended many political careers. It caused the biggest demonstrations seen in Australia since the anti-conscription days of the Vietnam war. Finally, it went to the High Court, which decided that the Tasmanian state government had the power to prevent the building of a dam on the Franklin River. The area had been named to UNESCO'S World Heritage List as having outstanding universal value as a cultural and natural heritage (WER, July 30, p. 6).

Cohen told WER that after the High Court decision, "A lot of environmental groups jumped up and down and said, 'Whacko! Let's declare everything a World Heritage Area.' But they can't do that, for each case is separate. We have made it clear, we will not be a court of last appeal and that they must handle certain issues locally."

However, he continued, if the proposed exploitation of an environmentally sensitive area involves export, "We call for an environmental impact statement. I have the right to do that."

One export product that has become a political embarrassment for Cohen and the government is kangaroos. "We're having problems on the question of kangaroos," he admitted. He said a lot of publicity had been generated by two groups in Australia and one in America "who veer from downright dishonesty to being fairly stupid."

These groups claim that the kangaroo population is too low to cull and that government shooters are cruel, sometimes skinning kangaroos alive.

Cohen asserted, "It's rubbish, just rubbish" that the species culled are endangered. Australia's Commonwealth Scientific and Industrial Research

Organization (CSIRO) estimated the 'roo population at 19.1 million "and that's a conservative estimate," he said. The annual cull permitted is about three million but, Cohen continued, "I don't think it's been reached in recent years. We've probably been under by half a million."

Two leading conservation groups, the Australian Conservation Foundation and the Queensland Foundation Council, support the principle of culling, Cohen said, although they do not support the government's policy.

They argue that the cull should not be commercialized. But, Cohen responded, commercial culling keeps the cost down to the government and the taxpayer. The commercial shooters are experts, he said, "who have no interest in killing a 'roo except efficiently and quickly. They must hit it in the head, otherwise the skin is ruined." It's not a big business, he said, for it brings in only \$12.5 million annually.

An export product worth considerably more is uranium. It, too, is part of Cohen's brief, and it too is controversial.

The situation has some parallels with the Tasmanian dam, for four uranium deposits are in a World Heritage Area, the Kakadu National Park in the Northern Territory. Two uranium mines are already working, and two are proposed for the area. Uranium has also been found down south in Roxby Downs, where other minerals (copper and gold) are being extracted.

Cohen said that for the moment uranium mining can continue in existing mines and/or in areas where the uranium is a byproduct (as in Roxby Downs). But, he admitted, this is a politically sensitive stance. The Labor government promised during its election campaign to end mining uranium. Many Australians oppose its export, fearing nuclear proliferation.

The government is now making an inquiry into the whole issue of uranium mining so as to develop a policy. Cohen is one of four ministers involved. The others are for trade, minerals and energy, and Aborigine affairs, since Kakadu Park is an aboriginal area.

They will also decide whether to expand Kakadu to twice its size (as originally planned) and what the impact of these decisions will be on the 120,000 people of the territory.

Even though there are tough and per-

haps unpopular decisions ahead, Cohen is proud of what this government has accomplished in seven months. He is proud of the Tasmanian dam decision. He is proud that the Great Barrier Reef Marine Park was just increased from 14 to 80 percent of the reef's area, "and it will be 99.9 percent by the end of the year" (see following story). He is proud that in the recent budget there are more funds for the environment, ranging from government agencies to grants to conservation groups.

Cohen is also proud that the Hawke Labor government continued what the previous administration began: It recently produced "A National Conservation Strategy for Australia," based on the World Conservation Strategy formulated in 1980 by three international groups. The national strategy was arrived at through consensus politics involving governments at all levels, industry and business, environment and other groups.

As a politician, Cohen, 48, also seems pleased that his job is not a political backwater but one at the forefront of public attention. When he was named shadow minister for the environment in 1978, "I wasn't enthused about the job because I thought there wouldn't be enough to hold my attention." But now, he says, "it was the greatest service anyone ever did for me."

LIBBY BASSETT

## Australia's big reef to be 99% protected

PERTH--With remarkably little fanfare, the Australian federal government has introduced regulations that put 80 percent of the Great Barrier Reef in the realm of a national marine park.

At the same time, oil drilling has been formally banned in those areas not yet included in the park.

By the end of 1983, 99 percent of the reef will be protected by the Great Barrier Reef Marine Park Authority.

Until now, only 14 percent of the reef was so protected.

The sudden move by the Australian government has increased the size of the park by more than five times.

Matters concerning the protection of the 500,000-square-kilometer reef off

the coast of Queensland, on Australia's east coast, came to a head in 1970 when the government placed a 10-year moratorium on oil drilling. In 1975, the Great Barrier Reef Marine Park Act was introduced.

However, through the years there have been only feeble attempts at any real protection of the area and its unique coral and other marine life. With the increasing price of oil in 1980, the Queensland state government had proposed the possibility of offshore drilling, but the idea was firmly squelched by the federal government.

The federal government's latest move was made with the knowledge that its legislative authority over the marine park is backed by a recent High Court decision. The court supported federal moves to stop the Tasmanian state government from building a dam in a remote wilderness area.

In that case (WER, April 30, p.4; July 15, p.8; and July 30, p.6) the High Court agreed that the federal government's legislation protecting the World Heritage Site involved took precedence over the state's right to build the dam on that site.

JANE NACZYNSKI-PHILLIPS

AUSTRALIA'S Commonwealth Scientific and Industrial Research Organization (CSIRO) has published a comprehensive guide to all its 700-plus research programs.

Copies are A\$20 each (this includes domestic postage only) from CSIRO, P.O. Box 89, East Melbourne, Victoria 3002, Australia. Make checks to "Collector of Money."

## So. African premier urges eco-protection

CAPE TOWN--In a marked change from its usual neutral attitude on conservation, the South African government recently came out strongly in favor of a national environmental strategy.

South African Prime Minister P.W. Botha said that with land rapidly being degraded by population pressures and bad management, there was an urgent need to develop a total environmental strategy for the country. "It must be remembered," he said, "that conservation is not a luxury for the wealthy to holiday in game reserves or

scenic parks. It is a matter of survival and well being, and we must realize that our natural resources are limited."

Botha stressed the need to coordinate development and conservation, as they have "inseparable goals." Said he: "In the long term, environmental precautions are essential for continued economic development. If development is to be sustainable, it must pay vigorous attention to sound resource management."

Never before has the government come out so strongly on the need to manage rationally the environment.

Some environmentalists were heartened; others pointed out that three years ago the government was presented with a National Strategy for Environmental Conservation compiled by top ecologists on behalf of the Wildlife Society. While the government accepted the report, nothing was done to act on its recommendations.

Earlier this year a Council for the Environment was formed. Made up of experts from both the public and private sectors, it aims at coordinating all environmental matters. However, because the council was formed too late to be included in the 1983 budget, it was without adequate funds.

In addition, the working committees have not got off the ground yet, and there is no secretariat or staff to do the legwork. Some conservationists fear the council may be stillborn. They hope that the impetus of the Prime Minister's milestone speech will soon be backed up by council action.

In a separate statement, Minister of Constitutional Development and Planning Chris Heunis said that a new procedure for the preservation of nature areas had been initiated because of increasing public interest in nature conservation.

According to the new procedure, once the Department of Environment Affairs has formulated guidelines for the utilization of an area, the owners will be consulted. Once their approval has been obtained, the reserve will be proclaimed. A committee of private owners and government officials is then appointed to manage the area.

(Proclamation of a nature area simply means a freezing of land use. The land is not expropriated by the government; it remains in private ownership.)

With the diminishing likelihood of new big national parks and reserves being proclaimed, Environment Affairs officials see it as "possibly the only way we'll be able to set aside conservation areas in the future."

MIKE NICOL

## Pesticide makers adopt ad guidelines

WASHINGTON--Leading U.S. pesticide manufacturers, environmental and church groups have agreed on guidelines for advertising agricultural chemicals in developing countries.

The 12-member Agricultural Chemicals Dialogue Group began meeting last year (WER, Nov. 15, 1982, p.7) to develop broad new guidelines for the safe use of pesticides in the Third World.

It felt that special action was needed to reduce the hazards associated with the use of pesticides, which can harm human health and the environment if not used correctly.

After a year and a half of dialogue, the group this fall presented its guidelines to the 100-member National Agricultural Chemicals Association (NACA), and they were adopted by its board of directors. The guidelines represent a voluntary code of standards for U.S. chemical companies.

The guidelines cover promotion efforts in any media and say: "Advertising campaigns should inform and educate in addition to promoting the product. To that end, advertising materials should emphasize proper uses, limits and hazards as well as benefits, with the intent of both improving general agricultural practices and protecting human health and the environment."

Dr. Jack D. Early, NACA president and dialogue group member, said the ad guidelines were "the first product of what we are confident will be a fruitful cooperative effort by industry and public policy groups."

Dr. A. Karim Ahmed of the Natural Resources Defense Council, also a member of the dialogue group, said, "I am extremely pleased that the pesticide industry has adopted these consensus guidelines on advertising. This is an unprecedented and important first step since these guidelines were developed jointly by industry and public interest organizations."

"Guidelines for Advertising Practices in the Promotion of Pesticide Products in Developing Areas of the World" is the first of several guidelines the group anticipates releasing.

Besides NACA and NRDC, the group includes United Agricultural Products, Inc.; Rohm & Haas Company; National Wildlife

Federation; Interfaith Center on Corporate Responsibility; Union Carbide Agricultural Products Company, Inc.; Dow Chemical; Environmental Defense Fund; United Church Boards Social Responsibility in Investment; and The Conservation Foundation, which acted as mediator for the group.

For further information: Sam Gusman or Gail Bingham, The Conservation Foundation, 1717 Massachusetts Ave. N.W., Washington, DC 20036, (202) 797-4300.

SPECIAL TO WER

## Argentine court case to ban using 2,4,5-T

BUENOS AIRES--Three Argentinian environmentalists have gone to court here to block the import and use of the chemical 2,4,5-T, which contains the extremely dangerous by-product dioxin.

Alberto Kattan, Juan Schroder and Antonio Brailovsky presented a writ in court that said 2,4,5-T is freely distributed and used throughout Argentina after being imported by Dow-Corning de Argentina S.A.I.C.

Their action is the first legal battle against a powerful economic organization; its counterpart is Dow Chemical in the U.S. The environmentalists said they had legal standing based on a previous judicial decision earlier this year when a federal judge granted citizens or private associations the legal right to protect the environment and natural heritage (WER, Aug. 30, p.4). That decision revoked the authorization granted two Japanese aquariums to capture 14 dolphins. It was the first popular, or class, action in Argentina's history.

The new writ offers as evidence the fact that 2,4,5-T is banned in several developed countries, such as Holland, Denmark, West Germany and Sweden, or else severely controlled as in the U.S. In Argentina the product is commercialized under 10 or more brands after importation.

The plaintiffs asked the judge to issue an injunction ordering the Secretariat of Agriculture and Livestock, a powerful federal agency, to stop granting new licenses for products containing 2,4,5-T. They also requested suspension of all activities involving use of the chemical. They asked that existing stocks be seized

and stored with special precautions. Finally, they requested that its import be banned, explaining to the population the reasons for such measures.

News of their suit has already reached the public. One newspaper wrote that 2,4,5-T "is imported and sold in this country with as much care as if it were aspirin."

PEDRO TARAK

## More on chemicals. . .

A WEED-KILLING SPRAY used in Japan by home gardeners and at schools can cause chromosomal abnormality. The warning was disclosed after a cell check on a middle-aged woman by a research team at Kobe University. The woman tried to commit suicide by drinking liquid paraquat, "Gramoxone," early this year. While she was being treated, it was discovered that her chromosomes were of varied shapes with some parts missing, and that they did not come in pairs. Professor Shigeaki Baba said paraquat triggers chromosomal mutation in embryos. The children that the patient had borne earlier are healthy. "Gramoxone" was registered in 1965 and specified as toxic, but the government accepted the makers' claim that chromosomal mutations were not found in test animals.

## New plan for Athens could cut pollution

ATHENS--The Greek government has unveiled an ambitious master plan for the greater Athens area which, if implemented, will be the first attempt to replan the sprawling capital in 150 years.

When Athens became the capital of modern Greece in 1833, the city was an attractive cluster of houses around the Acropolis. The century and a half since then have seen Athens degenerate into a chronically overcrowded, heavily polluted concrete maze.

"Athens developed as a Third World city with squatter housing," Environment Minister Antonis Tritsis told WER. "There was never a time when more than one-third of Athens was planned."

In a country with long experience of reducing even the most carefully thought out planner's projects to irrelevant scraps of paper, how much of a chance does the

master plan have of reversing the damage already done? "I think one would be surprised," Tritsis said. "Even in an area like Athens, which looks pretty well established, pretty well built--with the whole of the Athens basin already filled with houses and apartment buildings--our conclusion is that you can really do lots of things that could change the physiognomy of Athens in less than 10 years."

The major objective of the master plan, Tritsis explained, is to end Athens' dependence on a single downtown area and to turn it into a polycentric and decentralized city, while at the same time ending the sprawl between major centers. Tritsis' ministry has identified a number of peripheral centers in the city where future development will be concentrated.

No modern plan of Athens would be complete without a comprehensive attack on the city's most celebrated menace, its pollution cloud. Tritsis has so far attempted to control pollution--without much success--through restrictions on traffic in the downtown area and the summertime shutdown of polluting factories. In the long term, however, Tritsis says that much of Athens' industry will have to be moved. "We are surveying our industry establishment by establishment," he said. "Those that can be properly fixed with filters and other devices will be permitted to operate in situ where they are. But those that cannot operate locally because of the pollution (they cause) will be translocated outside the Athens area."

MICHAEL SKAPINKER

## Greek eco-assessment. . .

AN ENVIRONMENTAL ASSESSMENT OF GREECE was just released by the Organization for Economic Cooperation and Development (OECD).

This environmental policy assessment was conducted at the request of the Greek government with the assistance of experts from six member countries: Germany, Italy, the Netherlands, Switzerland, the U.K. and the U.S.

Their 138-page report supports new and strengthened policies to deal with a wide variety of environmental issues. The experts found that although there are serious problems in Greece--even critical ones in Athens--the Greek people enjoy on the whole a comparatively good environment.

The government is conscious of the problems, the report said, and public pressure for improvement is rising.

## Conference on world energy held in Delhi

NEW DELHI--Delegates at the World Energy Conference, which concluded in India's capital recently, emphasized the difference in approach to the energy crisis between the First and Third Worlds. While the former saw the solution in terms of more investment in the commercial sector, the latter emphasized alternative sources of energy, organized at the community level.

At the session on "Energy and Society" in the six-day conference attended by 3,000 delegates from 70 countries, Dr. Curt Nicolini of the International Chamber of Commerce said, "The crisis is man-made; the cure has to be man-made too. Increased private investment, in energy as well as in other fields, is the key."

Dr. J. R. Frisch, of the French Energy Commission, produced a welter of statistics to show how by the year 2020 coal would play a less important role in developing countries, production and consumption of oil and gas in these countries would increase sharply, and while growth rates of total energy produced in these countries would rise, the per capita consumption rates would remain very low because of population increases. Thus, while industrialized countries could reduce their dependence on oil, there was no other option available to the Third World.

### FORESTRY IS THE KEY

His view, however, was challenged by Dr. Amulya Reddy, the well-known "alternative technologist" from the Indian Institute of Science in Bangalore. He pointed out that this scenario did not take into account the possibilities of technological innovations in developing countries--especially with biogas, and of energy systems like biomass-based social forestry. Indeed, the key to the energy problems of poor countries, Indian government experts told WER, lay in forestry. As the conference itself concluded: "The firewood crisis has become a catastrophe," with forest cover vanishing at the rate of 250,000 square kilometers every year.

According to the World Bank representative, developing countries needed investment worth \$130 billion to meet their energy needs for the decade and the Bank

itself would not be able to provide more than 3 percent of the foreign exchange required for this. Third World delegates warned that the technology for renewable sources of energy--particularly solar and biomass--was being controlled by the West, which would continue to make developing countries dependent.

Although the theme of this 12th Congress of the World Energy Conference was "energy--development and the quality of life," the latter aspects were not given sufficient emphasis. The conference ended with the plea that the "more fortunate help the less fortunate" and called for cooperation between developed and developing countries. Ultimately, as the conference recognized, the latter would have to become more self-reliant and diversify their source of energy to tackle the severe shortages they faced.

DARRYL D'MONTE

## Caracas is hosting a Latin energy meeting

CARACAS--Venezuela and the Latin American Energy Organization (OLADE) will host a six-day conference here December 11-16 to discuss alternate energy sources for electricity. The announcement came on the heels of the Fourth Latin American Congress on Solar Energy, held here in September.

The Solar Energy Congress revealed a recent surge in Latin solar technology and a small but growing solar industry. Government interest is awakening to the tropical sun's potential for food processing and cool storage, grain drying, air-conditioning for data processing plants, even offshore drilling.

The December OLADE convention will cover not only solar energy but large and small hydroelectric generators, wind, coal, geothermic and biomass energy sources. Among its sponsors are the Ministries of Environment, Science, Mines and Energy, private foundations and government power companies, as well as the Commission for the European Communities.

For further information: Dr. Francisco Carrillo Batalla, Edificio Icauca, Pelota a Punceres, Caracas, Venezuela.

H. BRANCH  
L. STEINHEIL

## Save-the-mangroves plan begun in Asia

DHAKA--Destruction of mangrove forests in South Asia has spurred environment officials of Bangladesh, India, Pakistan and Sri Lanka into formulating a regional protection program.

At a week-long symposium here on environmental management of mangrove, coral and island ecosystems, officials called for setting up a research institute in Bangladesh. It is the first regional step to protect these coastal warm-water forests. The symposium was sponsored by the Bangkok-based UN Economic and Social Commission for Asia and the Pacific (ESCAP) and the Colombo-based South Asia Cooperative Environment Program (SACEP).

South Asia has 1.7 million hectares of mangrove forest, about a quarter of the Asian total. Bangladesh, which has about 0.6 million hectares of mangroves, is increasingly faced with the problem of replenishing trees cut for making newsprint, houses, matchboxes and tea chests. In India half of an estimated 2.4 million hectares of mangrove forests in the Sunderbans have been lost to human settlements and agriculture. In Pakistan, industrial waste from factories, city sewage and oil spills from ships are affecting mangrove trees on about 160,000 hectares. Mangrove areas in Sri Lanka, the smallest in the region, have been cleared for coconut cultivation.

The economies of South Asian countries could be severely damaged by the loss of these forests. In Bangladesh, for instance, at least one-eighth of the country's 93 million people depend directly or indirectly on the mangrove forests for their livelihood. Pakistan could lose nearly 90 percent of its fish products. "With the mangroves gone or reduced, South Asian countries would lose their best natural shield against tropical cyclones, erosion and flooding," said Dr. Kazi F. Jalal of ESCAP.

Some countries have already started national mangrove conservation programs. India has declared mangrove forests in the Gulf of Kutch protected areas.

And Bangladesh forest officials have planted mangrove forests along the coast and on new land formations in the sea with finance from the World Bank.

AHMED FAZL

## Kenyan women plant trees nationwide

NAIROBI--Women's groups in Kenya have set themselves a target: 15 million trees to replace the forest lost over the last half century.

Professor Wangari Mathai, chairman of the National Council of Women of Kenya, told WER that about 400,000 trees had been planted since the "green belt" scheme was launched in 1977. She founded the movement to demonstrate that African women can do something practical to preserve the environment.

The loss of forest cover in many parts of Kenya has led to heavy erosion. "Too many of our rivers are full of silt as the valuable topsoil is washed away. I didn't want to see this continue," Professor Wangari said.

Local women's groups in all parts of the country raise tree seedlings and then plant them in school compounds and similar areas where they can be cared for and protected. Each green belt has a minimum of 1,000 trees, and local schoolchildren help keep the young trees free from weeds and watered in dry weather.

In many areas, local green belt wardens work with the rest of the community to develop new forest areas. By this means, Professor Wangari said, a high survival rate--over 90 percent in some areas--has been achieved with the newly planted trees.

The Kenyan scheme is so successful that it has attracted international support.

Danish schoolchildren raise funds which are sent to finance the "for every child a tree" program in Kenya. The Norwegian Forestry Society and the United Nations Decade for Women also help to finance the Kenyan women's program.

"It's very much a family scheme. Mothers take their children with them when they are planting and caring for the new trees, the schools allocate three or four trees to each child, and teachers and other members of the community are all directly involved," Professor Wangari said.

Kenyan women, she added, are well aware of the need to increase forest cover to protect the land. Most of them rely on woodfuel for cooking, and so want to maintain adequate stocks near their homes. And they do most of the farming on family plots.

CHARLES HARRISON



## Costa Rica chooses cash over ecology

SAN JOSE--A high government official has told the people of Costa Rica that they must choose: ecology, or the material benefits to be derived from a multimillion dollar pipeline project.

The Minister of the Presidency said, when asked by reporters about the possibility of adverse public opinion from environmental groups, that the public would have to choose between an investment of \$750 million, or nothing.

Several years ago, similar attempts by previous governments to build a cross-isthmus oil pipeline created widespread public debate, and the legislators of this small democracy were compelled to publicly disavow the scheme.

Now, Costa Rica has one of the highest per capita foreign debts in the world. President Luis Alberto Monge is said to be personally interested in pushing the pipeline project, which could provide the country with a net profit of \$60 million a year.

Earlier this year, a high-level government-appointed commission was named to study the implications of the project--social, economic, political, ecological and archaeological. Its recommendations have not been made public, but it is known that the commission opposed a southerly route over the Talamanca Mountains.

The original plan was to have one pipeline. But recently the First Vice President was quoted as stating there now will be two, one crossing the south and carrying heavy crude, the other crossing the north and carrying light crude.

The southerly crossing would go right through the internationally acclaimed La Amistad International Park, which may be the most important protected area in Central America. It is expected to become a World Heritage Site.

At the end of the summer, the government dispatched a small group of key officials "to meet with a number of interested major U.S. oil companies." There were conflicting stories in the paper as to just which companies were interested, but they did say the officials had come back with a concrete offer of \$750 million for construction.

Meanwhile, former President Jose Figueres noted that the Panama pipeline is functioning at less than capacity.

MURRAY SILBERMAN

## More on Latin America. . .

COLOMBIA'S SAN SILVESTRE MARSH, formerly "a natural paradise," has become a sterile deposit for hydrocarbon wastes, reports Beatriz Salazar Alvarez of the Bogota daily newspaper *El Tiempo*. The major ecosystem--750 square kilometers of swampland during flood season--is located in eastern Santander department. Streams flowing from Barrancabermeja, site of Colombia's major oil refinery, dump vast quantities of wastes into San Silvestre. Sewage also flows in from the Magdalena River.

Because of the pollution, extensive areas of aquatic vegetation have died. Moreover, fish have stopped reproducing, she said. Most of the inhabitants near the swamp were fishermen, who work for the refinery.

COLOMBIAN AND VENEZUELAN environment officials met recently to symbolically plant tree number one million in a reforestation program encompassing the border areas of both countries. The ceremony was held in Pamplona, Colombia, during the Simón Bolívar bicentennial. It was Bolívar who, as president of Gran Colombia (now Venezuela, Colombia and Panama) signed the 1825 Chuquisaca Decree calling for one million trees to be planted to protect watersheds and control soil deterioration.

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# World Environment Report

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## The Ruhr - where industry and environment coexist

BONN--Few areas in the world have a worse environmental image than the Ruhr District of West Germany. It is the world's most concentrated industrial area, with coal mining, steel mills, electric power plants and oil refineries dominating the scene.

But the truth is that, far from being the "coal pot" of legend, the Ruhr today demonstrates that concentrated heavy industry in a densely populated area can coexist with a wholesome environment, given enlightened planning and management.

In 1893, the byword there was "a lot of smoke means a lot of jobs," and the district deserved its unsavory reputation. At that time only 6.3 percent of the area was built up, and 20.3 percent was forested. There was an enormous growth in industrial activity and population between that year and 1927, by which time the built-up area had grown to 14 percent while the forested area had declined to 18.6 percent. Today, with built-up areas accounting for 32.2 percent of the total, 16.9 percent is still forested, up from 15 percent in 1960. Even more remarkable is that forests, pastureland, farms and parks--so-called green acres--take up 67 percent of the total. This with a population of around 5.5 million in a space of 4,432 square kilometers (1,711 square miles). That gives it a population density of 32,144 per square mile. By comparison, the District of Columbia, the most densely populated equivalent in the U.S. has a density of 12,127. The density of Singapore is 10,576.

The preservation of green areas and the provision of clean air and water is due largely to the work of several independent planning and administrative bodies (consolidated since 1920 in the Kommun-alverband Ruhrgebiet, Kronprinzen Str. 35, 43000 Essen 1). Four of these were in operation by the turn of the century, with responsibilities for the supply and cleansing of water, waste disposal, protection of the landscape and cleanliness of the air. Air cleanliness was the responsibility of the State Institute for Emission

Protection, which established clean air standards and installed a district-wide, fully automatic air observation network. Both were the first of their kind in the world and have since been adopted by the German Federal Republic. Thanks to continuing efforts, dust and soot precipitation in the district is now no higher than in the less-industrialized cities of Munich and Frankfurt.

Also around the turn of the century, water supply and cleaning operations were undertaken by the Ruhr Water Association to meet the needs of the population (280 million cubic meters a year) and of the steel industry (1.3 billion cubic meters a year). The Association has built 17 dams and reservoirs on the Ruhr River and its tributaries (all surrounded by parks and forests) in addition to 118 wastewater treatment plants. Thanks to its efforts, the Ruhr is now one of the cleanest rivers in Europe notwithstanding it flows past such industrial centers as Dortmund, Bochum, Essen and Duisburg.

One river that got completely out of hand in the late 1800s was the Emscher, flowing roughly 6 kilometers north of the Ruhr and generally parallel to it. It was hopelessly polluted, and, in addition, it regularly flooded lowlands caused by the sinking of old coal mines. In the early 1900s the Emscher Corporation was founded to deal with it, which it did by shortening its course from 109 to 81 kilometers, building protective banks to contain the water flow and constructing 25 waste treatment plants and 20 phenol extraction installations. Today flooding has been eliminated completely and the pollution is so under control that at the outlet of the final treatment plant at the river's mouth a school of trout swim contentedly to demonstrate the water's cleanliness.

To deal with household and industrial wastes the Ruhr Raw Material Recovery Center at Herten was built in 1978. Its task is to recover usable raw materials while converting other wastes to convenient fuels or inert wastes of far less bulk than the raw materials fed into it. It was the first of its kind in the world, and similar ones, specialized for local conditions, are now being built elsewhere in Germany and abroad.

A continuing problem is old waste dumps, coal mine heaps and abandoned railway yards, some more than a century old. he

They are now being covered with topsoil and planted with trees and shrubs. In the past 10 years 2,600 hectares (6,400 acres) of them have been so dealt with and are now developing into healthy young forests, improving the landscape and providing recreation areas for local hikers.

What is more important than a cataloging of protective and corrective measures instituted in the district (and more could be cited) is the demonstration of the compatibility of intense industrialization and a wholesome environment. The mistakes and abuses instituted or allowed to flourish in the past in the district, as well as in other parts of Germany, have proven to be an expensive lesson. But from them valuable corrective measures have been devised, so that today the Ruhr District is cleaner, more productive and more populous than at any time in industrial history. Accordingly, the steps taken may prove to be as important to the rest of the world as the advances in engineering and industrial technology for which the area is more widely known.

J. M. BRADLEY

## Another German solution. . .

TO ANSWER THE QUESTION, what is killing the great forests of West Germany? (WER, Aug. 15, p. 1), the German multinational BASF has proposed an experimental solution.

BASF believes acid rain is not the only answer. Intensive foresting has leached minerals and nutrients from the soil. BASF has proposed a three-year, large-scale test to the German Ministry of Research and Technology.

Working with the forestry research stations of the German states and forestry departments of universities, they will do soil and plant analyses and all nutrients as required. BASF expects that not only will the trees be saved but that they will grow stronger and faster, which should help compensate for the cost of fertilizing the forest. BASF estimates it should cost forest administrations about US\$100 per acre (or \$247 a hectare). Since the forests would have to be fertilized only every fifth year (if the experiment works), the annual cost would be approximately \$20 an acre, or about \$50 a hectare.

## Turkish government asks public to help

ISTANBUL--Turkey's first Environmental Protection Law was approved by the National Security Council recently and put into force with a campaign designed to stimulate popular interest and support.

In a national radio and TV address Dr. Nimet Ozdas, Minister of State for environmental affairs, said that environmental protection could be a success only with the cooperation and support of the people. "Our citizens should not expect everything to be done by the State. They should share the responsibility with us," he said.

He warned that penalties provided in the new law will be fully implemented.

Ozdas also told a news conference here that he expects the Golden Horn--a polluted stretch of water extending from the Marmara Sea to the old city of Istanbul--to be cleaned completely within the next 10 years. He said Japan's Foreign Minister Shintaro Abe, who was visiting Istanbul, expressed interest in the cleaning of the Golden Horn. Turkish authorities are planning to contact Japanese firms about the cleaning job. SAM COHEN

## Portugal drafting new environmental laws

LISBON--To prepare for its entry into the European Economic Community by 1986, Portugal is moving swiftly towards its first environmental legislation.

The new coalition government, of Social Democrats and socialists, ousted the small monarchist party that had built public interest in the environment by fighting for environmental laws. Other parties have been quick to take up the cause. The communists, for example, ran a "green independent" on their ticket and plan to have him defend environmental projects in parliament.

Antonio Capucho, secretary general of the Social Democrats, is Minister of the Quality of Life and has appointed environmentalists from all parties to important positions in his ministry. He plans to present a basic environmental law in par-

liament this fall and then follow it up with 30 complementary laws.

"Everything else must be ready when Portugal signs the EEC entry agreement in '85 or '86," said Carlos Pimenta, the 28-year-old enthusiastic state secretary for the environment. "It's Portugal's biggest challenge and maybe a blessing. Our program cannot lag behind Europe."

MARY MILLS

## New EEC levels for cadmium discharges

BRUSSELS--By 1986 European industries using cadmium must respect the discharge levels agreed to recently by EEC environment ministers in Luxembourg.

The limits will be applied progressively depending on whether industries discharge their wastes into rivers and waterways or seas. Cadmium, generally considered the most toxic heavy metal, has a number of uses: as an anti-corrosive agent in galvanizing iron, as a PVC stabilizer and in dry batteries. Its most common use is a red or yellow pigment. Recently Sweden banned the coloring in the children's toy LEGO.

The European Economic Community directive on discharging cadmium waste into the aquatic environment is the second (following mercury which was adopted last year) in a series envisaged by the European Commission. It will include a number of toxic pesticides.

Progress has been blocked by British insistence in applying quality objectives (measuring how much effluent may be present in a given stretch of water) as opposed to the approach favored by the other EEC states involving emission standards. These lay down how much an industry or a factory can singly and safely discharge, and involves measuring the pollution at source.

In a compromise solution Britain (whose fast-flowing rivers have a natural advantage in avoiding effluent build-up) was allowed to continue to apply its system in the case of new plants--as long as reports are submitted regularly to the European Commission on the system's efficiency.

ANNA LUBINSKA

## Polluting companies fund acid rain study

STOCKHOLM--Swedish and Norwegian environmental researchers have accepted an English grant of 5 million pounds (US\$7.5 million) to study acid rain, despite a considerable amount of skepticism on the part of the Scandinavians and English environmentalists.

The money will be provided jointly by Britain's Central Electricity Generating Board (CEGB) and the National Coal Board, who together are responsible for the bulk of sulphur dioxide emissions from the United Kingdom. The CEGB has steadfastly refused to recognize Scandinavian findings that English sulphur emissions are killing Scandinavian lakes and waterways.

Swedish researcher William Dickson, working in the Swedish Natural Resources Protection Agency, sees political motives behind the grant. He wrote that funds have been made available for the five-year study "presumably to delay decisions on direct measures against acid rain." In London, Friends of the Earth said the grant is a move to buy time. They believe the CEGB expects research results to show that coal has better uses than electricity generation, such as feedstock for the chemical and plastics industries or conversion into gas. This would then clear the way for nuclear power, which both the CEGB and Government are promoting as a cheaper and cleaner source of electricity.

The three-nation acid rain study will look into the causes of acidification of surface waters in Norway and Sweden and the implication for fisheries. It will also look at the qualitative changes that could be expected if sulphur emissions were reduced. Researchers will come from Britain's prestigious Royal Society, the Norwegian Academy of Science and Letters and the Royal Swedish Academy of Sciences. It will be chaired by the vice president of the Royal Society, Sir Morris Sugden, C.B.E. The program will be under the control of the scientists and its results published without restriction.

CEGB chairman Sir Walter Marshall argued for continued research before action because the three-fold reduction

in sulphur dioxide emissions that has been suggested would involve capital costs of more than 4 billion pounds (US\$6 billion). "Since electricity is essential for everyone, this effectively lowers every's standard of living, and it would be tragic to do this without understanding exactly what we are doing," he said.

However, confidential documents obtained in Norway by the British newspaper, The Observer, disclose that the British Government has remained silent about the extent of acid rain's harmful effects in southwest Scotland and the English Lake District. Almost all of the 72 lochs and 40 streams sampled by Norwegian scientists in 1979 are being turned acid, and some have lost all their fish. Results of regular tests taken since then by scientists of the Scottish Freshwater Fisheries Laboratory are still not published, The Observer stated.

A.E. PEDERSEN in Stockholm  
BARBARA MASSAM in London

## Swiss air pollution is mostly home-made

BERN--The Swiss cannot blame neighboring countries for air pollution because most of it is "home-made."

This was the essence of a lengthy study sponsored by the Swiss Federal Office for the Protection of the Environment in 1982. It was carried out by a network of eight monitoring stations, including one on top of the towering Jungfrauoch, where the purest air is found.

The experts contradicted the popular concept that most pollution comes from neighboring industrialized countries.

"The fact is that most of the pollutants in the air are locally produced," the report stated. "The most important sources are home and building heating, motor vehicles and factories. Generally the concentrations of pollutants are heaviest in the proximity of these cited sources."

The report noted a sharp increase in air pollution over the preceding year, particularly for nitrogen oxide and ozone.

Since motor vehicles are prime polluters, Switzerland announced it would establish ceiling levels for exhaust pol-

lution well under those agreed upon by the European Community and by the Economic Commission for Europe (ECE). It had also announced plans to move to lead-free gas as early as possible, without becoming "an island" in the European sea of nations. Soon afterwards, West Germany stated that as of 1986 only automobiles using lead-free gas could be sold in the country. This was followed by an Austrian announcement that it would follow the German lead. Thus three countries are now committed to lead-free gas by 1986--but only Switzerland decided to establish lower ceiling levels than the rest of the continent.

The nation's largest automobile club, the Touring Club Suisse (TCS) urged the Federal Government to collaborate with West Germany, the Scandinavian and Benelux countries, Britain, France, Italy, and Austria, as well as the ECE and the European Community to insure a concerted plan of action. Only this, it said, could avoid problems for tourists.

The TCS pointed out that about 45 percent of foreign travellers come from Germany and that if Switzerland did not offer lead-free gas by 1986, German motorists would be forced to go elsewhere. It suggested the Government offer the Swiss driver an added incentive to join the move towards cleaner air: a reduction in the tax on unleaded gas.

WILLIAM G. MAHONEY

## Israel has system to combat SO<sub>2</sub> pollution

JERUSALEM--Israel's Environmental Protection Service (EPS) has drafted a comprehensive program to combat air pollution from power plants and oil refineries in Haifa and Ashdod.

A major component of the program is the prevention of sulphur-dioxide pollution through the use of low-sulphur fuel in accordance with an Intermittent Control System (ICS). This was chosen by EPS because the high cost of low-sulphur oil prohibits its use on a consistent basis in this country. As data is received from monitoring networks, an alert will be sounded when concentration levels reach a specified critical level prompting an immediate switch to low-sulphur oil (less than 1 percent).

Israel's power plants and oil refineries now use high-sulphur (3-4 percent) oil.

In Haifa, where some of the most severe sulphur dioxide violations ever monitored in Israel were recorded in February and March, an emergency plan has been instituted by the EPS and the Haifa Municipality. The plan utilizes the ICS--based on two simple monitoring devices--to alert authorities to switch to low-sulphur oil. This temporary emergency plan will be replaced by a sophisticated monitoring network working in conjunction with the ICS.

In Ashdod, where an upward trend in sulphur dioxide concentrations has also been noted over several years, agreement was reached for allocation by the Treasury of \$1.4 million for establishment of an automatic, continuous, computerized monitoring network, similar to one operating at the Hadera coal plant. An international tender to purchase the necessary equipment will soon be published. Here, too, an ICS will be operated in conjunction with the network.

In addition, the Israel Electric Corporation is reportedly spending millions of shekels a year on environmental control equipment at its Haifa and Ashdod plants. It is consistently investigating various means of combustion optimization intended to reduce harmful emissions.

SHOSHANNA GABBAY

## More on air quality. . .

WEST GERMANY, concerned about the health of its dying forests, has been given the go-ahead by Economic Commission for Europe to submit detailed proposals for a study on the role of science and technology in effectively reducing air pollution.

CONSERVATION OF RESOURCES rather than reduction of pollution may have been the main reason, but China has ordered the modification of 728,000 motor vehicles before the end of 1984. The order came at a National Meeting on Economizing Gas Motor Vehicles, held recently in the central city of Wuhan. A report submitted to the meeting said the Jiefang (Liberation) Model B-type vehicles not only produce excessive pollution but they also use much more gasoline than is acceptable considering the country's energy shortage. The report said 728,000 of these vehicles were in use throughout the country.

## Denmark and Canada sign sealife accord

COPENHAGEN--Denmark and Canada have signed an environmental agreement to protect marine life in the waters separating Greenland and Canada. The agreement, signed here, replaces two earlier interim arrangements and makes joint protection measures a government affair rather than a lower-level administrative function.

It provides for prior notification by Denmark and Canada before taking any measures that could affect marine life in the treaty area, and it calls for consultations at the request of either country to solve threatening environmental problems. It also specifically requires safeguards in connection with offshore drilling or other seabed activities.

The pact provides for joint scientific research programs and the development of methods for assessing environmental risks to marine life. Either country will be able to request information on existing or proposed legislation, regulations or other governmental actions that could affect the marine environment.

Another article provides for joint action in selecting suitable shipping routes through treaty territory. This will give Denmark--and Greenland, which is most affected--a say in the movement of big gas tankers through the coastal waters, a matter of considerable concern to Greenland hunters. They fear that use of such tankers during the winter months, as envisaged in Canada's Arctic Pilot Project, would frighten whales out of the area because underwater noises emitted by the ships might confuse the whales' sensitive navigational abilities. Greenlanders are worried also about the dangers of hunters falling into open water after passage of a tanker.

J.C. Munro, Canada's Minister for Indian and Northern Affairs, said the Arctic Pilot Project is more of a question mark now than ever before.

The agreement doesn't give the parties veto rights over each other's development plans in the region, but it does make joint consultations an easier matter than hitherto. The machinery for

setting environmental problems now exists, and the pact opens the way for joint scientific evaluations of possible environmental risks.

A.E. PEDERSEN

## The lake of Geneva has three more years

GENEVA--An international group of scientists and environmentalists, meeting here recently, warned the Swiss and French governments that unless urgent action is taken the pollution of the lake of Geneva (Lac Lemman) will reach the point of no return in three years.

They further advised French and Swiss citizens that if their Federal governments continued foot-dragging on an immediate ban on soaps and detergents containing phosphates, they should take matters in their own hands by boycotting such products.

APL President Jean-Bernard Lachavanne noted that the Swiss Federal Commission for the Protection of Water had finally adopted a ban on phosphates in detergents, but that this would not go into effect for two to three years.

Such a delay would be fatal to the lake, he warned, since action must be taken immediately to prevent pollution from progressing beyond the point of no return.

The group said that admissible levels for phosphates should be 200 to 500 tons per year; the lake now receives 2,000 to 2,300 tons per year, of which only about 800 tons are eliminated by purification stations.

Any diminution in the inflow of phosphates now would only begin to have an effect on the lake in from 10 to 20 years, the experts said.

WILLIAM G. MAHONEY

## Soviet industry told to clean up faster

MUNICH--The Soviet Communist Party daily Pravda recently exhorted all ministries and departments to increase efforts to prevent water pollution.

It cited by name a series of plants where purification measures were insufficient, adding that such situations would have to

be rectified. For instance, the paper said, installation of an effluent-free system is being held up at the Navioazot production association. And it said work to stop discharges from the Yavan electrochemical plant in Tajikistan has been dragging.

Pravda noted that in some areas where water was in short supply it would be cheaper and more efficient to reduce consumption than to supply water from afar. (This might mean that the government is rethinking some of its planned massive river diversion schemes.)

Although antipollution measures have been implemented at 1,045 enterprises in 135 cities over the past decade, Pravda said concern for saving this valuable natural resource is still not being shown everywhere. It said firms should be forced to keep water consumption levels to a minimum and that supervisory bodies insist on increased recycling and reuse of water.

WILLIAM G. MAHONEY

## Romanian river plan to cost \$8 billion

BUCHAREST--To combat the destructive effects of recurrent droughts and floods, Romania announced plans for a 100 billion lei (US\$8 billion) project to manage the country's rivers and irrigate 13.5 million acres (5.5 million hectares) of farmland by 1990.

The program, passed by parliament this summer, is considered the most ambitious economic objective in postwar communist Romania, officials said.

It calls for a "complex set of measures creating conditions to achieve a sure and stable cereal output in any climate condition," Romanian President Nicolae Ceausescu said. "As is well known, there is no year in which we haven't paid tribute to drought. This year, the drought has manifested (itself) particularly powerfully."

According to official press reports, the program includes measures for using rivers for generating electric power, protecting crops against flooding, land improvement and irrigation.

"An essential condition for the development of economic and social life is the prevention and combating of water, soil and environmental pollution generally," the program paper said.

The program will entail draining nearly 5.4 million acres (2 million hectares) by 1985, and 13.5 million acres (5 million hectares) by 1990.

The costly project also will insure the water necessary for growing industrial and private demands.

In 1970 and 1975 Romania was hit by major floods--reportedly the worst in the country's history--that damaged four million acres (1.6 million hectares) of farmland, several hundred industrial plants and left more than 300,000 homeless.

In other years, the country suffered from persistent drought. The drought reached its worst this spring, triggering desperate measures by Romanian farmers to save their crops including bucket and even kettle brigades.

The program calls for speedier construction of irrigation canals. The program blamed shortcomings in their construction on lack of equipment and spare parts and poor maintenance of water pipelines.

A "national high command" headed by Mr. Ceausescu was to be set up to coordinate the nationwide large-scale operation in which the population and army units were called to participate.

VIOREL URMA

## Soviet dam disaster...

THE SOVIET COMMUNIST PARTY daily Pravda reported the country could lose one of its richest mineral deposits and face an ecological disaster because of a dam that should not have been built.

According to the paper, after a dam cut off Karabogaz Bay from the Caspian Sea three years ago the composition and quality of its mineral deposits changed markedly. The bay is the Soviet Union's largest supplier of sodium sulphate, used in the paper, glass, textile, chemical and oil processing industries. The bay also contains minerals important for metallurgy, fertilizers and medicine, the report said.

The bay's rich mineral deposits were replenished by salt water from the Caspian Sea before the dam went up. The dam was constructed because scientists thought the bay was taking too much water from the Caspian, but Pravda questioned this premise. The paper stated that Karabogaz Bay had now become a shallow lake.



## More on water. . .

TO PRESERVE SPAWNING AREAS, "water-meadows" and wildlife zones, the Soviet Union is building a hydroelectric dam below another hydro project to ensure that the water levels remain stable. The Soviet news agency Tass said the Mainskiy dam being built on the Yenisey River would block the river downstream from the Sayano-Shushenskaya plant. It quoted Mikhail Alexandrov, chief design engineer for the new station, as saying that when all generating units of the 720 megawatt Sayano-Shushenskaya plant were in operation, the water downstream would rise six meters. When they were stopped at night, the water level would fall quickly. The Mainskiy Dam will offset these abrupt level oscillations. These and other hydroelectric stations along the 5,000-kilometer-long Yenisey River and its tributary, the Angara, supply electricity for Siberia, which is being intensively developed.

ISRAELI SCIENTISTS are trying to find a correlation between Mediterranean water temperature and rainfall. The research is expected to confirm the supposition that by raising sea water temperature in summer, increased evaporation will bring about increased precipitation in winter.

The first phase of the research will try to accurately forecast winter rain based on oceanographic data obtained in summer. In the second phase, technical means will be explored by which water temperature may be raised so as to increase precipitation. A 10 percent increase in rainfall could bring significant changes in the country's water economy.

THE LONG DROUGHT HAS FOCUSED ON INDIA'S ATTENTION on rain cycles. It bought a weather monitoring ship from the Federal Republic of Germany for US\$32 million. In July it sailed the Arabian Sea to Kenya with 35 scientists aboard to determine monsoon patterns. In September, the 4,000-ton Sagar Kanya sailed the Indian Ocean to the Seychelles after the monsoon.

Not only drought but unseasonal rains ruined crops worth millions of dollars over the past two years.

NINETY-NINE PERCENT OF THE WATER supplied by Colombia's state corporation Insfopal

is contaminated, its executive director, Nelson Amaya Arregoces, revealed recently. (Insfopal is Instituto de Fomento Municipal, or the Municipal Development Institute.) Insfopal is in charge of the water supply for towns with over 2,500 inhabitants (excluding the nation's five largest cities). It serves 16 million of Colombia's 28-million people. The polluted water is a major cause of gastrointestinal diseases in Colombia, Amaya noted.

To improve the quality of the water it supplies, Insfopal plans to invest \$620 million in treatment plants and other infrastructure over the next three years.

CHINA CLAIMS TO HAVE DECONTAMINATED the Lijiang River that flows through the scenic city of Guilin in southern China. The Lijiang River, famous for the unique limestone hills lining its banks and their reflection in its water, was polluted in recent years by industrial wastes from nearby factories. Environmental protection regulations were imposed, under which fines were imposed on polluters. In the past three years, 20 factories have been ordered to close or move elsewhere to reduce river contamination. Besides, 81 pollution control projects have been built along the river. At present, the river's levels of phenol, lead, copper, chromium and other harmful chemicals are below the allowable state levels, the Xinhua News Agency reported.

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## New scheme protects rainforests--profitably

NEW YORK--A complex but innovative approach to saving tropical rainforests has been devised by a new organization, Earthlife.

The idea is to manage the intact forests, using them for research and development that will lead to profitable products.

Earthlife's pilot project is in the West African nation of Cameroon, where the government plans to create three national parks out of 11,000 square kilometers of virgin rainforests. According to Earthlife, these reserves are the richest in Africa and will represent nearly 10 percent of all tropical forests currently under protection. To save these new parks from encroachment, financial and technical help is needed, and that is where Earthlife--with headquarters in London and subsidiaries in the U.S. and Canada--is taking the initiative.

What Earthlife plans to do is to raise both funds and public awareness in the developed countries for its project through an international mass media campaign. The focal point of the campaign is a documentary film made in one of the Cameroon forests by Earthlife director Phil Agland. "Korup--An African Rainforest" was premiered in the U.K. last year over nationwide television and seen by 25 million people. It is currently being distributed in more than 50 countries. By using the film and a package of other promotional and educational materials, Earthlife hopes to get sponsorship for its project from the general public, world industry, development aid agencies and from governments.

With the funds and technical assistance raised, it will help the Cameroon government build roads and park buildings, buy equipment, train foresters and rangers and create intra-African exchange programs. The International Union for the Conservation of Nature and World Wildlife Fund are cooperating with Earthlife on this endeavor.

Over US\$1 million has been invested in ecological research in Cameroon over the past 10 years by more than 20 of the world's leading academic institutions. Since 1976 phytochemical research in the Korup and Douala-Edea forests of Cameroon has been underway, concentrating on tree species known to be pharmacologically active and to have local medicinal

or other uses. University of Strathclyde (U.K.) researchers have found compounds that could be used as anti-depressants, potential anti-cancer agents and as possible cures for sickle-cell anemia.

One of the most exciting concepts of the program is creating a buffer zone around the national parks to be used for economic development programs, such as agroforestry, agriculture (both subsistence and cash crops), raising new kinds of animal protein and, of course, tree plantations for the use of local people. Thanks to the decade of phytochemical research, Earthlife hopes to interest pharmaceutical and other forest-resource-related firms in the possibilities of commercial research in the parks.

At the same time, the Earthlife plan is to develop a conservation education program in Cameroon, both in the parks and in the schools. The model they hope to follow is that of the Kenyan wildlife clubs for young people.

What makes this project different from other park preservation efforts is that industry is being asked to participate, and not just with financial support. As the project prospectus states: "Among industry strategists, there is a growing awareness of the loss of potential products that could result if current global practices destroying irreplaceable genetic and other natural resources continue.... To be effective in the long run and to appeal to industry, conservation must be accompanied by research and development activities leading to profitable products that can be derived from intact, managed forests--for example, medicines and improved crops.... Earthlife believes that firms will want to consider participating in conservation projects that have concrete commercial benefits." And so they hope to save these forests by using them. LIBBY BASSETT

## Thai forests hit worst in SE Asia

HONG KONG--Most tropical forests in Southeast Asia will be lost if the present pace of deforestation keeps up, the Asian Wall Street Journal reported.

The spread of agriculture, urban expansion and the development of hydroelectric and other facilities are the primary causes. Logging plays a smaller part since

only 10-30 percent of the trees in the region have commercial value.

Thailand has been hit worst. Half its forests (53 percent of the land in 1961) have been denuded. The country continues to lose 2.6 percent of its forests every year.

In the Philippines, where 30 percent of the country is forested, a quarter of the total land suffers from erosion. The situation is severe in the Philippines since it has a dense population and a shortage of fertile agricultural land.

In Indonesia, the transmigration program, resettling residents from overcrowded Java into the Outer Islands, has destroyed some lowland forests.

Vietnam lost nearly two million hectares of forests to defoliants and bombardments from 1961 to 1974.

Malaysia does not have such a serious deforestation problem since it has a low population density and is industrialized compared to other countries. It also has absorbed people from rural areas into urban centers. It has declared 43 percent of its land as a permanent forest areas, though only three percent of the land is made up of national parks. Malaysia also has led others with practical plans to curb deforestation. It has been intensifying the plantation of government-subsidized cash and tree crops (bananas, papayas, pepper and cocoa) which take up less land. The aim is to stop shifting cultivation.

The Indonesian government has been tightening up on forestry management. It has already revoked logging concessions of over 12 million hectares to firms ignoring regulations. The government ultimately plans to raise the area of its natural parks from six percent of its total land to 10 percent.

SPECIAL TO WER

## Armed gangs protect illegal logging

BANGKOK--Illegal logging is big business in up-country Thailand. It's so big, in fact, that the illegal loggers have organized armed gangs to commandeer freight trains and to provide protection while they are using the trains to transport logs. So says the Governor of the State Railway of Thailand (SRT), Banyong Saralamp, who also admits that he is virtually powerless to deal with the problem.

"We cannot do much to deal with them because when they are out to do their business they are normally protected by men armed with high-powered weapons," he told *The Nation Review*.

Illegal logging is nothing new in the northern part of Thailand, where Saralamp says the problem is most serious. What is new is that it is now so highly organized and, he says, protected by people in high places as well as the armed gangs.

Not so long ago, illegal logging was confined mainly to local villagers in various areas, who cut trees for household use or for use in small, cottage industries. But now, he says, "the big boys have moved in," and it is difficult to control. The way he sees it, the only way to stop the illegal logging is to make it difficult for those who are buying the logs rather than trying to go after the loggers themselves. "The illegal loggers would soon disappear if they had no market." SPECIAL TO WER

## After seven Years Silent Valley saved

BOMBAY--Silent Valley--the controversial hydroelectric project in Kerala state at the southernmost tip of India--is unlikely to be sanctioned, following the report of an official committee.

Mrs. Indira Gandhi has taken a personal interest in preserving the tiny strip (8,950 hectares) of tropical forest, after representations were made by Indian environmental groups as well as by the World Wildlife Fund and International Union for the Conservation of Nature.

The committee, headed by Prof. M.G.K. Menon, member of the Planning Commission and one of India's top scientists, consisted of four members from Kerala, who were anxious to get the \$93 million dam and reservoir okayed, and an equal number from the central Government who believed that it was necessary to protect this belt, which is totally uninhabited, as a gene pool.

Many rare crop and medicinal plants have been found in the valley and the surrounding forests.

The controversy over Silent Valley has been simmering for seven years, through three changes of government in New Delhi and more than twice as many in Trivandrum, the state capital. At present, the Kerala authorities are looking for an alternative

project for the federal government to fund. As a last-ditch attempt they are trying to propose one near Silent Valley which, they claim, won't destroy the forests. Experts are skeptical about this claim, and it is expected not to get New Delhi's approval.

DARRYL D'MONTE

## Will Burma agree to four national parks?

RANGOON--After two years of survey work, four outstanding natural areas have been recommended as national parks for Burma. Guarded and cautiously developed, they could equal or even surpass the best in Asia, according to naturalists with the joint Burmese Government/F.A.O. Nature Conservation and National Parks Project.

But Burmese energies are still focused on developing the Hlawga Wildlife Park near Rangoon, an up-market recreational area and Party priority. To date, a high proportion of conservation project funds and a much greater proportion of the Burmese budget have been absorbed by Hlawga's roads, fencing, dams, buildings, zoo construction and--not the least costly--the capture of animals.

The catching teams have little or no experience in the use of nets, snares or dart guns: They are young graduates of the veterinary and forestry faculties assigned as trainees to the project. They have recently been advised by an F.A.O. consultant expert, Dr. Michael Woodford, and his three-month consultancy may result in lowering the persistent, embarrassingly high 80-90 percent mortality rate.

Whether or not U.N. funding will continue to support the Conservation and National Parks Project after 1984 (the current term) is soon to be decided. A modest budget for continuation is likely to be agreed to, but for any figure over \$900,000, the prospect is dim. Many nations prefer to give aid bilaterally rather than via the U.N. in order to exercise greater control and to obtain the credit for any success.

A decision on the Burmese Government side to protect the proposed park areas and to process without further delay the necessary legislation, might swing the scales. Developing a national park on the scale envisaged would cost a fraction of the amount already spent on Hlawga.

SPECIAL TO WER

## US groups plant trees in Haiti

PORT-AU-PRINCE--Foreign organizations in a "hands-on" project are attempting the awesome task of reforesting a virtually denuded country, Haiti.

The US\$8 million project, funded primarily by the USA, was signed into being in September 1981. Its goal is to establish the practice of raising trees as a cash crop so as to reforest the country, to furnish wood for fuel and to raise rural incomes.

The U.S. Agency for International Development (AID) is coordinating the program, called the Agroforestry Outreach Project. It consists of funding three non-governmental agencies that are helping farmers plant trees throughout Haiti. They are Operation Double Harvest, the Pan-American Development Foundation and CARE.

Operation Double Harvest is a US-based, non-profit corporation founded and managed by Aart van Wingerden, a successful farmer and nurseryman from North Carolina. It has built a tree nursery producing 3 million seedlings a year and has planted five demonstration tree farms with 477,000 trees. It also designed and produced a smaller and much lighter seedling container, the Windstrip, which has reduced both the costs and labor involved in planting. While a farmer can carry 10 seedlings in the traditional plastic sacks, he can carry 500 seedling in Windstrips, making large-scale reforestation more feasible.

The Pan-American Development Foundation (PADF) and CARE are providing trees and technical assistance to local groups in almost every region of the country. The response, said Dr. Fred Conway, the AID coordinator, has been overwhelming.

Dr. Conway told WER that PADF has helped 6,500 farmers plant 3 million seedlings, mostly on hillside plots. He said that CARE, working mostly with rural community councils, has helped 2,500 farmers plant over one million seedlings on the barren, northwestern peninsula.

In 1979, United Nations technicians warned that deforestation in Haiti was so widespread that the situation was "irreversible." They said it was likely that Haiti would become "the first true Caribbean desert." Despite this alarming report, the government of Haiti did not act. But the government did allow foreign

organizations to act on its behalf.

Dr. Conway disagrees with the UN's evaluation: "It's a huge undertaking, but I feel we can substantially assist in reforestation with the cooperation of local landowners." He pointed out that between March 1981 and June 1983, they have planted more than 4.5 million seedlings and reached more than 9,000 farmers. Even so, the odds are rough, for as Dr. Conway pointed out, "in this country of six million people there are only two people we can call trained and qualified foresters."

ARTHUR B. CANDELL

## US pressures Colombia to use paraquat

BOGOTA--The Colombian press has been critical of a U.S. Congressional resolution (August 2) to continue pressuring Colombia into using the herbicide paraquat to kill marijuana that might be exported to the U.S.

This latest controversy follows last January's, after the U.S. State Department offered a US\$19 million aid package to Colombia and other Latin American nations for paraquat spraying (WER, March, 15, p.4). At that time, the Minister of Health Jorge Garcia firmly rejected the proposed aid, saying that paraquat is an "ecological aggressor" whose use is illegal in Colombia.

This time the U.S. tried to speak directly to Colombian journalists. It arranged a telephone-hookup interview at its embassy in Bogota with Dr. Carlton Turner, director of the White House Drug Abuse Policy Office. His view was that "The most effective way to stop international drug traffic is to eradicate drug cultivation.... And, at least in the United States, eradication includes the use of herbicides. Paraquat is the best herbicide to use because it kills plants within 24 hours."

Dr. Turner told the journalists that some of the \$19 million aid package had been used in Peru; the rest is still available.

"Everything we do is toxic," Dr. Turner said. "If we decided not to use toxic substances anymore, we would go back to the Stone Age. If you look at the beneficial effects of paraquat, they outweigh the negative effects."

Many people in the U.S. did not agree with Dr. Turner. This summer the government sprayed paraquat on marijuana being

grown on government lands in the south. There was a considerable outcry about its environmental health effects.

The press here in Colombia also did not seem convinced by the U.S. arguments. The Bogota daily, *El Tiempo*, responded that paraquat is "...a deadly poison, which has no known antidote and is capable of killing, within a few days' time, whoever sprays it without taking due precautions." The key issue here, as yet unresolved, is whether Colombians will pay more heed to such commentary or to the assertions of a White House advisor.

LORE CROGHAN

## Andean nations sign major eco-agreement

CARACAS--A regional system of food security, conservation and agricultural agreements was signed by the foreign ministers of five Andean nations at a meeting held here recently. The nations are Venezuela, Colombia, Ecuador, Peru and Bolivia.

The Andean agreement is called the Jose Celestino Mutis System, named for the scholar who 200 years ago organized a study of the national resources, agriculture and social structures of Nueva Granada--now Colombia, Panama, Venezuela and Ecuador.

One agreement calls for guaranteed food supplies to meet nutritional needs through improved productivity and technology and the creation of food stocks capable of meeting emergencies and disasters.

Cereals, legumes, vegetable oils, milk and milk products, eggs and meat were cited as priority foods for production and incorporation into national diets.

The Andean countries agreed to set up mechanisms to ensure the rational use of soils, forests, fauna and flora, and to protect the headwaters of rivers. They agreed to stress environmental education, seeking the participation of local farmers in conservation practices. The Mutis System also aims to promote the use as well as the conservation of rivers, seas and forests.

In the field of zoosanitation and phytosanitation, the agreement calls for concerted regional action against introduced diseases and pests, with better controls and diagnostic centers.

The Mutis System will foster joint programs of research and technology transfer, coordinating these with international pro-

grams in the region; the monitoring of local food stocks to determine immediate needs and thus aid the nations to maintain reserves.

Subregional trade in priority foods is sought through improved distribution, transportation and storage. The Mutis System will promote adoption of common criteria in dealing with international trade in basic products and will stimulate non-traditional farm exports. Regional trade operations dealing with food surpluses and deficits would be facilitated.

HILARY BRANCH

## Chile sets up first chinchilla reserve

SANTIAGO--A major breakthrough in protecting the chinchilla was reached in Chile recently with establishment of the first National Chinchilla Reserve, to be run by CONAF (National Forestry Corporation) on around 2,000 hectares of land 300 kilometers north of Santiago. The reserve will be used as a breeding ground for the long-tailed chinchilla (*Lanigera*). Chile is the only country in the world where this species is found in the wild.

The land, previously part of a large goat ranch, became the property of CONAF in April this year. By agreement, goats had been kept out of the area destined for the reserve since 1976, and the vegetation necessary for the chinchilla's survival has shown a vast improvement since then.

A survey carried out by the University of Chile estimates that the density of the population varies from 2.2 to 11 chinchillas per hectare depending on the vegetation, a 30 percent growth rate since 1976.

Chilean laws designed to help protect the animal were passed in 1929, when the capture of the animal and the sale of skins were forbidden, and in 1975, when the commercialization of both the skins and live animals were forbidden. Hunting still continues, but at a rate reduced from that at the turn of the century, when 500,000 skins were exported to Europe each year.

The other chinchilla to be found in Chile is the "brevicaudata," whose finer, longer hair makes it more sought after. It lives in the high Andes (in Chile, Peru, Bolivia and Argentina) and is therefore slightly safer from hunters.

CHRISTINE McDERMENT

## Fences destroy African wildlife

JOHANNESBURG--In a controversial culling, 300 elephants were killed in Etosha Pan by the Namibian Department of Nature Conservation recently. Authorities felt survival of the world-famous park depended on its elephant population being drastically reduced.

Over the past three decades it has increased so dramatically that areas of the reserve which used to be covered by vegetation are becoming dustbowls.

The increase has been both due to natural growth and elephants being driven south by the escalating border war with Angola in the north. From an estimated 50 to 100 elephants in 1955, Etosha now has more than 3,000. Carrying capacity research shows the park can tolerate a population of between 1,500 and 2,000 elephants--or become a wasteland unable to support anywhere near the present total game population.

Some experts believe that the culling proves that the entire approach to conservation in Namibia is wrong. Migration routes and the natural distribution patterns of elephants and other large species are disrupted by South Africa's division of Namibia into black ethnic areas.

Game fences were erected to partition Etosha from the "tribal" areas of Damaraland and Kaokoland, resulting in a radical disruption of natural distribution patterns. With no end in sight to the system of ethnic partition it became clear that the survival of the park and of the elephants depended on a scientific culling program.

Meanwhile the culled elephants have been butchered, and tinned elephant meat will soon be available in Namibian supermarkets. A million cans will be marketed under the brand name "Eloolo."

### BOTSWANA AND THE EEC CONNECTION

In neighboring Botswana, 825 kilometers of fences criss-cross the country, not to divide it into ethnic tribal areas but to try to prevent the spread of foot and mouth disease in cattle. The effect of these fences has been decimation of the wildlife population. During periods of drought (and southern Africa has just gone through one of its worst) the animals would normally range widely looking for forage and water. However, the fences focus the migratory movement along fixed trek routes and, ac-

cording to researchers Delia and Mark Owens writing in *Wildlife*, the animals are funneled into a small area, pile up and overgraze the range until they starve to death. In addition, they are harassed by poachers who shoot the best animals, those most likely to survive the drought.

J.B. Condy, a veterinarian and authority on foot and mouth disease who designed two of the fences in the early '50s, now says they are "unnecessary" for controlling the disease. He conceded they "were just slapped across the map." Their removal would immensely improve the chances for wildlife survival, the Owens wrote.

They said, "Perhaps the time has come for the people of Botswana to ask whether the continued mass destruction of wildlife in order to prop up the cattle industry is justified." The Owens estimated the wildlife was worth US\$14.2 million last year. They note that spokesmen for the cattle industry argue that it has long been the country's number two industry after mining. But, they respond, if a similar amount of time, energy and money had been devoted to developing multiple game industries, they might have become a major source of income with revenues more widely distributed among the people.

Andrew Higgins, writing in *British Wildlife*, added to the Owens' account. He agreed that cattle have always been an important part of the Botswana culture and economy, "but the importance has been enormously increased by an aid program by that master of agricultural forward planning, the EEC (European Economic Community). Under a special agreement 19,000 tonnes of beef from Botswana are imported each year by the Community... At the same time, surplus beef from the EEC mountain is dumped in areas of Africa which have an endemic FMD (foot and mouth disease) problem.

"Surely the European nations must work out an aid policy that does not result in a poor country such as Botswana destroying its major scarce resource--wildlife--in order to export beef to countries that already have more than they can cope with."

MIKE NICOL

## Put fences around people, not animals

HARARE--Put the fences around people, not animals, suggests Rowan Martin, principal ecologist in Zimbabwe's Department of Na-

tional Parks and Wild Life Management.

Reversing the zoo set-up in the wild is one part of an ambitious plan that could revolutionize Zimbabwe's approach to wildlife management, land use and conservation. In a first-of-its-kind, multidisciplinary approach backed by computer analysis, Martin and other experts in and out of government have produced a comprehensive study of the wildest parts of Zimbabwe.

Different government agencies often work at cross-purposes in a region. The only solution, Martin said, was to get everybody together in one room for five days to hammer out a consensus. Consequently, Zimbabwe's first regional planning workshop was held in 1982.

By using computer overlays of soil, slope and rainfall conditions in the Sebungwe region, a tenth of Zimbabwe's area, the experts produced a comprehensive plan that can act as a guideline for proper land use and can point out potential conflicts between agriculture and wildlife.

To avert those conflicts, the experts proposed setting up zones in which the status of wildlife would vary from total protection in game parks to total elimination in crop areas. Between these extremes would be areas--buffer zones--in which both people and animals would exist. Because the animals would be free to roam everywhere but in the crop areas, the fences would surround the people, not the animals.

Buffer zones between parks and farms should eliminate the inevitable friction that comes when cultivated fields lie next to wildlife preserves. Farmers lose enthusiasm for wildlife conservation when they can't kill the animals that raid their crops. And the animals are constantly threatened by poachers.

To strengthen the farmers' interest in wildlife conservation, the experts have suggested that rural communities form land companies to control the use of the land surrounding their farms and to share the profits derived from it.

These land companies would go a step beyond the current Operation Windfall program here, which attempts to distribute the benefits from wildlife among the rural people who share its environment. Martin, who devised Operation Windfall, says it has run into problems because revenues from wildlife don't always reach the people who suffer most from contact with the animals. Poaching, which had disappeared in one area after the program began, made a comeback.

The land companies could exploit both

wildlife and land for the direct benefit of the entire community. For example, the company might charge its members grazing fees to pasture their cattle on company land. These fees would contribute to the profits that would be divided equally by all adult members of the community as shareholders in the company, so even the poor farmer without cattle would benefit from the pasture land.

The land companies could lead to more than just a renewed respect for wildlife among the rural people. They might promote better land-use techniques for grazing, farming, forestry and water conservation. However, Martin stressed that the government would not force communities to form such companies if they showed no interest.

Wildlife would benefit from the multipurpose areas between the parks and the farms in that they would link regional parks allowing greater dispersion of the animals. At present, the game parks are in danger of becoming overcrowded islands of wildlife. Hunting in the areas between the parks, controlled by the land companies with government supervision, could reduce the need for culling operations. The overall wildlife population should increase.

These proposals are still before Prime Minister Robert Mugabe's government, which must consider the political consequences of such a revolutionary approach to land management. The government has shown itself to be sympathetic to conservationists and receptive to new ideas, so the experts are hopeful.

BOWDEN QUINN

## Using animals in Africa...

IN SUB-SAHARA AFRICA, 92 percent of the energy put into farming is human. Animals contribute about seven percent, and tractors only one percent. The International Livestock Center for Africa (ILCA), based in Addis Ababa, says farmers need to put a lot more energy into their farming if they are to raise enough food for the rapidly expanding population. Although there are nearly 10 million draft animals in the area the ILCA recommends their number be greatly increased. In many countries there is a separation between agriculture and pastoralism, with neither the farmer nor the herdsman using animals for work. One obstacle to the better use of animal power is the belief that tractors are best; ILCA says this belief is all too often mistaken.



## New strategy saves degraded Zululand

CAPE TOWN--Rural land-use strategies initiated in South Africa's densely populated and environmentally degraded KwaZulu area are beginning to show positive results, according to Mrs. Mary Rose of the Institute of Natural Resources.

In every Institute project emphasis has been placed on the prime importance of food production, while safeguarding the soil, habitat and wildlife.

"In formulating development plans we have consulted with the people living in the area at every step. It is the only way of ensuring success, which many international agencies are only belatedly discovering," Mrs. Rose said.

Projects include improving the livestock situation, developing an agricultural marketing system, biogas research and a strategy aimed at maximizing the fish yield on a sustainable basis.

Among the longer-term projects are tree lots, as firewood is a major fuel problem in KwaZulu. Some 150 million hours are spent annually in firewood gathering.

The Institute's director, Professor John Hanks, explained: "As the human population of South Africa continues its rapid growth, resources are becoming scarce, and what can be termed environmental indicators, such as overgrazing, soil erosion and deforestation, show us that we have exceeded the sustainable yield of vital life-supporting systems.

"Poverty, malnutrition and unemployment are directly associated with these indicators, and the resulting downward spiral of land degradation has produced a situation which deserves recognition as the greatest single threat to the long-term stability of South Africa."

The Institute publishes occasional monographs and working papers on their projects. Further information can be obtained from the Institute of Natural Resources, P.O. Box 375, Pietermaritzburg 3200, South Africa.

MIKE NICOL

## More on land use...

THE COLOMBIAN GOVERNMENT recently issued a decree to reward farmers in the Upper Magdalena River region for making special

conservation efforts. Such measures have been urged by the Sociedad Colombiana de Ecología, as means of encouraging Colombian ecology-consciousness (WER, May 15, p.7).

The financial incentive offered is a generous amortization of government loans for farmers who plant "eco-protector" crops like fruit trees, corn, beans and yucca; who undertake reforestation; who cultivate grasslands; and who prevent erosion or otherwise improve the soil.

ONE OF THE FEW FERTILE VALLEYS in the People's Democratic Republic of Yemen (South Yemen) is getting an infusion of agricultural aid money from one bilateral and three multilateral agencies. The project will cover 3,225 hectares of irrigated land in Wadi Hadramawt, one of the few valleys with groundwater sources that can be tapped for irrigation. The hope is to reduce the country's reliance on food imports and to raise farm incomes. There will be studies for flood and erosion control. Funds for the US\$36 million project are coming from the Arab Fund for Economic and Social Development (\$12 million), the World Bank's International Development Association (\$9 million), the UN Development Program (\$200,000) and a bilateral contribution from the Kuwait Fund (\$10.6 million).

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## Are US companies fleeing strict environmental laws?

NEW YORK--Are U.S. companies fleeing abroad to escape stringent environmental regulations at home?

Both Presidents Carter and Reagan apparently thought so. Their Administrations devised broad strategies to respond to the perception that pollution and workplace health regulations are responsible for increasing the numbers of plants being built abroad. According to the Conservation Foundation's paper, "Siting New Industry--An International Perspective," the Carter Administration tried to secure international agreements to equalize pollution control regulations. It tried also to ensure that U.S. companies would take anti-pollution measures in their overseas producing plants. By contrast, the Reagan Administration approached the problem of industrial relocation by loosening regulations within the United States.

Even though their policies differed widely, both proceeded on a similar assumption, said author H. Jeffrey Leonard, "that environmental regulations are responsible for significant declines in the competitiveness and productive capacity of U.S.-based firms, for increases in imports of manufactured products, and for increasing the number of U.S. industries locating abroad."

But, Leonard continued, policymakers "do not have a good sense of whether environmental regulations have been the driving force, a contributing factor, or merely incidental in international location decisions."

The Conservation Foundation study found that there have been some increases in overseas location by a small number of manufacturing industries in response to pollution controls and--even more so--to workplace health standards. It found some cases in which U.S. firms operating abroad failed to take measures to reduce pollution and protect worker health.

"However, what is most significant is that our research shows these phenomena to be isolated exceptions rather than widespread occurrences," Leonard wrote. He found no signs of large-scale flight of U.S. industry despite the enactment of numerous environmental laws--even in the two groups of industries most likely to be affected, chemicals and

metals. The favorite foreign locations of these "pollution-prone" industries remained other advanced industrial countries with laws not unlike those of the U.S.

The Foundation's research indicated that the regulatory burdens "have not been substantial enough to offset the advantages of producing in the United States in most cases...market considerations, transportation and labor costs, political stability "

However, one exception was the primary metals industry and, possibly, specific parts of the chemicals industry, those that produce asbestos, benzidine dyes, arsenic trioxide and a few pesticides.

Of the few industries experiencing "international dislocations" as a result of U.S. pollution and workplace health standards, most also were experiencing declines in product demand, lagging in technological innovation and earning inadequate profits for substantial new capital investments, the study found.

Where did these industries go?

Leonard's study found that more than half of all investments by U.S. chemicals and metals industries outside of the highly industrialized nations were in Ireland, Spain, Mexico and Brazil.

After research in Ireland, Spain and Mexico, Leonard found that most U.S. firms have taken anti-pollution measures beyond those required by the laws of the countries. The technologies transferred take advantage of advances already made at home. Since most firms expect their plants to last up to 40 years, "they are unwilling to bet that environmental regulations will not be significantly stricter during the lifetime of the plant," he said.

And, by introducing new technologies, training technicians in pollution control, even sometimes building joint waste treatment facilities with local governments, U.S. companies have "in many instances had a positive impact in combatting industrial-related pollution problems in industrializing countries," Leonard reported.

Alternatively, those companies "that have chosen to ignore environmental and public health considerations have faced very serious economic and political problems in these rapidly industrializing countries," he discovered. The polluting U.S. firms were closed, fined or hit with new restrictions in all three countries.

The study concluded: Any effort to weaken existing environmental regulations in the U.S. cannot legitimately use the argument that it is leading to the flight

of U.S. industry overseas. Nor would relaxation of regulations restore the long-term competitiveness of U.S. industries, for it would reduce incentives for technological progress and manufacturing process changes.

SPECIAL TO WER

## The polluter seldom pays in the UK

LONDON--In Britain, a House of Lords committee found that although the Department of the Environment contends the country rigorously adheres to the "polluter pays principle," in fact the polluter rarely pays for the cost of its pollution.

The Lord's Select Committee on European Communities report, The Polluter Pays Principle, found that many industries still believe they have "free use of the environment as a sink" for pollutants.

As reported in the British weekly, New Scientist, the Lords recommended that Britain take advantage of an EC rule which allows government subsidies of up to 15 percent on investment in cutting pollution. These subsidies could be given to declining industries, which are both short of money and unlikely to invest in new and cleaner plant, the committee suggested. This could include some principal river polluters.

The Lords' committee feared that the clean-up of Britain's rivers has run aground. They suggested that the rule for air pollution, that firms must use "best practicable means" to cut discharges, should apply to river pollution as well.

They said that if the polluter were made to pay, the fees could pay for the cost of monitoring, compensation for pollution and for providing cleanup incentives.

SPECIAL TO WER

## Danish dissent over Swedish nuclear waste

COPENHAGEN--Denmark and Sweden are at loggerheads about transporting nuclear wastes from Swedish plants to France for reprocessing. Sweden's specially-built nuclear wastes carrier, the "Sigyn," has been involved in one or two mishaps, and the Danes are worried that another mishap could involve nuclear radiation in a highly popu-

lated area.

Danish Environmental Minister Christian Christensen has requested that the Swedish government take the Sigyn out of service until an impartial survey determines whether she is underpowered, as Danes believe. The Sigyn will occasionally use the narrow Oresund route that separates Denmark from Sweden and which runs along the heavily populated Copenhagen metropolitan area. Other voyages use the Great Belt, a broader waterway but one used by all large vessels entering or leaving the Baltic.

Swedish government and utility company sources say the Danes are making a fuss about the Sigyn largely for political reasons, to pacify a large and vocal Danish anti-nuclear opinion.

Denmark cannot forbid passage of the Sigyn. Although the Great Belt is entirely within Danish territory and the Oresund is half Danish, both are classed as international waterways with free passage for all ships on peaceful missions. A.E. PEDERSEN

## Europe is trying to regulate asbestos

BRUSSELS--The European Community appears to be concentrating its efforts to reduce exposure to asbestos.

Ministers, meeting at the Social Affairs Council, recently adopted a directive which aims at protecting workers in the asbestos industry from occupational and accidental exposure. The directive, which comes into force in 1987, lays down an action level (the level of asbestos presence at which monitoring, notification of public authorities by employers, and medical check-ups are required) of 0.25 fibers per cubic centimeter. The action level applies to all six varieties of asbestos.

Limit levels are also laid down in the directive. They are 0.2 fibers per cubic centimeter for crocidolite fibers, which most member states considered very dangerous, and 1.0 fibers per  $\text{cm}^3$  for all other asbestos fibers.

According to the directive, workers are to be kept informed of the risk involved and if these maximum exposure levels are exceeded, they should be supplied with breathing equipment (this should be needed only temporarily). The directive also covers regular maintenance and cleaning of the factories, and hygiene and safety mea-

asures for workers. Its effectiveness is to be reviewed three years after entry into force, i.e., in 1990.

A draft directive on the marketing and use of asbestos, aimed at protecting the consumer, has been having a rougher ride. After three years of discussions, European ministers were recently unable to adopt the directive due to the last-minute appearance of two suggestions from the French.

The original aim of the directive was to impose a system of labelling all products containing asbestos of the six varieties (actinolite, amosite, anthophyllite, chrysotile, tremolite and crocidolite) and to ban the use of white, brown and blue asbestos. Quite early on in the talks a lack of consensus as to the risks involved in the use of white and brown asbestos led to them being dropped from the draft.

In May, the French minister turned up with amendments to do away with the distinction between products containing crocidolite and other types of asbestos, on the grounds that a special label for blue asbestos would discriminate against other asbestos varieties as being less dangerous. This was not acceptable to other delegations.

Despite present difficulties, the directive is expected to be adopted within the next few months. The Commission is meanwhile working on another directive dealing with the use of products containing brown and white asbestos.

Finally, the Commission is also preparing to reduce asbestos fiber emissions into the atmosphere. A draft directive on limiting asbestos fiber emissions at source in the European asbestos-using industries should be ready by the end of 1983.

The decision to draw up legislation follows the failure of the EEC countries to orchestrate, after two years of talks, sectoral agreements with their asbestos industries. The directive will apply maximum emission levels to all six types of asbestos. The values will be based on those already imposed in France, where the government signed a successful agreement, back in 1978, to limit asbestos emissions with the two French asbestos-using firms, Eternit and Everitube. The values range from 0.1 milligrams per cubic meter of air in the case of pure asbestos dust (which contains at least 20 percent asbestos fibers) and 0.5  $\text{mg}/\text{m}^3$  air in the case of mixed dust.

The draft EEC directive will also lay down limits for liquid emissions and will cover the treatment and reduction of asbestos waste.

ANNA LUBINSKA

## Britain has a new policy on asbestos

LONDON--The discovery here of a dangerous amount of asbestos around a power station being demolished led to a new policy and tighter checks on demolition procedures in Britain.

The Central Electricity Generating Board (CEGB) has six out-dated power stations up for sale. It was the one in Fulham, London, which they sold to a firm of contractors for demolition, that caused public alarm and an immediate halt to the demolition work. Its destruction will be completed under the supervision of the Government's Health and Safety Executive.

Afterwards, the CEGB said that in future it would be responsible for stripping all asbestos before offering any power stations for sale to contractors for demolition. This could cost the CEGB up to 1 million pounds (US\$1.52 million) per station--costs passed on to the consumer.

Before 1969 safety regulations took force, asbestos was widely used in public buildings. The National Union of Public Employees would like a survey of these, with the ultimate intention of removing all asbestos. These suggestions have been turned down by the Health and Safety Executive. However, the Government did announce in the House of Commons that it would impose stronger controls on asbestos stripping. Firms carrying out such work will have to be registered and checked as "of good character."

BARBARA MASSAM

## Cape Town children have high lead levels

CAPE TOWN--Children living in downtown Cape Town, South Africa, were found to have high levels of lead in their blood, and researchers from the School of Environmental Studies which made the study feared that the children could therefore suffer from behavioral and metabolic problems.

In the wake of this University of Cape Town report, published last year, two further studies have been announced. The government's Department of Health will study lead contamination in children's blood--if finances allow, said the department's chief air pollution officer, M. Lloyd. And

the city's Metropolitan Air Pollution Control Committee will investigate the lead content of air in a residential area near an oil refinery. This follows a Medical Research Council survey which showed abnormally high lead levels in the teeth of children living in the area.

According to the report by the School of Environmental Studies, Cape Town "has the highest atmospheric lead levels in the country. The three-monthly safety level for atmospheric lead is an average of 1.5 micrograms of lead a cubic meter of air. Yet in 1981 a three-monthly average in the city went well above 5.5 micrograms a cubic meter."

The study recommended that lead levels in South African gasoline be reduced from 0.836 grams a liter to 0.15 grams, in line with European Community recommendations.

However, the major oil companies treated the report with skepticism. A.M. Evans, the sales technical manager for Shell South Africa summed up their attitude: "The link between petrol (gasoline)-lead and blood-lead levels has yet to be conclusively shown, and no one can agree what constitutes a dangerous level of blood-lead."

MIKE NICOL

## Chemicals underground behave abnormally

COPENHAGEN--The Danish Environmental Protection Board says chemicals don't behave underground as they're supposed to. Chemicals that are destructible above ground may resist deterioration when buried.

Furthermore, materials that are considered difficult to dissolve can still affect underground water sources. Instead of being stopped by the various clay layers, they move down into the watertable.

The Protection Board made these observations while investigating an old chemical plant site that has been polluting local water supplies.

Among other things, the investigation showed that DDT, generally considered difficult to dissolve, had penetrated up to two meters of earth during a period of 30 years or more. The investigation turned up traces of basic chemicals, medium stage products and finished products. The factory in question manufactures or has manufactured insecticides and chemical sweeteners.

A.E. PEDERSEN

## Venezuela has a pesticide plague

CARACAS--Pesticides are becoming a plague worse than the insects they are intended to control, according to Venezuela's Health Ministry, which notes more poisonings "due to increased farm activities and the irrational use of pesticides."

Figures published by the Health Ministry Bulletin for the cultivation season (mid-April to mid-September) showed 65 percent more cases in 1982 (301) than in 1981 (195) with a jump of 18 percent in deaths. The total for 1982 reached 70 deaths compared with 60 for 1981 and 27 in 1972.

The ministry denounced lack of controls in the sale, distribution and use of powerful chemicals which are sold over the same counter as food supplies in some rural districts. Untrained farm workers are observed fumigating into the wind without mask, gloves or other safety equipment.

A National Pesticide Commission, established in response to public alarm over the dangers of agricultural chemicals, is investigating: the level of toxins in vegetables, milk and grains reaching the consumer; the use of products banned in other countries; contamination of the ecosystem; and a widespread disregard of the dictates of the Pesticides Law.

HILARY BRANCH and LILI STEINHEIL

## More on agro-chemicals...

TRANSPORTING TOXICS--BY BIRDS--is just one aspect of a renewable two-year agreement for wildlife research signed recently in Caracas by the Environment Ministry and the Canadian Embassy. The wildlife services of both countries will pursue programs of mutual interest, in particular on bird species which migrate between Canada and Venezuela.

Of particular interest is the investigation of food chains to try to identify chemical toxins and their movement, and thus determine the origin of biocides and their impact on wildlife and the environment. Other parts of the agreement cover hunting legislation, training personnel within wildlife services and the exchange of technical information.

VEGETABLE FARMERS on the outskirts of Bangkok were using a bizarre formula to keep their crops free of pests. This "home-

brewed" concoction--a mixture of four to five brands of insecticides--was used frequently in large amounts to ensure good, fresh-looking crops for the market.

Fortunately, the Agricultural Department decided to step in to ensure that the nearly 20 tons of vegetables transported daily to Bangkok contain no more than the minimum permissible levels of toxic farm substances.

A pilot project to produce "safe" vegetables has been launched by the Toxic Substances Division of the department, following months of preparation between farmers and agriculture officials. The farmers have been taught proper methods of applying insecticides and alternative means of pest control. A new cooperative marketing system will bypass middlemen.

The "safe" vegetables will be easily identifiable by their plastic wrapping stamped by the Agricultural Department with: "The safe vegetable." Similar pilot projects are also being undertaken in other major vegetable-growing districts, both near Bangkok and in other provinces.

"WHEN OUR COUNTRY BECAME INDEPENDENT, our ambition was to 'modernize' our economy," Tanzanian President Julius Nyerere said recently. "We did not work this out very thoroughly, but it appeared to us that if you wanted a productive agriculture, you had a mechanized agriculture, and you used chemical fertilizers, chemical insecticides and to be completely up-to-date even herbicides," Nyerere said.

The unreliability of supply from the lone fertilizer plant in Tanga, which is dependent on imported oil and foreign currency for both production and distribution, coupled with abandoning "the teaching of compost making...regarding it as a discredited and old-fashioned technique" had resulted in "nothing being done at all in many places to refertilize the soil, much less to improve the fertility," Nyerere said.

Referring to the alarm being raised by some critics about the harmful effects on soil and water supplies of chemical fertilizers in the West and in India, President Nyerere said, "There is no reason why we should be afraid of chemicals any more than a man with an occasional headache should refrain from using aspirin because other people use so many that they die. I believe they can be very useful, alone or in combination with natural methods of soil protection, when used in moderation and in appropriate circumstances."

## Chemicals in the water...

THOUGH IMPROVING, THE STANDARD OF JAPAN'S water remains poor, particularly in closed areas, such as small and medium-sized rivers in cities, lakes and reservoirs, enclosed bays and inland seas. A major factor behind this is the discharge of untreated domestic waste water into public bodies of water. Existing installations are inadequate, the Japan Environment Summary reported: Only 30 percent of the population were served by facilities for the disposal of excreta and domestic waste water in 1980.

Nationally there is no coherent policy for disposing of domestic waste water and reducing its pollution load. To improve this situation, the Environment Agency is surveying measures already in place. The goal is to provide a basis for developing optimum disposal techniques and guidelines for administration. The major administrative problem is that, despite efforts to change this, there is no legal control on the discharge of domestic waste water into public bodies of water. In addition, projects are held up by inadequate financing, and the lack of proper maintenance and management will also become a problem as the number of facilities increases. Technical problems center on disposal techniques and the disposal of sludge as few research and experimental projects have been carried out. The basic role of the survey will be to bring to the attention of the government the sad lack of facilities and concern for a problem which is a major contributor to pollution in Japan.

THE GOVERNMENTS OF HONG KONG AND CHINA recently worked out a 12-month program to monitor pollution in the Shenzhen River which divides China from the British colony. The effort is undertaken by a Joint Working Group on Shenzhen River Control. It will study the problems of pollution and flooding along the river and recommend solutions. To facilitate the work, both sides have adjusted their different modes of pollution testing equipment for standardized comparison.

The river is tidal and has seasonal fluctuations. It is heavily polluted on the Hong Kong side, where human activities are concentrated, and is cleaner at the upper stream.

FORTY RIVERS IN THE PHILIPPINES ARE ALREADY "DEAD" due to pollution from domestic sewage, industrial wastes, agricultural wastes and community refuse, according to the Philippine National Environmental Protection Council. NEPC also said that the rest of the water resources in the country are fast deteriorating. These 419 principal rivers, seven major river basins, 58 lakes and wetlands are deteriorating due to logging in the upper reaches and increasing population growth and rapid industrialization.

TAIWAN'S LEGISLATURE recently revised a law penalizing people who dump wastes and tend livestock or poultry near fresh water areas. Offenders will be slapped with fines ranging from US\$75 to US\$1,500, the most serious offense being the use of poisons and electrical devices to catch fish. The revisions--which will become official after presidential approval--cover new sources of pollution including hospitals, livestock and marine culture industries, mines and factories that had not been strictly monitored before.

THE SWISS GOVERNMENT IS MOVING towards a total ban on all phosphates in detergents following the conclusions of a study by the Water Protection Commission which found that cleansing qualities would not be lost if other harmless chemical additives were substituted.

The Interior Ministry charged the Federal Office for the Protection of the Environment with rewriting the present Federal law on detergents to make it conform to the Commission recommendations.

The Federal Office for the Protection of the Environment stated that it would complete its revision of the law in time to circulate it among "interested parties" by the beginning of 1984.

Under the Swiss system, drafts of proposed changes are submitted to all interested parties--detergent manufacturers and importers, chemical firms, Chambers of Commerce and other business groups that might be affected as well as to environmental associations. When all parties have had an opportunity to provide input, the draft will be revised to the extent possible in order to achieve the widest possible agreement before a final version emerges.

## Chemicals in the air...

NASA, the U.S. National Aeronautics and Space Administration, recently began a major research effort, a study of the susceptibility of the global atmosphere to chemical change.

Human activities have a strong effect on the global atmosphere: increasing levels of carbon dioxide, depletion of ozone in the stratosphere. NASA says that other gases which may have an impact on the atmosphere may also be increasing, such as methane and nitrous oxide.

The Global Tropospheric Experiment reflects growing concern about the atmosphere's lower region. The first phase will develop, test and evaluate techniques to measure concentrations of key chemical species in the lower atmosphere, such as hydroxyl, nitric oxide and carbon monoxide. Initially, the new, high-technology monitoring instruments will be installed aboard aircraft and flown off Barbados and over the United States. Long-range plans call for global aircraft sampling in the late 1980s, followed by space-based measurements in the early 1990s.

ATHENS IS NOW OFFICIALLY THE MOST POLLUTED Western European city, says the European Parliament's environmental committee.

This is no surprise to Athenians who have lived through sharp restrictions on traffic during the summer months and attempts to decentralize the polluters.

Even so, the Greek Pollution Control and Research Association has reported that air pollution is getting worse. In the first four months of this year, it reported the amount of smoke in the air increased 150 percent over the same period last year, that hydrocarbons were up 122 percent and carbon monoxide up 130 percent.

A NEW AIR POLLUTION CONTROL BILL was recently introduced in Hong Kong. The bill which took five years to draw up, has defined "static" sources of pollution into two categories: those likely to give rise to serious pollution; and the rest.

"The first sort of operation we have called 'specific processes'," said Denis Bray, the Secretary for Home Affairs. "There are provisions for licensing these processes plant by plant. Planning, design, construction and operation are required to take place under controlled con-

ditions so that the best practical methods can be incorporated from the beginning."

Exemptions will be granted to those 81 plants already in operation when the law is enforced, unless the plant is expanded or replaced.

For the rest, the bill proposed to follow the practices that had been in use for over 20 years under the clean air ordinance, he said. "Here operators proceed unfettered unless they are causing a nuisance to people round about. If this happens they are shown how to reduce the nuisance and, when necessary, there are powers to require operators to put things right," he explained.

AIR QUALITY IN SHANGHAI, China's biggest metropolis, has improved significantly in recent years with the enforcement of anti-pollution measures, the official Xinhua News Agency reported. The amount of sulphur dioxide in each cubic meter of air dropped from 0.17 milligram in 1973 to 0.09 milligram last year, according to the Shanghai Environment Monitoring Center. The corresponding figures for suspended dust in the air indicated a drop from 0.43 milligram to 0.03 milligram.

The municipal government has in the past few years allocated 71 million yuan to control industrial wastes. Air pollution is monitored by 15 stations working around the clock, according to the center. Since 1980, these stations have been part of a worldwide monitoring network operating under the World Health Organization.

MS. JIANG XIAOKE, CHIEF OF BEIJING'S environmental protection bureau, said a total of 15 million tons of coal, producing 260,000 tons of sulphur dioxide and 420,000 tons of soot particles, were burned in the Chinese capital in 1981. In order to solve the resultant serious air pollution problem, Beijing is shifting from coal to gas or liquefied petroleum gas for cooking fuels. As a result, 70 percent, or 800,000 households, were using the new fuels at the end of 1982. Besides, 90 percent of the 12,000 boilers for winter heating had been improved to raise efficiency and reduce smoke.

In addition, 700,000 trees and 200 hectares of grass will be planted in the city. Two million cubic meters of industrial and domestic sewage pour into the rivers daily through the city, Jiang said. Beijing plans to dredge three of its main rivers and lay more sewage pipes during the next three years.



## Energy & environment mix in Colombia

BOGOTA--Colombia's state oil company Ecopetrol (Empresa Colombiana de Petroleos) is demonstrating a new level of sophistication in environmental planning, with a large-scale landscaping project at a natural-gas storage site on the Savannah of Bogota. By the end of 1984, the site will boast tanks storing 500,000 barrels of gas. But these tanks will be set on less than 60 hectares of a 340-hectare new forest reserve.

"We are attempting 'ecological reconstruction' of the land at the gas storage center, by restricting our planting to species that are native to the Savannah of Bogota," said Dr. Jaime F. George, director of environmental affairs of Ecopetrol. For example, eucalyptus, although ubiquitous throughout the Savannah, is not really a native species, so it will not be used. Cedars, acacias and Romeron pines, true natives of the region, are among the planned plantings, as well as groves of indigenous fruit trees (like papayuelas and peaches) to feed the birds.

Environmental planning at the center also includes an elaborate separation system to isolate and purify waste water from the gas before it enters the natural waters of the Savannah.

Such scrupulous environmental engineering is a new strategy for Colombia's state oil company. "We began worrying about ecological consequences only a few years ago," said Dr. George. "Now, every project undertaken by Ecopetrol or the oil companies that work with us must be planned on the basis of environmental impact studies."

For example, he noted, a subterranean oil pipeline now under construction in the Casanare region of the Eastern Llanos (or plains) was planned with respect for the environment. The pipeline's 130-kilometer route circumvents forest groves. When it must cross rivers, the pipeline is planted two meters below their beds to avoid disturbing the aquatic environment or polluting the water. The pipeline also has a special set of safety valves to shut off oil flow in case of accidents.

But other Ecopetrol environmental planning is purely remedial because older oil installations in Colombia were not designed with environmental protection in mind.

For instance, the country's major re-

finery at Barrancabermeja is over 50 years old. The complex includes 50 separate plants, producing petrochemicals and plastics as well as gasoline, so it has caused tremendous ecological problems that have only recently been confronted.

Ecopetrol's efforts to clean up the Barrancabermeja refinery complex began a few years ago with water pollution control. Until then, the contaminated residual waters separated from petroleum were allowed to run directly into natural water sources. A year and a half ago, Ecopetrol completed construction of a \$10 million treatment plant for these residual waters.

The company is still working on Barrancabermeja's air pollution problems. It has installed controls at an old sulphuric acid plant, for example. And it has instituted careful monitoring of complete combustion in the plants, which cuts down on the emission of air pollutants.

Another remedial Ecopetrol effort is wide-scale reforestation throughout Colombia, wherever its past construction projects caused deforestation and erosion.

The environmental menace of oil production is an old problem in Colombia, and official awareness of the need to solve it is relatively new. But the state oil company's evident determination to work at environmental protection promises that the problem is at least on its way to being solved.

LORE CROGHAN

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## Latin countries agree to develop Amazon & Orinoco

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CARACAS--Eight South American nations have committed themselves to gradually include 7 million square kilometers of the Amazon basin into their development plans. This was announced at the Amazon Cooperation Council Session held in Lima earlier this summer. The eight signators of the Amazon Cooperation Treaty are Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Surinam and Venezuela.

Brazilian delegate Rubens Ricupero, recognizing the difficulties inherent in international cooperation programs, said, "We must start from realistic bases in a gradual and persistent effort which is up to the challenge: the rational and harmonious use of 7 million square kilometers and a fifth of the world's fresh water." He suggested that a first step be exchange of information through committees of two to four countries set up along the lines of the Latin American Economic System. One country alone, he said, could not evaluate all Amazonia.

In this spirit, the President of Peru, Fernando Belaunde, travelled to Venezuela afterwards by way of the Amazon-Orinoco river systems crossing through Brazil. His journey highlighted Venezuela's dream of developing river communications with its Amazon neighbors, using the unique "two-way" connecting river, the Casiquiare, one of the few in the world connecting two river basins.

Since its discovery in 1500 the Orinoco River has served as a highway for explorations into Venezuela, Colombia and even Brazil. But not until today has the potential of the river itself been explored.

The Orinoco, born in the highlands of Parima on Venezuela's southern boundary with Brazil, is the world's third greatest river in volume of water. Some 2000 tributaries collect an astonishing one billion cubic meters of water annually. Each year these waters carry an estimated 200 million tons of sediments out to sea, enlarging the Delta on their way.

Largely undeveloped, the vast basin covers 830,000 square kilometers (one quarter in Colombia) of dense jungles and empty plains grazed by free-range cattle. The exception is the Venezuelan heavy industry complex of Ciudad Guayana at the confluence of the Caroni. The Caroni is harnessed by giant Guri Dam,

still a-building, which provides hydropower for iron, steel and aluminum industries: at present 3 million kilowatts; by 1986, a total of 10 million kw.

Government authorities see the Orinoco Basin as a future magnet for development and population. Today, 90 percent of Venezuelans live and work along a narrow coastal strip. There are so many studies of the Orinoco's potential that the Environment Ministry created a special Orinoco/Apure department for coordination.

Most advanced is the Orinoco Tar Belt, a project to develop an area of 82,000 km<sup>2</sup> on the north bank of the Orinoco where immense deposits of heavy oil are marked for future exploitation. The Orinoco/Apure office is making a thorough environmental impact study financed by the oil industry.

Among the long-range plans is a hydroelectric project at El Infierno on the Orinoco itself, 250 kilometers upriver from Ciudad Guayana, which would produce 2,368,000 Kw without interrupting traffic on the river. Such traffic would stem largely from bauxite exploitation from the vast deposits at Los Pijiguaos. The bauxite would be moved down to Ciudad Guayana in barge trains of 3650 tons.

The Orinoco-Apure project itself is a long standing dream to make an effective river navigation system opening up the entire southern half of Venezuela. The study currently covers ecology, socio-economic data, hydraulic engineering, land use planning and navigation.

Other studies include:

- a joint ecology survey of the river by Simon Bolivar University and the University of Colorado;
- Research on water and soil quality of the Orinoco Tar Belt by Intevp, Petroleo de Venezuela's Research Institute.
- River navigation infrastructure project by the National Canalization Institute;
- Harbor and dock facilities by the National Port Institute;
- Joint development studies for the border region with Venezuela's Ministry of Foreign Relations International Basins' Commission, Ministry of Defense and other bodies working with their Colombian counterparts.

However, the resources of the Orinoco/Apure project are expected to be reduced as the budget of the office is being gradually cut back from 5 million bolivars in 1982, then equivalent to more than \$1 million, to 3.5 million this year, when the exchange has dropped to about Bs. 10 to 1 dollar.

HILARY BRANCH and LILI STEINHEIL

## PROFILE: Venezuela's environment minister

CARARAS--Venezuela's Environment Minister calls himself a "total independent" politically. Jose J. Cabrera-Malo took office this past January with few illusions about holding his job beyond the change of government next March. For the present he is deterred neither by politics nor by the immense tasks assigned to Venezuela's Ministry of Environment and Renewable Natural Resources (MARN).

"No one at the Ministry asks what 'color' people are," the 62-year-old agronomy engineer says, referring to color-coded electioneering banners. "The highly qualified team working here is our most important legacy." Yet the Ministry is understaffed, and there is no money for field jobs such as forest rangers and fire fighters. In these spheres as in other more technical tasks the Ministry works closely with private groups, volunteers and other official agencies.

Civic education and community action committees have carried the conservation message to almost every level of public awareness since the Ministry was founded in 1977, and the Minister points out with pride that environmental education has been included in the curriculum of teachers training institutes.

In costly projects, however, the environmental struggle is uphill. The Ministry's budget has been cut back almost 35 percent in three years. Moreover, the current 2.15 billion bolivar budget is worth less than half what it was in international terms before exchange controls devalued the currency in February. (The budget is now equivalent to about \$200 million.)

MARN is responsible for national parks, wildlife management, forest reserves and logging, urban green belts, the quality of air (including noise), water (including oil-rich Lake Maracaibo and some 410,000 km<sup>2</sup> of the Caribbean Sea), and land, right down to the nation's beaches. Not to be overlooked is the considerable problem of waste disposal in Caracas.

Water is the Ministry's major responsibility. Seventy-five percent of all MARN money, including funds of the National Waterworks Institute (INOS), goes to building and sustaining reservoirs, aqueducts, irrigation systems, dikes, flood control works and related environmental

concerns such as reforestation of watersheds.

Another program aims at converting 630,000 hectares of largely virgin forests and swamp south of Lake Maracaibo into agricultural land as the future "bread basket" of Venezuela.

To meet future demands on the nation's renewable resources, the Ministry has placed top priority on carrying forward the National Land Use Plan.

"This is the challenge of converting something badly utilized into an emporium of riches by means of the rational, ordered and reproductive use of the land and its resources," the Minister explains.

The on-going National Land Inventory, begun in 1968, provides maps and reports for determining lands good for agricultural, industrial, urban, wilderness and recreational uses. Other far-reaching studies include inventories of hydraulic resources and hydroelectric potential, a long-range agricultural plan, and the massive Environmental Macro-systems study set up with UNESCO assistance, which is an inventory of resources, population and production systems. Already more than two acres (nearly a hectare) of maps and 90 volumes incorporating 45,000 pages have been completed in this study.

These studies will be used for "eco-development," a catch term which is key to environmental thinking in this Third-World country of vast natural resources. Yet 90 percent of its 14.5 million people live on a coastal strip equivalent to 10 percent of the land.

"The mission of the Environment Ministry is to help the development process without prejudicing our ecological patrimony, an indispensable condition for raising the quality of life of Venezuelans," according to Minister Cabrera-Malo.

As a practical man, one of J.J. Cabrera-Malo's first actions as Minister was to reduce the red tape known in Venezuela as "permisologia" and to speed up permits for farmers and foresters. Although, for the first time under Cabrera-Malo's business-like rule, factories have been closed for non-compliance with anti-contamination regulations, in other ways he has encouraged industry, seeking its participation.

Believing that incentives are more important than penalties, the Minister was a prime mover of a recent government decree which provides financial stimuli for investments in conservation and ecology. Tax exemptions are to be granted for importa-

tion, operation and maintenance of materials and equipment for pollution control, reforestation, irrigation, land improvement and waste treatment.

At a recent meeting of industrialists the Minister said, "We are putting a finish to that myth that the land and its resources are either not-to-be-touched or are endangered. I believe that a resource that is not used is not a resource."

In this light, a new forestry policy places the Venezuelan reserves "at the service of the country" through long-term concessions, after a period of seven years in which all logging was prohibited. Cabrera-Malo, whose previous post was president of the National Reforestation Company (CONARE), speaks of trees with authority and concern: "We are convinced that the best way to protect the forests is to use--and improve--this resource in a controlled fashion."

Venezuela's 120,000 Km<sup>2</sup> of forest reserves are considerably more than U.S. forest reserves which total 76,000 km<sup>2</sup> but the exploitable commercial wood is estimated at a low 1500M<sup>3</sup> per square kilometer.

At present at least 20 big concessions have been granted, some as large as 800Km<sup>2</sup> and 1,200km<sup>2</sup>, for durations of up to 40 years. Regulations require the concessionaire to establish nurseries of improved seed for replanting with native or foreign species, to present a forest management plan and an industrial use plan. Since development of a management plan may cost as much as a million dollars, the Ministry authorizes the immediate use of the concession while a management plan and research study are being drawn up, so that money from lumbering goes back into the forest.

As the man who in 1969 founded Uverito, the government pine plantation in the southeastern state of Monagas, Cabrera-Malo guided the transformation of an arid tract into a forest of Honduras pines and Eucalyptus which now covers 82,000 hectares with 131 million trees. The first 12,000 hectares were sown with a machine of Cabrera-Malo's own design capable of planting 2000 pines a day. Today, machines with a capacity of planting 3500 seedlings an hour speed Uverito towards its goal of 210 million trees in an area of 1200km<sup>2</sup>.

For his work in Uverito and CONARE, Cabrera-Malo has been awarded the National Conservation Prize, the Order of the Liberator, the Order of Henry Pittier and the Golden Mercury international conservation citation.

HILARY BRANCH

## Argentinian dolphins set legal precedent

BUENOS AIRES--An environmental lawsuit made history here in Argentina, opening the way --for the first time--for popular (or class) actions.

The content of the case was of minor importance. It repealed federal permits to capture 14 dolphins for Japanese aquariums. More importantly, it opened up channels for future actions on behalf of the environment.

In Argentina, as in many other civil law countries, court action is limited to individuals who must prove a direct interest (either to person or property) in the case involved. Unlike Anglo-Saxon law, popular actions (citizen or class actions) were not admitted by legislation. Individuals or associations could not act on behalf of community or general interest. In environmentally disruptive situations (overexploitation of wildlife, acid rain, deforestation etc.) the person or property conditions usually were not met.

In Argentina, public officials are not used to encountering observations (or opposition) by individuals or associations on matters of general interest. Officials, who have the constitutional right to manage the welfare of the public domain, often disregarded public opinion unless it was extremely powerful. The situation worsened as a sequence of totalitarian governments created an authoritarian system. This abuse of power combined with economic corruption and led to popular fear, preventing effective public participation in any matter of general interest.

The dolphins case, therefore, was particularly interesting not only from an environmental angle but because it opened the door to a democratic process.

The action was filed by two well-known environmentalists, Alberto Kattan and Juan Schroeder. It was brought against the Executive Power (Undersecretariat of Fisheries), which authorized two Japanese aquariums to take 14 dolphins.

The two environmentalists argued that the permits were granted without undertaking a prior "sound biological study," a condition required by the latest wildlife conservation laws. To ensure that they met the direct-interest conditions, the plaintiffs argued that since science has proved an interdependence between human and all other

forms of life, the protection of their own lives was at stake.

Federal Judge Dr. Oscar Garzon Funes admitted the argument--and elaborated the position by extending the same right to private associations concerned with the environment. The judge annulled the dolphin-catching permits and deauthorized any future permit granted without a thorough biological study.

By his decision, Judge Garzon opened a channel for popular action by interested individuals or groups. This precedent does not have the same legal value as in the Anglo-Saxon system, yet it is a way of introducing this right into the legislative system.

PEDRO TARAK

## Past and future shock meet in the Galapagos

SANTA CRUZ ISLAND, GALAPAGOS--The ecological future of Ecuador's Galapagos Islands, "the birthplace of modern biology," will be charted next year. In 1984, a special Presidential Commission from mainland Ecuador must hand over its Master Plan, a series of recommendations for the optimal management of the archipelago's human population, both transient and permanent. The Plan will be the result of two years of on-site investigations here.

The islands, 900 kilometers off the Pacific coast of Ecuador, are one of the world's foremost nature preserves, essential to the study of evolution and animal behavior. Their profusion of rare fauna draws some 25,000 tourists annually. The best possible management of these visitors is a key environmental protection issue.

Because of a natural scarcity of fresh water, the lava-rock islands have never suffered massive colonization, National Park guide Jose Alfredo Salvador explained. But the archipelago nevertheless has a permanent population of 6,500, according to the 1983 census. The environmental impact of these inhabitants is an equally crucial issue.

The Commission's Master Plan must specify whether Galapagos visitors should continue to be restricted to boat trips through the islands, or whether touristic infrastructure such as hotels and airstrips should be built. Currently, tourists must live aboard rented yachts or ocean liners and can disembark only for nature walks and

sunbathing. They must be accompanied at all times by special naturalist guides, trained by Ecuador's National Park Service.

"If tourists continue to live on ships, their annual numbers could be increased without endangering the islands' ecology," said Dr. Friedemann Koster, director of the Charles Darwin Research Station, the archipelago's scientific investigation and environmental protection center. "But feeding and housing tourists on the islands would be a spiny problem, requiring construction and increased food production."

The Master Plan must also outline the means of increasing the permanent population's standard of living. "The only two types of human societies that coexist peacefully with their environments are the very primitive, and the very sophisticated, conscious protectors of ecology," said the Research Station's director. "To become the latter type of society, the Galapagos population will have to make use of the highest technology, to perfect their energy generation, sewage treatment, water supply, housing construction, and agricultural production." Dr. Koster noted that if the Ecuadorian government designs such a marked increase in the standard of living in the Galapagos, it must be prepared to face complaints from other relatively less-developed regions of the nation.

The government organization Ingala will doubtless be assigned a role in carrying out the future development that will raise the population's standard of living. (Ingala is the Instituto Nacional Galapagos, or the National Institute for the Galapagos.) According to Dr. Koster, the controversy over Ingala is political rather than ecological (WER, April 30, 1982, p.4).

Ingala is an administrative entity created in 1980 to handle federal funds for municipal development. The Galapagos archipelago first became entitled to these funds in 1973, when it became a full-fledged province. Unaccustomed to working with large sums, the local Galapagos administrators made some unwise spending decisions, Dr. Koster explained. The national government therefore decided to intervene, and named competent authorities to deal with the money. Ingala personnel are strangers to the islands and their inhabitants, and are mistrusted as outsiders.

#### EL NINO--THE DESTRUCTIVE WEATHER SYSTEM

In February 1982, the Ecuadorian government announced its decision to make the

waters surrounding the islands Park territory as well. The difficulty lies in working out the legal mechanism, Dr. Koster said. The first question concerns jurisdiction. Should the Ecuadorian Navy, the National Fisheries or the National Park Service be responsible? The second concerns the delineation of different marine zones. In what areas will fishing be prohibited, or permitted? Where will visitors be welcomed, or excluded? These details are now being hammered out, he said.

El Nino, the warm ocean current that has punished the Pacific coastlines of North and South America with heavy rains for the past 10 months, has decimated the archipelago's animal populations. Because of scarce food supplies, many sea lions and marine iguanas died of starvation. But Dr. Koster believes this will result in long-term genetic benefits: "In keeping with natural selection, the strongest individuals of these species have survived. They will pass on their superior traits to future generations."

(Soon after WER spoke with Dr. Koster, researchers at the Smithsonian Tropical Research Institute in Balboa, Panama, found that coral reefs off the Galapagos, Panama and Colombia were dying. The scientists hypothesize that a variety of factors related to the El Nino have warmed tropical waters to temperatures that corals cannot tolerate. They have received numerous reports of dying atolls and reefs off the islands of Polynesia, the Philippines and Indonesia and in the Atlantic off Panama's San Blas Islands.)

A perennial Galapagos topic is the need to eradicate introduced animal species that prey on native wildlife, such as the famous Galapagos tortoises. Feral dogs, cats, goats, pigs and rats, descendants of animals brought by Galapagos settlers over the past century, are a continuing menace. The Charles Darwin Research Station devises plans to control feral populations but can carry them out only with the help of volunteer financing.

The Ecuadorian government is generous with the internationally run research center, Dr. Koster noted; it provides at least half the station's annual operating budget. But other funds must come from private environmental funding sources. Dr. Koster urged private contributions to the Smithsonian Institution and the World Wildlife Fund, earmarked "for science and conservation in the Galapagos Islands."

LORE CROGHAN

## International whaling quotas cut this year

LONDON--This year's meeting of the International Whaling Commission (IWC) at Brighton, England, opened amidst publicity surrounding the Greenpeace attempt to film alleged U.S.S.R. infringement of their gray whale quota in Siberia.

After the usual protracted negotiations between IWC members, this year's agreed quotas dropped from the 1982 total of 12,577 whales to 9,875, with the biggest reduction in minke whales. There are zero quotas in the South China Sea, Yellow Sea and Sea of Japan, and half last year's quota in the North Atlantic. The 400 quota for sperm whales in the North Atlantic is now phased to zero.

All this is encouraging for those nations committed to halt all whaling by 1986.

The three major opponents to this moratorium, Japan, the U.S.S.R. and Norway, had hoped that by encouraging Peru to activate its IWC membership they would gain support for their cause. But Peru eventually decided to withdraw its objection to the moratorium in exchange for a moderate quota on Bryde's whales for the coming year.

After six consecutive meetings in England, the Commission will meet next year for the first time in Brazil.

BARBARA MASSAM

## Water decade hit by lack of funding

COPENHAGEN--Less than three years after the World Water Decade was launched, senior World Health Organization officials have been quoted as saying "we knew all the time" that achievement of the Decade's goal "was not possible," Earthscan reported.

In 1980, then-UN Secretary-General Kurt Waldheim said that "clean water and adequate sanitation for all by 1990" was "eminently achievable." He promised that the UN system "will provide the overall framework, the technical support, the momentum and the promotional activities necessary for the program's success."

But WHO, in an official update on the Decade presented to journalists here, listed five constraints: "the absence of strong popular and official support, weak

institutions, shortage of trained personnel, doubts about technology and insufficient financial resources."

The last, lack of money, is the key obstacle, Earthscan contended. At the beginning of the Decade the World Bank estimated that US\$60 billion would be needed every year up till 1990 to provide every home with a latrine or sewerage connection and clean water. A cheaper option was 80 percent coverage using simpler technologies, which would cut the investment to \$30 billion annually. So, the 100 percent aim of the Decade was doubtful even before it began.

In 1981 only \$10 billion went into new projects. The UN Development Program, coordinator for Decade activities, reduced its funds for these efforts from \$14 million in 1980--the year before the Decade began--to \$6.5 million in 1982. World Bank loans for water and sanitation averaged \$572 million a year between 1977 and 1981; they were \$441 million in 1982.

WHO's Director of Environmental Health, Dr. Berndt Dieterich, is confident that the Decade is gaining momentum and that more people are becoming aware of the importance of clean water. But, he wondered: "Are we going to get the resources?"

SPECIAL TO WER

## Egypt has its first conservation law

CAIRO--The People's Assembly has approved Egypt's first conservation law.

"This is very encouraging," one Egyptian official told WER, "for it means that conservation is endorsed 100 percent by the government, and it is now part of our policies and plans."

The law empowers the Government to create parks and national preserves, prohibits hunting and fishing within these areas and to impose stiff fines and prison sentences on violators.

According to a New York Times report, an influential group of Egyptian and American environmentalists, including the stepmother of the American-born Queen Noor of Jordan, lobbied for Egypt's first national park. It is Ras Mohammed, an area of coral reefs off the southern tip of the Sinai Peninsula. The lobbyists contended that Ras Mohammed is endangered by modern fishing techniques that destroy coral reefs and by proposed

ill-planned private development.

This fall, an environmental protection agency will begin operating under the auspices of the Prime Minister's Office.

Recently, environment and ecology groups have been formed. Although there are now environmental activists in Egypt, many agree that the environmental movement here has a long way to go, for Egypt is beset by economic problem and is short of natural resources.

SPECIAL TO WER

## Population explosion in Egypt--of rats

CAIRO--Rats have been a major problem in Egypt since ancient times. But recent environmental disruptions have caused a rat population explosion here. An estimated 200 to 250 million rats are threatening people's health, livestock and property--and destroying up to 40 percent of the grain crops needed to feed a rapidly growing human population.

The reasons for the surge and resurgence in the rat population are several. First, the building of the Aswan High Dam harnessed waters that previously flooded rat-infested land. The problem was compounded in the early 1970s when people, who had fled the Suez Canal region to escape the 1967 Arab-Israeli war, started to return, displacing rat colonies that had occupied the abandoned cities. The introduction of high-yield wheat and rice around that time provided abundant food to support the swelling rat population.

Since then the problem has steadily worsened. Authorities in the Sharqia region, 110 kilometers north of Cairo, report that over seven million rats were killed in 1981. A report submitted to the People's Assembly (Parliament) by member Wafic Tubor, says 20 to 40 percent of wheat and rice crops are lost every year to rats. Even worse, they attack livestock and babies. The rodents now are believed to outnumber the human population (45 million) by four or five to one.

Dr. William O'Keefe, a Damascus-based Australian medical officer told WER: "It's a wonder Egypt hasn't been hit with a major epidemic."

Egypt's rodent problem first received widespread attention in 1978 with the launching of a joint British, French and Swiss anti-rat campaign. Initially, it was

a success, but a lack of maintenance and follow-up action led to the reappearance of rats in bigger numbers than ever. Dr. Roger Roedel, head of the newly formed Egyptian-German Rat Control Project attached to the Ministry of Agriculture, said, "After the campaign, the remaining two or five percent of the rats are better off. They have no competition, food in abundance and produce litters of up to 12 which become sexually active in six to eight weeks. There is also the factor that in some campaigns the rats' natural predators are killed off."

Dr. Roedel and his seven-man team are currently studying previous rat extermination campaigns in Egypt to determine the most effective methods for the country. Once a course of action is decided on, the team will lay the administrative foundation for an on-going program in the Ministry itself, later to be extended to the governorate and district levels throughout the country.

Money for the campaign--\$6.4 million--is coming from the West Germany Agency for Technical Cooperation. The program is expected to take from three to five years and will involve 50,000 people. JOHN M. BRADLEY

## A continuing MidEast problem...

PERSIAN GULF OIL SPILL UPDATE. The seven-month spill from wells in the Iraq-Iraq war zone goes on unchecked. Red Adair, the U.S. expert on fighting oil rig accidents, told Youssef Ibrahim of the Wall Street Journal, "It's the biggest and probably the worst thing I've ever seen. It is going to ruin the Gulf." He said the amount of crude oil spilling into the water exceeds 10,000 barrels a day, more than twice the estimate of the Iranian Offshore Oil Company. Adair returned in early August from a one-week inspection of the Gulf.

However, Arabian officials on the scene disputed Adair's estimates, saying the spill had had less severe effects than anticipated. Although the World Wildlife Fund confirmed a WER report earlier this year that large numbers of sea creatures and birds had died, experts said there was still no scientific evidence linking the deaths with the oil slick.

One reason for the comparative lack of ill effects is that seasonal winds have blown the slicks away from the Gulf nations over the summer. In September, the winds are expected to turn.



## Energy news in brief...

THE DECLINE IN WORLD OIL CONSUMPTION, which began in 1980, continues. Oil consumption for 1982 fell by three percent to 2.8 billion tonnes, and has dropped 10 percent since 1979.

However, world primary energy consumption remained broadly unchanged, said the BP Statistical Review of World Energy. It said that coal, nuclear and water-power increased their contribution to primary energy consumption at the expense of oil and natural gas.

SIX HUNDRED BARRELS OF CRUDE OIL WERE DELIBERATELY DUMPED into the Bay of Campeche as the Mexican government oil monopoly, Pemex, demonstrated its ability to clean up accidental oil spills. Miguel Tomasini, a Pemex spokesman, said the test was a "complete success."

The dumping took place near an offshore oil rig in the lower end of the Gulf of Mexico, off the Yucatan Peninsula. It is the same area in which the wild well Ixtoc 1 poured oil into the water several years ago.

A barge and three specially equipped boats contained the slick with a barrier 500 meters long and six meters deep, supported by cables and floaters. Three oil-collecting machines with a combined capacity of 3,640 barrels of oil per hour collected the oil which was pumped into the barge's 10,000-barrel tank.

Backup for the demonstration was provided by the Mexican Army and Navy which dispatched small craft into the area to spray oil traces with biodegradable dispersants.

BRAZIL'S STATE OIL COMPANY, Petroleo Brasileiro (Petrobras), is experimenting with a new form of energy, babassu nut shells. A gasifier using babassu shells--the first in the country--is now in use.

Gas from the babassu shells will run boilers and tractors at the company's asphalt plant in Fortaleza, in the state of Ceara. The gasifier is expected to save about US\$600,000 in foreign currency a year, the equivalent of 4,000 tons of oil.

This is the first large alternative energy unit of Petrobras to come onstream. It is the first co-current process gasifier with a large capacity ever known, Petrobras said (it produces five million kilocalories an hour). And it is the company's

first project to receive resources from a government-owned bank through a conservation program.

The fruit of the babassu nut has many uses: From its almond comes an oil used in the food and cosmetic industry; it produces a starch used for food, alcohol, as a feedstock and as an additive to drilling mud for oil wells; and the innermost layer can be transformed into high-grade coal, while the outermost layer can be used for burning or gasification.

BRITAIN'S PLANS TO DUMP RADIOACTIVE WASTE at sea this year have been "scuppered" by British seamen (WER, July 15, p.3), the New Scientist reported. It said this year's dumping would have involved a record amount of waste: 3,500 tonnes, compared with 2,700 last year and 2,500 in 1981.

In a related development, the weekly journal reported that the Japanese nuclear industry is abandoning its own plans to dump low-level waste at sea. In June, the Japanese Federation of Electric Power Companies launched a plan to switch to land disposal for the 330,000 drums of low-level waste currently on hand. The combination of the London Dumping Convention moratorium on disposing of nuclear wastes at sea and the opposition of Pacific Island states reportedly led to the change in plans.

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# World Environment Report

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## What is killing the great forests of West Germany?

BONN--No ecological event here has caused a greater sensation among professionals and laymen alike than the so-called Wald Sterben (dying of the forests) during the past two years.

Examination of sawn trunks of dead or seriously affected trees reveal stunted and irregular growth patterns, indicating that discolored branches and falling needles are terminal signs, not signs of new infection, as was commonly supposed. The infection may be as much as 10 years old before outward signs appear.

The species most affected are fir, spruce and Scotch pine which, with all other coniferous species, make up roughly 75 percent of the German forests.

Discoloration and the falling-needle symptoms were first observed on a wide scale about two years ago in the extensive forests of Bavaria and Baden-Wurttemberg in southern Germany. The affliction has spread rapidly throughout most of the country and is now estimated to affect up to 30 percent of all conifers. Deciduous trees are not noticeably affected since, according to current theory, they shed their leaves every year and with them the poison that is damaging their coniferous cousins. In restricted areas up to 90 percent of the conifers are now dead or are dying.

Foresters and environmentalists, not normally given to dramatic or exaggerated rhetoric, now speak routinely of it being "five minutes before twelve" for the German forests. Professor Peter Schutt, a forestry botanist from the University of Munich, estimates that by the end of this decade the German forests could be dead. Bernard Vogel, Minister-President of the Rheinland Palatinate and President of the Association for the Protection of German Forests, puts the financial damage to date at DM20 billion (\$8 billion).

Accepting uncritically the catch phrase that has been used to explain forest damage and water pollution in other parts of the world, notably in the United States and Canada, most Germans, including many professionals, have been content to blame the damage to their forests on acid rain. It is a tidy phrase, and the source of the acid is easy to explain: the electric power plants that burn around

35 million tons of coal a year plus the steel mills with a consumption of 18 million tons. Coal contains sulphur, which is released from the smokestacks in the form of sulphur dioxide ( $\text{SO}_2$ ). Combined with rain or snow it forms sulphuric acid, which kills the trees. Added to that are the country's 23 million motor vehicles, whose nitrogen-rich exhausts are duly transformed into nitric acid, equally as deadly as the power plants' and steel mills' sulphuric acid. In addition, there is a large segment of the population that is down on power plants as a matter of principle (solar energy and water power are much cleaner), and so the acid rain explanation quickly took root. Moreover, it is widely believed, there is an easy solution to the problem: scrubbing and filtering of stack gases.

#### ALTERNATIVE EXPLANATIONS

The only trouble with this theory is that it fails to take account of some pertinent facts and circumstances. The forest damage was first observed and has its greatest inroads in areas most remote from concentrations of power generation and metal refining. The industries in the worst affected areas are, with a few exceptions, generally small and notably clean. Further, while the principal coal burning plants do emit sulphur, the emissions are far below what they were 10 years ago. On top of that, West Germany's coal consumption of around 75 million tons a year is half what it was in the mid-1950s when there was no noticeable forest damage. In those days, little if any attention was paid to stack emissions. As to motor vehicle exhausts, while certainly much higher than they were 30, or even 10 years ago, the worst forest damage has not occurred in the densest traffic areas (e.g., the Ruhr District, notable also for its coal consumption), but in sparsely settled regions, often remote from major highways.

Observing these and other factors, Professor Hans-Achim Gussone of the Research Institute for Forestry at the University of Gottigen concluded that acid rain is too much of a pat answer to explain the whole phenomenon. He noted that in the Bavarian Forest trees closest to the Czech border (at least half of West German air pollution comes from neighboring countries, notably Czechoslovakia, East Germany, France) are thriving, while the western parts of the same forest are suffering

seriously. In a particularly badly stricken stretch of forest in North Rhine Westphalia there is a luxuriant growth of lichen on the trunks of dead trees, though lichen are more sensitive to acid than are the trees themselves. Prof. Gussone doesn't go so far as to say that acid has no ill effect. He simply maintains that relying on it alone as the cause blocks inquiry into other factors that may explain the phenomenon.

Another questioner of the acid rain explanation is Dr. Bernd Prinz, director of the North Rhine Westphalian Institute for Protection against Emissions. Analyzing land on which trees are dying, he found the death rate as bad on alkaline soil as on acid soil. Measuring  $\text{SO}_2$  concentrations in valleys and hilltops, he found the greater concentrations in low places where the trees were quite sound, while they were dying on hilltops where the  $\text{SO}_2$  concentration was lower. In one instance, trees were dying where the concentration was as low as five micrograms per cubic meter of air.

#### IS OZONE A CAUSE?

Dr. Prinz points out that sulphur concentrations in the West German air have remained constant since 1976 (oil refining and burning offsetting coal's decline), but that nitrogen oxide concentrations have increased by 50 percent since 1966. In the presence of strong sunlight, of which Germany has had a surplus in the past two years, the nitrogen oxide splits into an acidic atom from which ozone ( $\text{O}_3$ ) is formed. Measuring the ozone concentrations as he did the  $\text{SO}_2$  concentrations, Dr. Prinz found the greater tree damage in zones of higher  $\text{O}_3$  concentrations, i.e., at the higher levels where sunshine was stronger.

(UNEP, the UN Environment Program, recently stated that ozone from increased use of the automobile can cause decreased harvests. Auto emissions, interacting with sunlight, can extensively damage food crops by creating excessive ozone at ground level.)

The U.S. Crop Loss Assessment Institute put the crop damage due to automobile-induced excess ozone at \$3.1 billion for the U.S. alone. The USA accounts for 55 percent of the world's food supply.

UNEP says that ozone-dose experiments on crops had different effects: peanut production dropped 50 percent; winter wheat by 30 percent and soybeans by 45 percent. Corn, the most resistant of all, showed a

production fall of 10 percent.

The damage in the USA occurred from ozone present at about 0.05 to 0.07 parts per million in the troposphere. In the industrial countries, where almost every third person owns an automobile, crop losses due to auto exhausts may run into several billion dollars, UNEP calculated.)

Motor vehicles are a major source of nitrogen emissions, accounting for 45 percent of the total in West Germany, against only 19 percent from industry and 31 percent from electric power plants. Lead-free gasoline is seen as the first step in the reduction of nitrogen emissions from motor vehicles. It can be sold cheaper than leaded gasoline, though the cost of an engine that will operate efficiently with unleaded gasoline will cost DM1000 (\$400) more than today's engines.

The West German Government is considering legislation similar to that of the United States which would outlaw leaded gasoline. If such a law were passed, it would take until 1990, according to Interior Minister Friedrich Zimmermann, to have an appreciable effect on the atmosphere.

Meanwhile, the foresters continue to speak of 1990 as the death day of the forests.

J.M. BRADLEY

## Conflict over lead-free gas and cars

GENEVA--The Swiss Federal Council, the executive arm of Government, declared in response to a Parliamentary question that lead-free gas will not be available in this country until other European countries begin to make the shift.

In effect, the reply said, lead-free gas will probably not go on sale until the 1990s. However, a few days later, West Germany pushed forward the date to 1986.

The Swiss Council said that "the increased air pollution caused by motor vehicles represents a serious problem to which we must devote all necessary attention. The Council has taken steps to meet this problem.

"From Jan. 1, 1982, the maximum amount of lead in normal and super gas is not permitted to be above 0.15 grams per liter. Therefore Switzerland is--after West Germany and Sweden--one of the first European countries to have limited the

amount of lead permitted in gasoline.

"The present situation in Europe concerning lead in gasoline is basically determined by the directives of the Council of the European Community, according to which the maximum lead permitted is 0.40 grams per liter since Jan. 1, 1981. Member states can, it is true, prescribe tighter standards. However, it is expressly forbidden to prescribe a maximum ceiling that is less than 0.15 grams per liter. Because of the Community regulations, one finds nowhere in the European market lead-free gas, contrary to that which is found in the United States, Canada, Japan and Australia.

"At the moment, the Community Parliament foresees prescribing for 1985-86 a uniform lead level of 0.15 grams per liter.

"The present situation shows us that it will not be possible to meet the projected deadlines, in view of the slow evolution, in particular within the framework of the European Community. Furthermore, if Switzerland proceeded in an isolated manner to introduce lead-free gasoline, it would run into serious supply problems.

"In view of the problems raised, the introduction of lead-free gas calls for a process coordinated, to the extent possible, on a Europe-wide basis. One cannot underestimate the problems that this will entail, nor the time period it will demand. Given the present situation, we must be realistic and accept the idea that the introduction of lead-free gasoline would not be able to take place in all European countries--therefore, also in Switzerland--before the 1990s."

However, in its statement the Federal Council opened the door to a more rapid conversion by declaring that "it is prepared to collaborate actively in efforts leading to the introduction in all of Europe of lead-free gas."

Just days afterward, a West German Government spokesman said in Bonn that from 1986 on, new cars would have to be equipped to take unleaded gasoline.

He said that Bonn would pressure other European countries to do the same, but would not follow the principle of proceeding at the speed of the slowest country. He said that Chancellor Helmut Kohl felt that West Germany should adopt a pilot role in this matter.

The spokesman said that no date has been set for converting old cars to unleaded gasoline and that he assumed this would be a long-term process.

WILLIAM G. MAHONEY

## More coal can be used cleanly

PARIS--Many countries want to expand their use of coal, yet their utilities and industries have run into barriers of inconsistent regulations and public skepticism about the environmental effects.

A recent report by the Coal Industry Advisory Board (CIAB) of the International Energy Agency (IEA) maintains that it is possible to expand the use of coal in an environmentally acceptable manner using existing technology.

The report, "Coal Use and the Environment," was based on an 18-month study by the eight members of the CIAB Environmental Committee. They analyzed the practical environmental problems encountered at 31 power stations in 10 European and North American countries--all members of the Organization for Economic Cooperation and Development (OECD).

The CIAB report suggests practical action that can be taken by both government and industry to take full advantage of coal's competitiveness as an energy source, while continuing to give adequate protection to the environment:

For governments they suggest that:

- \* national and local environmental requirements be harmonized so that the diversity of coal supplies are widened and costs reduced.

- \* environmental approval procedures be consolidated, simplified and expedited so as to minimize uncertainties and the expense of unnecessary project delays.

- \* regulations be formulated so that industry has the possibility of responding with cost-effective control strategies.

- \* innovative environmental control technologies be encouraged through funding assistance for research, development and demonstration projects.

- \* an international approach be taken on planning, siting and construction so as to minimize uncertainties on potential trans-boundary problems.

For industry, the report suggests:

- \* a positive approach of trust and cooperation with regulatory authorities and the public.

- \* publicizing, with government, the steps being taken to ensure that increased coal use is compatible with environmental objectives.

- \* additional research to develop alter-

native by-product utilization of coal-derived combustion wastes.

The report recommends that governments balance their energy and environmental goals in order to develop consistency in national programs. The committee found inconsistencies in some countries where national energy programs call for increased coal use, yet there are restrictive national and local environmental regulations and policies.

In their study the Environmental Committee looked at three kinds of projects: new facilities, conversion of existing oil-fired plants to coal and company programs to upgrade coal quality at existing coal-fired plants.

The CIAB includes industry representatives from Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, Spain, Sweden, the United Kingdom and the United States.

SPECIAL TO WER

## Britain to clean up old coal mine sites

LONDON--Under any British government coal will play a major role in energy policy. The effect of coal mining on the environment has always caused concern here, increasingly so since the development of major new fields at Selby and Belvoir.

Recently, the Departments of Energy and the Environment published a white paper ("Coal and the Environment") that suggests action on the main environmental problems of spoil disposal, opencast extraction, subsidence damage and air pollution.

The Government, National Coal Board and local authorities will work together to experiment and study the costs and benefits of new methods of disposal, including use for road construction. Initially they will concentrate on the major Yorkshire, Nottinghamshire and Derby fields. It is recognized that there are limited alternatives to the continuation of local tipping.

Planning applications to develop new fields must now contain measures to restore the landscape, but the white paper recognizes a special need to tackle the legacy of old, derelict mining areas. Part of the government money provided for its derelict land program will therefore be specifically allocated to derelict coal fields.

By transferring planning responsibility

for opencast mining to local authorities, the white paper argues there will be stronger public control and greater attention to local needs. But it rejects a 1981 Energy and Environment Commission recommendation to limit the amount of opencast mining permitted. "In the longer term," it says, "the appropriate level of opencast output should be determined by the market, subject to the acceptability of individual projects as determined through the planning system."

This reliance on market forces is much in line with the philosophy of Mrs. Thatcher's government. Environmentalists wonder whether in practice this will provide sufficient safeguards for the environment.

Some subsidence damage can be prevented by the scrutiny of present planning regulations, the paper suggests. But to cover cases where it is unavoidable, an independent review of compensation procedures is recommended together with an extension of the Code of Practice to cover loss of market value on property.

For the transport of coal, the white paper endorses the 1981 Commission's recommendation that rail carriage should be preferred except where road and water can be proved better both environmentally and economically.

"Acid rain" has become a political as well as an environmental problem, the paper notes. It reiterates Britain's position: that more research is needed before responsibility can be allocated, and that Britain abides by the European Convention on the matter to which it was a signatory.

The National Coal Board and local authorities have a vigorous part to play in the future to safeguard the environment, the paper concludes, and it ends on an optimistic note: "Most of the potential environmental problems from any increased coal production and use can be overcome by the more widespread application of current best practice."

BARBARA MASSAM

## Coal-power perk: a park for Israel

JERUSALEM--Residents near Israel's first coal-fired power plant in Hadera heard good news recently: Plans for a 70-hectare park promised as "compensation" for the power plant seemed to be materializing. Second-

ly, no violations in air quality standards were recorded during the first year of the plant's operation.

The park should be ready in three-four years. Planned for both banks of the Hadera River near the power plant, it is Israel's largest-ever national investment for a park. The Israel Electric Corporation (IEC), the Ministry of Interior and the Treasury will all share in the US\$12 million project. In addition to conventional park features, an artificial lake will be fed by the plant's cooling water, providing year-round warm water recreation.

Data provided by the 12-station air quality network in the region show pollution levels well below threshold levels established for the plant (50 percent of the Israeli standards for 99-100 percent of the time). While only two units were in operation during the first year, experts are fairly confident that air quality violations can be avoided once all four units of the 1400-megawatt plant are working.

One reason for optimism is the operation of an Intermittent Control System (ICS) at the site since the summer of 1982. This system was adapted from the SDEL (Sulphur Dioxide Emissions Limitation) program of the Tennessee Valley Authority in the USA. It signals critical levels requiring the institution of immediate safety precautions to avoid violations. The method will be further evaluated and refined under conditions of full power plant load and higher-sulphur 2 percent coal.

Meanwhile, plans for Israel's second coal power complex south of Ashkelon are proceeding, even as residents contend that the 1100-megawatt power complex will cause ecological and/or psychological damage to the development of tourism and recreation in the city. In accordance with the Hadera precedent, the municipality is now demanding its own compensation for the \$1 billion plant--a \$20 million marina.

SHOSHANA GABBAY

## More on Israeli coal..

FOLLOWING ACTIVATION OF THE COAL-FIRED power plant at Hadera, other industries in Israel are considering the switch to coal.

The Environmental Protection Service in the Ministry of the Interior is not opposed. It has prepared guidelines for the conversion of industry to coal and is directly involved in reviewing the environmental aspects of the switch in each particular case.

## Israel chalks up 10 years of success

JERUSALEM--Israel's Environmental Protection Service is 10 years old. Recently its director, Dr. Uri Marinov, surveyed its successes and shortcomings.

Achievements included:

- increased awareness of environmental protection on the part of the general public and government;
- incorporation of environmental considerations into the physical planning process;
- establishment of local environmental units throughout Israel and appointment of environmental advisors to regional planning and building councils;
- utilization of the environmental impact statement as an important means of preventing new nuisances from arising;
- introduction of a "plan for the prevention of environmental nuisances" into the licensing conditions of Israel's first coal-fired plant at Hadera;
- establishment of monitoring procedures and networks for water, air and noise.

A recurrent motif of environment week ceremonies held at the Knesset (Parliament) was a call for establishment of an environmental protection agency in Israel. This agency would have the necessary clout to deal effectively and comprehensively with such problems as air and water pollution and the disposal of toxic wastes. It is widely felt that despite the progress achieved, a transformation of the EPS into a full-fledged government authority will be required to bring about necessary changes in environmental laws, enforcement and various programs.

SHOSHANA GABBAY

## Malaysian environment not a pretty picture

KUALA LUMPUR--When he talks about Malaysia's environment, Dr. Sham Sani paints a very grim picture. There is, he says, a steady deterioration in the quality of air in the lush, jungled country. Streams are heavily polluted. And during the past decade almost one-third of the country's forest resources has been destroyed or severely damaged.

Dr. Sham, a professor at Malaysian University (Universiti Kebangsaan Malaysia),

is a man who knows. He has been monitoring atmospheric conditions for several years as well as conducting other on-going environmental studies.

"After looking over the data for the past few years, I feel the quality of air has deteriorated," Dr. Sham says. "It is not that the Department of Environment is not doing anything, it is just that the number of motor vehicles is way ahead of any control measures." He cites a 1982 study which said that many, if not most, of the 2.6 million motor vehicles in Peninsular Malaysia were poorly maintained and using fuel with one of the highest lead contents in the world (0.84 gm per liter). "Other than smoke, there has not yet been any control over vehicle emission, especially with respect to hydrocarbons, carbon monoxide, nitrogen oxide and sulphur oxide."

Motor vehicles are not entirely to blame for the deteriorating atmospheric conditions in the country, Dr. Sham says. There also is a growing problem of smog and haze, both of which are relative newcomers to Malaysia. He urged the government to conduct an intensive study to deal with this problem before it becomes worse.

Much more worrisome than the atmospheric pollution is the destruction of forest resources and the absence of a sound water resources management policy. He refers to this as "the rape of vegetation." To support this rather harsh description, he cited statistics published by the Malayan Nature Society: "In 1957, Peninsular Malaysia had 9.5 million hectares of forest land, but the latest figures for 1981 show that only 6.3 million hectares of forest remain." For this, he puts the blame on bad management and poor planning.

According to the Red Data Books published by the World Wildlife Fund, 17 Malaysian land mammals are on the verge of being extinct, and 13 bird species are endangered.

The destruction of forests is also closely related to the water resources issue. Not only has it depleted catchment areas but it also is causing soil erosion, flooding and myriad other problems. The Department of Environment is making headway in some areas of environmental protection, Dr. Sham says. But the key to truly significant progress is in more public awareness.

In a related area, the Department of Environment (DOE) admitted that Malaysian waters are becoming increasingly polluted, and said if appropriate measures are not taken, the problem may get out of hand.

The DOE said the pollution came from both

onshore and offshore sources. Onshore wastes were caused by palm oil mills, rubber factories, residential areas and hotels. Offshore, the main culprits were spills from oil tankers and the discharge of oil from ships.

The DOE has set up 109 air quality stations and 20 tar oil stations throughout Malaysia to monitor pollution. Another 37 air quality stations and 37 tar oil stations are expected to be set up soon in Sabah and Sarawak.

To date, 36 factories have been brought to court for failing to comply with the Environmental Quality Act 1979. On oil spills, 23 cases were reported in 1981 and 17 in 1982. Even though penalties for discharging oil range from about US\$200 to US\$1,000, there is still excessive oil discharged in the Strait of Malacca, and such acts are difficult to monitor because of the vast area.

SPECIAL TO WER

## Hong Kong eco-report: little accomplishment

HONG KONG--The Environmental Protection Agency (EPA) here has just published its annual report on pollution, and its control, in the colony. The net result: Little has been accomplished.

According to the report, the long-awaited noise control bill is still a long way off and is not expected to go before the Legislative Council before late 1984. Now, the report states, "existing noise control legislation is limited and fragmented, and the noise control bill is being developed to provide a logical framework." New controls recommended by the EPA include curbing excessive noise between 7 a.m. and 7 p.m. However, until legislation is passed nothing effective can be done.

The EPA is also waiting for draft regulations under the water pollution control ordinance and the waste disposal ordinance concerning the control of toxic waste. This is particularly needed to combat pollution in streams in rural areas. EPA findings show that 60 percent of the rivers surveyed in 1972 were classified as "clean," but now only 30 percent of these can be so classified. The main problem is agricultural wastes, particularly pig wastes, which are hosed into nearby rivers. To solve this problem the report concluded that it would take HK\$340 million (about

US\$47 million) in capital expenditure and HK\$110 million (US\$15 million) in recurrent expenditure. Ten water control zones are going to be set up by the Agency covering all of Hong Kong to help combat the growing seriousness of water pollution.

Besides water pollution, waste disposal is another area of great concern. Some 6,500 tons of refuse is disposed of daily via various government facilities. This is expected to increase to around 12,000 tons a day by the end of 1993. The EPA is conducting a study to examine possible ways of reducing waste generation at the source to solve the problem.

Another major area where the Agency is going to have to step up its activity is air pollution. Atmospheric dust is of particular concern. The principal sources are construction and reclamation sites. As yet the EPA has no equipment with which to measure the size of dust particles. Hong Kong's dust levels were "quite high by international standards," the report said.

The report also dealt with the results of studies undertaken to assess lead levels in dust and air. These were well below the "action levels" adopted by the Greater London Council, the report added. However, the EPA has commissioned two prominent British scientist to study the sources and pathways of lead in the environment.

Basically very little has been achieved in the past decade, as Hong Kong's prosperity has come at the expense of the environment. Epcom, the Environmental Protection Advisory Committee, had hoped that enlargement of the EPA would mean that the formulation of legislation would be quicker. It does not appear to have made a difference. As Henry Litton, chairman of the special committee on noise, said, "Time and time again we have been told that a draft will be forwarded to the committee for consideration, (but) this has not materialized."

SPECIAL TO WER

## East helps West...

JAPAN SENT A FIVE-MAN MISSION TO TURKEY, at the Turkish government's request, to help work out comprehensive measures to combat Ankara's increasingly serious air pollution. The Japan International Cooperation Agency, with cooperation from the Japanese Environment Agency, is now analyzing the findings of its preliminary survey mission to determine the areas in which Japan can help Turkey.



## Brazilians sue state over Alcoa smelter

LONDON--People who live around Sao Luis in north-east Brazil have brought suit against the state of Maranhao, alleging that it illegally handed over land to the Aluminum Company of America (Alcoa). This is land on which the mining and smelting giant is now building an aluminum smelter. The popular action also claims that Alcoa's operations are damaging the environment.

The smelter, Alumar, is part of the huge Carajas mining project, spread across tens of thousands of square kilometers on both sides of the lower reaches of the Amazon River. Brazilian and foreign companies plan to extract iron ore, manganese, copper, bauxite, nickel and gold during the rest of this century and beyond. Brazil hopes that Carajas will ensure a permanent trade surplus for the country.

While the current global economic recession has been causing most investors in Carajas to scale down their commitments, Alcoa has been pressing on towards its goal of starting output of alumina and aluminum by the middle of next year.

Local citizens' groups are saying in papers filed in June, 1981, that the governor of Maranhao and the mayor of Sao Luis, the state capital, were in breach of state and Brazilian federal constitutions when, in 1980, they sold 3,700 hectares on which Alcoa would build its smelter, in association with its Anglo-Dutch partner, Billiton. The officials reserved an adjoining 6,300 hectares in case the company needed them. The governor also gave Alcoa a 50 percent discount on its water taxes.

Yet, a few days before the documents were signed, a committee of experts appointed by the state to check on Alcoa's request criticized the company's proposals because they included no assurances as to how residents and the environment might be safeguarded. Alcoa has said since that it will use water from its own wells and will monitor the effect of its activities on soil and water in tandem with the Maranhao State Environment Office. But that body has admitted that it has neither the technicians nor the equipment necessary for such monitoring.

The residents complain of choking dust from the construction site. They are worried that there will be pollution by toxic waste and dangerous demands on ground water reserves.

Recently, a delegation from the World Council of Churches met with Alcoa officials at the company's Pittsburgh headquarters to express their concern about this project. Alcoa spokesmen told WER that the company is preparing a report to its shareholders on the social and environmental aspects of its Brazilian project.

Alcoa plans to bring bauxite to the smelter by river and sea at first, from deposits at Trombetas on the far, north side of the river. Later a railway is to transport iron ore, manganese and bauxite. Opposition politicians and scientists in Brazil argue that the railway would pass through lands occupied by Indian tribes and would become the spine of an unregulated, jungle-razing colonization of the kind already leading to bloody clashes and much loss of topsoil in other parts of the Amazon region.

Although Brazil's critical need for foreign exchange is a strong motive for pressing on with all elements of Carajas, the current cuts in public spending, occasioned by an austerity program designed to help meet the country's vast foreign debt, are the environmentalists' best ally. Even Alumar might well be delayed, if not in court, by the Federal government's difficulty in finding the money to complete on time the Tucuruí hydroelectric project, on the River Tocantins, on which the smelter would depend for power. ROBERT DEL QUIARO

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# World Environment Report

News and Information on International Resource Management

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## UN votes to protect people from harmful imports

NEW YORK--The UN General Assembly, by an overwhelming vote of 146-1, has passed a resolution to protect people from imported products harmful to health and the environment. The U.S. voted against it, primarily for financial reasons.

The seven-point resolution, arrived at after weeks of intense negotiation, stringently controls the exports of banned, severely restricted or--in the case of pharmaceuticals--non-approved products. It further mandates that the UN make information on them available by compiling an easy-to-understand list of these products--primarily pesticides and pharmaceuticals--and make it available no later than December of this year. It also requests all governments and UN organizations to provide information and assistance.

The idea of the resolution was first raised by Venezuela this past July at a meeting of the Economic and Social Council in Geneva. After weeks of negotiation between representatives of the 23 developing country co-sponsors and delegates from the industrialized West and East, a third and final draft resolution was approved. The interesting aspect of the final vote was that it received near-unanimous approval not only from the developing countries but from all industrialized nations, with the exception of the U.S.

According to sources both at the U.S. Mission to the UN and at the State Department, the primary reason for the American nay vote was financial. Implementing the resolution would require about \$90,000 in additional funds, a UN source said. A spokesman for the U.S. Mission said they were relatively "happy" with the basic approach of the resolution, but "what was critical in our vote was the financial aspects. That tipped the balance." Said the State Department source, "A decision was made to vote against proposals with new financial implications. For good or bad we will vote against resolutions calling for new money." The U.S., they concurred, wants to see the UN live within its budget.

Enrique Ter Horst, the Venezuelan delegate to the UN, said after the vote: "We know that the negative vote of our good friends on the United States delegation is principally a response to budget consider-

ations linked to the financial implications of this resolution. We know also that the United States practices and obliges its exporters to practice some of the strictest regulations on the export of these types of products for the protection of the importing countries." For this reason, he concluded, "We are sure that our U.S. friends will cooperate completely with the Secretary General in compiling the consolidated list" of products harmful to health and the environment.

A State Department official queried by WER said, "The United States will make its information available. We will cooperate and share with them."

Two North American non-governmental groups sharply criticized the U.S. vote. Said Jacob Scherr of the Natural Resources Defense Council: "The United States had, until recently, been the world's leader in addressing the problem of the dumping of banned, hazardous products in developing nations of the world. It is ironic that while other nations were beginning to follow the U.S.'s lead, the present Administration is making an about-face on this critical international problem."

Ward Morehouse, President of the Council on International and Public Affairs, stated, "The present Administration, in standing alone in opposition to this resolution clearly appears to be more interested in adhering to a 19th century free-market ideology than in responding to the growing consensus worldwide regarding the export of banned, dangerous products in the global marketplace.... It is very much in our national interest--and that of the U.S. business community--that all countries play by the same rules."

According to these NGOs, the worldwide trade in chemical products rose from \$22 billion to \$96 billion between 1970 and 1978, while export of these products from the industrialized to developing countries increased from \$5 billion to \$24 billion. "In recent years, numerous examples of the export of banned, withdrawn or non-approved products have come to light, including marketing of banned drugs, pesticides, other consumer products (such as unsafe medical devices), and shipments abroad of hazardous wastes," they stated in a press release.

But as Ambassador Ter Horst said in his statement to the General Assembly, he felt real satisfaction that the United Nations "have taken a clear and decisive position in favor of a solution to this problem that affects so many human beings, in particular

the inhabitants of the majority of countries in the developing world.... We have proved that the United Nations, and in particular the General Assembly, is a forum where it is possible to realize concrete agreements of tangible consequences to benefit the men, women and children of the entire world."

LIBBY BASSETT

## Pesticides overuse lessens crop yields

BANGKOK--Excessive use of pesticides in the last few years has led to such a high level of resistance among the various agricultural pests found in Thailand that farmers are losing some 40 percent of the total annual yield. In terms of cash the loss costs them about US\$873,362,445 a year, the Thai Department of Business Economics reports.

Chemical control is no longer reliable, the report found, and is becoming less viable economically each year because of the farmers' excessive use of pesticides. The problem lies in the facts that they do not fully understand either how to employ these chemical agents or know the characteristics of the various insects. This lack of knowledge has led to the widespread misconception that by using greater doses or stronger pesticides the problem will easily be solved.

According to the Department of Business Economics report, Thailand spent more than US\$2.6 million importing pesticides last year. The final cost to the farmers has been about US\$61 million. Yet this figure could have been much lower if these chemical agents had been properly used, which also would have contributed towards slowing down the resistancy growth-rate.

Another problem of great concern is the health hazards arising from excessive pesticide usage. There have, in recent months, been a number of cases of apparent poisoning resulting from crops, particularly vegetables, which have received far greater doses of pesticides than are necessary.

However, some good has come out of this situation. Wider studies are now being carried out on alternate methods of control through integrated pest management. These methods may end up being cheaper, safer and more effective than pesticides.

TONY OLIVER

## Panamerican ecology & health center open

MEXICO CITY--Prevention and control of environmental chemical risks is a priority concern of the Panamerican Center for Human Ecology and Health. As part of the Panamerican Health Organization and World Health Organization it serves Latin America from its headquarters just outside Mexico City.

The center's basic role is three-fold: to create ties between itself, professional specialists and governments in order to improve the health of Latin American peoples; to put into practice methodologies to avoid the adverse affects on health which generally accompany economic development and social change; and to support and design appropriate programs for training and education in environmental and occupational health.

The center, known as ECO, prepares educational materials and technical guides relating to workers' health; ecological strategies for the control of illnesses; does environmental evaluations of development projects, especially industrial plants and dams; and has developed an information system with special focus on occupational health and hazards to workers.

ECO concentrates not only on public health matters but on all aspects related to community development, including agriculture, cattle raising, foods, industry, education, housing, public works and communication.

As part of its work, ECO recently began publishing a newsletter, Human Ecology and Health. The center has eight fulltime professional staff workers, among them specialists in environment, epidemiology, ecology, occupational health, toxicology, social anthropology, systems analysis and management of information systems. Besides describing the recent work of the center, the newsletter announces courses, seminars and workshops to be held by ECO or other world organizations in related fields and provides a listing of ECO publications.

An agreement between ECO and the Mexico City regional office of the UN Environment Program was signed a year ago, setting out areas and mechanisms for joint cooperation. Signing were the director of the Panamerican Health Organization, Dr. Hector R. Acuna, and the UNEP director for Latin America and the Caribbean, Jose Lizarraga.

KATHERINE HATCH

## Norway proposes new, stiff chemical rules

OSLO--The Norwegian Environment Ministry has proposed new, stiffer stipulations on the labelling and sale of dangerous chemical substances and products.

The requirements, which take effect March 1, are largely the same as those applying within the European Economic Community (EEC) area but cover even more substances. Norway is not an EEC member country.

The stipulations cover domestic production as well as import, classification, labelling, packaging and sale. In principle they embrace all chemical substances that can represent a danger to health.

The list of dangerous substances prepared by the Norwegian authorities is based on the EEC list and covers 1,200 items, 210 more than on the EEC list. About 60 substances fall under a different classification in Norway than on the EEC list.

Excepted from the new stipulations are products which are subject to special legislation: pesticides, medicaments, food, cosmetics, wine, spirits, beer and tobacco.

The manufacturers or importers are to be responsible for labelling in accordance with the following classification: very poisonous, hazardous to health, corrosive, irritant, allergen, carcinogen.

"This will allow consumers, if they wish, to select other products instead," said Environment Minister Wenche Frogn Sellaeg when presenting the new stipulations at a press conference recently. She added that one important reason for the new stipulations is that the number of chemicals in new products has increased in recent years.

SPECIAL TO WER

## New chemical news...

OECD MEMBER STATES--the 24 industrialized free-market nations--are now bound by an OECD Council Decision to provide sufficient information on the health and environmental effects of chemicals before they are marketed. The decision concerning the Minimum Pre-Marketing Set of Data (MPD) was adopted after lengthy negotiations. It will serve as a basis for meaningful first assessment of chemicals, whose sales now exceed US\$300 billion annually. As the only internationally recognized data set, it will be the benchmark against which countries can harmonize their chemicals legislation.

## Portugal approves national eco-law

LISBON--The Portuguese government approved its first nationwide environmental law late last year, a law that will be supported in the 1983 plan and budget.

The law reorganizes the Ministry of Quality of Life into four departments: territorial planning, quality of life (to work with other ministries and local town councils on air and water pollution), natural resource conservation and sports. A special cabinet will deal with consumer problems.

Ministry approval will be necessary for all projects--urban, agricultural or industrial.

Ribeiro Teles, Minister of State for the Quality of Life, said the Ministry's aim is not to delay or obstruct needed investment projects but to "select investment appropriate for the country without destroying the 25 percent of the soil left that is suitable for agriculture." A recent study showed that 60 percent of workers' income comes from the land and 75 percent of what they eat is produced by them. The Minister stated: "An effort should be made to keep people on the land in order to develop a regional economy and stagnate the growth in city population--a trend being developed in Europe."

With the new general law approved, the Ministry is preparing regulations that town councils and government officials must follow. They should be in effect by the end of the year. The Ministry will also set up interministerial teams which, with the town councils, will work on cleaning up the five worst polluted areas in the country: Sines, Barreiro, Lisbon, Estarreja and Setubal--all industrial centers.

Environmental awareness has been growing. A few months ago, fishermen blocked the entrance to the Sines industrial port until a chemical company put in pipelines to avoid polluting the fishing area. Citizens frequently block factories until anti-pollution measures are promised. Groups defending "national patrimony" have sprung up all over the country and are now a strong lobby. Ecological causes were a major issue in the December local elections with all parties taking an avid interest in the environment--something new in Portuguese politics.

MARY MILLS

## South Africa's new eco-act criticized

JOHANNESBURG--South Africa's Environment Conservation Act, promulgated in 1982, has been criticized by environmentalists as a mere sop despite the fanfare that greeted its drafting.

The White Paper--a statement of intent that preceded the Act--was entitled a National Policy Concerning Environmental Conservation. It was welcomed by all non-governmental conservation bodies.

The White Paper called for centralizing the country's official conservation bodies so that resources and finance could be rationalized. But the provincial conservation bodies, particularly the Natal Parks Board, felt their power would be eroded so the resultant bill was watered down.

Environmental lawyer Andre Rabie of the law faculty at Stellenbosch University commented: "There was no way I could see the provinces losing control of their activities, but this was the way some saw it."

After the Act's promulgation it was hailed by Professor Rolf Botha, chairman of the Habitat Council--a non-governmental conservation body--as placing South Africa in the vanguard of the conservation movement. He saw it as a positive sign of increasing State responsibility towards the environment.

But Professor Rabie says the Act is a misnomer: It has no environmental policy statement, and it does not supercede any other Acts of Parliament. In short it is an Act without teeth.

It provides for a statutory Council for the Environment which will draw its members from both the public and private sectors. This, Professor Rabie believes, is a positive move, but the council will merely advise on the coordination of environmental affairs.

However, the Act does allow for the appointment of management committees for sensitive natural areas. These will be areas such as mountain catchments or wetlands in private hands where land-use can now be frozen to ensure that environmental destruction is kept to a minimum.

Professor Rabie says the Act was really promulgated to pave the way for provincial legislation regarding noise control and solid waste management. Even there he is unhappy as there are no guidelines, and he

feels the two issues should have received separate legislation.

"What I would really welcome is a National Environmental Policy Act such as that in the United States," he says. "We need to have obligatory environmental impact assessments for sensitive projects, but this sort of legislation is not even on the horizon."

Industrialists and developers regard environmental impact statements as an expensive obstacle to progress and frequently quote U.S. examples of how construction has been held up for years at great cost.

Like most other countries, Professor Rabie points out, environmental legislation in South Africa occurs as parts of many acts. But as there is little coordination between government departments the legislation is frequently abused. **MIKE NICOL**

## Eased Norwegian laws...

THE NORWEGIAN GOVERNMENT has proposed changes in present pollution laws, but Environment Minister Wenche Frogn Sellaeg says it will not constitute a weakening of the legislation.

She said the proposal allows emissions which do not cause damage or inconvenience "worth mentioning" to take place without having to obtain special permission from the environment authorities.

The reason for the proposed changes was to avoid unnecessary burdens being placed on the environment authorities by matters which have little significance in a pollution context, Ms. Sellaeg said.

## Turkish polluters to pay big fines

ISTANBUL--A new bill with heavy fines for causing sea and air pollution is now under consideration by the Turkish Prime Minister's office. It is expected to be presented soon to the Constituent Assembly and to become law.

An existing law on sea pollution dates back to 1927. Due to devaluation of currency over the years, its fines are not realistic under present conditions. Many industries and maritime companies do not mind paying the light fines. Under the new bill, ships causing sea pollution will be

punished by a fine of from 250,000 lira (\$12,000) to 10 million lira (nearly \$50,000). Industrial plants and private houses causing sea pollution will receive a fine of 20,000 lira or \$100 dollars to 500,000 lira or \$2,500. As to air pollution, those responsible for causing it will receive a fine of 100,000 lira (\$500 dollars) to 1 million lira (\$5,000 dollars).

Informants reporting cases of air or sea pollution and who can prove it with evidence will receive 10 percent of the fines collected.

The bill prohibits the construction of houses, industrial plants, restaurants, coffee houses, beach facilities, etc. along seashores without the permission of port authorities.

The recently enacted Turkish Constitution includes for the first time a provision regarding the environment. The 56th article of the Constitution says: "Everyone is entitled to live in a suitable and healthy environment. It is the duty of the State and the citizens to develop the natural environment, to protect environmental health and to prevent environmental pollution."

**SAM COHEN**

## Idled Greek ships foul coastal towns

ATHENS--Merchant Marine Minister George Katsifaras said that nothing can be done about the large number of idle ships polluting Greece's coastal towns. The ships have been laid up and anchored at various points along the Greek coast and are the most visible sign of the country's acute shipping crisis.

Katsifaras admitted that protests had been received from local administrators and communities. "Steps have been taken to keep environmental pollution down," he said. "We have tried to explain to these communities that although we are aware of the problem, there is no other solution."

Over 1000 vessels, almost a third of the Greek merchant fleet, is presently laid up, a result of the international recession and rising costs. Officials at the Greek Union of Shipowners said that there are another 86 applications in the pipeline for further ships to be anchored off the coast as a result of the drop in demand for cargo space.

**MICHAEL SKAPINKER**

## Top men leave major eco-organizations

NEW YORK--Unexpected changes at the top of two of the world's biggest environmental organizations took place toward the end of last year.

The UN Environment Program announced that its Deputy Executive Director, Peter Thacher, was taking early retirement so he could join the new Washington-based World Resources Institute, founded by Gus Speth with a \$15 million grant from the MacArthur Foundation (WER, June 30, 1982, p.1). Speth was chairman of the policy-making U.S. Council on Environmental Quality during President Carter's administration.

In Switzerland, Lee Talbot, Director General of IUCN, the International Union for Conservation of Nature and Natural Resources, announced unexpectedly that he was resigning "for personal reasons" still not public by the time WER went to press. An American, like Thacher, Talbot had been in the post since August 1980. The Talbot resignation created logistical difficulties at IUCN since his deputy, Peter Sand, had announced his resignation a short time before--to go to UNEP's new environmental law section. Previously, Sand was Director General of CITES, the Convention on International Trade in Endangered Species. Sand, who was to leave in February, reportedly might stay as Acting Director General until Talbot's successor is in place.

One interesting possibility for this IUCN post--a name mentioned to WER by some involved in the process--was Peter Thacher. But the plan as of this writing was that he would go to the World Resources Institute as its first distinguished fellow.

Gus Speth, President of the Institute, said, "We're excited about the prospect of Peter coming here because of his long experience in global issues."

### Where Thacher and the \$15 million will go

The World Resources Institute is a center for policy research. With its \$15 million, which was granted for a period of five years, it hopes to stimulate and support leading thinkers from many fields and countries who will study global resource questions and create policy options. Right now, Speth said, "We're brainstorming with our advisors on maybe a dozen issues and areas. Out of that will come a handful of projects." Some of the broad areas and is-

sues he mentioned are agricultural resources, chemicals and health, energy/climate/industrial resources, living resources, and the cross-cutting problems of information, institutions and governance.

"We're getting a fix on our initial projects right now; this will take us through the first quarter of 1983," Speth said.

"We hope in about a year to be turning out a steady stream of policy studies on global resource issues." But, he cautioned, "This is the beginning of a process of engagement in policy aspects, not an end in itself." He hopes these policy studies will be "practically useful" to governments, industry and other policy-making sectors.

LIBBY BASSETT

## First report on India's environment

BOMBAY--India's first "State of the Environment Report" was recently published\* by the Delhi-based Center for Science & Environment, a voluntary organization manned by journalists.

It puts together authentic and accurate data on various facets of development activities with environmental consequences and serves to highlight the inadequate role of the government either in disseminating such data or even bothering to collect it.

The 200-page report stands out for two important reasons. One, it takes a "people's" view of such problems and thus comes out with startlingly new insights. In commercial forestry, for instance, the planting of eucalyptus is described, by one environmentalist, as an "ecological terrorist" for wreaking havoc on the surrounding vegetation. Nevertheless, monocultures of eucalyptus and similar species of fast-growing trees are favored in state-sponsored plantations. For once, data on the environment just doesn't detail levels of pollution, soil loss and the hazards of big dams but also spells out what these mean to the lives of ordinary people.

Even more surprising, however, is the "feminist" bias of the report. Say the score of authors in a joint statement appended to it: "Women invariably suffer more from unbalanced development and environmental degradation.... We find women more interested in the restoration of the environment, which provides the family with its basic needs, than its cash-hungry men."

In the Chipko movement, women took the initiative in stopping contractors from wielding their axes: They had to fetch firewood from ever-increasing distances every day.

The report is, paradoxically, depressing and optimistic. On the one hand, the authors point out that they "have been able to develop a dramatic picture in which the misery of the human condition in our country is mirrored by the sweeping degradation of its environment." At the same time, the report mentions people and institutions who are doing their best, however modestly, to arrest this inexorable process. The authors hope that this overview, which enables the reader to see the inter-connectedness of the problems, will lead not just to enlightenment but to action.

DARRYL D'MONTE

*\*The report is available from the Center for Science & Environment, 807 Vishal Bhavan, 95 Nehru Place, New Delhi 110 019, India, at US\$20 or from Earthscan, 1319 F Street, N.W., Washington, DC 20004, U.S.A.*

## Norway fights sealing and whaling bans

OSLO--Norway is fighting international rulings that would shut down its sealing and whaling industries.

Late last year, the EEC Commission proposed prohibiting the import of sealskins from Norway into Common Market countries.

The President of Norway's Storting (parliament), Odvar Nordli, told the Commission in Brussels that seal stocks are not endangered by the limited Norwegian catches. He emphasized another ecological point of view: What will happen to fish reserves if seals are allowed to multiply unhindered?

Nordli also expressed strong regret that the EEC Commission rejected a Canadian proposal for a thorough investigation of catch methods, which, he said, could have cleared up a number of questions.

"Long experience has made me aware of the fact that emotions are also a part of politics," Nordli said. "I would not like that trading connections between Norway and the EEC should be determined by emotions rather than realities."

And Norway's Minister of Fisheries Thor Listau, summing up his government's argument for protesting the International

Whaling Commission's ruling to ban all commercial whaling as of 1986, said that whaling is essential for the continued existence of many small settlements along the Norwegian coast. He said further that the catch is an element in the total management of marine resources. And, in addition, he concluded, there are biological grounds for continued whaling.

Norwegian authorities assert that minke whale reserves are not overtaxed, an assertion supported by the IWC subcommittee on the minke, which voted unanimously in favor of permitting continued Norwegian hunting of this species. The scientific committee of the IWC voted 87 to 3 in favor of continuing the whaling.

Minister Listau said research on more humane killing methods is in progress.

When queried on the U.S. threat to impose fish import restrictions against Norway if it disregards the ban, Listau said he was confident of American understanding of the Norwegian viewpoint. The Minister said, however, if the U.S.A. actually imposes the import ban, then Norway must reassess its decision to continue whaling. Import restrictions could involve a loss of about US\$50 million a year for Norway (the first-hand value of whalemeat was \$4.5 million).

SPECIAL TO WER

## Iceland's fisheries have a seal problem

REYKJAVIK--In Iceland, a country that lives on fish and fish products, the seal is a problem. Not only does it devour some 50,000 tons of seafood a year, but it harbors a parasite, the so-called ringworm, that in one phase of its life cycle infests cod and several other valuable fish species.

Freezing plants have to handpick it from the fish on lighted tables. The cost is enormous, and it is very strenuous work.

Since the price of sealskins has been going down in recent years (nature preservation organizations have succeeded in cutting seal fur almost out of the fashion market), Icelandic farmers, who for centuries hunted seals as a sideline, have now almost given it up. Therefore, the number of seals, both the common seal and the more valuable grey seal, have increased enormously in recent years--and the ringworm problem as well.



This led to a conflict last summer between fisheries and conservation organizations. A committee headed by the chief of the Icelandic Fisheries Laboratories with representatives from diverse organizations in the fisheries business, decided to pay the farmers bounties for every lower jaw of a seal presented (this would at the same time serve as material for further research on age groups in the seal population.) The freezeries said they would accept and pay for seal meat as well, which in the past had always been utilized.

No sooner had this been advertised than strongly worded protests started pouring in to the government, calling for a stop to the bounties. The Nature Preservation Council (NPC) complained that neither it nor the Marine Research Institute had been consulted. They said the connection between ringworms and the seal population was not fully known and called for much more intensive research. They asserted that much of the seal meat has not come to the freezeries as expected, meaning that some hunters produced the lower jaw for the bounty and left the rest on the spot. The council considered it a possible danger for bird life, as some, such as the eagle, could get into the seal oil.

The reaction of Fisheries Minister Steingrímur Hermannsson was that such bounty payments were not contrary to any law in the country. The NPC then called for the necessary laws. The ministry recently formed a committee to look into the matter.

ELIN PALMADOTTIR

## More ocean protection...

OBJECTIONS TO THE 1986 WHALING BAN were filed recently by the three leading whaling nations--Japan, the Soviet Union and Norway--as well as by Peru, reportedly under pressure by Japan whose Taiyo Fishery Company owns the Peruvian whaling operation. This could make the ban a paper victory.

Former Japanese Prime Minister Suzuki--over the opposition of several government agencies--pushed the objection decision through his cabinet in the last days of his administration. He has strong ties to fishing and labor interests. The new Japanese prime minister and cabinet may be forced to reconsider the objection if they face heavy U.S. sanctions, according to the U.S. wildlife consortium, Monitor.

THE UN LAW OF THE SEA CONVENTION was signed by 117 states, the Cook Islands and the UN Council for Namibia this past December in Jamaica after 14 years of deliberations.

The U.S. and United Kingdom, which did not sign, joined the view that, for those parts of the treaty which codify existing international law, the rights and responsibilities of all states would be the same for both parties and non-parties to the Convention, Citizens for Ocean Law reported.

Fiji was the first state to ratify the Convention; the treaty will become international law one year after 60 nations have ratified it.

Among the eight key treaty achievements that Conference President Tommy Koh cited, three were environmental: conservation and optimum utilization of the sea's living resources will be enhanced by implementing provisions relating to the exclusive economic zone; important new rules for protecting and preserving the marine environment from pollution; and translating the principle that sea-bed resources constitute the common heritage of mankind into fair and workable institutions and arrangements.

AUSTRALIA HAS DECLARED ITS FIRST MARINE protected areas, in the Coral Seas Islands Territory off the northeast coast. The Coringa-Herald and Lihou Reef National Nature Reserves are 8,890 and 8,420 square kilometers respectively.

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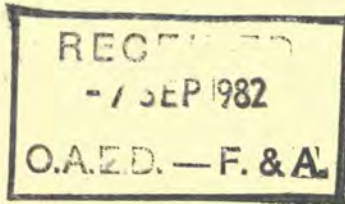


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## GOVERNMENTAL POLICIES ISSUE Global issues downplayed in new U.S. eco-report

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#### GOVERNMENTAL POLICIES ISSUE

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NEW YORK--President Reagan's environmental policy making body, the Council on Environmental Quality, finally produced its 1981 annual report. The cover is all-American (a bald eagle on a white background); the contents--at least on international issues--are vanilla bland as well.

It is the slimmest such volume in several years--291 pages compared with 1980's 497 pages. The role global environmental issues play in this administration's thinking is perhaps symbolized by the fact that Global Environment is at the tail end of the report; in 1980 it was the lead-off chapter.

President Reagan's message submitting the report to Congress made no mention of international issues; more than half of President Carter's message the previous year was devoted to humanity's effects on Earth's biological systems.

The final two paragraphs of the initial chapter set out current policy: "...The United States has established a record of leadership in the protection of the environment and should continue to exert this leadership. The government should endeavor to work cooperatively with all nations, developed and developing, and with all responsible and relevant elements of the societies involved to attain this end."

It suggests more research is needed on controversial and complex areas, such as ozone protection, acid precipitation, ocean pollution and climate. And the initial chapter concludes with an unexceptionable policy statement: "The United States should continue to encourage responsible development and environmental protection by other countries with due respect for their own individual values and priorities."

In the 22-page Global Environment chapter, the material becomes somewhat more interesting. At one point the administration seems to be arguing with itself: In discussing the Law of the Sea treaty, the report notes that on April 30, 1982, the U.S. and three other nations voted against the treaty--"The primary unresolved issue was the regime proposed for seabed mining," which the U.S. wanted to pursue without treaty stipulations. Two paragraphs above this statement is a lengthy discussion of the potential harm of deepsea mining on the ocean en-

vironment. It says in part, "Mining could inflict some irreversible damage to marine life. Ocean communities, if damaged, could take years to recover or to reestablish themselves."

Generally, the 1981 report's international section is a straight-forward retelling of the past decade's environmental history, updated through early 1982. It covers the global commons: atmosphere (CO<sub>2</sub>, acid rain and ozone), oceans (deepsea mining, UNEP regional seas program, radioactive waste disposal--it says the Energy Department is researching the possibility of dumping high-level radioactive wastes at sea), and Antarctica. It discusses ecosystems--tropical forests, arid lands, wetlands--and efforts to conserve them. It reports on biological diversity: crop resources, harvest and trade, and international agreements on whales, polar bears and seals. Finally, major efforts to review global environmental issues are discussed.

Beginning with the Club of Rome's 1972 report, "The Limits to Growth," it ends with the Carter Administration's "Global 2000 Study," which has been generally ignored or discredited by the Reagan Administration. The CEQ goes to some length reporting on the controversy surrounding Global 2000 and quotes two of its biggest detractors.

The report then addresses itself to "A Response to the Challenge" of Global 2000 and the other studies: "At the present time this Administration is conducting a re-evaluation of appropriate governmental responses to the issues raised in the various global trend reports...with appropriate private sector involvement. In the course of the review, in-depth analyses of various global issues are planned and strategies will be developed for increasing the capability of the government and the private sector to anticipate and evaluate global environmental and resource problems."

The CEQ report concludes by saying that a number of private U.S. groups are already addressing these issues, as are international organizations. What it does not say is that the U.S. government's "re-evaluation of appropriate governmental responses" has not yet gotten off the ground. LIBBY BASSETT

## More national eco-policies...

INDIA'S FIRST "STATE OF ENVIRONMENT" report was published August 15 by the Center for Science and Environment, an independent organization manned by journalists. The survey covers a wide range of environmental

issues, relating them to the economic and social problems confronting the country. Copies are available from: Center for Science and Environment, 807 Vishal Bhavan, 95 Nehru Place, New Delhi 110 019, India.

REPRESENTATIVES OF INDUSTRY, government and conservation groups met recently in Canberra to start work on a National Conservation Strategy for Australia.

Topics discussed were a program for 1982; preliminary arrangements for a national conference; the proposed format of a draft strategy and a review of proceedings to be published from the conference. The first draft of a discussion paper, "Towards a National Conservation Strategy for Australia," was made public by the end of April. After public comment, a draft strategy will be prepared for discussion and ratification at the national conference to be held in Canberra towards the end of 1982.

THE PRIVATE SECTOR'S ROLE in several crucial issues affecting our future will be discussed at the prestigious Woodlands Conference, to be held November 7-10 at The Woodlands, Texas. The conference's executive director is Gerald O. Barney, author of "The Global 2000 Report to the President." The gathering of businessmen, scientists, academicians and government officials from several countries will focus on such issues as soil deterioration and world food outlook, making pollution prevention pay, environmental health and water reuse. There is a sliding scale of fees. For information: 1982 Woodlands Conference, P.O. Box 9663, Arlington, VA 22209; telephone: 703/841-0048.

## Tougher standards urged in Israel

JERUSALEM--Israel's State of the Environment Report for 1979-80 reveals a complex picture of achievements and shortcomings. Based upon data collected from monitoring systems and reports solicited from public and private organizations throughout Israel, it includes conclusions and recommendations for improvement in several realms of environmental protection. The 235-page report, prepared by Israel's Environmental Protection Service, was recently presented to the government.

Summarizing data obtained from the na-

tional air quality monitoring network, the report pinpoints Israel's problem areas as those in the vicinity of power plants and large industrial complexes in Tel-Aviv, Haifa and Ashdod. It suggests emission standards be established, on a priority basis, for the following industries: power plants, refineries, cement plants, and chemical and petrochemical industries. Moreover, there is a pressing need for modernization of ambient air quality standards established before 1973 under the Abatement of Nuisances Law.

The report calls for a comprehensive rehabilitation program for all the country's streams, to transform them from sewage carriers into recreational sites. A rehabilitation plan for one of Israel's major streams, the Yarkon, has already been prepared and awaits implementation.

An additional problem in the realm of water quality is improper maintenance of wastewater purification plants. While the number of these installations has increased in past years, proper operation and maintenance have not been achieved in several facilities. The report recommended that the National Sewage Project, designed to provide treatment for virtually all of Israel's wastewater, become a national focal point in the realm of maintenance as well.

With the transfer of marine quality protection to the Ministry of Interior, significant progress has been achieved in supervision and control over oil pollution. The report notes that several laws and regulations have been passed or amended in this realm, but legislation preventing land-based pollution is still required.

Progress is also noted in noise research and methods of noise abatement. Noise assessments were prepared for three new military airports while vehicular noise was studied in urban, developed areas. The report urges planners and decision-makers to consider noise exposure forecasts in their deliberations as an integral part of the physical planning process itself.

In the area of pesticides and chemicals, inadequate progress is noted. While surveys regarding storage of pesticides were undertaken and monitoring of pesticide residues in agricultural and dairy products continued, little progress was achieved in ensuring the safe transportation, handling, use and disposal of chemicals. Moreover, full operation of the Ramat Hovav center for the collection, neutralization and disposal of toxic wastes has not been achieved.

The report notes with satisfaction the completion of the national master plan for solid waste disposal which establishes disposal sites or processing facilities, according to different technologies, throughout the country. In addition, there were advances on a number of local research and development projects for recycling household waste. Of major priority now is establishment of an industrial recycling plant in the Dan (Tel-Aviv) region.

A "plan for the prevention of environment nuisances" regulating operation, control, supervision and warning procedures for coal-fired power plants was completed while intensive deliberations revolved about the siting of a new coal power complex in southern Israel.

The report notes an increased public consciousness of the importance of environmental protection and calls for additional efforts to be invested in environmental education. Education coupled with public participation in environmental decisions are recognized as the key to environmental protection.

Important priorities for action in the future include strengthening the administrative basis for environmental management, preparation of environmental standards appropriate to Israel's specific conditions, and enforcement of environmental legislation.

SHOSHANA GABBAY

## More on Israel...

IN ISRAEL, an intensive environmental education campaign has achieved a large measure of success.

A course of study for high school students directed toward a matriculation examination in environmental quality has been completed. This course, the first of its kind in Israel, has been transferred to the Open University where appropriate textbooks and material will be developed.

In an experimental venture by the Education Ministry and the Nature Reserves Authority, schools adopt nature reserves in their vicinity, allowing students to learn about flora and fauna while helping rangers do maintenance and clean-up work.

Another program utilizes the field study centers of the Society for the Protection of Nature in Israel by introducing nature study into the curricula of primary and secondary schools in their vicinity. The programs are coordinated with the Ministry of Education.

## Environment Ministry demanded in India

NEW DELHI--The first national conference of India's legislators met recently and suggested that the Department of Environment be immediately accorded the status of a Ministry to make it more effective in the implementation of various programs.

In a resolution, it proposed that each of India's 22 states set up environment departments.

Prime Minister Indira Gandhi, who inaugurated the two-day conference, cautioned the legislators to be careful in site selection for a project, so that it did not destroy local ecology, cause harm to agriculture or any other life systems that provide the means of earning of livelihood. She added that "half of the land in India suffers from soil degradation" and "this severely reduces our capacity to increase production."

"Conservation means giving precedence to prudence over greed," she stated.

The Minister in charge of environment, C.P.N. Singh, said that a new scientific approach to conservation was urgently required not only for maintaining a few large mammals but to conserve overall biological diversity.

He said a number of environmental problems could be solved through rapid economic growth, social justice and by cutting population growth. He noted that the politicians present could play crucial roles in stimulating mass awareness and fostering participation in programs of environmental conservation and eco-development.

R. MURALI MANOHAR

## India's environment chief interviewed

NEW DELHI--"The very first priority is to create mass awareness about the environment. This is why we are setting up a center where we will computerize information from all countries," says Dr. T.N. Khoshoo, who took over as the Indian government's new secretary of the Department of Environment on May 15.

The appointment of the third secretary of the department in about as many years as it has been in existence has caused some concern in environment circles in the country. As it is, a new department like this has

problems because it straddles so many different government ministries and is often in the position of tendering advice in areas which others consider outside its jurisdiction.

"Unless people are involved, there's no way that this department can spread the work throughout the length and breadth of the country," Dr. Khoshoo stated. "At present, only the educated are concerned about protecting the environment. In villages, people bathe twice a day, their utensils are sparkling, but outside their huts, conditions are bad. Thus Indians are individually clean, but collectively dirty."

For the past seven years, Dr. Khoshoo has headed the National Botanical Research Institute in Lucknow, where he has worked on the genetic evolution of plant development and also conducted research on the relationship between air pollution and plants. He replaces Dr. S.Z. Qasim, who has joined the newly created Department of Oceanography, following India's successful Antarctic expedition last year.

As a botanist with 37 years of work behind him, Dr. Khoshoo is worried that many wild progenitors of plants and primitive cultivars are in danger of extinction. "For every one plant that is threatened, between 10 and 30 are endangered," he observes, referring to the delicate natural balance between all forms of life.

"India is where 170 plants in the world today originated," he says. "But the biggest dharma (natural or moral principle) before the country is to realize that non-violence must not only be displayed towards human beings but also to nature."

DARRYL D'MONTE

## More Indian eco-planning...

INDIA'S PLANNING COMMISSION, which formulates the nation's five-year development schemes, is for the first time seeking the help of 44 universities in the dual task of checking large-scale environmental destruction and deciding what projects to launch in the country's remote areas.

During the current sixth five-year plan, the Planning Commission has okayed \$16 million for "eco-development," and nearly a quarter of this will go towards student grants for research.

At present, three areas are being studied: the hilly areas and watersheds of the Himalayas, the Ganges basin (from the origin to its sea-mouth), and the ghats or range along the west coast.

## First symposium on priorities in Peru

LIMA--Peru recently held its first symposium on environment priorities, sponsored by the Banco Continental (a large state-owned bank), the UN Information Center, and representatives of Peru's mining, fishing and manufacturing industries.

The most controversial presentation came from Professor Marc Dourojeanni, director of the forest sciences program at Peru's Agrarian University and a former director of the government Department of Forestry and Fauna. Attacking the environmental policies of successive governments, he said the Ministry of Agriculture was spending too much--around 85 percent of its budget in 1979, for example--on expanding the agricultural frontier. He said a better alternative would be to improve the productivity of land already under cultivation.

This year, according to Dr. Dourojeanni, only one-quarter of Peru's eight million hectares of cultivable land is actually being used, the rest having been abandoned. Meanwhile, the government intends to develop areas such as the Amazon, which he said has a low agricultural potential, or open up protected areas for cultivation. This expansion, including the construction of roads and infrastructure, would lead to a 30 percent reduction in land available for agriculture in Peru by the year 2000, he calculated.

GAIL MOSS

## Colombian Congress urges Eco-Ministry

BOGOTA--The first national Congress of Ecology was held here recently, sponsored by the Sociedad Colombiana de Ecologia (Colombian Ecology Society) to celebrate its 10th anniversary.

Participants included representatives of governmental and private organizations throughout Colombia and Venezuela, Panama, Ecuador, Peru, Brazil, Haiti, Jamaica and the Dominican Republic.

One major topic of discussion was the plan for regional protection of the Caribbean basin.

On a domestic level, German Garcia Duran, President of the Society, urged that a Ministry of Environment be created to insure coherent government policy on institutional, legal, program and financial

levels. He said the present government organization, INDERENA (Instituto Nacional de Recursos Naturales y del Ambiente) has too small a staff and budget. Therefore environmental laws are virtually unenforced, Garcia Duran said, even though Colombia has one of the most thorough Natural Resource Codes in the world.

Garcia Duran stressed that deforestation was one of the country's gravest problems: 350,000 hectares are cut down every year; only 35,000 hectares are replanted.

Other issues addressed at the Congress included erosion, multiple forest use, the rational use and protection of ocean resources, the relationship of agrarian reform and conservation, and the need for parks to safeguard the fossils of central Colombia.

LORE CROGHAN

## New Zealanders form anti-ecology lobby

WELLINGTON--New Zealand's environment minister Dr. Ian Shearer denounced the formation here of a counter-environmental group aimed at curbing the conservation lobby.

The group, known as New Zealand Futures, was formed at a gathering of 500 people on the south island's west coast, which has had little industrial potential since the gold and coal-mining eras, apart from the controversial logging of indigenous beech forests.

A Wellington lawyer, Des Dalgety, who has represented Prime Minister Rob Muldoon in major litigation (and is a personal friend), told the meeting that conservationists include extremists who pay no attention to work opportunities for residents of some areas. He claimed that conservationist pressure on politicians had grown unchecked.

The environmental movement in New Zealand has established its attitudes on development procedures with nominal government support.

Dr. Shearer branded Mr. Dalgety's initiative as "reactionary, unrealistic and foolish." He said the anti-environmental move was unlikely to succeed because of the strong and growing support of New Zealanders for the principles of conservation. Present policy was to integrate conservation and development, he said.

There is, however, an official impatience to get on with jobs the politicians have set their hearts on.

JACK KELLEHER

## POINT OF VIEW: A double standard on pesticides & profits

NEW YORK--President Reagan is currently reviewing a proposal from his State and Commerce Departments to relax existing controls on exporting banned products. I investigated first-hand what happens to such substances--particularly pesticides and pharmaceuticals--in Third World countries, and believe the Administration should keep the restrictions now in force, and make them even tougher.

This makes sense in terms of business, foreign policy, environmental concerns, public health, let alone the questionable morality of using a double standard that in effect amounts to a marketing philosophy of "unsafe here, okay anywhere else."

As Congressman Michael Barnes told me in a public television documentary I produced on this issue, "An Administration that is very pro-business and wants to increase American trade is actually taking a position counter to our international trade objectives." How can it be in the best interest of American business or government for the U.S. to get a reputation for selling unsafe products around the world?

The argument is not about the value of pesticides in general. It is about those particular pesticides found by our government to cause cancer, birth deformities, kill fish, damage bird life and create other kinds of environmental havoc. The list includes Mirex, Dieldrin, Aldrin, Endrin, BHC, Chlordane, Heptachlor, 2,4,5-T, DDT and some others such as DBCP. I saw these products on sale in Asia, Africa and Latin America without warnings or restrictions, or being used without the protective clothing or masks required in the U.S. Most of these items cannot be sold in the U.S., or if they are, it is for a very limited use.

A former pesticide executive in Brazil told me that the marketing of farm chemicals there is done "in a way that is totally irresponsible." Farmers are "conditioned" to use pesticides on a certain day, not because of a certain pest. He claimed most farmers confuse natural predators--useful insects--with pests, and are trained to spray insecticides "whenever they see anything flying around." He also reported the recent use in his country of mercury compounds on tomato crops. Mercury is a poison that attacks the human central

nervous system.

In Bangladesh farmers rely on their government for expert help on what pesticides to use. But the head of a large government farm operation there told me he did not even know there was such a thing as a banned pesticide.

In Malaysia I saw unprotected workers use 2,4,5-T to kill non-productive rubber trees, and found this highly restricted (in the U.S.) product on sale in unlabeled bottles directly adjacent to identical labeled bottles filled with soy sauce.

In the past 25 years succeedingly intensive and over-intensive uses of pesticides have been occurring in the Third World. DDT used to be sprayed once or twice a growing season in Central America. Now it is sprayed an average of 28 times a growing season there. The pesticide has lost its effectiveness as more resistant pests develop, requiring newer and more powerful poisons to kill them. That is one reason there is a resurgence of malaria in the Third World. Malaria-carrying mosquitos no longer can be eradicated by common pesticides.

The World Health Organization estimates at least a half million people suffer from pesticide poisoning every year. In hospitals I visited in rural Colombia this was the number one health problem doctors had to deal with. Farm laborers came to them foaming at the mouth, violently ill, and some died. Their families, often living near sprayed fields, also are harmed by the drifting chemicals. A Central American professor complained to me with outrage that the situation is "an atrocity" dangerously affecting his generation as well as children. "Our future is being slowly poisoned," he said.

Arguments are made that pesticides are essential to grow crops to feed a hungry world, that each country is entitled to make its own decisions on what it imports, and that there are variations among western European nations and the U.S. on restricting some of these products.

But most pesticides used in the Third World are not used on crops to feed the local populace. Over half the pesticides are used on export crops, for food and fiber shipped to us.

As to the claim that sovereignty is more important than public health or environmental degradation, many find this a morally reprehensible rationale. Why make cancer-causing or birth-deforming products available at all? If a Third World official

wants to buy a dangerous banned product from the U.S., it is only because someone here is greedy enough to want to sell it. Why do manufacturers here persist in exporting such products when there are safer substitutes and pest control techniques that are not as perilous?

This is not something Third World people ignore. As they learn more about it, their anger grows. This also is not something we can ignore much longer. If we don't want to do anything about it because we don't care about the Third World, maybe we will want to because the illegal pesticides are coming back to possibly imperil our own health. The U.S. Food and Drug Administration found through spot checks that 10 percent of our imported food is contaminated with illegal residues of those very pesticides banned for sale in America.

To relax the minimal U.S. export notification restrictions even further for the sake of profit will only add to the many problems now existing. The U.S. and its trading parties will--in the long run--be better off if export controls are based on the single standard of unsafe here, unsafe everywhere.

ROBERT RICHTER

*Mr. Richter is an independent filmmaker specializing in environmental subjects. He is also co-author of the recently published book "Pills, Pesticides and Profits."*

## More on pesticides...

FOODS COMMONLY SOLD ON THE VENEZUELAN MARKET are highly contaminated, a central University of Venezuela study has found. As a result, the National Institute of Nutrition launched an information campaign, particularly to warn mothers about the danger of contamination of breast milk by insecticides.

Researchers from the school of agronomy found DDT contamination in 83 of 111 samples of milk among tested mothers from the central states of Aragua and Guarico, particularly in the towns of Maracay and Calabozo. Also, in the same findings, insecticide residue above the World Health Organization standards was found in various foods, including butter, margarine, pasteurized milk, oil and vegetables sold on the local markets. Foods processed in the Maracay-Valencia area are distributed nationwide.

In 1975, Venezuela imported 6 million kilograms of DDT from industrialized countries which have banned the use of DDT.

## TV show on asbestos prods UK government

LONDON--A British television program on the dangers of working with asbestos has led to a public furor here.

"Alice--A Fight for Life," screened this summer, chronicled the last few months of a woman who died of mesothelioma, an asbestos-related lung cancer. It showed her legal fight for compensation for work in an asbestos factory some 20 years previously. Few safety precautions appear to have been taken during her short stint there.

The program suggested that even today health and safety precautions are often inadequate and that industry figures on related disease and death were inaccurate.

Although it included some evidence from other countries, the show concentrated mainly on the record of Britain's largest group of asbestos companies, Turner and Newall of Lancashire. It quoted the research of the former chief medical officer of one of the companies, Dr. John Morris, which showed that the health of one in four, not one in 300 as the company claimed, employees was affected by asbestos. This evidence, it was alleged, was not published and was withheld from the Simpson Committee appointed by the government to advise on the problem in 1976.

In a subsequent discussion program, industry officials disputed the data. Nevertheless, Britain's Health and Safety Commission declared itself very disturbed by the program, and local environmental health officers have been inundated with queries from householders about asbestos-based materials in their homes.

Labour M.P. Jack Ashley and the General & Municipal Workers Union, which has 15,000 members working with thermal insulation and asbestos, called for a public inquiry into risks in the asbestos industry. This was rejected as unnecessary by the government, but it agreed to speed up implementing Simpson Committee recommendations and two European directives suggested for 1985.

These include a list of asbestos products to be banned because safer substitutes are available, a reduction in factories of the fiber level to below one million fibers per milliliter of air and a legal ban on spraying asbestos and the use of blue asbestos. Some of these standards already exist in some factories, and the new measures are planned to make them universal.

BARBARA MASSAM



## Eco-news in brief...

SMOG may be a factor in acid rain, Battelle, the world's largest independent research institute, discovered in a study sponsored by the U.S. Environmental Protection Agency.

Selected organic nitrogen compounds, previously unsuspected of influencing precipitation, are formed when components of smog are exposed to sunlight. The smog components are generated from both man-made and natural sources.

Battelle found that organic nitrogen compounds such as peroxyacetyl nitrate (PAN) are prominent in the atmosphere, soluble in rainwater and can affect rainfall acidity. In their month-long field study in rural Indiana, the researchers found measurable levels of PAN always present in samples collected 24 hours a day and analyzed on location. "The measurements show that PAN is ubiquitous in the lower atmosphere, and that its role in atmospheric chemistry may be more important than previously suspected," the study team leader reported. "It also appears likely that PAN can affect rainfall acidity by serving as an oxidizing agent for gases such as sulphur dioxide and nitrogen dioxide. It may convert them to their respective strong acids in cloud droplets, thus indirectly affecting acid precipitation."

ALTERNATIVES TO CONVENTIONAL POLLUTION CONTROLS are described in a 36-page monograph prepared for the UN Environment Program, which is available without charge.

"Low- and Non-Pollution Technology Through Pollution Prevention," was prepared by 3M's vice president for environmental engineering and pollution control, Dr. Joseph T. Ling. It consists of a world survey of pollution-prevention activities, reports on cost/benefit analysis and makes suggestions for implementing pollution-prevention technology. It is available from Dr. Ling (UNEP monograph), 3M, P.O. Box 33600, St. Paul, MN 55133, U.S.A.

DUMPING WASTES AT SEA is the subject of a new report produced by the Brussels-based European Environmental Bureau. It examines the effectiveness and practical implications of a variety of national and international laws enacted to control dumping at sea. "The control and disposal of wastes

at sea" is available free from the EEB, 29 rue Vautier, B 1040 Brussels, Belgium. A contribution for postage and publication costs is requested.

THE JOINT OCEANOGRAPHIC ASSEMBLY, a meeting of scientists that takes place every six years, was held August 2-13 in Halifax, Nova Scotia, Canada. It was sponsored by the Scientific Committee on Oceanic Research of the International Council of Scientific Unions. Among topics discussed were oceans and climate, resources, the carbon dioxide problem, managing fish stocks and high-energy coastal environments.

THE EAST-WEST CENTER'S Environment and Policy Institute is looking for a research fellow on regional marine policy cooperation in Southeast Asia. Experience in this field and professional writing ability in English are a necessity. The fellowship is for six months between October 1982 and October 1983, includes round trip air fare, health insurance, housing (adults only) and a stipend of \$2500 a month. To apply send a brief proposal, CV, writing samples, and names and addresses of two references to: Dr. Mark J. Valencia, East-West Center, 1777 East-West Rd., Honolulu, Hawaii 96848. Deadline is October 1.

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# World Environment Report

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*Acid rain is causing millions of trees and other plant life to die in Eastern and Western Europe 6*

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*The 11th Congress of Mayors predicts large cities may begin falling apart in a decade 8*

## Global marine pollution treaty has been ratified

LONDON--Ten years after its inception, the most important and comprehensive international treaty to fight marine pollution has finally been ratified.

MARPOL 73/78, a single legal instrument uniting the 1973 Marpol (marine pollution) Convention and the subsequent 1978 Protocol, needed ratification by 15 countries representing 50 percent of the world shipping tonnage. This was achieved by the ratification by Greece on September 23rd and by Italy on October 1st, and it will come into force on October 2nd, 1983.

It deals with pollution from oil, noxious liquid substances such as chemicals carried in bulk, harmful substances contained in packages, sewage and garbage. It controls the distances of discharge from coastal waters and bans discharge except in very dilute quantities at controlled rates. The five detailed annexes to MARPOL 73/78 contain regulations on violations, inspections, enforcements, reports on incidents at sea and arbitration on disputes.

Some 250 substances have been listed under the four categories of liquid noxious substances. Ships must be specially designed, constructed and equipped to carry these safely. The cost and technical difficulties connected with this have been major factors in delaying ratification.

Although publicity given to oil spills has been a spur to legislation, more pollution occurs from the discharge of ballast tank water contaminated with oil residue and from engine room bilges. The compulsory requirement for tankers to be equipped with segregated ballast tanks (SBTs) for loading with water on ballast voyages was also a cost delaying ratification.

However, in anticipation of the legislation, new tankers have been constructed to conform with MARPOL 73/78 regulations over the past few years. Shore reception facilities have also been constructed to deal with the discharge of oily residues. All these requirements should reduce the illegal discharge at sea, although carrying costs are likely to rise with the restriction of carrying capacity by the installation of SBTs.

The MARPOL 73/78 instruments were developed by the

International Maritime Organization and adopted at conferences arranged under the auspices of that organization.

BARBARA MASSAM

## More on marine pollution...

SOUTH AFRICA IS TO SLAP a 900 percent increase on the fine that can be imposed on captains of oil tankers which deliberately pollute the coast next year. This increases the maximum penalty from \$2,000 or one year's imprisonment to \$20,000 or five years. Those found guilty can be fined and jailed. Owners of a guilty vessel would also be responsible for all costs of clearing the coast.

It is well-known that oil tankers on their way to the Persian Gulf flush their bilges off the South African coast, but so far the authorities have been unable to prove any cases.

THE INDIAN PARLIAMENT has passed the Merchant Shipping (Amendment) Bill, 1982, which empowers the government to levy a pollution tax on ships using Indian ports.

India, the 15th maritime country in the world, decreed that unless a ship pays the tax, it will not be given port clearance.

The ship or a tanker which uses oil as fuel must maintain an oil record, and an Indian official is authorized to go on board to inspect the ship to see whether it has taken care to prevent oil leakage.

If oil or an oily mixture is discharged into the sea within the coastal waters of India, the master of the tanker will be liable to a fine of up to \$5,000.

OIL SPILLS AROUND BRITAIN'S COAST increased by 5 percent during 1981 says the annual survey of the Advisory Committee on Pollution of the Sea. Since recorded spills in North Sea oilfields were less, this points to an increase in pollution from "vessels unfit to be at sea."

MARINE POLLUTION IN SOUTH KOREA in the first half of this year increased by 16.3 percent compared with the same period last year. Statistics showed that maritime police checked 121 marine pollution cases during the six-month period. Of these, 87.6 percent were caused by oil and 12.4 percent by waste materials. The incidence of marine pollution in large ports such as Pusan or Incheon was reduced while that in small ports has greatly risen.

## UN votes to adopt World Nature Charter

NEW YORK--The United Nations adopted a World Charter for Nature at the current session of the General Assembly. But it seems likely that, although well-intentioned, its imperative language will not be adhered to by many nations--even though they may have voted for it.

According to a UN Environment Program official, several European and American nations, north and south, had strong reservations about the language of the charter, which said on all 24 major points that governments "shall" do this or that, rather than "should."

The Amazonian Treaty group abstained from the vote because it felt that the treaty that binds them together is their agreed-upon legal document and that the charter would impose other legal obligations on them.

The United States was the only country that voted against the charter (the vote was 111 to 1, with 18 abstentions). The U.S. representative told WER that there were several reasons for this. Even though the U.S. was an original co-sponsor of the charter, it felt that its language needed revision and clarification. And, the representative said, the U.S. State Department made an error in timing: "We couldn't get our position together in time." The U.S. Mission to the UN asked for a few days more time for informal, inter-governmental consultation to work on language. Zaire, the major sponsor of the charter, said it had already taken three years, and it was decided to go ahead with the vote.

In addition to the imperative nature of the document (the "shalls"), there were other controversial sections. One states that: "Measures intended to prevent, control and mitigate natural disasters, infestations and diseases shall be specifically directed to the elimination of the causes of these and avoid adverse side effects on nature." As several sources told WER, neither the United Nations nor man can prevent, control and mitigate natural disasters, only God can; they would have preferred wording that said, "Measures intended to prevent, control and mitigate the effects of natural disasters..."

Another point of conflict was this: "Each person (meaning every person in the world) has a duty to act in accordance with

the provisions of this Charter for Nature; acting alone, in groups or through the political process, each person shall strive to ensure that the objectives and requirements of this Charter are met." The UN, in effect, is putting this obligation on every human being on earth.

The legal status of the charter is, as a UNEP official said, "up in the air." There has to be some follow-up, but that is not mentioned in the charter. The text says that the "principles set forth in this chapter shall be reflected appropriately in the law and practice of each state." At present, it seems unlikely that this will happen.

LIBBY BASSETT

## World Parks Congress declares action plan

JAKARTA--Over 450 specialists attending the concluding ceremonies of the once-a-decade World National Parks Congress in Bali, Indonesia, issued a declaration which calls on governments to take action to save what is left of the world's natural heritage.

The Bali Declaration links conservation with sustainable development and the rational use of the world's natural resources.

The declaration has a six-point action program to: (1) expand and strengthen global and regional networks of parks and protected areas, (2) support the establishment and management of protected areas, (3) provide permanent legislative protection for protected areas, (4) plan and manage protected areas using the best available scientific information and monitoring techniques, (5) recognize the economic, cultural and political factors which affect protected areas, and (6) implement existing international conventions concerning protected areas.

The declaration calls on all governments to "take these actions bearing in mind their responsibility for the whole of life and accountability to present and future generations."

"The congress hasn't produced only words," said Dr. Lee Talbot, director general of the Swiss-based International Union for Conservation of Nature and Natural Resources (IUCN), the congress co-sponsor. "We will take action to make sure that the recommendations of this congress are fulfilled through the unique global network of governmental and non-governmental organiza-

tions which comprise the membership of the IUCN in 111 countries. We will also work closely with the other co-sponsors of the congress including UNESCO, FAO, UNEP, World Wildlife Fund, US National Parks Service and Parks Canada."

In addition, the parks congress issued 20 recommendations for setting the course of future world parks management policy. The congress urged that a no-minerals regime be brought into operation in Antarctica until such time as the environmental risks have been fully ascertained and safeguards developed to avoid adverse environmental effects, thus maintaining voluntary restrictions on mineral development.

The congress called upon multilateral and bilateral assistance agencies to consider protected areas as an indispensable part of sustainable development and urged governments receiving assistance to give higher priority to conservation projects in aid requests. The congress called upon all nations acting through the Law of the Sea Convention to establish large sanctuaries in the open ocean in order to further knowledge of those areas beyond the limits of national jurisdiction and to protect the common heritage of mankind.

Other recommendations called for improving programs of research and information dealing with protected areas and for measures to curtail existing threats to them.

The World National Parks Congress held in Bali, Indonesia, October 11-22, is the third of its kind and the first to be held in a developing country. It was attended by 450 scientists and parks professionals from 68 countries.

KATE WEBB

## New Indonesian parks...

INDONESIA IS CREATING 11 NEW NATIONAL PARKS, totaling 2,250,377 hectares.

Dr. Soedjarwo, Director of Forestry for Indonesia, made the announcement at the World National Parks Congress at Bali.

These now join five existing national parks, making a grand total of 4,935,996 hectares. Indonesia has set aside 299 protected areas (including national park land) amounting to some 11.2 million hectares, or about 6 percent of its land area.

Since Indonesia must support a burgeoning population of 140 million on 193 million hectares, this represents a significant advance in ensuring that nature protection will play a vital role in the future economic development of the country.

## Taiwan is creating its first parks

TAIPEI--The establishment of Taiwan's first national park and the promise of more to come have brought fresh interest in preservation of the environment to this overcrowded and rapidly developing island.

Even though an international tourist resort is to be included in the park, and a nuclear power plant will soon be operating next door, environmentalists in Taiwan already see many benefits from the park. For example, the government has pledged to provide US\$70 million to develop Kenting National Park (at the southern tip of the island) over the next five years.

Included in the budget is a provision for park staff to protect animals and plants in what is Taiwan's only truly tropical environment, providing sanctuary for species which cannot be found elsewhere on the island. Much of the wildlife in the park is threatened by hunters and farmers, whose presence will gradually be ended.

Already, the government has taken action to protect shrikes and birds of prey which are killed or captured by the thousands each autumn as they migrate through southern Taiwan on their way to winter haunts. This slaughter has become something of a scandal in Taiwan, but the government had been reluctant to act because of the hundreds of people who make a profit in the trade. Ornithologists reckon that up to half of the two million shrikes which pass through Taiwan, and a similar proportion of hawks and eagles, perish each year. The shrikes are cruelly de-beaked and strung up alive before they are fried to make a local delicacy for tourists.

Since the establishment of the park, the government has despatched special wardens to arrest the illegal hunters and impose fines of up to US\$4,000 and even to imprison repeat offenders. The crackdown has not been wholly effective because the hunters work mainly at night, but the government has pledged to continue despite protests. In one drive by the police, some 1,000 traps were destroyed.

Immediately after the Kenting Park was established, the newly created Taiwan National Parks Administration started to draw up plans to open a second one in the area of Yushan (Jade Mountain), at 3,997 meters the highest peak on the island.

Original plans for a new cross-island

highway right through the prettiest part of the proposed park have been scrapped, and the route moved south. Other roads built across the island in the center, north and south have brought fruit farmers and other developers as well as motorized tourists, who have severely damaged the delicate mountain environment with erosion and pollution.

The area around Yushan is regarded as particularly valuable since it is the habitat for many species of plants and animals found only in Taiwan, which again are threatened by hunters and developers. It is also the site of an old Ching dynasty walking trail, regarded as an historical relic as well as a scenic marvel. Modern walkers have rediscovered this trail, bringing litter and other minor pollution, and this is taken as an indication of the amount of damage a vehicle road would cause.

Plans for other national parks are being worked out for other parts of Taiwan. While much remains to be done to preserve the environment, the establishment of the national parks is seen as a serious expression of government intent.

MICHAEL BOYDELL

## The Seychelles needs aid to save an atoll

VICTORIA, SEYCHELLES--This island republic, covering a vast area of the Indian Ocean but with a population of only 65,000, is finding it hard to meet the cost of maintaining remote Aldabra Atoll as a conservation area. It's asking for help.

Aldabra, more than 1,000 kilometers from here, and 155 square kilometers in area, is one of the world's largest raised atolls and has hardly been touched by man. An outcry from world scientists in the 1960s killed a British plan to develop Aldabra as an airway staging post or as a military base.

The Royal Society of London took a lease on the island in 1967 and ran it as a research center. Two years ago the Royal Society handed Aldabra over to the newly formed Seychelles Islands Foundation, which has launched a world appeal for \$1 million to pay the cost of maintaining the island.

There are thousands of giant tortoises there--more than anywhere else in the world--and innumerable quantities of turtles, birds and fish.

Its value to research scientists is its unspoiled and unexploited status. Since it emerged from the surrounding ocean about 80,000 years ago, when a coral cap grew on top of submerged volcanoes, its poor soil and lack of fresh water have protected Aldabra from settlement and exploitation--though passing ships in the past have taken numbers of giant tortoises away with them.

CHARLES HARRISON

## Mining threat lifted in So. African park

JOHANNESBURG--South Africa's famous Kruger National Park has been granted a temporary reprieve from the threat to mine coking coal in its unique northern area.

But the reprieve is cold comfort to thousands of conservationists, who fought for six years to save the park, as it was motivated by economic rather than environmental factors.

The South African Iron and Steel Corporation (IsCOR), which intended mining the coal, said that due to a depression in the international steel market it had been forced to cut exports. This had "diminished the urgency for the exploitation (of coal) in the game park."

Although the Government welcomed IsCOR's decision, it sat on the fence during the entire controversy and still refuses to categorically protect the park from mining. This, despite being faced with the largest petition ever drawn up in the country's history.

To date more than 100,000 people have signed a strongly worded petition condemning the mining proposals. Even though the petition has been closed twice, signatures continue to flood in. Individuals and organizations from more than 20 countries have added their names to the protest.

The coking coal threat started in 1977 when a government-authorized geological unit violated the National Parks Act by prospecting in Kruger Park. It was only when IsCOR announced the coking resources that the public realized the park was in danger despite an Act which forbids mining and prospecting.

MIKE NICOL

## More national parks...

SOUTH AFRICA'S 10TH NATIONAL PARK at Langebaan Lagoon, 100 kilometers north of Cape

Town on the west coast, will be proclaimed before the end of the year. An 11th, further up the west coast, is being planned.

Langebaan covers an area of 10,000 hectares and could become one of the most important bird conservation areas in the subcontinent. It is the smallest but richest of the world's six floristic kingdoms containing 1,300 plant species.

Langebaan will probably be the last "off-limits" national park. Because South Africa's National Parks Act excludes mining or prospecting, a new act is in the pipeline which will allow new parks to be proclaimed subject to certain conditions, such as mining rights.

THE MALAYSIAN GOVERNMENT will declare more areas of peninsular Malaysia as national parks in the near future. Malaysian Science, Technology and Environment Minister Datuk Amar Stephen Yong said that in Sabah three more areas were expected to be declared as parks, including a marine park. There are at present five national parks in the state with a total area of 1,261 square kilometers.

In Sarawak, which currently has five national parks with a total area of 541 kilometers, nine more areas will be declared as parks.

Yong said no development or exploitation of any form was allowed in national parks with two exceptions. The first exception being where a change is needed to increase the population of a species and the second to accommodate tourist facilities so the public can observe nature in its original form.

THE PHILIPPINE MINISTRY OF NATURAL RESOURCES and the Ministry of Tourism have jointly set up four parks in the country to conserve marine resources, according to Natural Resources Deputy Minister Arnold Caoili. The four sites where the marine parks are located are: Sumilon island in Cebu; coral reef parks in Sagay, Negros Occidental; Guindolman, Bohol; and Sombrero island in Batangas. Caoili said the concept of marine parks came from the International Union for the Conservation of Nature and Natural Resources (IUCN). To gain more support for the marine parks concept, the resource ministry's natural resources management center planned its first National Conference on Marine Parks from Oct. 4-6 this year.

## Both Germanys agree on water protection

MUNICH--East and West Germany have reached their first agreement on environmental protection measures to improve the quality of lakes, rivers and other waterways in West Berlin, the West German government announced.

Many West Berlin waterways are fed by heavily polluted rivers running through the city from East Berlin and East Germany.

The accord between the governments in Bonn and East Berlin provides for a substantial expansion of three major sewage purification plants in and near East Berlin. The announcement said that West Germany will pay 68 million marks (\$25.2 million) to share the investment costs of the project that is scheduled to be completed by 1986.

West Germany's Minister for Inter-German Relations, Egon Franke, welcomed the accord as the first major agreement with East Germany in the ecological area. The accord, arrived at after difficult negotiations, offers hope that talks long underway on East German measures to reduce the potash content of the Werra River might achieve success. The vast volume of waterborne salt carried into West Germany from East German potash mines has long been of great concern to West German environmental protection experts. WILLIAM G. MAHONEY

## Acid rain affecting East and West Europe

MUNICH--Acid rain is causing millions of trees and other plant life to die in Eastern and Western Europe.

The probable cause of acid rain is industrial pollution and its threat is not new: Ecologists have been warning of the danger to forests for the past decade. But governments, beset with economic problems, have only recently begun to recognize that the early warnings were correct.

An overall look at Europe shows that the impending disaster, as with most environmental problems, knows no political borders. Centrally planned Communist regimes and free-enterprise democracies share the same headache.

In West Germany, trees that have flour-

ished for generations are shedding their needles or leaves and turning brown. Reports say that already half of the country's conifers--thousands of millions of trees--are sick. Some scientists even fear that the famous tourist attraction, the Black Forest, may be doomed.

Across the border to the east in Czechoslovakia, some 50,000 hectares of forest in the Ore Mountains are reported to have been destroyed by pollution from Czechoslovak and East German power stations. One unofficial report in mid-October said that along the Czechoslovak-West German border half of the woods are diseased.

Moving north to Poland, pollution from the huge steel mills of Nova Huta is held partly responsible for the massive damage to the area mountain range, where Norway spruce throughout the 32,000-hectare national park have now shed their needles.

Some of the worst damage from acid rain and other pollution has occurred in the southern Polish city of Krakow, where the ancient castle, historic churches and other architectural treasures are threatened. It is so serious that a Polish architect estimated recently that 100 old buildings could collapse at any time.

Last year, under pressure from the now-banned Solidarity union, officials closed the Skawina Aluminum Works at Krakow, a major contributor to the pollution. But the problem remains.

Buildings damage is also a problem in West Germany--from the majestic Cologne Cathedral to Bavaria's Neuschwanstein castle--where the effects of acid rain are deeply etched on the facades of ancient buildings.

Trees and buildings are not the only victims. In parts of East Germany, for example, deer no longer eat grass in the Spring, since it has become poisonous. Fences in the area must be constructed of aluminum, since other metals are more quickly eroded by the pollution.

The story is repeated throughout Europe, from Scandinavia in the north to the coasts of the Mediterranean. Reports come out of the Soviet Union of similar problems.

Most researchers agree that the problem begins with the burning of coal, oil and natural gas. This produces sulphur dioxide and nitrogen dioxides which, along with other contaminants, escape into the upper atmosphere where they combine with vapor to form a solution of sulphuric or nitric acids. This then falls to earth as fog rain or snow: ergo, acid rain. It seeps

into the soil, leaching metals that poison tree roots and prevent the tree from absorbing sufficient water. The trunk core rots, needles and leaves fall, then branches, and finally the weakened tree falls completely during a storm.

The situation has deteriorated rapidly in the past few years. Last year, for example, some three and one half million tons of sulphur dioxide fell on West Germany--double the amount recorded in 1950.

One report says that in Europe as a whole enough poison fell from the sky to crown each citizen with 50 kilos of sulphur dioxide.

The oil crunch also played a role, forcing countries with soft coal deposits to go back to the mines for cheaper energy.

In Czechoslovakia, the expanded mining of high-sulphur soft coal since the oil price hikes of 1974 is blamed for a corresponding rise in pollution. As early as 1978, press reports in North Bohemia said that 40 percent of the area's forests were affected by coal dust and fumes. The trade union newspaper "Prace" warned that the area could become "a moonscape."

WILLIAM G. MAHONEY

## Seveso dioxin may be in East Germany

MUNICH--The West German weekly Der Stern reported that containers of poisonous dioxin waste from the Seveso chemical plant in northern Italy have been stored in East Germany amid strict secrecy.

Following the Stern expose, the East German government denied accepting the chemical that caused controversy six years ago when leakage poisoned 1,800 hectares of densely populated land north of Milan.

The weekly, which has built its extensive circulation on its exposes, said it had a copy of a contract under which a state-owned East German firm agreed for 6.7 million marks (about \$2.7 million) to store 44 barrels of poison at a site near the port of Rostock. The Italian Commissioner responsible for polluted land reclamation, Luigi Noe, said in mid-October that the 41 metal containers (Stern cited 44) left Italy on September 10; that the waste was safely housed in a clay-banked cave; but insisted that the country of destination could not be revealed for security reasons.

Meanwhile, 30,000 cubic meters of soil

contaminated in the explosion were buried close to the Seveso factory in the middle of a highway interchange, the New Scientist reported. It said the 10-meter-deep dump is sealed with a plastic lining, but that if water seeps in, there are pumps to keep the dump dry (to protect local water courses).

The whereabouts of the container, or reactor "pot" in which the explosion occurred, are unknown. A British team of scientists who visited the site recommended that removing dioxin-contaminated materials from the pot would be too dangerous as the waste would have to be chiseled from its walls--an operation considered risky for the workers involved. The British scientists recommended the pot be dismantled and buried, along with the contaminated soil, in a concrete crib under conditions as stringent as for nuclear waste.

But the plant owners, Givaudan of Switzerland, did not accept the recommendations, the weekly New Scientist said, and they sent workers into the plant to remove the caked dioxin waste. The company says the pot is now 99.9 percent decontaminated.

But meanwhile, the Italian government reportedly has applied to the signatories of the London Convention on Sea Dumping for permission to dump a reactor pot into the Atlantic.

SPECIAL TO WER

## More on chemical risks...

DET NORSKE VERITAS, a Norwegian classification society, has been commissioned by the Petrofina oil group of Belgium to develop a total integrated vulnerability model (TIVM) for analyzing the consequences of accidental or deliberate discharges of harmful liquids, chemicals and gases.

According to Det Norske Veritas, "the TIVM project seeks to improve the qualitative analyses needed to obtain a realistic picture of the total risk to human life, health and environment from the discharge of pollutants. Special emphasis is being placed on achieving a better description of spreading, migrating and blending mechanisms as well as fire development, explosion progression and chemical reactions."

The TIVM project could have worldwide application "and is expected to strengthen the opportunities for identifying potential environmental problems at an early stage when establishing new industry," the Norwegian firm said.



## Mayors predict cities may grow unbearable

CARACAS--The 11th Congress of Mayors of the larger cities of the world was held here recently, and the mayors concluded that if urban conditions do not improve within the next decade, large cities will begin falling apart.

Mario Lunghi, secretary general of the congress, predicted a massive shift away from cities as urban residents flee from unbearable conditions in the densely populated areas.

The organization sponsoring the congress, the Center of World City Cooperation, tries to bring together urban leaders of all nations to share problems and solutions in an effort to improve city environments.

In the group's 11 years of conferences, the major difficulties confronting city managers have not changed much. Said Lunghi: "There are no new problems these days. What is new is the quality and the quantity of the problems."

Even though he was pessimistic about the future of cities, Lunghi said this 11th congress had proved "a very, very great success." One reason was that the turnout was extremely good. Of the estimated 400 people attending the sessions, 100 had come from other countries and continents. Fourteen Arab nations were represented, as well as a number of African nations. An impressive number of mayors from Europe and the Americas were also present.

At the same time that the mayors were meeting, about 400 transportation experts were meeting here for the Second World Conference on Development of Urban Transportation. The first world transport conference was held in Dakar, Senegal, in May 1980.

The goal of the conference was to attempt to define and solve urban transit problems in developing countries. Workshops discussed planning strategies, infrastructure, economic effects, social and political aspects, and energy use with a particular focus this time on Latin American problems.

ELIANE DE STEINHEIL

### More on cities...

THE INTERNATIONAL FEDERATION OF MUNICIPAL ENGINEERS and the United Towns Organization will hold a series of conferences and an

exhibition on "City Planning and Equipment" in Geneva's Parc des Expositions January 17-23, 1983.

In 1975, the organizers noted, 39 percent of the world population was urbanized; by the year 2000 it will be 50 percent. The problem is even worse in the Third World, they said, where the annual rate of increase in urbanization is 4.1 percent as against 1.8 percent in the developed world.

Since environmental problems are a major factor in city planning for the future, they will be featured both in the conferences and in the equipment exhibition. Contact: SEPIC/CPE, 40 rue du Colisee, 75381 Paris, France.

BAD FORESHORE PLANNING is costing South Africa's most famous sun-worshippers' city, Durban, more than \$2.3 million a year to re-sand its beaches.

The developers' rush to build giant hotels and blocks of flats on the beachfront did not take into account the scouring action of the wild winter seas once the natural vegetation and the barrier sand dunes had been replaced with concrete and tar. Consequently, the city council has to order the importation of about 600,000 cubic meters of sand annually. For the first time this year sand was dredged from the ocean floor and pumped down a 2,200 meter pipeline to the beach where it was leveled by bulldozers.

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# World Environment Report

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## Zimbabwe's people share the profits from wildlife

HARARE--The Zimbabwe government's new share-the-wealth-from-wildlife program has brought a remarkable change in rural people's attitudes toward wild animals, said Richard Pitman, an official with this southern African nation's wildlife department.

In the past, he said, villagers thought of the animals as pests that could damage crops and threaten lives. They grew angry watching government officers and white tourists shooting game that the villagers would be put in jail for killing. Now, rural people see the animals as a source of income well worth protecting.

What happened, according to Bowden Quinn, a fellow with the Institute of Current World Affairs, is that local communities now benefit from their wildlife. After independence two years ago, Prime Minister Robert Mugabe's government started giving local councils the revenues from hunting in communal lands. Professional hunters buy the right to kill animals from the government and pass on the costs to overseas visitors in search of big-game trophies. A lion, Quinn said, will bring \$1,300 to the area in which it is killed.

Another part of the new policy is Operation Windfall. In this program, the government distributes locally the meat from elephants culled in communal areas. Local councils get the proceeds from the sale of the elephants' ivory and hides.

Previously, the government sold the meat on the open market, and all revenues went to the wildlife department, which still happens when elephants are killed in national parks.

District Councillor Charles Jiri told Quinn he used to think the elephant was "an ugly, useless beast." Now, he says, "I would nurse a sick animal back to health." Councillor Jiri's northwestern district received more than US\$233,000 last year in wildlife revenues. His council is using the money to build four health clinics.

Even with drought this year, which has led to increased poaching, Chief Warden Barry Ball of the Department of National Parks and Wildlife says, "I guarantee that the level of poaching (in the northwest) will be far lower because the people in that area know that the animals are bringing them money."

The government program mainly benefits people living in lightly populated communal areas near the northern, western and southern borders, where most of the animals are. The best results have come in the northwest, where the program began. Poaching there has almost disappeared.

The wildlife department gave local and district councils a total of \$666,000 in wildlife revenues last year, which Pitman says is "more money than some of these councils have seen in their lives."

SPECIAL TO WER

## More on wildlife...

FALKLANDS IN THE NEWS, again. It seems that British and Argentinian ships weren't the only ones drawn to those remote south Atlantic islands. More than 100 years ago the Beagle, with Charles Darwin aboard, visited and found that the Falklands--like the Galapagos--are home to a host of tame and accessible species. For several years the World Wildlife Fund has been discussing creating wildlife reserves on three privately owned Falklands, the Jasons and New Island. Now, with the possibility of an increased British presence on all the islands and possible krill fishing and oil exploration in the area, there is a special urgency to preserving a few Falklands in their comparatively wild state as rookeries. Right now, the matter is in the hands of the owners' English lawyers. A World Wildlife Fund lawyer--facing present realities--said they would like to include some Argentinians among the trustees, once the Trusts are set up.

DENMARK HAS BECOME THE FIRST COUNTRY to ratify two international conventions on protection of plant and animal life. These are the Bonn convention of 1979 that aims at global protection of migrating animal species. It covers 15 mammals, 20 species of birds, one fish and four reptiles--all regarded as endangered species. The other document, the European convention of 1979 on protection of nature, seeks governmental protection of 119 plant species, 345 mammals, 2,600 birds and other animal species.

AUTHORITIES IN HENAN PROVINCE IN CHINA have decided to set up 13 natural protection zones to protect rare wild animals. They include 12 state-owned forest zones and one collective forest zone.

## Perch and prosperity return to Lake Geneva

GENEVA--Fishermen in Switzerland and France, restaurant chefs and their customers are smiling these days: after six years of declining catches, perch have returned to this vast, inland sea called Lac Lemán, or Lake Geneva.

But there is disagreement over the cause of this "miracle of the fishes." A Geneva Cantonal inspector charged with overseeing lake problems blames over-fishing during the early 1970s that prevented the full reproduction of the species. He also stated that pollution was an important factor, chiefly phosphates. Fish eggs, he commented, have a vital need of oxygen in the water.

A professional fisherman, Jean Froehlich, placed most of the blame on the weather. "Most of the fish are hatched in the month of May," he explained. "For five years we have had wet and cold springs with high winds. The temperature of the lake remained very low, thus curbing reproduction. This year we finally had a warm and sunny spring, warmer water--and more perch."

In any case, the statistics are stunning: In 1975 professional fishermen alone took 272 tons of perch from Geneva Cantonal waters; in 1981 their catch had sunk to 5.6 tons.

Professional fishermen are especially happy because so many of the perch running this summer and fall have been the young fish that have not yet reproduced. All perch under 15 centimeters must be tossed back; thus the huge new schools promise good fishing for at least several years to come.

The return of perch and prosperity has served to soften bitterness and disagreement over new regulations that will soon go into effect governing fishing in the lake. A new Concordat Intercantonal (Geneva-Vaud-Valais--all with lake frontage) will soon be announced that will bring all Cantonal practices into line with the international accord recently reached between Switzerland and France, after 12 years of laborious negotiations. The new Concordat established the size limitations for all fish in the lake--perch, pike, lake trout--and adjusts the seasons when fishing is permitted so that all areas are in accord. For example, although Switzerland always enforced the 15 centimeter minimum for perch, France

did not until the new agreement went into effect.

Still there is grumbling. Eric Matthey, Cantonal Inspector for Forests, Fauna and Protection of Nature, wants the perch minimum raised to 18 or 20 centimeters. A 15 centimeter perch is only one and one-half years old, he argues, and has not yet had the chance to reproduce. A perch reproduces only when it is about two years old.

The Intercantonal Committee negotiating the new accord had decided to force fishermen to enlarge their netting spaces from 26 to 30 millimeters which would permit the too young and too small fish to slip through. But the professional fishermen took this issue to Federal Court and finally the Committee dropped its demand.

Some amateur fishermen's organizations suggested that all fishing simply be halted for one year. The professionals fought this by demanding that such a step be accompanied by financial reimbursement for their losses. The pros also suggested that when there appeared to be over-fishing, the number of nets could be limited.

There is general agreement, however, that both amateurs and professionals should not commit the errors of the early 1970s when huge catches were permitted. There is also agreement that years of strictly enforced anti-pollution measures--agreed upon by all riverain Swiss Cantons and France--are now beginning to show real results.

WILLIAM G. MAHONEY

## More aquatic lifesavers...

DETERGENTS made and sold in Italy as of September have a lower content of phosphates to reduce the uncontrolled growth of algae in Italian seas.

"Eutrofizzazione" (eutrophication) has become a major plague and a threat to tourism in Italy as phosphates dumped into the rivers and seas act as fertilizers for sea weeds. Massive murrains of fish, and bitter protests of vacationers, occurred along the Adriatic coast this summer as a result of the proliferation of algae which reduce oxygen in the waters taken by streams past the beaches to the oceans.

The percentage of phosphates in detergents was cut to 6.5 from 9 percent. The content will be reduced further to 5 percent by April 1984 on the basis of a law approved last December.

Producers of detergents will have to list the percentage of phosphates and other chemicals on the boxes, and municipal health units will be entrusted with control of the product.

THE DISCHARGE OF NITROGEN AND PHOSPHATES into Tokyo Bay has now been restricted to prevent further contamination of its water. The restriction was agreed to by the governors of four prefectures. In 1979, an estimated 340 tons of nitrogen was discharged daily into Tokyo Bay. Under the agreement, nitrogen inflow into the bay is to be reduced by 1.5 percent to 330 tons in 1984. The daily inflow of phosphate, estimated at 41 tons in 1979, is to be reduced by 18.5 percent to 33.4 tons by 1984. To obtain these goals, the local governments involved are required to draw up guidelines for expanding sewerage systems, and for promoting the use of non-phosphate detergents as well as non-phosphate raw materials at factories.

THE DUTCH GOVERNMENT in late September announced it planned to stop dumping nuclear wastes at sea immediately. Witze de Back, a spokesman for the Ministry of Public Health and Environment, said, "This ministry is convinced that ocean dumping is a safe disposal for wastes. But it's clear that our society does not want ocean dumping." The Dutch have used the sea for dumping wastes from their two nuclear power plants and from other sources for 15 years.

In a related development, de Back told Hazardous Materials Intelligence Report that the Dutch Parliament is considering an emergency response bill authorizing the immediate cleanup of 350 top priority hazardous waste sites. He estimated it would cost \$800,000. The ministry predicts that 4,000 sites will eventually need cleaning up. The ministry hopes the bill will become law by early 1983.

DENMARK AND WEST GERMANY have signed an agreement providing for joint efforts in case of oil pollution in the southeastern North Sea and western Baltic. These areas are considered extremely susceptible to environmental damage in case of oil spills.

The agreement sets up the "DANGER Plan" (for Denmark-Germany) under which the coastal waters are graded according to the degree of environmental sensitivity. Both countries have special environmental ships that can put to sea at short notice in case of oil pollution.

## Britain to increase nuclear sea dumping

LONDON--The U.K. nuclear industry is seeking ways of increasing its ocean dumping capacity and of thwarting the activities of protesters.

The United Kingdom Atomic Energy Authority (UKAEA) wants to charter a new ship, which can discharge waste straight from its hull to prevent boarding and other protester activities. Its current ship, the Gem, is due for an insurance review.

Before Gem's last voyage in July to dumping grounds 600 miles (1,000 kilometers) off the coast of Cornwall, the UKAEA obtained an injunction in the Dutch courts against the British members of the environmental group Greenpeace to prevent a repeat of their former harassment. Dutch Greenpeace members, to whom the injunction did not apply, chained themselves to the dumping platforms and delayed Gem's activities for days.

An international group of Greenpeace members, including the mayors of two Spanish towns, sailed in September to protest against the Dutch dumping nuclear waste off the north-west Spanish coast.

In future, overall responsibility for radioactive waste disposal in Britain will be assumed by NIREX (the Nuclear Industry Radioactive Waste Executive), a new body outlined in the Government's White Paper on radioactive waste disposal (WER, Sept. 15, p.2)

With the Government policy of nuclear expansion, the UKAEA anticipates that NIREX will need extra sea-dumping capacity. UKAEA stresses that all its dumping is carried out within both national (Department of the Environment, Ministry of Agriculture, Fisheries and Food) and international (OECD and London Dumping Convention) regulations.

This is only possible because such regulations are not adequately monitored or defined or are ignored, says Greenpeace. The dumping taking place, they claim, is in contravention of the 1972 London Dumping Convention.

All 18 signatory nations to this promised that they would do nothing which would be "liable to create a hazard to human and marine life, to harm living resources, damage amenities, or to interfere with other legitimate users of the sea."

BARBARA MASSAM

## Oil pollution from ships is decreasing

GENEVA--Without the measures taken by governments and other bodies through the International Maritime Organization (IMO), pollution from ships might be much greater and more menacing than it is today, C.P. Srivastava, Secretary-General of the IMO, declared here in his annual World Maritime Day message on Sept. 23.

Srivastava said the volume of oil entering the sea from ships today was considerably less than it was barely a decade ago, despite the fact that there has been a significant increase both in the size of the world's fleet and the amount of oil transported by sea.

He said that prospects are even more encouraging. In particular he noted that there is now a distinct likelihood that the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978, will enter into force some time in 1983. This, he commented, "will mark the culmination of one of the most important international endeavors for the preservation of the marine environment."

WILLIAM G. MAHONEY

## China adopts an ocean protection law

HONG KONG--China recently adopted a Law on Marine Environmental Protection, the Xinhua News Agency reported.

The law, adopted by the 24th session of the Standing Committee of the Fifth National People's Congress, contains chapters devoted to the prevention of marine pollution caused by coastal projects, prospecting and exploitation of oil resources, discharge of pollutants along the coasts and from marine vessels, and the dumping of wastes.

All enterprises and departments which engage in developing marine oil resources must submit a report on the estimated effects on the environment to the environmental protection departments under the State Council for approval. The report must be submitted before handing in a plan for the work and must contain effective measures for preventing marine environmental pollution. Effective measures must be taken to protect aquatic resources when demolition is re-

quired in offshore petroleum prospecting and other operations. In oil testing operations, oil and oil-containing mixtures must not be discharged into the sea and measures must be taken to see to it that gases and oil erupting from the wells being tested must be fully burned.

Units which need to dump waste materials shall not do so until they have the approval of state departments of oceanographic administration. Having acquired the approval, they must dump such materials within the time limit and in places as prescribed by the oceanographic authorities.

The law calls for protective measures for marine natural conservation centers, seashore resorts and other areas under special protection. The law is to be observed by all vessels, drilling platforms, aircraft, submersible devices, enterprises, institutions and individuals engaged in navigation, prospecting and development of natural resources, production, scientific research and other activities in the sea waters within the jurisdiction of China.

SPECIAL TO WER

## New Saudi standards...

SAUDI ARABIA has just issued the English-language version of its new Environmental Protection Standards. In 24 pages it covers ambient air quality standards, air pollution source standards, receiving water guidelines, performance standards for direct discharge, pre-treatment guidelines for discharge to central treatment facilities, and implementation obligations and enforcement. For a copy, write to: Dr. Abdulbar al Gain, Vice President, Meteorology & Environmental Protection Administration (MEPA), P.O. Box 1358, Jeddah, Saudi Arabia. Ask for Document No. 1401-01 1402 H.

## Huge Panama copper mine put on hold

LONDON--The British-based mining transnational, Rio Tinto-Zinc, has postponed indefinitely its plan to join the government of Panama in exploitation of Cerro Colorado, one of the biggest copper deposits in the world (WER, March 15, p.5). Announcing this, RTZ and Codemin, the Panamanian state entity, blamed the global economic reces-

sion, which has led to a low price for copper. Other, unmentioned stumbling blocks were environmental and human.

The project, 150 miles (241 kilometers) west of the Panama Canal, would take about \$2 billion to bring on stream, and the world price of copper is languishing at less than half the \$2 per pound (\$4.40 per kilo) which metals markets analysts believe would be the break-even point for producers in the late 1980s. Bringing Cerro Colorado copper to market at full capacity--200,000 tons a year--would be apt to depress the price even further, analysts said.

RTZ and Codemin have reduced their activity on the site to care and maintenance for other reasons, too. The mining giant has been unable to persuade the Panamanians to include in the contract a waiver of national labor laws for the project. The two would-be partners have also not seen eye to eye over the 80 percent increase in electrical generating capacity the scheme would need (with consequent flooding of a vast area of western Panama) at governmental expense.

What's more, the government in Panama City fears that a continuing low copper price would leave it with an even greater foreign debt than it has now, after it had borrowed the billion or so it would need to finance its 51 percent stake in Cerro Colorado.

Officials noted RTZ's favorite tactic elsewhere in the Third World whereby it has used little of its own capital to set up big metals projects and then has paid off the debts incurred by a rapid extraction of the best-quality ore.

Further black marks for the project were the despoliation which titanic displacement of 100,000 tons of waste a day would cause in mountains vital for water resources in most of western Panama; the impact of the development on the local Guaymi people, who have mounted a shrewd and tenacious campaign against the project; the fact that, even at the peak construction period, it would create only about 2,300 jobs in a country which needs 20,000 new ones a year just to keep unemployment steady. The government was not keen to spend an extra \$200 million to keep wastes (much of them toxic) out of local rivers by dumping them far out into the Pacific.

When the project was put on ice at the end of the summer, it would still have required a two-year study phase and three to four years of construction.

ROBERT DEL QUIARO

## POINT OF VIEW: Pesticide producers play a positive role

*To provide an alternative Point of View to Robert Richter's August 30th editorial on the sale of restricted or banned pesticides to the Third World, WER asked an industry spokesman to respond.*

MIDLAND, Michigan--Disease, famine and poverty are Third World realities. Not that many years ago Western Civilization was confronted with the same realities. The progress in overcoming these problems was the product of scientific research nurtured in an economic system that we call free enterprise. One of the greatest successes of the free enterprise system is the multinational corporation. No other economic or public entity can as efficiently discover, produce and deliver to the people of the Third World products they need to conquer disease, famine and poverty. Do American corporations that produce agricultural chemicals deserve the criticism that Mr. Richter has leveled against them? "The questionable morality of using a double standard that in effect amounts to a marketing philosophy of unsafe here, OK anywhere else."

Let me first address a factual error in Mr. Richter's editorial relating to a product marketed by The Dow Chemical Company. The product 2,4,5-T is approved by the EPA for rangeland and rice application in the United States. These uses also happen to be the major markets for 2,4,5-T in Third World countries. Certain other uses of 2,4,5-T were suspended in the United States by the EPA in 1979. The study upon which this action was based was subsequently repudiated by scientific authorities throughout the world. Negotiations between industry and the EPA may result in major suspended uses being reinstated. In short, the facts concerning 2,4,5-T simply do not support the characterization of double standards for export only.

Let me turn to some of the apparent premises on which critics advanced the argument for more government regulations of pesticide exports.

One premise is that the U.S. Government actions taken against pesticides in this country are correct. That is not necessarily a valid assumption if we judge the action based on scientific data relevant to

risk. The assumption is that scientists working for our government are more capable than their counterparts in other developed countries. By what logic can one reach the conclusion that we should tell users in countries such as Germany and Great Britain what pesticides they should or should not use? Such a determination is surely within the capabilities of their agencies and scientists dealing with such questions.

If we focus only on Third countries, we find the premise advanced that their risk/benefit analysis is the same as ours. This is an even less credible position. Many countries face high rates of disease, famine, poverty, and have life expectancies much shorter than ours. Can we impose on them our standards? We now deal with environmental questions in terms of parts per billion and in cancer risk assessments of one in a million. I find it difficult to understand how one can ask that these types of standards be made the required actions for countries facing significantly different circumstances and problems than we do in the United States.

Another premise we find in many of the arguments concerning pesticide exports to Third World countries is that these sales offer U.S. corporations huge profits. The major markets for pesticides are the United States, Europe and Japan. Third World countries are relatively small markets and because of their weak economies, such countries cannot afford the newer, more expensive pesticides. Their purchases normally consist of what one would term commodity products. These are less expensive and are also relatively less profitable to the producer.

One portion of this issue is cause for concern: the potential and/or actual misuse of pesticides in developing countries. The major factors creating the possibility of harm are the enormously larger number of people employed in agricultural production in these countries and the relatively high rate of illiteracy.

While it is impossible to ensure that pesticides are not misused in developing countries, Dow has established policies and implemented plans with the goals of ensuring our products are produced and used throughout the world in accordance with standards that protect people and the environment.

Our commitment to proper use is best expressed in our active training program with users throughout the world. For example, in 1981 Dow held over 500 training programs

with farmers and ranchers in Latin America. Not only have we committed resources to educate the users of our products, but we continually look for ways to avoid misuse. In the Philippines, the Fertilizer and Pesticide Authority and Dow collaborated in a research program to approve the recycling of used plastic banana shrouds for the manufacturer of shoe soles--thus eliminating the potential for the discarded pesticide-treated shrouds being used as food wrappers.

The issue of pesticide export is complex. Those in Government and various public interest groups who seek to address this issue should critically research the real-world facts before they condemn U.S. agricultural chemical companies and proposed new regulations. If developing countries are to conquer disease, famine and poverty, they will need pesticides, pills and profits. Multinational companies such as Dow will play an important role in raising the standard of living, increasing the life expectancy and reducing human misery in the developing countries. ETCYL BLAIR

*Mr. Bair, a vice president of The Dow Chemical Company, is director of Health & Environmental Sciences.*

## Pesticide alternatives require N-S transfer

PENANG--The non-governmental organizations that met here to organize the Pesticide Action Network (WER, July 15, p.1) urged the promotion of traditional biological and integrated pest management (IPM) practices. While this call is timely, writes Ujjayant N. Chakravorty of the Centre for Science and Environment, "it is little realized that technologies like IPM are unproven, complex and out of reach for most Third World countries with their primitive agriculture systems."

IPM is a pest control system that tries to reduce pest damage to tolerable levels through a variety of techniques: biological control, inter-cropping, clean cultivation, planting repellent or trap crops, and, when necessary, chemical pesticides. IPM tries to first use non-chemical defenses before changing the environment with chemical pesticides.

It thus depends on a sound knowledge of the ecology of the region as well as of the pests and crops concerned. For example,

coconut crops in Western Samoa were saved from the rhinoceros beetle when FAO imported an insect virus from Malaysia. To protect Asian and African farmlands from desert locusts, governments are aided by satellites which look for signs of intense breeding activity. With its emphasis on organic farming and biological control, IPM is fast emerging as a high technology domain, Chakravorty states.

Most integrated pest management research is concentrated in the developed countries, particularly the U.S.A., so IPM systems developed for temperate lands may be completely inappropriate to tropical and subtropical conditions.

At present, Chakravorty says, IPM serves the interest of pesticide multinationals: "The speed with which new pesticides introduced into farms are becoming redundant in the face of mounting pest resistance is of great concern to these big manufacturers. It takes about six to 10 years of research, costing between US\$15 million to US\$20 million to develop a new pesticide, plus an additional period of time before it begins to be accepted by farmers."

Therefore, he contends, IPM practices, which help slow the process of pest resistance, are welcomed by chemical companies, for their pesticides remain effective for a longer period. At the same time, expenditures on new pesticide development would come down considerably.

The Centre for Science and Environment researcher believes IPM is taking the same route as solar energy. In the last decade solar energy raised hopes as a panacea for the Third World's energy problems. But when it became apparent that major oil companies were involved in marketing solar technologies, the idea of cheap solar power was recognized as an illusion, he states.

Chakravorty states that since IPM research is dominated by Western scientists, Third World countries will soon have to depend on a handful of IPM companies, much as they do today on pesticide companies. He suggests that members of the Pesticide Action Network in the West should focus their campaign not on pesticide multinationals but on their own governments so that IPM knowledge is shared with developing countries. "A willingness to help developing countries generate their own IPM programs is necessary before this technology can be touted as a substitute for pesticide use in the Third World," Chakravorty concludes.

SPECIAL TO WER



## Prince Charles joins political eco-group

LONDON--The future king of England, Prince Charles, has joined an environmental pressure group opposed to many of the government's high technology policies, including the planned rapid growth of electricity generation through nuclear power.

The British royal family always avoids political controversy so the prince, by joining the Conservation Society, has--perhaps unwittingly--broken with tradition. Nevertheless, there is a strong conservation tradition within the family. In September when the prince announced his decision to become an honorary member of the society, his father, Prince Philip, was touring the United States in his role as head of the World Wildlife Fund.

The Conservation Society has been one of the key groups opposed to the use of lead in gasoline and recently went through an internal wrangle over whether it should support unilateral nuclear disarmament. Ultimately, it decided against public commitment to the idea.

The prince's decision to support the society can perhaps best be summed up by the goodwill message he sent their annual conference earlier this year. In it he said: "The idea of conservation as the creation of sustainable life support systems can be seen as the most necessary and also the most challenging of all ideas. We need to find constructive ways of changing the direction of science and technology into more harmonious channels by encouraging much greater understanding of natural and sustainable biological systems."

BARBARA MASSAM

## More conservation news...

THE ONCE-IN-A-DECADE WORLD NATIONAL PARKS CONGRESS is being held in Bali, Indonesia, October 11-22. It is sponsored by the International Union for Conservation of Nature and Natural Resources (IUCN), the UN Environment Program, UNESCO, UN Food and Agriculture Organization, World Wildlife Fund, US National Park Service and Parks Canada.

The first week's program focuses on a biogeographical review and major issues of the future for protected area managers. The second week will focus on management,

training and international cooperation and support.

A highlight of the Congress will be the launching of IUCN/WWF's campaign to halt the destruction of tropical rain forests. The international conservation groups hope to enlist corporate support for the campaign, particularly big timber concerns.

TWO INDIANS who have been active in environmental movements have received the Magsaysay award, the "Nobel of the East," this year. They are Chandi Prasad Bhatt, founder of the Chipko (tree hugging) movement in the Himalayas, and Manibhai Desai, who runs the Bharat Agro-Industries Federation near Pune town, not far from Bombay, which has pioneered many rural self-sufficiency schemes, including the reliance on fast-growing trees.

ANY CONTRIBUTION to a program for the conservation of natural resources will merit an income tax deduction in India.

But the program must be approved by the Secretary of the Department of Environment.

CONSERVATION IS NOT A BIG VOTE GETTER in Australia--yet. However, according to the Australian Conservation Foundation, more than 1,000 Australian conservation groups had a membership of between 350,000 and 400,000 last December--more than the combined membership of all political parties.

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## U.S. biosphere program is inadvertently endangered

WASHINGTON--The U.S. Man and the Biosphere Program (MAB) has been the perhaps inadvertent victim of U.S. fund cutting aimed at the UNESCO Commission.

"I don't think the Office of Management and Budget realized that MAB was part of UNESCO" when it cut its funds, said Brooke Holmes, Acting Executive Director of the U.S. program. The U.S. has become increasingly unhappy with the politicization of UNESCO, particularly in the area of freedom of the press. MAB, however, "is largely non-political within UNESCO," Holmes asserted.

But what the cut in funds meant is that next year MAB may be without a home in the U.S. government. The International Organizations Program, which currently has responsibility for MAB, lost the funding. Now, the State Department is taking the lead in trying to find a niche for the U.S. portion of this international program.

Over 100 countries participate in the Man and the Biosphere Program, which is 11 years old.

In the U.S., MAB has produced a series of well-received environmental profiles of 48 developing countries for the U.S. Agency for International Development. It has also engaged about 130 U.S. natural and social scientists in activities aimed at the rational use of natural resources, Holmes said. The U.S. has on-going programs in 12 areas, such as forests, grazing lands, mountains and tundra, demographic changes, pollution, and biosphere reserves for research and monitoring.

The level of funding has been decreasing. At its top the program got \$660,000 in one year, of which \$250,000 went to the directorate (other U.S. agencies and universities participate in the program). This year, Holmes said, funding for the directorate is just \$90,000.

"It's a pittance," he told WER, considering the time and services of participants from universities, other research groups and government officials in the parks and forest service, who do this extra duty on their own time.

A senior State Department official, who is actively trying to find U.S. MAB a home, said he felt funding should be \$1-2 million a year and that there should be a long-term commitment from various govern-

ment agencies for increased funding to match U.S. priorities. He admitted that so far "we don't have inter-agency support." He hoped to find a permanent residence within the State Department for MAB, perhaps in the Oceans, International Environment and Science division. If that happens, State will talk to other agencies about supporting MAB efforts; if State can not provide a home, then it will try to persuade another agency to take the responsibility. In the past, MAB has received financial and/or expert support from the National Parks Service, AID, State, Environmental Protection Agency, Department of Energy and the Forest Service.

"It must be done by September 1983," the end of the fiscal year, said the State Department official. Holmes stated: "I have no doubt it's going to work out." He wants it all settled by this spring, for that's when he will leave the job to go to another in the foreign service.

LIBBY BASSETT

## Mexico upgrades its environment agency

MEXICO CITY--For the third time in a decade, Mexico is instituting official attempts to curb environmental contamination that grows worse every day. President Miguel de la Madrid, who began his six-year term on December 1, ordered the upgrading of environmental affairs with its inclusion in a new Cabinet-level Secretariat of Urban Development and Ecology.

"The preoccupation with the ecological situation of our country appears spasmodically," observed columnist Fernando Cesarman in the independent daily, *Unomasuno*, "while the deterioration does not stop, not for an instant."

Under the law which created the new secretariat on January 1, its role includes formulating and conducting a national policy of environmental protection, regulation of residual waters, establishment of ecological criteria that assure the conservation of fundamental ecosystems, and the administration of national parks.

In combining urban development and environmental affairs, President de la Madrid demonstrated a widely held concern that many of Mexico's environmental problems are the result of chaotic urban development, most notably in Mexico City, Monterey and

Guadalajara, the three largest cities and each an industrial center as well as a population hub. Marcello Javelly Girard was named Secretary of the new department, with Dr. Alicia Barcena Ibarra appointed under-secretary for ecology.

Another positive effect of the creation of the new secretariat will be the bringing together of technical personnel now scattered among departments of health, agriculture, water resources and the now-dissolved secretariat of human settlements and public works. In previous years, competition among the various secretariats apparently worked against environmental successes for the nation as a whole. While environmental protection laws have been official policy since 1971, their enforcement has not occurred systematically.

KATHERINE HATCH

## Costa Rican pipeline project is revived

SAN JOSE--The new Costa Rican administration (in office less than a year) has revived the cross-country oil pipeline project that sparked heated controversy here a few years ago. When the National Legislative Assembly in late 1979 repealed the enabling degree that would have permitted the pipeline, the project seemed to have been permanently laid to rest (WER, Nov. 5, 1979, p.1; Jan. 1, 1980, p.5).

However, now that Panama on January 19 formally inaugurated its cross-isthmus crude oil pipeline (WER, Aug. 3, 1981, p.8; Sep. 30, 1982, p.8), the Costa Rican government is vigorously pushing forward a program to build a similar pipeline from the Pacific to the Caribbean.

Compared to the violent opposition the plan received in 1979, there has been very little objection from the formerly vociferous environmental community. (A factor could be Costa Rica's economic situation, which has considerably worsened in the past couple of years.)

Since Costa Rica has specific laws on these matters, bids and proposals must be made public. Each bidder is presenting his own routing, capacity and design as well as the benefits to the country, which is in desperate need of foreign exchange.

Thus far, four companies have presented offers to the government: Petrosa, S.A.; Stel Alberta Ltd.; Rising Star Resources

Ltd. and Raval Holding Ltd.; and Oleoducto de Costa Rica, S.A. Details on the nationality of these companies have not yet been made public.

Plans indicate pipeline capacities ranging from 600,000 to two million barrels a day, while cost estimates run from \$484 million to well in excess of \$1 billion.

The Costa Rican government has appointed four commissions to study the political, technical, economic and ecological aspects of the project. One member of the latter commission publicly stated that three of the companies have not presented any environmental impact statements in their proposals. Two of the routes would cross the new and widely acclaimed La Amistad International Park in the southern Talamanca Mountains.

MURRAY SILBERMAN

## Haitians planting millions of trees

PORT-AU-PRINCE--A new approach to reforestation in Haiti seems to be working well, despite years of official disinterest.

The U.S. Agency for International Development (USAID) has gone directly to rural people with an educational campaign on the necessity of reforestation. "And we are meeting with unprecedented success," said a high U.S. official here.

"The peasants have never been told the consequences of deforestation by anyone, and now that they know, they are very receptive and cooperative," he said.

Just four years ago, a pessimistic UN official predicted Haiti "may well become shortly the Caribbean's first true desert." In 1979, a UN report said the unrelenting deforestation of this once-lush island was "irreversible at this time."

The USAID tree-planting program consists of introducing hardy, quick-growing tropical varieties such as *Leucaena leucocephala* through village citizen councils. The rural people are told of the advantage of trees as a cash crop and the role of forests in soil conservation, erosion control and maintaining a renewable fuel supply.

The USAID official said, "We, with the peasants, planted two million trees in 1982 and plan for five million more this year. The peasants are now planting seedlings to replace those cut, and we are very pleased to find that the survival rate is presently

70 percent."

Charcoal and wood are the only sources of fuel outside the city. Even in the capital, scarce hardwood is burned by bakeries and dry-cleaning plants. In the past several decades, peasants have ranged far and wide in their search for fuelwood. Today, the frontier between Haiti and the neighboring Dominican Republic is clearly visible from an airplane: The Haitian side dusty, bare and eroded, the Dominican side green with forest as a result of an efficient forest service and the use of alternative fuels.

ARTHUR CANDELL

## Peruvian private sector wants parks

LIMA--Peruvian tour operators are seeking U.S. advice and support for their scheme to set up an integrated national park system.

The vice chairman of the Peruvian Association of Adventure Tourism Operators (Apta), Alfredo Ferreyros, planned to meet with officials of the U.S. National Park Service in Washington in March. The talks, he said before leaving, would be "on an unofficial basis, to see what setting up a regulatory system in Peru might involve, and to try to identify possible channels for funding." Ferreyros admitted, "We have very little on paper yet. These conversations will help set the stage for support and legislation."

Apta, which is made up of seven tourism agencies, plans to begin by cleaning up the 38-kilometer Inca Trail to Machu Picchu and equipping it with camping facilities and a first-aid station, to serve as a model for a nationwide park system. The next step will be to push for national legislation to create an entity to coordinate the system.

Peru's parks and reserves are at present administered by several government agencies so that, according to Ferreyros, "Only sporadic efforts are made to clean up and protect Peru's natural tourist attractions."

In the meantime, Apta is planning a symposium of scientists, archaeologists, tourism operators and other interested parties to plan a feasibility study of which areas should remain open to visitors without harming the environment. GAIL MOSS

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## Colombia says no to marijuana spray

BOGOTA--In January, the U.S. State Department kicked up controversy in Colombia when it offered extensive aid to "eradicate marijuana cultivation in Colombia" by spraying fields with the herbicide paraquat.

The \$19 million program was intended to finance equipment and training of personnel in Colombia and other Latin American countries (WER, May 15, 1982, p.3).

The Colombian government rejected the proposal with an announcement from Minister of Health Jorge Garcia that any use of paraquat is illegal in this nation. The minister also established an investigation commission to seek out and stop any current use of the spray by traditional farmers.

Garcia Gomez based this rejection of paraquat on the findings of a team of government and private researchers. First, he stressed that paraquat poses severe health hazards and death through accidental contamination as well as deliberate use of tainted marijuana. Second, he objected to paraquat as "an ecological aggressor, with severely damaging effects on flora and fauna." Many other Colombians expressed fears concerning possible long-term harm to affected ecosystems.

The Colombian government's own battle against drug traffic does not include environmentally damaging measures. Nor does it focus particularly on marijuana cultivation, on the wane because of the success of U.S.-grown marijuana in North American markets. Instead, Colombian strategies fight the processing of cocaine, a far more lucrative contraband export. LORE CROGHAN

## More on Colombia

UPDATE: GOOD NEWS concerning Tayrona National Park (on Colombia's Caribbean Coast), half of which was awarded to two persons who in 1980 purchased land rights originally granted in 1934 (WER, Sep, 30, 1982, p.8).

Recently, the Attorney General's office announced it has legally recovered the lost park land. The Instituto Nacional de Recursos Naturales Renovables y del Ambiente (Inderena) will again be proprietor of the entire 15,000-hectare nature reserve.

SCIENTISTS FROM BOGOTA'S UNIVERSIDAD Nacional are campaigning against a Colombian Senate proposal to change the legal boundaries of the Sierra de la Macarena biological reserve. The park, in Colombia's "llanos" or plains region, is currently one of the world's largest ecological preserves. The proposed law would diminish its size, handing over land to migrants who have settled within its periphery in recent years. Because some of those settlers are guerrillas, the army has militarized the zone, making it difficult to carry out scientific experiments and studies.

The university scientists suggest that the government pay the settlers a fair price for their illegally obtained holdings and help them relocate on good land outside the Macarena reserve.

## Peruvians organize against herbicides

LIMA--Lakeshore dwellers in Peru's central jungle are fighting a government plan to spray herbicides on Lake Yarinococha, near Pucallpa, to kill a fast-growing water hyacinth--the "huama."

The plant first appeared on the lake three years ago and now covers 20 percent of its 500-hectare surface. It apparently doubles in growth every 100 days, which means that by July the lake could be completely covered, paralyzing lake traffic and commercial fishing. Already oxygen levels in the water have been lowered, depleting the fish population. The plant has also appeared in other communities between Pucallpa and the Amazon port of Iquitos.

The local government development agency Cordeu had agreed in mid-January to a US\$10,000 spraying plan, but the defense committee set up by lakeshore residents says this would endanger the lake's ecology and inhabitants. More than 20,000 people, including about 2,000 Shipibo Indians, live in and around the lakeshore without land access, most relying on lake water to drink and bathe and on lake fish for their protein source.

While the defense committee agrees that a small amount of spraying should be carried out to remove the huama, it favors reliance on the use of a Ministry of Fisheries anchovy harvesting machine to pull the plants out of the lake, or to push the plants into

the Ucayali river through a 10-mile-long canal which drains the lake when the river drops. A spokesman for the Shipibo says that one cause of the huama explosion in 1982 was the blocking of this canal last May by commercial fishermen to prevent fish leaving the lake.

The defense committee is now lobbying Cordeu for US\$10,000 to bring the harvester from Lima. It is also asking congressmen and government officials to declare the lakeside communities an emergency zone in order to raise money for the machine, and for the study of biological methods to eradicate the huama. GAIL MOSS

## Thai lake problems...

IN THE WAKE OF A RECENT WIDESPREAD EPIDEMIC that killed millions of fish in Thailand's fresh-water fish farms, the Ministry of Agriculture and Cooperatives is to place restrictions on 80 more toxic pesticides and herbicides--adding to a list of 123 chemicals already under strict control.

Although the epidemic was traced to a bacterial source, heavy traces of toxic pesticides were found in many water samples taken from affected farms. This resulted in a committee being set up to look into the use of toxic chemicals. The findings of the committee indicated that the 80 substances to be restricted were apparently widely used in the agricultural sector.

## New Thai lake basin development plan

MANILA--The Asian Development Bank, headquartered here, recently approved a US\$3 million loan to Thailand for studies on how best to develop a lake basin in the southern region. Since Thai consultants have limited experience in this type of work, the government expects to hire an outside firm or consortium of firms with considerable experience in similar projects.

The Thai government wants to decentralize its economic activities away from Bangkok, the capital, to other regions. It has chosen the Songkhla Lake Basin in the less-developed south, an area of about 8,000 square kilometers with an estimated population of one million.

The planning study for development of the

Songkhla Lake Basin will be carried out in two stages. The first consists of a regional development and environmental study to formulate a strategic framework. This will involve review and formulation to pre-feasibility level of proposed and new development projects. The second stage involves preparation of detailed feasibility studies of high-priority projects agreed upon by the government and the Bank. During the first stage, the Office of the National Environment Board (one of two executing agencies) will be provided with institutional support to strengthen its role.

The program's total cost is estimated at US\$4.58 million. Besides the ADB loan of \$3 million (payable over 15 years with a grace period of two years at an interest rate of 11 percent a year), the UN Development Program is expected to provide co-financing of \$500,000 to meet the balance of the foreign exchange cost. The government will provide \$1.08 million in local currency.

Executing agencies for the first stage will be ONEB and the Office of the National Economic and Social Development Board (NESBD), 962 Krung Kasem Road, Bangkok.

SPECIAL TO WER

## Malaysian solution...

MALAYSIA IS ALL SET TO SELL THE WORLD a new concept in controlling soil erosion. This concept uses rubber latex as a substrate to hold together soil particles and prevent topsoil from being washed away by the elements. The method has already been tested successfully, preventing soil erosion in road cuttings, according to the Malaysian Rubber Research Institute (RRI). The RRI is at present trying to sell the idea to the Chinese as a method to check soil erosion in valleys upstream of the Yangtze River in China.

"The potential is there even if the amount of latex used is of 2 percent strength," Datuk Haji Dr. Ani Arop, director of RRI, said. He said spraying a sandy area with latex could create enough substrate for seeds to take root and grow. He said experimental quantities of the latex have been used to fortify the sandy, arid soils of the Dunkirk beach in France and the Belgian coast. Datuk Haji Dr. Ani said if the method proves popular in China and other countries, about 10 percent of the natural rubber produced in Malaysia could be used in erosion control.

## EC nuclear research funds for acid rain?

BRUSSELS--The European Community's experimental nuclear reactor project "Super-Sara," at the Joint Research Center (JRC) in Italy, may soon be abandoned in favor of research into the problem of acid rain.

Funding for the project has encountered considerable problems since the light water reactor was built in 1980 to detect and avoid accidents such as that at the U.S. Three Mile Island reactor.

European research ministers, who are divided on the issue, agreed in February to put off a formal decision to abandon the project until March 10 when they were to examine alternative proposals put forward by the European Commission.

The Germans, who are in the Presidency of the Council of Ministers until July 1, are keen to use JRC facilities for research into the transfrontier problems of acid rain--a big issue in Germany. Rerouted funds available for this alternative field of research could reach up to 370 million European units of account (US\$352 million).

The Community will nevertheless continue research on light water reactor accidents. Instead of Super-Sara, the Commission envisages both intensified national research and greater collaboration with countries outside the Community. It already cooperates on two projects with the U.S. and, according to Commission experts, collaboration on a further two with Canada would also be possible.

ANNA LUBINSKA

## UK reactor hearings have wide fallout

LONDON--The Fallout Marching Band led the inharmonious protest that started a public inquiry into a new kind of nuclear power station this government hopes to build.

Britain's first pressurized water reactor (PWR) could be built at Sizewell in Suffolk at a cost of 1.1 billion British pounds (US\$1.7 billion), based on a U.S. Westinghouse design. Additional safety features necessary to bring it up to more stringent British standards would cost an additional 100 million pounds (\$152 million). When (and if) it is built--by 1991

--it would generate 1,200 megawatts of electricity.

The inquiry is something of a David and Goliath situation with the proponent, the Central Electricity Generating Board (CEGB), drawing on 5 million pounds of public money to present its case. Protesters were refused public funding.

Both sides acknowledge the significance of this inquiry for Britain's nuclear power program until well into the next century, for the government hopes to build nine more PWR power stations. For similar reasons other European nations, particularly West Germany and France, are watching the inquiry closely.

The inquiry is expected to last until well into the autumn, with the first nine weeks devoted to the CEGB case. Opponents contend that need and cost are the primary issues. The Council for the Preservation of Rural England challenges the claim that electricity from Sizewell B will be cheaper. Friends of the Earth questions the need for extra nuclear capacity and puts forward the potential of alternative energies--if they received even a modest proportion of the billions of pounds put into nuclear development.

Part of the CEGB case is that nuclear power will reduce over-dependence on coal, which at present provides 80 percent of power station fuel. The National Union of Mineworkers leader, Arthur Scargill, sees this argument as more political than economic, a further attempt by Prime Minister Margaret Thatcher, "the plutonium blonde in No. 10," to undermine trade union power. He said the dangers of pollution, cancer and potential terrorism are the arguments that should be used against Sizewell B.

Although the CEGB is confident that its arguments on safety, cost and need will win, the increasing politicization of nuclear power and nuclear weapons could be a key election issue.

BARBARA MASSAM

## Red tape may enmesh Italy's new sea law

ROME--Italy has approved a law providing closer controls and stiff penalties on persons and companies dumping polluting substances into the sea.

The law was promulgated in February, but red tape could delay its effectiveness by years.

Pino Lucchesi, a Christian Democrat deputy who has been a major supporter of Italy's "sea law" warned that "two or three years might be needed before authorization for purchasing ships and planes for controlling sea pollution and its source gets through bureaucratic hobbles."

Time will be also needed before new personnel are hired for port offices, including 600 technicians for the new central office for sea defense, as required by the law.

Italian ecologists say that the sea law will be a good law when operative, but they expect it could face the same delays and troubles experienced by the so-called Merli law which controls water pollution in industrial areas.

The Merli law is barely effective because of several amendments and bureaucratic delays five years after its original approval.

PIERO VALSECCHI

## Pollution in Venice mostly agricultural

VENICE--A four-month investigation by Italian experts produced surprising results about the severe pollution in the lagoon of Venice.

It is not caused by industrial waste, as originally believed, but by the massive dumping of agricultural waste, chiefly fertilizers.

Last summer the lagoon of this scenic city became a noxious pool, filled with algae and dead fish, the source of millions of mosquitos which troubled tourists and residents.

The nearby chemical plants of Porto Marghera and the shipyards were first suspected. Instead, experts said that large amounts of fertilizers used in agriculture, which reached the lagoon through rivers and canals and combined with an unusually low tide, deeply altered environmental conditions. They said this was a striking example of what could happen nationwide if the massive use of chemicals is not regulated by law.

Fertilizers first triggered a massive growth of algae and later their putrefaction. This caused suffocation of fish and an unprecedented proliferation of mosquitos.

However, the Italian Chemical Association underlined that there has been a steady decline in the use of fertilizers and pesti-

cides by Italian farmers in recent years. Sales of pesticides dropped about 10 percent to 165,000 metric tons in 1982.

Protests and accusations against pesticides as a major threat to the environment were made by the National Association of Hunters. Association officials claimed that the gradual disappearance of game was due to chemical poisoning.

Anti-hunting groups, although not excluding damage from chemicals, claimed that only suspension of hunting for several years could preserve Italy's fauna.

PIERO VALSECCHI

## Three nations won't fight whaling ban

REYKJAVIK--After two days of hard debate, the Icelandic parliament decided not to object to the 1986-1990 commercial whaling ban, voted last July by the International Whaling Commission (IWC). In an evening session on the last day to file objections, parliament decided--by one vote--to go along with the ban.

(At about the same time, South Korea and Brazil also decided not to file objections to the ban. This means that just four nations--Japan, the USSR, Peru and Norway--will continue whaling despite the ban. The U.S. consortium of wildlife groups, Monitor, urged its members to focus their efforts on Japan and Norway. It said some groups were pressing for a boycott of Japanese and Norwegian fish products.)

In Iceland, the debate in newspapers and in parliament turned on the economic issue. In 1981, whaling produced 1 percent of Iceland's national income. Its total shutdown would affect 200 workers--a loss comparable to 200,000 being put out of work in the U.S.A. On the other hand, the U.S. buys 30-40 percent of all fish that Iceland exports. This market would have been in jeopardy due to threats by American protesters, said the Coldwater Seafood Corporation, which warned against the objection.

Fisheries Minister Steingrímur Hermannsson had argued that the IWC ban was not based on scientific conclusions. He asserted that Icelanders had always run their whaling in accordance with the scientific committees' quotas and that therefore whale reserves around Iceland are not overtaxed.

All parties concerned stressed the need



for more intense research on whaling stocks. Even the Nature Conservation Council maintained that it did not consider a short-term whaling ban an ecological necessity. Nevertheless, it did not recommend objection in view of the circumstances.

ELIN PALMADOTTIR

## New Zealand synfuel plans hit a setback

WELLINGTON--A district court action in a small New Zealand dairy farming town could affect the pace at which this country pursues big synthetic fuel projects in the face of environmental objections.

The district court, lowest in the judicial structure, was sitting at Hawera on the edge of a natural gas development field. It fined a development corporation \$1,000 for discharging a poisonous substance (un-ionized ammonia waste) into a stream in contravention of freshwater fisheries regulations.

The corporation's subsidiary ammonia-urea plant disposes of its wastes by spray irrigating them onto a nearby pasture. But as a caustic soda mix used to reduce acidity before spraying compacts soils, reducing their ability to absorb, the waste ran off into a gully killing fish 20 kilometers downstream.

The Natural Gas Corporation pleaded guilty but submitted that it had taken reasonable precautions. The corporation paid \$9,000 last year in an out-of-court settlement after another, smaller spill from the parent gas treatment plant.

The ammonia-urea processing plant is itself a by-product, located on a natural gas field near the gas processing plant. They are not far from an off-shore gas well, which is the key to development of a chain of processes for production of synthetic fuel. The purpose is to decrease substantially New Zealand's dependence on imported fuels. Because the ammonia-urea plant is the first piece moving into production its performance is bound to have impact, particularly in delivery on assurances made on preservation of the environment.

Government policies on implementation of an industrialization plan, on which it was last elected, tend to emphasize the need for fast tracks through legislation, to get on with the job, rather than long consultations and adjudications on environmental

objections. It so happens that the kind of environment affected by dumping the non-absorbent ammonia wastes is not scenic or aesthetic but valuable dairy farming land in a country which is still a major dairy exporter.

JACK KELLEHER

## New man at UNEP...

THE UN ENVIRONMENT PROGRAM (UNEP) has a new second-in-command, Joseph Wheeler, who until last year was Deputy Administrator of the U.S. Agency for International Development (AID).

His appointment, announced by UN Secretary-General Javier Perez de Cueller, will be effective June 1. Wheeler replaces Peter Thacher who took early retirement to join the Washington-based World Resources Institute (WER, Jan. 15, p.6).

Wheeler's long-time career with AID was interrupted in 1961 when he helped start Peace Corps operations. In 1963 he returned and in succeeding years oversaw AID programs in Greece, Turkey, Iran, Cyprus, Jordan, Pakistan and, on a regional basis, the Near East and South Asia.

In 1979 he was presented AID's distinguished honor award for outstanding service, and in 1982 he was one of the first two AID foreign service officers to be awarded the rank of career minister.

Wheeler, who was born in 1926, graduated from Harvard University.

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## Iran-Iraq war causes worst oil spill in Persian Gulf

KUWAIT--The Iran-Iraq war is causing what may become the worst-ever oil spill in the Persian (or Arabian) Gulf. Because the damaged wells are within the war zone, there are no hard figures as to the amount of oil spilling. Estimates range from 1,500-12,000 barrels a day over the past couple of months.

Richard Golob, director of the Cambridge, Massachusetts-based Center for Short-Lived Phenomena, told WER that several off-shore wells were affected. The first, which had been damaged two years ago when it was accidentally rammed by a tanker, had been shut down, but in early February high winds and heavy seas caused a blow out. It has been spilling 1,000 to 1,500 barrels a day. The Iranian Offshore Oil Company asked oil-spill specialist Red Adair to cap it, but because he and other cleaning contractors could not be guaranteed safe passage or get a guarantee of millions of dollars in escrow to cover possible equipment loss, as of this writing nothing had been done.

The other wells were raided by Iraqi helicopters in early March, and two to four wells are reported to be on fire with a loss of 25,000 to 30,000 barrels daily. However, Golob said, because most of the oil from these wells is burning, marine pollution is not as bad as it might be.

By the second week in March a heavy slick about 240 kilometers long and 6.5 kilometers wide had formed, and a week later it was observed in Saudi Arabian waters about 50 kilometers north of Bahrain.

Because no one can get accurate information from the site due to the war, neighboring countries have no idea when, where and how much oil will head their way. All countries in the area have alerted their national oil contingency organization, for the spill is a serious threat to their economies. They have to protect water intakes for their desalination plants, factories and power generating plants. In addition, coastal peoples are dependent on the Gulf for fish. The Regional Organization for Protection of the Marine Environment in Kuwait has been trying to bring Iran and Iraq together to deal with this potentially catastrophic situation but, as of this writing, unsuccessfully. It received an urgent appeal from Iran in late March, asking for help in cleaning up the

slick--fast approaching Bahrain, Qatar and Saudi Arabia. Iran's Ambassador to Kuwait, Ali Shams Ardakani, said Iran had not asked Iraq to join the effort.

According to Golob, the situation is very serious. "If the Iranians and Iraqis were to come to a ceasefire agreement today, it would take four to six weeks to cap those wells. As the spill continues, it becomes more difficult and will take more time," he said.

The worst previous spill in the Gulf happened October 2, 1980, when an exploratory well, Hasbah 6, belonging to the Arabian American Oil Company (ARAMCO) blew out. A slick made up of somewhat between 50,000-100,000 barrels ended up on the beaches of the sheikhdom of Qatar. The current spill is already considered much more serious.

SPECIAL TO WER

## Caribbean sea treaty signed in Columbia

NEW YORK--As the Arabian (or Persian) Gulf nations found themselves powerless to halt an oil spill caused by the Iran-Iraq war--despite regional cooperation plans--yet another marine protection plan was born half-way around the world, in the Caribbean.

At the end of March, 13 of the 27 Caribbean nations signed a treaty to protect and develop their mutual sea. Known as the Cartagena Convention because it was signed in that Colombian city, it is essentially an umbrella treaty that does not obligate the countries to act. They agree generally to "prevent, reduce and combat pollution...and to ensure sound environmental management." It will be supplemented by a series of protocols, or treaties, that deal specifically with separate problems outlined in the general provisions of the convention.

While in Cartagena, the first of these protocols was signed into being, on "Cooperation in combating oil spills in the Wider Caribbean region." The Caribbean is an important oil-producing area. The UN Environment Program, which sponsors 10 regional seas programs worldwide including the Caribbean plan, said the Caribbean produced eight million barrels of crude oil a day in 1978, 3.1 million from off-shore rigs. It has a refining capacity of more than 12 million barrels a day. The major oil-producing countries are the U.S., Venezuela, Mexico, Trinidad and Tobago. In addition, super-

tankers regularly cross the region with Middle Eastern, African and Alaskan oil. In all, according to the UN, 4.7 million barrels are shipped through the Caribbean every day.

There have been extensive oil spills in coastal waters, UNEP reported: through accidents, tank washing and operational discharges over 76.6 million barrels in 1978. And UNEP projects that accidental massive spills of 30,000 barrels or more will occur about every 18 months.

So far, UNEP reports, the Caribbean islands have held two meetings in an effort to develop an oil spill contingency plan.

Other major problems there are destruction of tropical rain forests, impact of mass tourism, untreated sewage, destruction of coral reefs and mangrove forests.

The Wider Caribbean area covered by the Cartagena Convention includes 27 states ranging from the United States to northeastern South America and the islands in between--all in all a population of about 207 million.

The new treaty requires cooperation from politically disparate countries, such as the U.S. and Cuba, or Venezuela, Colombia and Guyana which all claim parts of each other's territory.

Although most of the 27 states were expected to sign, in fact only 13 did: Britain, France and the Netherlands, which control territories in the region; the U.S., Colombia, Grenada, Honduras, Jamaica, Mexico, Nicaragua, Panama, St. Lucia and Venezuela. The European Economic Community also signed. Four other Caribbean nations--Cuba, Costa Rica, Guatemala, and Trinidad and Tobago--sent delegates but did not sign because of legislative or constitutional technicalities. They were, however, expected to sign the agreement at a later date.

SPECIAL TO WER

## Cuba sets up its own EPA

HAVANA--Cuba, one of just four Caribbean states with a full-fledged (but fledgling) environmental protection agency, has promised to cooperate with its neighbors in the wider Caribbean clean-up and development plan. Although its representative was unable to sign the Caribbean treaty last month (see above), he said that Cuba planned to in the near future.

Cuba's new Center for the Protection of the Environment and Rational Use of National Resources should be fully operational by the end of the year, said Dr. Tirso Saenz, president of the National Commission for the Protection of the Environment. His commission's work will be finished when the center is set up. Dr. Saenz spoke with Athleen Ellington, Earthscan Washington Bureau Chief, who provided WER with a copy of his remarks.

Saenz's commission was set up in 1976 to draft the law for the new Center. It will be an independent unit with executive and enforcement powers under the auspices of the Cuban Academy of Sciences. The law establishing the Center was passed by the Popular Assembly in December 1980 along with 13 by-laws covering soils, forests, air, water, marine resources, fauna and flora. They are now before the Council of Ministers.

Dr. Saenz, who is U.S.-educated, said he studied several other nations' environmental institutions to create the Cuban Center, which he hopes will be a model for other Caribbean states.

As the Center sets up its data gathering and monitoring systems, the National Commission and the Academy of Sciences are already tackling Cuba's more serious problems.

Havana Bay is one of the most polluted harbors in the world. Its clean-up is one of 53 national priorities listed in Cuba's 1980-85 Five-Year Plan. The capital with two million people has no sewage treatment plants so the harbor gets most of the city's raw sewage, along with oil from tankers and waste from the oil refinery, a fertilizer and a battery factory. As part of the Caribbean Action Plan, agreed to in 1981, Cuba so far has received \$765,000 from the UN Environment Program and UN Development Program for the clean-up campaign.

Before Fidel Castro's 1959 revolution and sweeping agrarian reform program, peasants were forced to farm the mountainous regions as the best valley land was held by large sugar, coffee and tobacco plantation owners. A pattern developed, familiar throughout much of Central America and the Caribbean: deforestation, erosion and loss of topsoil. In 1982 the environment commission began a national reforestation program. Saenz told Ellington this program will be a primary concern of the new Center. A 1981 Food and Agriculture Organization and UNEP report projected Cuba's reforestation rate over 1981-85 at 52,900 hectares a year as opposed to 1,260 hectares for Nicaragua, which is slightly bigger.

Although Cuba's population of 9.8 million is growing more slowly than that of neighboring nations, it will double in 85 years. This has created pressures on the eastern pine woodlands surrounding the Sierra Maestra range which sheltered Castro's guerrillas during the revolution. The 150,000-hectare Zapata Swamp on the southwest coast, which is home to hosts of species, may be drained for agriculture. It already is affected by the use of pesticides and fertilizers in the surrounding citrus, rice and sugarcane plantations. To preserve this ecosystem, the Academy is working with the Hungarian Academy of Sciences and UNESCO's Man and the Biosphere Program on a five-year study of human impacts on the swamp.

As the population grows, energy demands do also. The Center plans to develop alternative energy sources. A National Commission for Biogas has already been set up, and several pilot digesters are being tested on dairies and farm cooperatives. The Center wants to install biogas units throughout the country, Saenz said.

In just 24 years Cuba has managed to control many diseases that still afflict most developing countries: tuberculosis, malaria and gastroenteritis. If the Center can apply this same zeal to the environment, then Cuba may well become the model for other Caribbean nations that it hopes to be.

SPECIAL TO WER

## More on Latin America...

THE BADLY POLLUTED BOGOTA RIVER is being cleaned up, reports Diego Pardo Koppel, director of the regional environmental agency CAR (Corporacion Autonoma Regional de la Sabana de Bogota). Colombian engineering firms are designing sewage treatment plants for 21 small towns that dump their contaminated waters directly into the 370-kilometer-long river. And a U.S.-Colombian consortium has undertaken a US\$4 million study, to be completed in early 1984, of solutions to the sewage problems of the city of Bogota, the single largest polluter.

These measures are part of a large aid package for the Bogota River that is being administered by CAR and the water company, Empresa de Acueducto y Alcantarillado de Bogota. Spokesmen at the Departamento Nacional de Planeacion, a government organization that oversees Colombian investments, estimate that the Bogota River program will cost US\$240 million, \$148 million from international development bank loans.

## Peruvian whaling gets a no-vote in Congress

LIMA--The Peruvian Congress has passed a resolution asking the Ministry of Fisheries to revoke its objection to the international whaling moratorium that takes effect in 1986. It requested the Ministry to prepare a report--to be ready this month--on Peru's whaling operations, which are carried out by a Japanese-owned company (Japan fought the International Whaling Commission ban and also filed a formal objection, as did Norway and the U.S.S.R.).

At about the same time, the new Minister of Fisheries, Luis Percovich, agreed to let an international observer study whaling operations at the port of Paíta, 900 kilometers north of Lima. They are run by the Japanese-owned Victoria Del Mar. This visit, the first of its kind, was agreed to during a meeting with Peruvian conservationists Felipe Benavides (president of the wildlife organization PRODNA), Augusto Urrutia and Enrique Serpa, deputy of the government Popular Action party.

Serpa told WER he hoped the whaling report would be objective, but he was not sure: "There are officials in the Ministry of Fisheries who have personal interests in whaling, and because of this the report may not be impartial. But," he continued, "we have great faith in Senor Percovich, who is very aware of the ecological problems, and who said to us that he would take the appropriate measures. The presence of an observer will be a tremendous step in the right direction."

Peru's objection to the international whaling moratorium had angered local conservationists, who were already upset by the fact that in 1982 Peru caught more than its quota of 165 Brydes whales. At least 35 percent of those caught reportedly were under the 12-meter minimum length fixed by the IWC. Benavides said that Peru had not filed the reports required by the IWC on the size and weight of the whales caught.

Last year Victoria Del Mar exported about 95 percent of its whalemeat to Japan--another infringement of IWC regulations, Benavides asserted, since meat from under-size whales is not supposed to be exported.

The popular and political response to Peru's increasingly isolated stand on this issue came about partly because of a well-publicized visit by the Greenpeace anti-

whaling ship, Rainbow Warrior, at the end of last year. Greenpeace members were briefly arrested after chaining themselves to one of Victoria Del Mar's three whaling ships. The Rainbow Warrior itself was held for several weeks under armed guard, and a charge of piracy was brought. After paying a US\$3,000 fine, the Greenpeace mission left Peru. GAIL MOSS

## More on marine mammals...

NORWAY'S OBJECTION TO THE 1986 WHALING BAN led the largest seafood restaurant chain in the U.S. to cancel \$5 million in codfish contracts from that nation. Long John Silver's Seafood Shoppes, with more than 1,300 fast-food outlets, is the world's largest buyer of cod filets. Spokesman O. Bruce Hinton, Jr., wrote the wildlife consortium Monitor: "Quite simply, my company now purchases fish only from countries which abide by the (International Whaling) Commission's recommendations."

INTENSE INTERNATIONAL PRESSURE ON TURKEY led that government to prohibit the hunting of dolphins and porpoises in the Black Sea as of this April. Sukru Elekdag, Turkey's Ambassador to the United States, said the ban "will last for an indefinite period until final results of a research project currently underway are available and fully analyzed." The Environment Agency of Turkey is now studying dolphin and porpoise populations in the Black Sea. Tens of thousands were hunted annually and converted into oil and chickenfeed.

## State of environment in Mexico found poor

MEXICO CITY--Desertification at the rate of 255,000 hectares of land every year, water contamination, and an annual bombardment of 3.7 million tons of atmospheric contaminants onto residents of the Mexican capital are among details cited in a new diagnosis of Mexico's ecological condition, prepared by the new Secretariat of Urban Development and Ecology.

"Until the middle of this century, a majority of Mexico was still virgin territory; it was not until the process of industrialization began, with a parallel pro-

cess of urbanization, that natural resources began to be used in an intense manner for the country's development," noted the report from Secretary Marcello Javelly Girard's federal cabinet ministry.

Constantly expanding the agricultural "frontier" without proper planning for environmental protection has accelerated desertification to its current rate of 255,000 hectares annually, the diagnosis found. "One-half of the cultivated lands gradually are deteriorating because of the destruction of forests, poorly planned agriculture practices or uncontrolled grazing," it said.

Mexico's water is contaminated, because of urban and industrial uses. The Panuco River basin receives "the waste of approximately 15 million inhabitants and more than 35,000 industries," besides discharge from other areas, "all of the water without previous treatment," the diagnosis found. While subterranean water remains free of contamination, it is being used up, especially in arid and semi-arid regions of northern Mexico.

Environmental contamination, hunting, fishing, poorly organized tourist activities, open mining and the inadequate disposal of solid wastes have resulted in the continued deterioration of ecosystems with the resultant loss of wildlife, the report observed.

Problems of all urban areas are emphasized in Mexico City, especially atmospheric contamination, due to industries and motor vehicles. KATHERINE HATCH

## Economy vs. ecology is Mexico's problem

MEXICO CITY--"Quality control" by industry and a "change in the attitude of the people" were cited by Salvador Corrales Ayala, press chief for the newly created federal Secretariat of Urban Development and Ecology, as the keys to cleaning up Mexico's environment. "But we will have to do things that are not extremely expensive," he added, acknowledging that Mexico's current federal budget is trimmed to meet economic realities.

While agreeing that laws presently enacted place restrictions on industry and provide for fines and closures if certain types of industry persist in contaminating the atmosphere, Corrales pointed out that Mexican industry must not be closed down

because of the need for production and jobs. He adds that many anti-contamination devices are expensive, particularly since most must be imported.

Mexico City's air, once crystal-clear, is badly polluted, mostly from emissions of the more than two million motor vehicles which daily use its streets. The spokesman said blame for this could be shared between the manufacturers of fuel and vehicles and their owners. The Mexican government is the sole producer of gasoline and diesel, through its parastate monopoly, Pemex, and Corrales acknowledged that Pemex could produce "cleaner" fuels.

At the same time, he emphasized that many cars circulating on the streets are old, poorly tuned and lack proper repairs to prevent pollutant emissions. Mexico does not yet place emission controls on vehicles manufactured or assembled in the country. All of this takes money, the spokesman noted.

The present administration of President Miguel de la Madrid Hurtado, who assumed office December 1 and who ordered creation of the new Secretariat of Urban Development and Ecology, has the best opportunity yet for attaining results in grappling with Mexico's ever-growing environmental problems, the spokesman said.

"For the first time, we are combining human settlements, the main cause of ecological problems, with the work of protecting and improving the environment," he said. "In this way, for the first time, the work will be coordinated in one agency. We now have the necessary administrative structure so we can do what is needed." Previously, ecological affairs were part of the federal health secretariat under a sub-secretariat for environmental improvement.

Dr. Alicia Barcena Ibarra, 31, the new sub-secretary for ecology, is a biologist with special interest and training in botany and ecology. She worked as a full-time investigator at the National Institute of Investigations on Biological Resources, co-produced a radio program on "Our Environment" at the University of Veracruz, is on the faculty of the National University of Mexico in Mexico City and was technical secretary to the Commission on Ecology and Environment for the Institute of Political and Social Studies of the Institutional Revolutionary Party, the dominant political party in Mexico. Marcello Javelly Girard is head of the Secretariat of Urban Development and Ecology.

KATHERINE HATCH

## British drinking water contaminated

LONDON--Nitrate levels in British drinking water are dangerously high, according to documents prepared by the Standing Technical Advisory Committee on Water Quality, staffed jointly by the Department of the Environment and the National Water Council.

They found that "Concentrations have, on the average, doubled over the last 20 years." The Thames, London's chief water source, now has an annual average of nitrates up 78 percent in the past decade. Worst affected are lowland areas like East Anglia, with good but highly fertilized soil.

The amount of nitrates in water, largely due to the leaching of fertilizers from farmland into rivers and underground waters, has been rising over the past two decades, the report said.

In the face of increasing evidence of a link between nitrate level and stomach cancer, the European Economic Community lowered the permitted rate from 100 milligrams to 50 mg. per liter. This comes into force in 1985, and certain areas of Britain will be well in excess of the permitted levels at certain times of the year.

The Committee's findings were reported to the House of Commons, and Members of Parliament on both sides of the House expressed concern. Environment Minister Tom King called for the documents to make a personal investigation.

The difficulty will be to alter farming practices. The industry is government subsidized and constantly encouraged to produce more. Farmers have to increase applications of fertilizer to maintain yields.

A Friends of the Earth spokesman said, "The soil in some areas is becoming a chemical sponge." He also noted that the petrochemical industry which supplies the fertilizers is now also supplying seeds needing highly fertilized soil to flourish.

BARBARA MASSAM

## More water pollution...

AT LEAST 50 STATIONS have been set up along India's sacred river, the Ganges, to monitor pollution, according to Dr. Niloy Chowdhury, Chairman of the Central Water Pollution Board. An entire stretch from Howrah, near Calcutta, to the delta in the Bay of Bengal, is unfit even for irrigation.

## Istanbul fines two firms \$10 million

ISTANBUL--The Municipality of Istanbul has received \$10 million (2 billion Turkish Lira) compensation from two Turkish companies for polluting the sea.

The companies were polluting the shores of the Atakoy district, which has beaches and camping sites. One of them is the airport administration, the other a bank. The former was dumping all its wastes into the sea, the latter owns modern apartment buildings without proper sewage systems.

Although there is no law yet on pollution of the air or sea, the Istanbul municipality obliged the two agencies to pay compensation for the damages and to contribute to the implementation of a project to clean the shores of Atakoy and save the Marmara Sea. The airport administration agreed to pay \$7 million and the bank \$3 million.

A municipality spokesman expressed hope that a law to impose fines on companies polluting the sea would be passed soon to permit implementation of the clean-up project within the next two years.

Meanwhile, the Minister of Housing, Ahmet Samsunlu, who has taken an active interest in environmental problems, said that a draft law with penalties against those who pollute the air and the sea will soon be presented to the Constituent Assembly.

On the same subject, the Governor of Istanbul, Nevzat Ayaz, said that he has just issued a decree providing for penalties against polluters, which will remain in force until a law is passed. He emphasized that the decree obliges all factories to use special filters in their chimneys and that special teams from the municipality will inspect these places. Prison terms of up to three months will be imposed on those who do not respect the new rule, Governor Ayaz said.

According to a report just issued by the Turkish Environmental Problems Foundation, air pollution is now threatening public health in 34 cities in this country. The main causes of pollution are the cement, fertilizer, newsprint, and sugar industries and mining close to cities. The Foundation, which is the only non-profit environmental organization in Turkey, urges the government to ensure the passing of an environmental protection law to stop what it describes as a disaster situation.

SAM COHEN

## An overview of the European "greens"

BRUSSELS--In March, Germany became the second European country with ecologists in parliament. Polling 5.6 percent of the vote, "die Gruenen" (the Greens) obtained a surprising 27 seats in the Bundestag, or lower house, far surpassing their Belgian counterparts "les Ecolos" who have had six members of parliament since 1981.

France also went to the polls in municipal elections, considered a fairly accurate popularity barometer. Despite a daunting 10 percent-of-the-vote hurdle, the French ecological movement (which consists of three currents) carried off several dozen local government posts in the first round and could in the re-run, by designating their vote, swing local power back into the hands of the ruling Socialists, who fared more badly than expected.

The ecologists could have done a lot better, commented a spokesman for the Movement D'Ecologie Politique (MEP), if they had achieved their aim of unity. But fundamental differences divide the Amis de la Terre (AT, or Friends of the Earth), the Confederation Ecologiste and MEP, which was recently renamed les Verts-Parti Ecologiste (VPE) in anticipation of a unified political party. They are deeply rooted in their origins: both VPE and AT grew around the strong and often conflicting personalities of Solange Fernex, a candidate for the European parliament in 1979, and Brice Lalonde, who ran for President of France in 1981 and who spends his time off with Greenpeace at Mururoa.

Since their October 1982 decision to form a unified party, the three organizations have been moving steadily away from each other on the crucial issues of status and structure. The VPE wants a single political party with no room for other militant activity. This is something AT cannot accept although it is prepared to supply political candidates. Both of these organizations want a centralized national executive while the Confederation, which was never anything more than a loose configuration of associations and movements at regional grassroots level, wants the regions to have a greater say.

After months of talks about "unification," apart from joint candidate lists in Paris and the Alsace the three movements went on to present their own candidates.

Despite their division, the French ecologists remain, next to "die Gruenen," the most influential of the Green movements in the European Community. If the French resolve their differences, they could together with their German counterparts play a key role in European politics at EEC level. The elections to the European Parliament are to be held in 1984. This time, unlike 1979, Greens all over the Community are preparing not only candidates but an entire grouping or faction. Representatives of the national ecology parties: British Ecology Party, Ecolo (Belgian Walloon) and Agalev (Belgian Flemish), Die Gruenen and MEP have been meeting regularly since 1981 to plan and coordinate a "Green International" with a common position at the elections. Because of the differing electoral systems in the various member states, it would be a voice, say the organizers, for those national Green parties which do not have a chance of obtaining a seat in the European Parliament. ANNA LUBINSKA

## Italy forms a "green wave"

MILAN--In the wake of political triumphs scored by West Germany's "Green" party, Italian ecologists and pacifists have formed their own "green wave" and already are thinking of a European federation of greens.

Italian greens--ranging from church-backed youth movements to non-violent conscientious objectors--still are far from the major influence of their German counterpart. Some members agree that their ideas, purposes and plans are still in a confused, initial phase.

So far, the Italian greens have refused any political link and support. Their only action has been to join a pacifist march from various Italian cities to Comiso, in Sicily, to protest the installation of U.S. nuclear missiles at a base there.

"We are few but we will grow in number and power," asserted Mario Appignani, a former member of the Radical Party during a recent meeting of a green group in Bologna.

Appignani and his group, one of many appearing on the Italian "green" field, plan to oppose building any new nuclear plants in Italy, the proliferation of Pershing and Cruise missiles and any attack on the national environment.



He announced an action in Tuscany to prevent knocking down dozens of cypresses to make way for a new highway. "We will chain ourselves to each tree when the Caterpillars come," he said.

He also unveiled his group's program: demands for parks in each urban area, a new law regulating use of chemical products and an "international movement" of greens, primarily West German and French ecologists and pacifists.

Livia Citterio, once a member of the left-wing Avanguardia Operaia who has long given up political activity, said she had confidence in the future role of the green movement in Italy. "A common idea of Italian greens is to safeguard peace and environment outside any political structure and link."

However, some members of green groups believe that formation of a green party will be a compulsory step in the future to, as one said, "know at least our number, our strength while avoiding any political exploitation by existing parties."

PIERO VALSECCHI

## News in brief...

THE OECD has just published two reports on oil spills. "Combatting Oil Spills--Some Economic Aspects," 140 pages, includes the first published statistical collection of oil spill costs. It covers 150 spills around the world and shows the increase in absolute and relative costs of clean-up and other damage between 1962 and 1980. A related report is, "The Cost of Oil Spills," 252 pages.

They are available from OECD sales agents around the world or from the OECD Publications Bureau, 2 rue Andre Pascal, 75775 Paris Cedex 16, France.

"ENVIRONMENTAL PLANNING FOR MAJOR PETROLEUM DEVELOPMENTS" is the title of an international workshop to be held May 15-18, 1983, in Vancouver, British Columbia, Canada. It is being sponsored by the governments of Canada and British Columbia, Canadian Petroleum Association, East-West Center of Hawaii, and the Westwater Research Center of the University of British Columbia. The cost is \$195 Canadian or US\$165. For information: International Workshop on Environmental Planning, c/o Venue West Ltd., 1704-1200 Alberni St., Vancouver, BC V6E 1A6, Canada, or telephone 604/681-5226.

A STUDY ON HAZARDOUS WASTE LEGISLATION in OECD countries has just been published by the Organization for Economic Cooperation and Development. It surveys the national legislation of 15 of its 24 member states and includes European Economic Community (EEC) directives and the OECD Council decision. It then makes a comparative legal analysis on rules of national scope and rules of international scope. It is available from the OECD, 2 rue Andre-Pascal, 75775 Paris cedex 16, France.

IUCN HAS A NEW DIRECTOR GENERAL, Dr. Kenton Miller, who was Secretary General of the World National Parks Congress held in Bali, Indonesia, last October. Miller replaces Dr. Lee Talbot, who resigned late last year for unspecified personal reasons (WER, Jan. 15, p.6).

Miller, a 43-year-old American, has been connected with IUCN, the International Union for Conservation of Nature and Natural Resources, for several years. He is chairman of its Commission on National Parks and Protected Areas, a member of its Species Survival Commission and of its Program Planning Advisory Group. He is also currently Director of the Center for Strategic Wildland Management Studies and is an Associate Professor of Natural Resources at the University of Michigan.

Miller takes over IUCN's leadership this July.

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## Peruvian jungle project raises many dollars, some doubts

LIMA--The Peruvian government is going ahead with its ecologically controversial Pichis-Palcazu-Pachitea development project, by which it hopes to convert three river valleys, covering 2.2 million hectares of Peru's highland jungle, into a center for agriculture, forestry, stockbreeding and agro-industry (WER, July 6, 1981, p.6).

The Lima office of the U.S. Agency for International Development (USAID), with whom the Peruvians are negotiating a loan of about \$20 million for developing the Palcazu valley, states bluntly that "President Belaunde is going ahead with the project whatever we do. We're trying to minimize the long-term negative effects."

USAID commissioned an environmental impact analysis prepared by 14 top scientists through JRB Associates Inc., a firm of environmental consultants based in Virginia. The study already has underlined the limitations of the project, at least in the Palcazu area; USAID says the "breadbasket" concept is not viable and that the Palcazu valley cannot support much colonization. USAID also says that it will not go ahead until the Indians have received land titles. A final presentation of the project and its problems will be presented to USAID this month in Washington; the loan agreement is expected within two months.

USAID is financing only part of the first stage of the project, estimated to cost at least \$100 million. There is an informal application for \$70 million from the Inter-American Development Bank for developing the Pichis valley. And agreements have already been signed with the West German government for a loan of DM10 million (\$4.2 million) for work in the Oxapampa area to the south, and with the Canadian government for Can\$1.7 million (\$1.4 million) for forestry development in the Pichis and Pachitea valleys.

The long-term strategy includes possible hydro-electricity, mining, oil and tourist activities. Specific current objectives include:

\* Construction of over 400 kilometers of roads, especially continuation of the so-called Marginal Highway running along the edge of the jungle regions.

\* Construction of the city of Constitucion, to be built at the confluence of the Pichis and Palcazu rivers. Although the city's population would reach



only 20,000 by the year 2000, it would supply back-up services for the region's industrial and commercial growth.

\* Social projects, including construction of health posts, and complete land titling of both native communities and colonists already in the area.

There has been practically no public opposition to the project within Peru, with 50 percent of the population either unemployed or below the poverty level, long-term thinking on resource conservation is a low priority both in the government and within the population as a whole.

Criticism of the project has been limited to anthropological groups such as CIPA, the Center for Research and Promotion of the Amazon. This criticism came in the middle of a Swiss-financed investigation into small-scale development of the region. The Swiss group was asked by the Ministry of Agriculture to withdraw, after allegations that it was inciting native communities against the government's plans. The withdrawal followed the signing of an agreement between the government and USAID to carry out preliminary studies for what is now the Palcazu part of the project.

"It was very obvious that in spite of the agreement with the Swiss, Ericsson (the Minister of Agriculture) wanted to obtain bigger funds," says Carlos Mora, head of CIPA.

### COLONIZATION

The Special Project Office (SPO) team running the project includes several highly qualified environmental scientists who are very conscious of the project's long-term threats of ecological damage, deforestation and the possible break-up of Indian communities. Nevertheless, given that these threats are an integral part of the project, they are not being lessened by the way it is being handled, say the project's critics. For example:

\* There is confusion over the SPO's figures for present population and land use. "There are more people there than the government says there are," says Carlos Mora, "and much of the rest of the land is under protection."

\* There is contradictory evidence over the government's intention to colonize. USAID states: "We've never discussed colonization (in the Palcazu) with the government." One of the SPO's top men agrees that colonization was never a basic objective and that "We don't know how many peo-

ple will arrive." Yet information published in the local press, originating partly from government sources, strongly indicates that colonization is on the way. And the SPO itself is assuming a total population for the area of 192,000 by the year 2000; this would at least double present numbers.

\* There are only vague plans for controlling settlers once they arrive, although in theory they would be assigned parcels of land. Furthermore, Brian Pratt, Northern Andean field director for Oxfam, the British-based charity which has funded small projects in the region, says, "There is also the probability that new settlers will follow the classic pattern of selling their land allocation to large landowners and that they will end up as exploited laborers, as happened in Bolivia." A further danger is that instead of food crops, many settlers will turn to the more profitable cultivation of coca.

\* The current freeze on land titling procedures is said by some anthropologists to be working against the indigenous population. In November last year, a law was passed halting land title applications for six months. Although this was primarily to arrest claims by colonists before the Indians had been properly titled, critics of the project say that this will hold up applications by the Indians themselves, while settlers move in. However, the SPO disputes this and says that nearly all the Indians in the area now have land titles.

In spite of the project's drawbacks, it appears that the Peruvians will get the money they need to push ahead with the project. Pratt says, "Western governments want to support Peru's new democracy, and making credit available is the easiest way to do it."

The biggest potential lender so far, the Inter-American Development Bank, seems to be all in favor, as long as the project's economic return is "high enough to justify investment," according to the Bank's Lima manager, Carlos Villar. The Bank is now awaiting completion of a project analysis. In contrast with the USAID report, this is being prepared by the SPO itself, supervised by Bank staff "for presentation purposes only."

However, planning is one thing. Even if the major lenders put conditions on the project, it is debatable how much they will be able to control developments. Brian Pratt's glum verdict is: "Once the road is there, it'll be a free-for-all." GAIL MOSS

## U.S. plans EIA for Latin marijuana

WASHINGTON--International narcotics agents in Washington are preparing another campaign to wipe out marijuana fields in Latin America by spraying them with the potent herbicide, paraquat.

State Department officials with the Bureau of International Narcotics Matters (BINM) have, however, arranged for an environmental impact statement describing the effect of inhaling marijuana contaminated with the herbicide, which is approved for use on weeds but not for food crops. Should paraquat clear this hurdle, scientists will then examine the possible effects of paraquat on Latin American flora, fauna, soils and populations. The EIS is due in July, the environmental assessment shortly thereafter.

Paraquat earned itself a nasty reputation in the late 1970s after Mexican narcotics agents, with several million dollars yearly in U.S. assistance, decimated marijuana crops in that country by spraying fields from the air. Much of the marijuana confiscated at the U.S.-Mexican border harbored several hundred parts per million of paraquat.

In 1978, the MITRE Corporation in suburban Washington prepared an EIS for the State Department, which had been sued successfully for not looking at the health and environmental consequences of its Mexican program. The EIS cleared paraquat on both counts, although it noted that little is known about effects of inhalation.

The U.S. Congress stopped the Mexican program anyway, because scientists at the Federal Department of Health and Human Services decided that minute amounts of paraquat in the lungs--down to a few micrograms--could possibly cause irreversible fibrosis. Since then, however, Congress has had a change of heart; spraying can resume so long as the government makes an effort to invent a "marker" that will alert smokers that their "pot" was once sprayed with paraquat.

Now, the State Department has hired MITRE again to prepare another EIS on health effects, and eventually to examine the environmental dangers to Latin American ecosystems and populations. Officials at BINM say discussions with Latin American governments on paraquat are "informal," and that no commitments have been made. While they won't list countries they have in mind, the

major targets are likely to be Colombia and Jamaica, now the largest suppliers to the American market.

While extensive data are available on paraquat's behavior in temperate ecosystems, there is little on tropical or subtropical environments.

Given the dearth of information on tropical biota, and a timetable of 60 to 90 days for the environmental assessment of each participating country, there is no chance that all potential effects can be defined. However, MITRE scientist Don Aurand notes that spraying can be tightly controlled, a conclusion shared by narcotics agents at the State Department. The agents point out that marijuana crops are rarely planted near food crops, a conclusion that critics of the program don't share. An examination of the warning label on paraquat shows that aerial spraying should not be undertaken during windy days or where thermal updrafts are common.

The Environmental Protection Agency, which approved paraquat for domestic use, now has misgivings about early research that proved it safe when in contact with the skin, and the EPA may require another round of research if paraquat is to keep its seal of approval.

Still to be determined is the safety of the marker that BINM may soon choose. Paraquat has been mixed with a chemical known as DLDM (di-limonene-dimercaptan), an organosulphur compound with the pungent odor of skunk. Protected within tiny polymer capsules, the DLDM rides on the harvested leaves until they are ignited, when, to the olfactory discomfort of anyone in the vicinity, it announces that the pot is contaminated with paraquat. Scientists point out that DLDM is less toxic than table salt, but little is known of its possible effects on the environment, or what its combustion might do to lungs.

CHRISTOPHER JOYCE

## More N-S dialogue...

SPANISH-LANGUAGE COPIES of the important U.S. environment-population-resource study, The Global 2000 Report to the President, are now available free of charge. The translation is of Volume 1, which created world-wide discussion of the problems. WER readers can order the translation for distribution in Spanish-speaking areas--minimum order of 50 copies--from Robert Fox, 12313 St. James Road, Potomac, MD 20854, U.S.A.

## Costa Rica creates an international park

TALAMANCA, Costa Rica--Shortly before he left office, President Rodrigo Carazo inaugurated one of the most important parks ever created in Central America: La Amistad (friendship) International Park. Its 202,343 hectares are surrounded by an equivalent amount of land devoted to Indian reservations and biological reserves. The park itself comprises about 4 percent of Costa Rica's land.

To celebrate this event, the government hosted representatives from several international organizations: the International Union for Conservation of Nature and Natural Resources, World Wildlife Fund-U.S., the Nature Conservancy, Organization of American States, UN Development Program, Inter-American Development Bank and others.

La Amistad is on the Panamanian border, and it is planned that Panama will establish a 125,000-hectare contiguous national park on its side. An agreement to this effect was signed March 3, 1979. However, since then, the Panamanian government has also agreed to run an oil pipeline through its proposed park area.

The rugged topography of La Amistad--it's the highest and most intact non-volcanic mountain range in Central America--contains a wealth of natural communities. There are constant changes in ecosystems as one moves from the lower to the higher (3,600 meters high) altitudes. The park contains eight of the 12 biological life zones found in Costa Rica. And scientists researching the area believe it may contain more distinct species than any other national park in the world.

With La Amistad, more than 8 percent of Costa Rica's land has been set aside in national parks, one of the highest figures in the world.

However, since Costa Rica is facing a severe balance of payments deficit and since a new administration is in power, some observers believe that the parks system may be subject to reorganization of some sort.

MURRAY SILBERMAN

## More on parks...

FARMERS ARE GROWING SUGAR CANE in a Queensland, Australia, national park despite protests by conservationists and the National Parks Service. Half the 340-hectare park--declared to preserve the more southern

location of Nypa palms in Australia--is threatened.

National Park and Wildlife Service surveys show that 500 Nypa palms, a rare salt-water species, will die unless floodgates built by farmers are removed to allow tidal salt water to reach them.

Sugar cane prices are at an all-time high of about \$900 an acre (about \$2,250 a hectare) while the penalty for interfering with national parks in Queensland is \$200.

## Swedish forest spray ban has loopholes

STOCKHOLM--Sweden's parliament approved by a one-vote margin a permanent ban on chemical spraying of forests effective next January.

However, it also voted that dispensations could be granted on various grounds.

The moderate daily Svenska Dagbladet summed up that parliament had passed a "prohibition law whose tightness most resembled a sieve."

While the law forbids in principle the use of toxic chemicals to fight undergrowth in the forests, exceptions can be granted by the provincial governments under various conditions including:

If the forest area is of little importance for outdoor life, for enjoyment by the local population or for protection of nature;

If the demands for regrowth under the law protecting forests cannot be achieved in an economically satisfactory way by clearing underbrush with mechanical methods, having regard for terrain conditions and the availability of labor.

The National Environment Protection Agency and the Forestry Board are to lay down the directives for any exceptions.

Minister of Agriculture Anders Dahlgren had promised "very restrictive" legislation on the use of chemicals, and a temporary ban went into effect two years ago while a parliamentary committee studied the issue from economic and practical angles.

Parliament, however, rejected Dahlgren's proposed law last December. The new legislation is a compromise between the Center-Liberal minority government and the Moderates. The Social Democratic and Communist parties wanted a tighter prohibition, but their proposals were rejected.

SPECIAL TO WER

## Pollution reduces life expectancy

BONN--Pollution is no longer just a threat to the environment. In the industrialized countries it has begun to reduce life expectancy, according to a policy brief released by the Environmental Affairs Commission of West Germany's ruling coalition, the Social Democratic Party (SPD).

The SPD Commission favors policies aimed less at economic growth and more on environmental protection, and its catalog of demands was recently approved by the executive office in Bonn.

"Those who are anxious to maintain the quality of the environment," the brief says, "must change industrial society as a whole."

A primary objective of the Commission is to prevent a further decline in life expectancy. Between 1949 and 1979, life expectancy of women in West Germany increased from 68 years and five months to 76 years and one month. It has since dropped to 75 years and six months. Over the same period, life expectancy among men increased from 64 years and six months to 69 years and four months. Statistics show this to have dropped to 69 years exactly.

The SPD Commission says the industrialized countries account for the lion's share of environmental pollution in the world, and unless they scale down their demands on the world's resources or keep them at current levels, they will aggravate a situation "that has already assumed dramatic proportions."

Among the recommendations drawn up by the SPD are the following:

- \* Limit or reduce the level of industrial emissions.
- \* Improve safety standards for those exposed to harmful emissions on work sites.
- \* Conduct regular checks of water taken from rivers and lakes, of sewage and effluents pumped into them and of sewage farms and dumps. Polluters foot the bill.
- \* Dikes, embankments and barrages should be built only to protect the land from flooding; reclamation of land from the sea should be prohibited.
- \* Pollution by motor vehicles has reached such an alarming level that the SPD Commission recommends: (a) a road tax increase, (b) cutbacks in highway construction, (c) increased use of railroads for freight transportation and an expansion of the public transportation system. JOHN M. BRADLEY

## Swiss parliament passes new eco-law

BERN--The draft of a new Swiss environmental protection law passed its first hurdle recently when the upper house of Parliament (National Council) approved it 119 to 24 following a seven-day debate.

The draft, which has a declared aim of protecting humans, animals, plants and their habitats, as well as defending the fertility of the soil, now must pass the lower house (Standerat).

The new law would establish Federal standards to which the Cantons (states) would have to conform. The draft is based upon the "polluter pays" principle.

In addition to forcing the polluter to pay the costs of his damages, it stresses preventive environmental protection: Before any official decisions can be taken on building new or changing existing highways, constructing power plants or other large installations, the environmental effects of such actions must be studied. The Federal Council (the executive arm of the government) is charged with issuing directives that would establish nationwide ceiling limits for air pollution, noise, vibrations and radiation. The draft provides that emissions must be limited by measures taken at their source.

When noise limits are reached in already existing buildings--perhaps near an airport or busy intersection--then noise protective windows must be installed.

The draft gives the Federal Government the authority to pass directives on treatment of environmentally dangerous substances or wastes and the absorption capacity of the soil.

It provides for establishment of expert-staffed environmental protection offices at the Cantonal level charged with determining responsibility in cases of violations.

The draft would permit associations or societies--such as the environmental protection organizations that have been very active throughout the country for the past 10 years--to bring charges before the expert offices.

It would grant the Federal Minister of the Interior the right to bring legal means to bear against Cantonal governments in cases where Cantonal decisions clashed with the Federal Environmental law. And in certain cases, it grants the Cantons the rights to appeal decisions.

WILLIAM G. MAHONEY

## Turkish constitution includes environment

ISTANBUL--Orhan Aldikacti, who heads Turkey's Constitutional Commission, told WER that the Commission has decided to include provisions on environmental protection in the new Turkish constitution.

The Commission is drafting a new constitution to replace the previous one (1961), suspended after the military takeover of 1980. The new constitution is expected to be completed and submitted to a public referendum this fall.

Aldikacti said this would be the first time environmental provisions had been written into the nation's constitution: "A fresh constitution should have the advantage of carrying provisions on the current issues and problems which the world (and the country) faces." The Commission is studying similar legislation in other countries as well as recent reports and proposals made by local organizations.

One of these organizations is the Environmental Problems Foundation of Turkey, which has submitted detailed environmental programs and reports to the government and the recently established Consultative Assembly. The EPFT issued an English edition of its book "Environmental Portrait of Turkey," the first such publication of Turkey's environmental problems in a foreign language. EPFT Secretary-General Engin Ural believes the book represents a major step towards solving these problems, which were described in detail. Turkey's environmental problems have been divided into nine chapters: air pollution, water pollution, soil, flora-fauna, energy, solid wastes, pesticides, traffic and noise. SAM COHEN

## Security risks are environmental: OECD

NEW YORK--The security of every nation depends on a definition that includes environmental risks, says a new report, "Economic and Ecological Interdependence," published by the Organization for Economic Cooperation and Development.

This report, which seems both balanced and relatively cautious, was, nevertheless, temporarily held up by the U.S. Environmental Protection Agency's international office. The U.S. is one of the 24 developed,

free-market nations that make up the OECD's membership.

The report says these environmental security risks "are virtually unknown to traditional diplomacy..., are beyond the reach of national governments..., cannot be fitted into received theories of competitive interstate behavior..., are coming increasingly to dominate world affairs..., cannot be wished away, and...are indifferent to military force."

In the OECD's view, they fall into three broad categories:

- \* Environmental pollution issues--carbon dioxide and climatic change, the ozone layer, acid precipitation, chemicals, and international movement of hazardous wastes.

- \* Resource issues--maintaining biological diversity, loss of cropland and soil degradation.

- \* Management issues--environmental aspects of bilateral development cooperation, environmental impact assessment and international cooperation, environmental aspects of multinational investment, and the international application of the polluter-pays principle.

As Jim MacNeill, Director of the OECD's Environment Directorate, wrote in his forward: "One characteristic that marks (some of these) issues...is uncertainty," uncertainty as to their nature, their causes or their consequences. More is needed than just scientific research, he said: "The question of how governments, industry and the public deal with uncertainty is an issue that itself needs further exploration.... When uncertainty clouds understanding of possible changes in natural phenomena, it takes on a special significance, especially if those changes could have serious economic or social consequences." Political consensus, in the absence of scientific consensus, is hard to achieve at the international level. However, as one expert noted, "If governments wait for scientific near-certainty, it will often be too late for them to act at all."

Therefore, this OECD report was published not by the Environment Committee but by the organization's Secretary-General to reach a wider audience of policy makers.

The OECD experts maintain that growing awareness of the interdependence of economic, political and ecological bases "can lead to hope or despair depending on one's view of the will and capacity of governments to make the necessary adjustments within and among their countries."

"Indeed," the report continues, "a major

implication of economic and ecological interdependence is that, as it inevitably increases, the ability of governments to deal unilaterally with problems on a national scale will diminish." This is true not only of the developed OECD countries but of the developing nations since many of their problems "stem from the economic, trade and other policies of OECD countries. Moreover, the growing scale of issues such as the loss of genetic materials, the conversion of cropland, soil degradation and tropical forest destruction, and the inability of many Third World countries to deal with them could have serious economic and even security consequences for OECD members."

A difficulty is that few, if any, OECD countries have the capacity to analyze global environmental and resource issues in a coordinated way and relate the parts to the whole so as to create, first, national policy and, eventually, international policy.

The OECD feels it is "well-placed to encourage, to facilitate, and to act as a catalyst" for developing an improved analytical and coordinating capability in its member governments, and the purpose of its study is to bring these issues to the forefront.

The 86-page report (97 82 04 1) is available from the OECD, Publications Office, 2 rue Andre-Pascal, 75775 Paris Cedex 16, France. LIBBY BASSETT

## Sea mining profits offset by eco-costs

BONN--A West German university study concludes that much of the benefits to be derived from exploiting the seabed could be offset by the environmental damage that deep sea mining will cause.

If the metal nodules only were disturbed there would be no ecological problem. But according to Prof. Juergen Schneider's study, mining three million tons of nodules will disturb 102 million tons of fine seabed ooze that is rich in animal life and nutrients, both of which would be destroyed in the process. To compound the problem, the seabed will not return to its original condition once the mining operation has moved on; settlement of the ooze will take from four to 104 years, he predicts, depending on the size of the particles in it.

Prof. Schneider is with the Geologic and Paleontologic Institute of the University

of Goettingen.

There are two accepted methods of deepsea mining: by bucket-chain excavator (or dredge) and by suction pipe, both suspended from surface ships. The dredge continuously churns up the seabed, creating a great turbulence in the area being worked. The suction pipe simply sucks up whatever matter it passes over, generating less surface turbulence. But in both methods far more ooze than metal is brought to the surface ship, whence it must be returned to the sea. Under current practice the ooze is discharged at depths of 100 to 300 meters, so as not to pollute surface waters. But this, according to Prof. Schneider, amounts to only a superficial precaution. Not only is there a slow settling over the disturbed areas, the ooze while in suspension will endanger all marine life in the depths it occupies. This will generate a particularly serious problem in the Pacific Ocean because of the erratic currents prevailing there.

An added threat comes from the prospective refining of the nodules extracted. For economic reasons, most refining will be carried out close to seacoasts. In the refining process over 60 percent of the weight of the nodules is discarded as refuse. This will be heavily contaminated with the sulphuric acid used in refining; and it in turn will carry appreciable amounts of the metals. Dumping this refuse into the sea or on land dumps exposed to surface water flowing into the sea can only increase the concentration of heavy-metal pollution. In Prof. Schneider's view, this is a more serious matter than the seabed turbulence or the intermediate-depth ooze.

The Law of the Sea Conference reports issued thus far are devoted almost exclusively to the question of who will get what. The question of damage to the sea environment and destruction to marine life--which was one of the three critical questions before the Conference--has been largely neglected in deference to prospective commercial gains from mining. J.M. BRADLEY

### CORRECTIONS:

In the March 30 WER, page 3, Ankara smog scare, the World Bank loan was a general engineering loan to Turkey to study several problems, including the Seyitomer plant.

The lead story in the April 30 WER on the Cubatao, Brazil, clean-up said duPont had a plant there. DuPont's international department states neither it nor a subsidiary is located in Cubatao.



## Energy in brief...

AN "INVALUABLE" GUIDEBOOK for those who need answers to energy questions in a hurry has just been published by the World Environment Center. CONTACT: ENERGY, an extensive guide to energy specialists in the U.S. and Canada, is designed for use by the news media and professionals in the energy field. Its 1,200 energy specialists have all agreed, as a public service, to answer queries in their fields of expertise. John Chancellor, NBC News anchorman, wrote, "I find that it merits the description 'invaluable.'" CONTACT: ENERGY includes a subject index of over 400 entries, such as nuclear, geothermal, solar and conventional systems, and it has a record of key energy legislation in the U.S. and Canada. The cost is \$49.50 plus \$2 postage and handling from the World Environment Center, 605 Third Avenue, 17th floor, New York, NY 10158.

SOLAR ENERGY EQUIPMENT may now be imported into India as of the beginning of April, the government announced in a change of policy. Official sources said the purpose was to help India get the latest technology.

Plans have already been drawn up for a joint Indian-U.S.-Italian venture to manufacture solar systems based on photovoltaic cells. A memorandum of understanding was signed between Duncan Brothers, Pragma (a company associated with the U.S. Solarex Corporation) and the ENI group of Italy.

The government also exempted from excise duty systems and devices designed to use biomass and wind energy.

Indian scientists engaged in solar energy research say the new policy will frustrate their efforts as Indian R&D has proven itself in space and can compete on the international market. There are more than 15 private companies in India engaged in commercial solar energy operations.

THE INDIAN GOVERNMENT has earmarked about \$50 million in the current sixth five-year development plan for renewable sources of energy. This includes \$2.2 million for tidal power research and \$3 million for geothermal energy.

Prime Minister Indira Gandhi told Parliament recently that no foreign experts were being asked to assist in programs relating to solar energy, bio-energy and wind energy, though there were some on-going joint

projects with other countries as part of bilateral science and technology agreements.

A SILICON TECHNOLOGY CENTER will be set up in Pakistan to promote research into the development of affordable solar energy, said Dr. I.H. Usmani, a United Nations Energy Advisor. He said Pakistan would be the first country to have such a center financed exclusively by the UN.

THE PHILIPPINES PLANS TO SPEND \$680 million in the next five years to develop its geothermal resources in a bid to reduce its dependence on oil. In a paper submitted at the Offshore Southeast Asia Energy Conference held recently in Singapore, officials said the nation hopes to achieve a nearly four-fold increase in its geothermal capacity by 1985. The Philippines' current geothermal capacity is 446 megawatts, or about 5.5 million barrels of oil equivalent. The capacity is expected to be increased to 1,774 megawatts by 1985.

TWO JAPANESE COMPANIES, Isuzu Motors and Kyoto Ceramics, have developed an engine that they claim consumes 30 percent less fuel than conventional car engines. The 2,000 c.c. ceramic engine is an entirely new type. According to the designers, it does not need a cooling system.

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# World Environment Report

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## In This Issue...

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## Cairo's garbage collectors get big World Bank loan

CAIRO--Garbage collectors, the zebaleen, are among the poorest of Cairo's poor. The citizenry views them with contempt and suspicion while the city government, with an eye on the tourist trade, is embarrassed by their presence and seems to regard them as part of Cairo's rubbish problem rather than a solution to it.

The World Bank, however, sees them as a valuable resource and on the basis of a recently completed study, which looked into the problems of waste disposal in Cairo, has made a loan of US\$900,000 to improve their lot.

The zebaleen, or "the pig raisers," are emigrants from Coptic Christian villages around Assiut in Upper Egypt. They started coming to Cairo over 50 years ago and continued their traditional occupation of raising pigs--anathema to the Muslim majority. As a supplement to their income, the zebaleen began contracting waste collection.

Roughly 40,000 now live in seven squatter communities scattered around Cairo's outskirts. Forbidden to own land, they live in makeshift huts, which have frequently been forcibly removed on sanitation grounds, and they make do without sewerage systems, electricity, sufficient water, medical facilities or schools. Illiteracy runs to 90 percent, according to some estimates.

Despite their deplorable living conditions and semi-outcast status, the zebaleen have developed a garbage collection and disposal system which the World Bank describes as "ideally suited to Cairo's conditions."

Mounted on their rickety, donkey-drawn two-wheeled carts, the zebaleen descend on Cairo's more affluent areas as early as 3 a.m. They service households, restaurants, hotels, grocery stores and other waste-generating businesses for a monthly fee ranging from US\$1.00 for private households to US\$5.00 or more for the large hotels.

Carefully sorted by the women and children, rubbish is treated as raw material. Anything for which there is a market or use is recycled. Every daily cart-load provides enough organic waste to feed 50 pigs, five goats and two donkeys. Much of the inorganic waste ultimately finds its way to the souqs

(markets) of Cairo in the form of carpets, colorful glassware, toys and other consumer goods. While pork is seen as "unclean" in the Islamic world, the zebaleen, who are Christian, do a good business selling the meat to foreigners and hotels.

Apart from the zebaleen, who visit about 40 percent of Cairo's households, there is no door-to-door trash collection service. Those unable to pay for their service simply dump their trash on the streets.

With its loan the World Bank hopes to remedy inefficiencies in the present collection system and enable the zebaleen to extend their services to areas which are now unprofitable to visit.

Some comparative figures with the municipal trash collection service argue in favor for expansion of the zebaleen's undertaking.

The zebaleen's biggest settlement, Mokattam, with a population of 8,000, alone collects 936 tons of rubbish daily, compared to 1,347 tons for the entire municipal fleet. Overall daily tonnage collected by the zebaleen is estimated at well over 2,000--and at no cost to the taxpayer.

The municipal fleet is also administratively top-heavy and expensive to operate. It costs the city US\$1.5 million yearly to run its fleet of compactor trucks, or US\$5,000 per vehicle per year. Broken down further, it costs the Cairo taxpayer US\$14 per ton of refuse collected, whereas donkey-cart collection is under US\$1.50 per ton, an amount which is spread among subscribers only.

Initially the World Bank intends to give the zebaleen a sense of permanency and will upgrade the community of Mokattam by financing a secure source of water, providing basic health care and sanitation instruction.

The zebaleen are skeptical, however. "We have heard these promises before," said Boutros, a 56-year-old longtime resident of Mokattam. "Why should we start believing them now?"

JOHN M. BRADLEY

## More capital improvements...

MONROVIA, LIBERIA'S, POPULATION WILL DOUBLE in 10 years. To improve sanitation, water supply and land entitlement programs for about 100,000 people in the poorest districts, the World Bank's International Development Association is lending the government \$10 million for the \$13 million project.

## Private sector delivers "the goods" in India

BOMBAY--An Indian subsidiary of the British firm Permutit has bagged one of the largest contracts for water treatment in India from a farmers' cooperative in Gujarat, which is putting up a giant fertilizer plant. The demineralized water plant will be designed and erected by Ion Exchange (India) Ltd., the country's top industrial waste treatment specialist.

Says G.S. Ranganathan, who recently took over as president: "The 17 million liters of water that the fertilizer plant will use are enough to meet a day's needs of the nearby towns of Surat and Baroda."

An ardent environmentalist, Ranganathan advocates a return to a land-based economy, which he feels will not only generate more employment but help break "the stranglehold of rural landlords." He hopes that industries will move to rural areas, taking their classless ethic and managerial efficiency with them.

His firm has initiated several rural projects, ranging from a tree farming biomass storehouse in Gujarat to fish farming and biomass gasifiers that will operate irrigation pumpsets. Given the country's severe fuel crisis, the firm has started to produce briquetted fuel from wood and agrowaste. Ranganathan believes that in environment and alternative technology, "the government is beginning to realize that the private sector can deliver the goods."

DARRYL D'MONTE

## Pakistan plans ambitious water & sewage cleanup

ISLAMABAD--Only 34 percent of the total population of 83.7 million in Pakistan gets piped water; modern sewerage and drainage facilities are available to only 13 percent.

There is a wide disparity in their availability in urban and rural areas. In urban areas safe water is available to 72 percent and sewerage to 42 percent, while in rural areas clean water is available to only 20 percent of the people and sewerage facilities are virtually non-existent.

This was revealed in a report prepared by the World Health Organization (WHO) and officials here. It was written as part of the worldwide drinking water supply and

sanitation decade.

As far as urban water supply is concerned, officials forecast that coverage will reach 100 percent of the population by 1990. This requires reaching an additional 20 million people, the report said.

In the case of rural water supply, considering that there are some 45,000 villages in Pakistan, 100 percent coverage by the end of the decade will be impossible. It is proposed to increase it from 17 percent in 1980 to 66 percent in 10 years, thereby covering an additional population of 39 million.

Urban sanitation coverage is proposed to be increased from 42 percent in 1981 to about 89 percent in 1990 -- an additional population of around 11 million.

More than \$1.4 billion needs to be provided by 1990, money which is, at present, almost nonexistent. Of the \$1,426.3 million foreseen by the plan, \$1 billion are expected to come from domestic resources.

MOHAMMAD AFTAB

## Europe has sanitation problems too, says WHO

GENEVA--Although health problems arising from lack of effective sanitation control are particularly urgent in the Third World, Europe has its problems too, as evidenced in three reports issued by the World Health Organization (WHO).

"The Risk to Health of Applying Sewage Sludge to Land" comments that although human and animal wastes have been used to improve soil for centuries, the practice does present certain risks. The report finds that "not enough is known about the risk to health" and recommends that "carefully planned epidemiological investigations" be carried out. It specifically cited the danger of sewage coming into contact with vegetables and fruit that are commonly brought raw into the kitchen.

The report reviews national sewage sludge disposal policies in many European countries and the United States; considers the principal bacteria, parasites, viruses and fungi capable of causing infection; and discusses the effects of long-term utilization of sewage.

A second, related report, "Health Aspects of Treated Sewage Re-use," states that WHO is concerned that the increasing use of imperfectly treated waste water can be a seri-

ous health hazard. Bacteria, viruses, protozoa and worms are all carried by water, and these are the cause of considerable disease, particularly through crop irrigation and insufficiently disinfected sewage.

Even highly treated waste water--dosed with chlorine--can retain some dangerous organisms, it warns. The report stresses that sewage irrigation and sludge application should not be used for quick-growing food crops to be eaten raw. It urges that WHO set up guidelines and a code of practice.

The third report, "Surveillance and Control of Acute Diarrhoeal Diseases," is especially concerned with such diseases in some Mediterranean countries, where there are inadequate levels of sanitation.

All the reports are available from WHO's regional office in Europe, 8 Scherfigsvej, 2100 Copenhagen Ø, Denmark.

WILLIAM G. MAHONEY

## More on sanitation...

TURKEY'S EFFORTS TO REDUCE POLLUTION in the Sea of Marmara and to begin restoration of its Golden Horn (WER, April 15, p.2) got a boost from the World Bank, which announced recently a loan of \$88.1 million for the \$222 million Istanbul Sewerage Project. It will help increase sewerage connections in the most densely populated parts of greater Istanbul.

THE DELHI, INDIA, municipal corporation plans to increase its sewage treatment plant capacity by one-third and install another unit to raise the total capacity to 125 million gallons a day by the end of next year.

Delhi authorities are also converting sewage and compost into manure for fertilizer. The compost plant provides cooking gas to nearby colonies, and another 10,000 families are to be piped gas from the sewage treatment unit.

CASES OF TYPHOID in South Korea have dropped from 3,500 10 years ago to only 500 in 1977. The change in South Korea's health picture began in 1971 when the government built simple piped water systems in nearly 1,000 villages. For some time the expansion was hampered by lack of funds, until the World Food Program, an international organization affiliated with the United Nations, stepped in and injected \$21.3 million. By 1979, 8,874 water pipelines had been built.

## EXCLUSIVE INTERVIEW with French Environment Minister Michel Crepeau

*The Mitterrand government in France has begun some important environmental initiatives. WER's correspondent in Paris, John Moody, recently held a wide-ranging discussion on them with Environment Minister Michel Crepeau.*

PARIS--WER: It's now been a year since the election of the Socialists in France. What is the state of the environment and what can you tell us about France's environment compared with that of other industrialized West European countries?

Crepeau: I believe that France, without being exemplary in all areas, is in as good shape as any other nation. The efforts that have been underway for 12 years, which are now being followed up and improved, have allowed us to obtain results which are now being seen. In the area of water, for example, France has done very well since there are several protective measures and our laws have been applied to most of the cases. Now, we understand that development is necessary, but it's important to find types of development that are not in conflict with the environment. This often means a change in behavior and attitude. What has to be remembered is that the environment is something we encounter in all phases of life; like health, it is easier to take preventative action than to try to cure it. This also costs less, anyway. By definition, this bureau is called upon to work not only on day-to-day conservation efforts, but also on the mid and long term. That's how it develops its programs and shows its originality.

Q: Other countries have their own individual problems; I'm thinking for instance of West Germany. Is there a comparison between their case and France?

A: Certainly the comparisons and the confrontations are permanent. Last week, I was in Luxembourg at the Council of Ministers of Environment of the EEC. These reunions take place at least twice a year, and they have begun to confront the current situation and to try to harmonize government policies. It's extremely important that this harmonization is within the European Community because it's clear that I as minister of environment of France impose on French industry constraints which

are not imposed on West Germany, or England or Belgium. That's part of the political harmonization that is at the base of the EEC treaty.

Q: So there is a common plan within the community?

A: Yes, but it's not a plan as much as a program. We discussed the environmental program for 1982-86, and we will ask the Common Market Commission to make a report after consulting with the European Parliament.

Q: We've heard that environmentalists are disappointed with President Mitterrand because they say he promised to completely stop all nuclear testing. They are certainly continuing. How do you explain this apparent contradiction?

A: First of all, the President never said that he would stop the development of nuclear. He simply said he would moderate the programs and develop a wider diversification of energy resources, which is why you can't say that the President or the government has not done what it promised.

As far as I can see, the President and the government have kept their promises; for example, he decided not to construct a central nuclear power station at Plogoff, and he decided not to permit the discharge of nuclear wastes at St. Priests d'Aprebrune. He also decided to slow down the nuclear program. He has promised that the nation's nuclear policy will be debated and voted on by Parliament. I think if you took a poll on the use of nuclear energy right now, you would find that there are about 5 percent militant ecologists against 95 percent of the French people who are if not for, at least not against nuclear energy development. However it is the 5 percent which in a democracy makes its opposition heard.

Q: So you put the number of persons opposed to your policies at 5 percent.

A: I put the radical ecologists, who say they would vote for an ecologist candidate, at 7 percent; if you wish, between 5 and 7 percent. Lalonde got 3 percent in the elections, the polls give him 7. That's why I estimated 5.

Q: Personally, are you a supporter of the government's policy on conducting nuclear tests?

A: Personally, being a minister of the government, I support the government.

That's the least that is expected of me.

Q: So there is no intention to stop or even reduce the rate of nuclear tests, for instance in the Pacific islands.

A: The worldwide crisis which surrounds us is not going to be solved by a decrease in nuclear testing, when we have a dollar that is at 7 francs and we know that the price we pay for petrol is high and may go higher. We even import coal. In those circumstances, France has no other solution to assure its energy future than to play an important role in the nuclear industry.

Q: In Chicago, there was recently a trial to determine culpability for the Amoco Cadiz (oil tanker) accident. It's now been four years since that accident, that tragedy. Is France any closer now than then to finding a way to prevent such accidents from recurring?

A: One can never completely prevent them or eliminate the risk of oil spills. All you can do is put into effect strong measures to reduce the risk. It's a problem of international regulation. As you just pointed out, the Amoco Cadiz accident was four years ago and the trial was only held this year in American courts.

Q: I've just seen the new edition of your "white book," and I understand that it was published on the initiative of the government. What can you tell us about that project?

A: One of the goals of the President is to decentralize political life in France. We believe that it is preferable for citizens to take more charge of decision making, without depending all the time on the state. That's hard for foreigners to understand. They believe the coming to power of the left means nationalization of everything, putting everything in the hands of the state. Actually it's been more like that in the United States.

So what we're doing is encouraging interested individuals and local groups to take over environmental protection responsibilities that have been carried out by the state. Citizens are regrouping into associations, and I think the environment sector was the right one to try this kind of experiment. Of course it's easier to give power to citizens in the domain of environment than it would be in, say, foreign policy.

Q: And what have been the results?

A: They are still only partial. We have given to these associations the means to experiment officially with various environmental programs. It will take time to see which way they are going.

Q: How many people are participating in this project?

A: Many. We have in France 4,000 associations of nature protection, ecologists who represent various groups, whose importance is obvious, but who do not make themselves heard often enough. But that is one of the risks of a project like this.

Q: One final question. What about the Green Party in France?

A: They are now entering a dialogue with the (socialist) government. I think that was shown in the government's decision to appoint Mr. Lalonde, who is the secretary of Friends of the Earth and the secretary of the Society for the Protection of Nature, to be the representative to the conference on nature protection in Nairobi. It's good that a person like him is used to his fullest potential, even if he doesn't always agree with us. I don't think they'll be governing in our place soon, but it is significant that they got 5 percent of the vote in a recent survey.

JOHN MOODY

## More on Europe...

BULGARIA AND BAVARIA will set up close cooperation in the field of environmental protection under terms agreed upon in recent conferences held in Sofia.

The agreements were reached by Bavarian Environmental Protection Minister Alfred Dick and the Chairman of the Committee for Environmental Questions of the Bulgarian Ministerial Council, Georgi Pavlov.

The series of exchanges include: laws and directives and measures taken to carry them out; experiences in establishing and operating automatic pollution control systems; experience in establishing the rational use of natural resources, including waste recycling and anti-pollution measures for rivers, lakes and seas; protection of soil; groundwater protection; solid waste treatment.

THE UN ECONOMIC COMMISSION FOR EUROPE (ECE) will sponsor an international symposium in Bucharest, Romania, October 10-14, 1983, to study more systematic uses of secondary forms of energy.

## WER looks at some very useful books

NEW YORK--One editorial requirement of the World Environment Center is that the editor can never be sick, for WER must come out on time. Recently, however, I have longed for a pain-free, two-week illness so that I could truly read, not just skim, the fascinating variety of books that have come across my desk in the past few months.

One that has been delved into with pleasure is "Building a Sustainable Society," by the President of Worldwatch Institute, Lester R. Brown. He writes with style and breadth, covering the wide range of environment and development issues. He begins with an historical perspective, outlines current pressures and stresses on our resource base, and then spends more than half the book discussing solutions--the transitions necessary to sustain ourselves on earth. A thought-provoking book. 433 pp., W.W. Norton & Company, Inc., 500 Fifth Avenue, New York, NY 10110, US\$14.95.

A former colleague of Brown's, Erik P. Eckholm, has produced another readable book, "Down to Earth," commissioned by the UN Environment Program to commemorate the 10th anniversary of the Stockholm Conference on the Human Environment. Written for the interested layman, Eckholm surveys the human, natural and unnatural conditions of the decade--putting them in their social, political and economic context. 238 pp., W.W. Norton & Company, Inc., *ibid.*, US\$14.95.

"Global Environmental Issues," also produced for the 10th anniversary UN environment conference, is based on UNEP's annual state of the environment reports. Its editors, scientists Essam El-Hinnawi and Manzur-ul-Haque Hashmi, have rewritten and extensively updated its various sections, which are chock-full of very useful charts. It covers environment and: development, military activity, chemicals, diseases, energy, water resources, food production, transport and tourism. 236 pp., Tycooly International Publishing Ltd., 6 Crofton Terrace, Dun Laoghaire, County Dublin, Ireland, US\$40.

A similar, but more comprehensive and technical book is "The World Environment 1972-1982," the official review of the UN environment decade. Dr. El-Hinnawi coordinated this 637-page study, in which scores of scientists participated, and the final text was edited by Martin W. Holdgate,

Mohammed Kassas and Gilbert F. White. It covers the atmosphere, marine environment, lithosphere...in fact, all spheres of the environment. It is the ultimate text, not for the casual reader. 637 pp., Tycooly, *ibid.*, US\$95 hardcover; US\$45 paperback.

### FOCUS ON SPHERES

In various environmental spheres, a number of books provide a more focused view. "The Oceans: Our Last Resource," by Wesley Marx, a lecturer in social ecology at the University of California, proposes practical ways of harvesting the sea without depleting it. He does, however, think seabed mining is like "trying to pick up peas with a straw from the top of the Empire State Building--at night." 353 pp., Sierra Club Books, 530 Bush St., San Francisco, CA 94108, U.S.A., US\$13.95.

"Pills, Pesticides & Profits--The International Trade in Toxic Substances" gives solid examples of a growing double standard: selling products considered unsafe in the country of origin to Third World countries. Written by S. Jacob Scherr and A. Karim Ahmed of the Natural Resources Defense Council and edited by Ruth Norris of Audubon, it includes also complete transcripts of the Public Television documentary films, "Pesticides & Pills: For Export Only," produced by Robert Richter. 167 pp., North River Press, Inc.; distributed by Caroline House Publishers, 920 W. Industrial Dr., Aurora, IL 60506, U.S.A., US\$10.95.

The U.S. is poisoning itself as well, says Lewis Regenstein, author of "America the Poisoned." He argues that by the time the government banned some deadly pesticides, their toxins were already in the tissues of 99 percent of all Americans tested--and in their food, air and water. Ignorance is no longer an excuse, he says, and offers examples of the destruction--and alternative courses of action for solutions. 414 pp., Acropolis Books Ltd., 2400 17th St., N.W., Washington, DC 20009, US\$15.95.

Along those same lines, the woman who focused world attention on the hazards of dumping toxic wastes without proper controls has written "Love Canal, My Story." Lois Marie Gibbs' purpose is to tell about the issues and problems that arise between citizens and experts and their government when a life-threatening environmental situation confronts them. 174 pp., State University of New York Press, State University Plaza, Albany, NY 12246, U.S.A., US\$11.95.

The problems that can arise between gov-

ernments are detailed in "Acid Rain: An Issue in Canadian-American Relations" by John E. Carroll. It contrasts the interests of both countries and suggests what must be considered to resolve this diplomatic near-impasse. 100 pp., Canadian-American Committee, National Planning Association, 1606 New Hampshire Ave., N.W., Washington, DC 20009, US\$6.

#### ENERGY--STILL A BURNING ISSUE

"Environmental Impacts of Production and Use of Energy" is based on three in-depth UN Environment Program studies on: fossil fuels, nuclear energy and renewable sources of energy (geothermal, solar, sea, hydro-power, biomass). Edited by the extremely energy-efficient Essam El-Hinnawi (four of these UNEP books bear his name), it reviews the environmental impacts at each state of the fuel cycle--from raw material to transportation and use. 104 pp., Tycooly International Publishing Ltd., *ibid.*, US\$51 hardcover; \$33 paperback.

A spinoff of the previous book is "Renewable Sources of Energy and the Environment." Edited by Dr. El-Hinnawi and Asit K. Biswas, it was prepared in conjunction with the UN Energy Conference last August. 219 pp., Tycooly International Publishing Ltd., *ibid.*, US\$32.50.

"Fuelwood and Rural Energy Production and Supply in the Humid Tropics" by R.P. Moss and W.B. Morgan was produced for UN University's Natural Resources Program. It focuses particularly on tropical Africa and southern Asia and shows how the development process, particularly urban demand, has affected the fuelwood industry. It then goes on to discuss alternative energy strategies. 234 pp., Tycooly, *ibid.*, US\$33.50 hardcover; \$26.50 paperback.

"Environmental Planning Guidelines for Offshore Oil and Gas Development" is a concise primer with many illustrations for activists in government, students and concerned citizens. It outlines the environmental impacts of tapping into offshore reserves of oil and gas and suggests planning considerations. Edited by John T.E. Gilbert of New Zealand's Commission for the Environment, it was written for the East-West Policy Institute. 64 pp., The University Press of Hawaii, 2840 Kolowalu St., Honolulu, Hawaii 96822, US\$6.75.

#### OF SPECIAL SCIENTIFIC INTEREST

Often, science and technology are touted as the answers to most of earth's problems. Colin Norman agrees they are immensely

powerful tools, but believes that the systems delivering technological change need rethinking so that science and technology benefit far more people. His Worldwatch book, "The God That Limp: Science and Technology in the Eighties" springs from the myth of Hephaestus, the Greek god of fire and metal-working who, though himself crippled, was entrusted with developing and maintaining many key technologies. 224 pp., W.W. Norton & Company, Inc., *ibid.*, US\$14.95 hardcover, \$5.95 paperback.

For those with specialized interests in the natural environment, a handful of books have been published that might be of interest.

One is an "Environmental History of East Africa." Subtitled "A Study of the Quaternary," it covers the last two and a half million years. It is technical, but as author A.C. Hamilton points out: "Modern East Africa is faced with severe environmental problems. To those concerned with the alleviation of these problems, a knowledge of environmental history provides a useful temporal perspective." 328 pp., Academic Press Inc. (London) Ltd., 24-28 Oval Rd., London NW1 7DX, England, US\$49.50.

Three attractive, large paperback books have been published in the American Scientist's Earth and Its Inhabitants series. All are edited by Brian J. Skinner of Yale University. "Paleontology and Paleoenvironments" again looks at our environmental past: the origin and diversification of life through studies of invertebrate and vertebrate fossils and ancient geographies. All books in this series are compilations of scholarly papers, well illustrated. 210 pp., William Kaufmann, Inc., 95 First Street, Los Altos, CA 94022, U.S.A., US\$9.95.

Another in the series is "Climates Past and Present." It considers climatic controls--the oceans, atmosphere and glaciation, climates of the past and the mutual influence of people and climate. 139 pp., William Kaufmann, Inc., *ibid.*, US\$8.95.

And, finally, for those wearied with earth's problems, there is "The Solar System and Its Strange Objects," which, through a series of papers, focuses on life in the universe, its origins and objects, and then turns its view towards Earth from space. It has illuminating photos and drawings. 220 pp., William Kaufmann, Inc., *ibid.*, US\$11.95.

LIBBY BASSETT

Would one of your colleagues find WER useful?



## Colombia loses half a national park

BOGOTA--Recently, park inspectors were evicted by municipal court order from Tayrona National Park on Colombia's Caribbean Coast. The judgment awarded 7,000 of the park's 15,000 hectares to two persons who in 1980 purchased land rights originally granted in 1934.

Last year, Colombia's Instituto de Recursos Naturales y del Ambiente (Inderena), Tayrona's official proprietor, initiated a suit in circuit court to nullify the sales contract, since the sale of public lands to private citizens is illegal in Colombia. As of yet, no decision has been handed down to Inderena.

The park, visited by 100,000 Colombians every year, is the largest natural reserve on Colombia's coast and one of the most important ecosystems of the entire Caribbean Basin. It has been plagued by illegal land expropriation; in recent years 150 hectares of park land have been used by private citizens for marijuana cultivation. Inspectors attempting to destroy the fields have been threatened and shot at. It is widely feared that, if allowed to remain under private control, Tayrona's bays will be used as ports for illegal drug exports.

The municipal judgment has been denounced by Inderena as ill-advised and illegal. Inderena has initiated new proceedings to recover the land. LORE CROGHAN

## More on Latin America...

THE CROSS-PANAMA CRUDE OIL PIPELINE (WER, Aug. 3, 1981, p.8) was built in record time --less than a year and a half. Its purpose is to speed the passage of Alaskan crude to eastern U.S. refineries. With 600,000 to 800,000 barrels a day running through the pipeline, conservationists are worried about what might happen at the Caribbean terminus at Chiriqui Grande. The lagoon there is part of a large aquatic ecosystem that is a nesting and foraging area for four species of endangered sea turtles (the hawksbill, leatherback, green and loggerhead). If, as is possible, there are spills, ballast tanks flushed or tanker wrecks, this could seriously affect the turtles' habitat. According to Audubon Magazine, initial efforts by the Caribbean Conservation Association to discuss environ-

mental safeguards with some partners in Petroterminal, the owner, proved fruitless. Besides the Panamanian government, others in the venture are 30 international banks and several American corporations.

AN AGREEMENT INTENDED TO HALT RAPID DEFORESTATION of the Amazon was signed recently by Japanese and Peruvian officials.

Flavio Bazan, director of Peru's National Institute of Forestry and Fauna, said migratory farming and jungle development have destroyed more than seven million hectares of vegetation in the Amazon region, equivalent to an estimated 10 percent of the resources needed to produce the world's oxygen supply.

The agreement establishes a joint forestry project in the Alexander Von Humboldt forest near Pucallpa in Peru's central jungle. To carry out the scheme, about 15,000 hectares of land have been set aside for study and experimentation, to be conducted by eight scientists from both nations.

Included in the agreement is a US\$2 million Japanese grant to finance the research effort. Bazan says the project, which began in July, will cost more than US\$4 million this year. Other sources of funding for the program are still being sought.

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# World Environment Report

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## PROFILE:

### Saudi environmental law to be based in Islamic law

NEW YORK--A Saudi scholar recently spent three months studying at the Environmental Law Center in Bonn and now is preparing a document that could revolutionize environmental law in Islamic countries. For Saudi Arabia, which soon will issue its first environmental standards, is correlating its environmental laws with the precepts of the Sharia, the sacred law of the Koran.

In most Moslem countries, Islam is more than a religion; it is the context for life in all its aspects: political, economic, ethical, social and legal. In Saudi Arabia, which has the two holiest places in Islam (Mecca and Medina), this is particularly true. All law in Saudi Arabia is based on the Sharia, which are Allah's commandments as revealed through his Prophet Mohammed and set down in the Koran.

"Many verses in the Koran and sayings of the Prophet Mohammed relate to the environment," explained Dr. Abdulbar alGain, Vice President of Saudi Arabia's Meteorology & Environmental Protection Administration (MEPA). For example, he told WER, there is one which says that removal of harmful substances from the way of a neighbor is a duty. This, he continued, could be interpreted to apply to pollution, litter and even oil spills.

The Saudi study, providing a legal basis for environment and conservation within Islamic law, has already created interest in other Islamic countries, Dr. alGain said. Eventually, this incorporation of traditional law into environmental law could act as a guideline for other developing countries, he believes, for it takes into account the cultural values of 600 million Moslems.

It should also help Saudi Arabia when MEPA promulgates its first environmental standards, on air and water quality, within the next few months. Dr. alGain said that Saudis have a long legal history, and he suspects that middle-sized industries may take to the courts when the new standards come out.

MEPA was established towards the end of 1980, and its purpose is to set criteria, standards, guidelines and policies at the national level to protect the environment and combat pollution. It has, for



example, been working assiduously on an oil spill contingency plan not only nationally but within the entire Gulf region.

Even before MEPA was formally set up, the Environmental Protection Coordinating Committee (EPCCOM), with representatives of almost all government agencies and organizations, held several meetings to work out these first standards for ambient air and water quality. They will be applicable to all existing and future facilities. Standards applicable to ground water, land pollution, noise pollution, motor vehicle emissions, and toxic or hazardous substances have yet to be developed.

One of the difficulties MEPA had was that it did not have a comprehensive data base on the environment. It searched the experience of other countries with similar ecosystems. It also set up a network of manned and automated monitoring systems around the country. They are being linked by computer, to be on-line next year. Dr. alGain expects that as more data is collected and analyzed (the network is being expanded), environmental standards and regulations will be modified. At the same time, variances to the standards will be granted on a case-by-case basis to facilities that can demonstrate that the impact of their pollutants will not lead to harmful effects.

The Kingdom's licensing authorities will be responsible for implementing the new standards. For example, the Ministry of Industry grants licenses for new industries; the Ministry of Municipalities licenses water and sewerage projects, and so forth. Dr. alGain believes that to live up to MEPA standards, these licensing authorities will have to require environmental impact statements for new projects. This same principle will apply to activities that are part of the Gulf and Red Sea environmental protection conventions.

#### Expatriate aid

To review these environmental impact statements, answer queries and to make timely option decisions, MEPA has made a big effort to hire the professional help it needs. It has contracts with U.S. and British companies, with the Australian government and already has hired about 100 of the 150 expatriate professionals it feels it needs. All in all, MEPA's staff is up to some 1,000 people, about 20 percent administrative, the balance scientific and technical. The technical, generally sub-professional level is by far the larg-

est, doing such tasks as manning monitoring stations and reading gauges. The scientific staff is from eight nations (about 50 percent Saudi) and works--successfully--as one team. "This is a new experiment," Dr. alGain said, "and it is working well."

To increase the number of Saudi environmental professionals, the government has sent MEPA staffers overseas to be trained and has created or expanded environmental science and meteorology departments in its own universities.

To get a better view of the entire picture, Dr. alGain said they will soon sign a contract with the Stanford Research Institute, which will help MEPA produce a State of the Environment Report. The next step will be development of a National Conservation Strategy that will identify gaps, trends and courses of action. After review by technical committees, the Strategy will go to the inter-ministerial Environmental Protection Coordinating Committee (EPCCOM) for political action. The process now is moving quite swiftly: Saudi Arabia's first national park was just inaugurated, and it is working with an international organization on developing marine national parks.

Dr. alGain was in New York to address the World Environment Center's International Environment Forum, a membership group of transnational corporation officials with environmental responsibilities. LIBBY BASSETT

## **Pakistan approves a national eco-law**

ISLAMABAD--Pakistan's Cabinet, meeting under the chairmanship of President General Mohammad Zia-ul-Haq, recently approved a national environmental protection law.

The need for a Federal environmental ordinance was felt when state governments and their local agencies said they were unable to control pollution and preserve the environment. These agencies had sought Federal legislative action and guidance as most municipal by-laws on environmental pollution control are either non-existent or inadequate. Also, due to lack of expertise, the municipalities are not in a position to effectively protect and preserve their local environments. Even at the state level, there is no institutional infrastructure to ensure the integration of environmental dimensions in development planning.

Since nationalized industrial units are controlled federally and private sector industries at the provincial level, it became essential to evolve and enforce a uniform set of standards and other regulatory measures through a single authority.

Under the new law, a National Environmental Protection Council has been set up. The Council will be headed by the Federal Minister for Environment. He will be responsible for all policy matters concerning environmental protection. The ordinance also provides for establishment of the Pakistan Environmental Protection and Improvement Agency which will execute the directives of the Council. The Agency will prepare national environmental standards and take steps for effective implementation of the national policy.

MOHAMMAD AFTAB

## Oil refinery controls to protect Taj Mahal

MATHURA, Uttar Pradesh--India's controversial oil refinery--40 kilometers north-west of the fabulous Taj Mahal in Agra--is about to go on-stream. Already, the 6-million-ton refinery is partly functioning.

The refinery is run by Indian Oil Corporation, a public sector giant, and the general manager at Mathura, S.K. Nayak, is confident that it will pose no threat to the marble structure of the Taj or sandstone monuments like the Agra Fort and Fatehpur Sikri in the vicinity.

"Since we will be using low-sulphur crude, the refinery will not emit more than one ton of sulphur dioxide an hour, which is well within tolerable limits," Nayak told WER. He plans to install a plant to recover sulphur from the fuel gases so that what is burned in the furnaces will be relatively sulphur-free. The height of the stacks has been doubled to 80 meters.

The committee which examined methods of minimizing the environmental impact of the Mathura refinery found that the existing pollution in Agra was caused by three sources. It recommended that two thermal stations in the town be closed down, the railway be converted to diesel fuel and 250 iron foundries be shifted. Afterwards, a study by the National Environmental Engineering Research Institute found that sulphur dioxide levels dropped 75 percent.

The refinery authorities are also treating the effluent released into the

Jamuna river, which flows downstream past the Taj and is the only source of water for Agra's citizens. "We have an elaborate system to collect any water that is likely to come into contact with oil in the plant," said Nayak. With physical, biological and chemical processes, the oily sludge is removed so that clear water runs into the river. "There'll be a fish tank at the end so that the quality of water is constantly monitored," Nayak explained.

Environmentalists, who have fought the location of the \$300-million refinery, still fear that emissions of sulphur dioxide may interact with moisture to form "acid rain" when the refinery runs to full capacity. The most notable opponents include members of the Indian Heritage Society in Delhi, Prof. J.M. Dave, Dean of the School of Environmental Sciences at the capital's prestigious Nehru University and Prof. T. Shivaji Rao of Andhra University.

Privately, oil company and government officials concede it was a mistake to locate the refinery near Agra and the Taj. Environmental awareness was inadequate when the refinery was proposed in the late '60s, they said, then it was too late to stop the project when the controversy arose. Air samples will be regularly monitored in and around the 300-year-old monument, and the next few months will tell whether fears for its safety are correct or not.

DARRYL D'MONTE

## More on the sub-continent...

AN INSTITUTE OF ENVIRONMENTAL STUDIES will be set up at Pakistan's Karachi University to supervise research projects in various fields of environmental science and also to check pollution in urban areas.

The Institute was recommended by 14 sub-committees constituted by the Karachi Development Authority (KDA) Master Plan and Environmental Control to study different environmental aspects of Pakistan's most populous city. If adjoining areas are included, the population is more than six million.

The Institute will seek assistance from international agencies.

A FIVE-YEAR "ENVIRONMENTAL MANIPULATION and source reduction" study of Pondicherry in southern India has revealed the startling comeback of diseases like malaria, filariasis, kala-azar and Japanese encephalitis because of resistance of mosquitoes--the vector--to insecticides.

## U.S. can't sue Pemex over Ixtoc blow-out

MEXICO CITY--Mexico's national oil company, Pemex, cannot be sued for damages to Texas beaches by the world's worst oil spill, a U.S. judge ruled in a lawsuit arising from the blow-out of Ixtoc-1, an offshore Mexican oil well that flowed out of control for more than nine months.

But Judge Robert O'Connor said the Mexican firm that operated the offshore rig for Pemex can be held liable for damages. That firm is Pemargo, which leased the rig from Sedco, a Texas corporation founded by Texas Gov. William Clements, for \$11,500 per day. That fee included rent of the rig, maintenance and some technicians.

The judge also found that the oil drilling platform was legally a vessel, in the sense of a shipping vessel, and therefore the amount of liability was reduced for the rig's owner, Sedco.

From its pre-dawn blow-out June 3, 1979, until it was finally controlled and capped on March 25, 1980, Ixtoc-1--which means "Woman in Flames" in the Mayan language--pumped 3.1 million barrels of oil into the Gulf of Mexico. It has been called the accident of greatest magnitude in the history of offshore oil drilling.

The Sedco drilling platform-rig was declared an irreparable loss from fire that enveloped it with the well's blowout. It sank July 12, 1979, and Sedco was paid the insurance.

Although tar balls washed ashore in five Mexican states and Texas, hindering fishing fleets and bathers, ecologists were surprised to see little permanent damage to the Gulf of Mexico. They credited the high temperature of the water and long hours of sunlight with lessening environmental damage to sea and shore life. KATHERINE HATCH

## Institute to save Lake Maracaibo

CARACAS--A new institute for the conservation of Venezuela's largest inland lake, Maracaibo, was established this year.

Operating under the new Lake Maracaibo watershed law, it gathers under one roof the Ministries of Health and Environment and officials from state governments.

The institute has requested \$163 million

over five years to begin a number of projects. Foremost among its short-term plans are treatment plants for the city of Maracaibo and other lakeshore towns.

Maracaibo, with approximately one million inhabitants, discharges its municipal waste untreated into the lake. So do its milk processors, breweries, factories and the slaughterhouse. Under new regulations all industries on the lake must have clean-up systems installed by 1983.

Farmers also contribute to the lake's deterioration with fertilizer and pesticide runoff. As part of an overall land-use survey, the Environment Ministry is studying soils in the lake basin. This survey is intended to aid the sagging farm production of a once-agricultural nation, which now has to import 50 percent of its food.

Government petrochemical plants and oil tankers are also cited as polluters, although the oil industry keeps a tight control over spills. It has installed sewage treatment plants in oil camps and in towns on the lake's eastern shore.

The institute's medium-range plans include a biological station for the lake. Long-term plans call for restoring Lake Maracaibo to a natural, healthy condition in 20 years.

HILARY BRANCH

## ANALYSIS: Tourism threatens the Galapagos

QUITO--Some 900 kilometers off the coast of Ecuador, a barren, lava-strewn, volcanic archipelago juts out from the cobalt blue sea. However inhospitable they may seem from a distance, the Galapagos Islands, considered by many to be "the birthplace of modern biology," today draw thousands of tourists.

Eager entrepreneurs are already pressuring the Ecuadorian authorities to expand tourist facilities. The official number of tourists allowed to visit the islands is limited to 12,000 but apparently that restriction has never been enforced. Today, with the true figure approaching 25,000, there are those advocating that the official figure should now be raised to approximately 30,000.

The problem is not so much the tourists themselves. As one senior member of the

Charles Darwin Research Station, an internationally funded scientific institution located on Santa Cruz, put it: "Tourists are easy to control, though whether it's done or not is another issue depending on the capabilities of the sadly underfunded and understaffed National Park Service. But more tourism necessitates greater infrastructure, including an expanded local population which politically is impossible to restrict, and that's what does the damage."

Despite the budgetary stringency of the Park Service, which is responsible for conservation, substantial funding seems to be available for a newly established organization called the National Institution for the Galapagos (Ingala). With direct links to the Ecuadorian President, Osvaldo Hurtado Larrea, a huge budget, and several well-known developers on its board of directors, Ingala is said to have as its main concerns health, education and communication. This despite the fact that the islands only have 5,000 residents and that 88 percent of the archipelago is uninhabited National Park. On-the-scene observers, suspicious of Ingala's intentions and increasing visibility, note that the organization has yet to publish a written statement of objectives.

Meanwhile, plans are afoot for a second airstrip to be built on the islands, which will evidently endanger a breeding ground for a rare species of flamingo. (When the Americans built the first airstrip on Baltra during World War II, for sport they slaughtered every land iguana on the island.) The developers are said to be eyeing a nearby beach area as a new Waikiki.

The Galapagos face a further problem. They became a National Park in 1959 but this status applies only to the island's terrestrial area, not the surrounding waters. Five years ago concerned scientists advocated the need for incorporating the marine area into the National Park, an urgent reform inasmuch as most Galapagos fauna live off or in the adjacent sea. Even the licensed cruise ships are accused of polluting, and residents are despoiling the black coral to sell to tourists. Galapagos fishermen opposed the recommendation, which, when it became a hot political issue, was dropped. Now that many fishermen have forsaken that vocation for the more lucrative tourist trade, there is reason to believe that renewed pressure to bring the islands' marine area within the protective dominion of the Galapagos National Park would be successful.

DAVID FINKELSTEIN & GRACE POLK

## More on Latin America...

IN SOUTHEASTERN PARAGUAY, colonization has led to farming in areas that once were covered by forests. At the same time, hydroelectric construction has begun on the Parana River, and erosion is emerging as a problem. Although the region's ecology is not yet gravely threatened, the World Bank believes there is a need for greater control over development activities. To this end, it is lending the Paraguayan government \$31 million for a \$54.3 million rural development project. It has many aspects: road development, credit to farmers, increasing the agricultural extension workers from three to 29, establishing a 100-hectare field station for crop and livestock research, land entitlement, health care facilities and safeguarding the rights of Indian communities in the Caazapa area.

IN COLOMBIA, two proposed dams with a potential hydroelectricity capacity of 1,300 megawatts are being looked at for their environmental consequences. Dames & Moore, American environmental consultants, have been hired to do a study of the Urra I and II dam area's timber resources, hydrology, water quality and ecology. In addition to power generation, the dams and their reservoirs will be used for regulation of the Sinu River in northwestern Colombia, flood control, irrigation and the recovery of inundated lands.

A "NATIONAL ECOLOGICAL CONSCIENCE" must be developed so Mexico can pursue economic growth without causing the deterioration of nature, Presidential candidate Miguel de la Madrid has declared. Otherwise, Mexico will be guilty of "historic immorality," said the nominee of the Institutional Revolutionary Party who is expected to win the Presidential election July 4 and begin a six-year term December 1.

FRENCH OCEANOGRAPHER Jacques Cousteau plans to lead a 40-man scientific expedition through the Amazon. His primary aims, he said, were to film animal and plant life and explore the ecological relationship between the vast Amazon forest and the ocean into which the Amazon flows.

Cousteau's expedition was scheduled to start in April and last 13 months. To Cousteau, "This is the greatest and most difficult expedition I have ever taken."

## FAO helps Burma assess natural areas

RANGOON--Burma's situation is enviable. It is the largest and least populated country (50 people per square kilometer) in mainland Southeast Asia. It has a centuries-old tradition of conserving certain trees and animals, originally as a royal right or for quasi-religious rites, and later as British colonial policy.

The result is a pro-conservation climate. The variety of species on large areas of unexploited, nearly undisturbed land provides the potential for creating fine national parks and reserves.

To assess the possibilities, a team from the Burmese government and the UN's Food and Agriculture Organization is now investigating the state of the nation's wildlife and the extent and condition of its natural areas.

A wide range of latitude and altitude--from sea level to 5,800 meters--insures an equally wide variety of climates and habitats, from the rain forests of the south to the "icy mountains," the Himalayas, in the far north.

Satellite photographs show that, as of this year, Burma still retains 47 percent of its forest cover. Although this is a startling reduction from estimates made just two years ago of 57 percent, it still compares well with Thailand's 17 percent and the Philippines' 13 percent, from a 1980 FAO study.

Burma has many of the same problems as other Southeast Asian nations: conflicts of interest, alternative financial and political priorities, uncontrolled poaching, and wasteful exploitation of forest and river resources. In addition, the Burmese bureaucracy is still somewhat suspicious and resentful of foreign influence after years of political and economic isolation.

Intermittent rebellions against British rule, Japanese occupation during World War II, revolution and counter-revolution after the war and continuing ethnic group insurgencies have taken their toll of the current government's self-confidence and sense of security, just as they have of Burmese natural resources. Under these circumstances, it is a hopeful sign that the government-FAO nature conservation project is underway.

Initial surveys are covering the presently secure or "white" parts of the country and, under military guard, some "gray" regions.

The aim is to identify priority areas and urgent problems. The team has been aided by the Burmese Forest Department and the State Timber Corporation, which lent some trainee elephants to transport surveyors into remote places.

The project started in July, 1981. By the time it ends, in 1984, the plan is to create a maximum of three national parks up to international standards. It will also identify sanctuaries for the most hard-pressed native flora and fauna, such as stands of natural teak, the brow-antlered deer and the remaining small herds of wild elephant. Already, survey teams have found surprisingly large numbers of tiger in the central and northern hill forests.

WENDY VEEVERS-CARTER

## U.K. wildlife act called "a charade"

LONDON--Britain's new Wildlife and Countryside Act is failing and is "a charade," claims a report\* prepared by the British Association of Nature Conservationists and Friends of the Earth.

The Act tried to respond to public concern about habitat destruction by farming and forestry interests. It had 1,000 amendments tabled against it during its passage through Parliament, where it was debated for five days in the House of Commons and 15 in the House of Lords, before becoming law in October of last year.

The chief criticism is the voluntary basis of management agreements to be reached between farmers and the Nature Conservancy Council (NCC)--the government's agents--over the protection of sites of special scientific interest. The report quotes three examples, two of marshlands, one of a mountain area, which are in process of destruction because they are not properly protected by the Act. The authors said this shows signs of becoming a common pattern.

If negotiation is not accepted or is not working, the Act's only real sanction is compulsory purchase through the NCC. The report criticizes the government for cutting NCC funding to the point where it already has had to opt out of purchasing. It criticizes the NCC for reducing the number of sites it should be designating and for being dilatory, so that some sites are already being destroyed in the waiting period.

The report makes eight recommendations,

which include introduction of planning controls over agriculture and forestry development, no development of special sites without NCC authorization and realistic penalties.

BARBARA MASSAM

\*"CASH OR CRISIS, the imminent failure of the Wildlife and Countryside Act," by Chris Rose and Charles Secrett for the BANC and FOE. Price \$2.50 from FOE, 9 Portland Street, London, W.1, England.

## ECE annual meeting acts on environment

GENEVA--The UN Economic Commission for Europe (ECE) ended its annual conference here by adopting a resolution that covered a wide range of environmental protection issues.

About 260 delegates from all 34 member countries (32 European states, Canada and the U.S.) took part in the March 23-April 2 session.

The final resolution touched on most areas in which the ECE is active: energy, environment in many forms, science, technology and trade. In addition, on the final day the Commission adopted decisions relating to energy, protection of the environment, monitoring and evaluation of transboundary water pollution, economic cooperation in the Mediterranean area, and cooperation in science and technology.

Under the procedure, a so-called Sessional Committee considered the work program of the many subsidiary ECE bodies and reported on them to the full Commission. These subsidiary bodies work year-round on such areas as: agricultural problems; timber; chemical industry; steel; science and technology; housing; building and planning; inland transport; coal; electric power; gas; energy; environmental problems; economic questions; water problems; and statistics.

The Commission "noted with satisfaction" the progress with regard to ratification of the Convention on Long-Range Transboundary Air Pollution and reiterated its appeal for early ratification by all parties.

The Commission also approved the work of its Senior Advisers in the field of environmental impact assessment.

In a decision taken on March 30, the Commission urged states to strengthen cooperation in the area of shared water resources and suggested the establishment of more international commissions to speed harmoniza-

tion of different long-term national plans of riparian states and of national monitoring systems. A second stage, it noted, could be elaboration of a joint plan for an entire river basin.

WILLIAM G. MAHONEY

## Animal wastes foul European waterways

GENEVA--Europe seems to have too much of what, in the past, had been a good thing--manure.

Recently, the UN Economic Commission for Europe (ECE) held a three-day meeting here to deal with the dangers of water pollution from an increasing amount of animal wastes.

The Seminar on Water Pollution from Animal Production was called, an ECE spokeswoman said, because economic considerations have stimulated the development of large-scale, intensive livestock farming. As a result of keeping and processing larger numbers of animals on smaller sites, manure is accumulating which cannot always be easily re-utilized in agriculture. As the trend toward greater concentration grows, so does the danger of greater water pollution, she said.

Delegates from 19 of the most industrialized countries of Eastern and Western Europe and North America discussed arrangements to facilitate the transport of manure over long distances and the importance of sufficient storage capacity in so-called manure banks. They also dealt with the appropriate livestock density in a given region, nitrates in drinking water, the best ways to eliminate pollution, as well as ways to treat manure.

Biogas production was mentioned as a means to reduce pollution (mainly odor) and to produce energy, but most felt that it left safety problems still unsolved.

The delegates recommended priority be accorded the effective enforcement of legal and administrative provisions that prohibit all direct discharges of animal waste, treated or not, into both surface water and groundwater aquifers. They felt the most appropriate solution was to collect the manure (without excessive water) and apply it on farmland to increase fertility and crop yields.

They recommended regulatory schemes by which licenses--including control over disposal and discharge of solid and liquid wastes--would be issued for operators of large-scale and intensive livestock units.



This would restrict livestock farming to areas where land is available for correct application and use of manure and slurry.

They suggested economic carrots, such as grants and subsidies, low-interest loans and tax relief, as well as sticks: water fees, effluent charges, penalties and fines.

WILLIAM G. MAHONEY

## Ireland plans center for hazardous wastes

DUBLIN--Ireland's first national center for the disposal of potentially hazardous wastes is to be established on a six-hectare site at Baldonnell in County Dublin, several kilometers from Dublin City. But despite government assurances of absolute safety, there are strong objections from residents in the area.

There have been several major controversies in the Irish Republic in recent years about allegedly hazardous industries.

Peter Barry, the country's Minister for the Environment in the outgoing coalition government, said the waste center was a much-needed facility if Ireland was going to continue to attract industries.

The new center is intended primarily for industries and businesses which produce hazardous wastes in their processes with no satisfactory means of disposal.

The center will include facilities for the reception and storage of the wastes and make arrangements for treatment or disposal at authorized facilities abroad. It should become operational in about 12 months.

About 20,000 tons of hazardous wastes are produced in Ireland annually. While the intention is to export the waste for treatment, facilities for treatment at the center may later be established.

Environment Minister Barry explained that a number of larger industries have in-plant treatment facilities of their own, or had established export arrangements. Even with the new facility, industry would still be expected to make every effort to reduce and recycle its own wastes.

New regulations will come into effect in January 1983 that impose stringent controls on all stages of the handling, storage and disposal of the 27 listed categories of toxic and dangerous wastes in Ireland.

They will require those storing, treating or depositing listed wastes to have a permit from the local authority. The regulations will also require local authorities to provide a network of disposal sites.

TOM MacSWEENEY

## More on Europe...

THE SWEDISH GOVERNMENT intends to get tougher with industry and power companies to reduce the rate of acidity in Swedish lakes. One proposal on the government's spring agenda is to increase the oil tax \$2.80 per metric ton to help finance the fight. Another would reduce the sulphur content of emissions from coal-fueled power plants. An estimated 18,000 of Sweden's 85,000 lakes have been seriously affected by airborne acidity, and another 3,000 are threatened.

A "RED LIST of large German mushrooms" places 40 percent of all types found in West Germany on the endangered list.

Mycologist Professor Wulfrad Winterhoff declared in Hamburg that growing air and soil pollution was the direct cause and not--as had been thought--the swarms of mushroom pickers that descend upon Germany's huge forest areas annually.

CZECHOSLOVAKIA'S BOTANICAL SOCIETY published its "red list" of endangered plants, claiming that about 1,900 plants of local origin, or 57 percent are endangered.

Air pollution is cited as the prime threat; others are excessive collection, afforestation of formerly open areas, draining marshlands and regulating creeks, and the increased use of chemicals.

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# World Environment Report

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## Arabs fund plan to control drought in African Sahel

KHARTOUM--The oil-rich Arab states have drawn up a master plan to channel millions of dollars into schemes to control drought in the Sahel region of West Africa, and to develop a new approach to agriculture and livestock rearing in the entire area south of the Sahara desert.

The Khartoum-based Arab Bank for Economic Development in Africa (BADEA) was commissioned by the Arab states and development agencies to suggest a new development strategy for the Sahel. This plan has now been adopted as the blueprint for an all-out effort to help countries like Niger, Upper Volta, Mauritania and Senegal produce more food and make better use of their arid land areas.

Athleen Ellington of Earthscan, who just returned from the Sahel, told WER, "The situation is not the same as 10 years ago (when drought killed thousands of people and destroyed most of their livestock); it is worse. There are more people and their livestock are back to pre-drought levels. This is leading to overgrazing on such a fragile resource base that failure of the rains could lead to disaster."

The situation at present, she said, is that the population is increasing by 2.5 percent a year, while the increase in food crops is up only 1 percent.

Although the Sahelian nations and development agencies give lip service to food self-sufficiency, Ellington said funding for agricultural production often goes to irrigation schemes for cash crops, such as cotton. Food grain imports, which started in 1972 as relief, still continue, she said, because national pricing policies give no incentive to farmers, who are 80 percent of the population. For example, Ellington said, "In Upper Volta, only 4 percent of the national budget goes to rural development although 92 percent of the population is rural. In Niger, which is at the upper end of the scale, 20 to 25 percent of the budget is earmarked for rural development, yet 90 percent of the people live in rural areas."

She said the U.S. Agency for International Development's Sahel Development Program allocates only 30 percent of its funding to food crops; the rest goes to infrastructure and irrigated cash crops. Of all

the aid sent to the Sahel between 1975 and 1980, \$7.45 billion, only 25 percent of the agricultural money has gone to food crops.

The BADEA plan envisages doubling production of traditional cereals, quadrupling production of new grains and sugarcane, and more than doubling meat production by the year 2000. It challenges some of the accepted ideas about the poverty of the region and says, for instance, that the problem is not so much a shortage of cultivable land as one of identifying the most suitable agricultural techniques and cultivation methods.

Developing irrigated agriculture by tapping underground water supplies, and controlling over-grazing by livestock will have long-term effects on the climate and environment of the area, reducing present tendencies towards more frequent droughts, BADEA adds.

A Committee of Islamic Solidarity with the Sahel Countries has been formed, and the Arab states have so far contributed \$210 million to finance development projects and food aid in the Sahel.

CHARLES HARRISON

## More on arid areas...

UPPER VOLTA has embarked on a nearly \$29 million project to expand rural development. A major feature of the project, which has a credit of \$23.8 million from the World Bank's International Development Association, involves engineering, equipment and supervision for construction of anti-erosion embankments for 20,000 hectares of dry-land farms. Earth structures to improve flood control and small-scale irrigation works will also be built.

THE FUTURE OF AUSTRALIA'S ARID LANDS was discussed at a recent four-day conference by government officials, conservationists, experts from universities and departments of agriculture, scientists and ranchers. Arid lands make up roughly 75 percent of the country with 2 percent of the total population. The conference, organized by the Australian Conservation Foundation, agreed to reverse the decline of arid lands by using a variety of grazing methods and to make policy on arid lands from the standpoint of long-term sustainability.

DESERTIFICATION IS SPREADING FAST from the middle Himalayas to the southern foothills, according to the father of Chipko Movement, Sundar Lal Bahuguna and his five young col-

leagues who just completed a 3,000 kilometer trek from Kashmir to Kohima in Nagaland.

Bahuguna said that the hills are eroded because of cultivation on the steep slopes and the digging of roots for fuel.

"The blue lines showing rivulets on the maps are actually dried-up streams with sand and gravel deposits all around. Fields once irrigated are now waste lands," he said. "The most distressing thing is the clear felling of natural forest to raise new plantations of commercial species."

## Egypt losing battle to save cropland

CAIRO--Despite huge investments over the past 20 years and feverish efforts by Egyptian authorities to increase the country's agricultural acreage, the government is fighting a losing battle.

Reclamation projects so far have been of marginal success, and numerous people in rural areas continue to use the fertile soil of the Nile valley to build small industrial plants. The most profitable industry taken up by landowners is the production of bricks, a commodity in high demand due to fast-growing urbanization in Egypt's rural areas. Mud brick houses are as old as Egypt itself, but the recent acceleration in brick manufacturing with one of Egypt's most precious assets has reached alarming proportions.

According to official figures, 285,000 hectares of agricultural land were lost to housing projects and factories over the past 10 years, or 8.5 percent of Egypt's total agricultural land. Since only 4 percent of Egypt is arable and since a million Egyptians are born every 10 months now--and the rate is rising--the problem has reached crisis proportions.

The Ministry of Agriculture recently was given authority to crack down with laws that prohibit use of the country's fertile land for anything other than growing crops. The Ministry also is drafting a law that would permit rural authorities to shut down illegal brick factories without prior notice or compensation.

During a recent speech before both houses of parliament, President Hosni Mubarak referred to the issue, saying it was "hindering the country's efforts to achieve food sufficiency." According to official

sources, the country's food import bill now runs to over US\$5 billion annually.

In the oasis province of Fayoum, some 100 kilometers southeast of Cairo, brick factories can be seen stretching in every direction. Just three years ago this was productive agricultural land. The factory owners say the industry is needed to supply the growing demands of government housing programs. Apart from oil, the factories depend on natural materials for production, digging out in some cases 150 centimeters (or nearly five feet) of topsoil. Well-trained donkeys are used to transport material and finished bricks to and from different parts of the primitive factories.

The factories, despite their disastrous impact on Fayoum's fertile countryside, provide considerable employment for many who lost their rented land when it was included in the province's housing and industrial zones. One of the factories employs about ten men over 65 years old who do what is apparently hard labor.

But somehow, the dug-out land is re-used for growing crops. "Yes," said Ahmed Salim of FINTECS, an agriculture consultancy firm, "the land used for material in the brick factories could be arable, but it can never be the same as it was." Salim went on to say that with the Aswan High Dam now preventing the land's fertility from being renewed by fresh silt brought down by the annual floods, "it would take hundreds of years to make up for the 1.5 meter loss in every strip of land that is dug out." Other experts say it could take thousands of years.

JOHN M. BRADLEY

### Better mud bricks...

RECENT RESEARCH by Professors G. Lewis and P. Mirihaglia, of the Department of Engineering at Zambia University in Lusaka, indicates that a mud-brick building can be made to last for 20 years. The key factor is cement reinforced with natural fiber, the cement being plastered onto surfaces of mud-brick walls. The result is five times tougher than unreinforced concrete and is far less expensive than conventionally-strengthened concrete that contains steel or glass fiber. Furthermore, it is drier, cooler and cleaner.

Walls for a standard house can be constructed with two bags of cement, two wheelbarrows of sand, and 12 pounds of the plant fiber, like sisal. Together with room sheets, a durable home can be built for a mere \$60.

## Arid land monitored by remote sensing

CAIRO--A two-day symposium on remote sensing and environmental monitoring in arid and semi-arid land was recently held at the Remote Sensing Center in Cairo.

It was co-sponsored by the University of Michigan's Environmental Research Institute which organizes similar seminars throughout the world every year. This was the first time one was held in the Middle East.

The Cairo Center, founded in 1971, is unique in the region. Participants represented 47 countries, but most of the research presented and discussed dealt specifically with the Middle East.

Remote sensing is a general term for a number of techniques used to monitor the earth from satellites or aircraft. Of special importance have been three Landsat satellites, the first of which was launched in 1972. Landsat's cameras scan the terrain beneath, and a continuous stream of information is sent back from the satellite and processed by computer to produce an image. Up to one million items of information can be transmitted back to earth every second and 34,000 square kilometers can be covered in a single scan.

Of particular importance to the Middle East, said a participant, is that "given the absence of roads and other infrastructure in many areas of the arid countries, remote sensing is virtually the only possible way of monitoring the environment."

Such natural changes as the movement patterns of the desert over extended periods can be monitored, allowing for advance planning in accordance with shifting dunes. Recent studies of the Sahara, for example, revealed that the desert is moving south and west towards the sea. Unfortunately, the construction of a new town on the Mauritanian coast was begun before this study was undertaken, and it is right in the path of the sands.

Changes in vegetation patterns can also be plotted, which can play an important part in range and livestock management. Remote sensing information has been successfully used for range and livestock management in Saudi Arabia, Yemen and Jordan. It will shortly be put into effect in Syria and possibly Morocco, where livestock have been especially hard hit by drought.

Other agricultural uses for remote sensing include the classification of soil

potential. This is now being carried out in the Sinai, as well as determining the size of each year's crop. Diseased crops and polluted water can be detected with infra-red cameras, while the moisture content of crops and soil can be determined by airborne multispectral photography.

Remote sensing can also study man-made changes. A report made by Dr. Zakya Shafii of Cairo University's Faculty of Engineering dealt with the use of Landsat and aerial photography to monitor Cairo's urban growth over a 10-year period. Some 70 percent of the city's expansion in the past two years, she concluded, has come at the expense of agricultural land, which in Egypt is already an extremely scarce resource.

On a more optimistic note, geological formations indicating the presence of oil and other minerals have been located in the Sinai through the use of Landsat. Based on the Landsat findings and follow-up ground surveys, Egypt is planning large-scale development of the region. JOHN M. BRADLEY

## Indian eco-damage dims its food future

BOMBAY--Dr. M.S. Swaminathan, India's top "Green Revolutionary" and now head of the International Rice Research Institute in Manila, said widespread ecological damage is one of the main factors holding back Indian agriculture.

He told an international conference on food in Bangalore recently that, although the country had made considerable progress in growing more food, there were five constraints--soil erosion, deterioration and loss of irrigated land, declining rates of yield and conversion of cropland to non-farm use--which could lower the nation's future food output.

The same theme was reiterated by B.B. Vohra, Chairman of the National Committee on Environmental Planning. He said the effects of denudation and soil erosion can be gauged by the floods that cost the country as much as \$1 billion annually. Due to waterlogging and salination, as much irrigated land is going out of production each year as is being brought under irrigation. Almost one-third of all available land in India is being almost totally denuded, while another third is so badly degraded that it is only partly productive, he said.

DARRYL D'MONTE

## More sub-continental agriculture...

RAJA SIKANDER ZAMAN, Pakistan's Minister for Water and Power, says the government is endeavoring to lower the water-table in areas severely hit by waterlogging and salinity.

So far, 13,360 tubewells (lifting underground saline water to reduce the water table) have been installed by the government and 7,423 kilometers of drains constructed, affecting 6.48 million hectares of land. Farmers and private companies have installed another 173,900 tubewells for the same purpose.

GUJARAT UNIVERSITY in western India, together with some voluntary agencies, has helped reclaim 2,000 acres (809 hectares) of saline soil by using industrial wastes from dairies, dyes, fiber and organic material. By spraying saline soil with a mixture of these wastes, water is able to penetrate it. Normally, gypsum is used for reclamation, but it is twice as expensive.

NEARLY 5,000 USEFUL WILD PLANT SPECIES are threatened with extinction in India, according to Dr. Vishnu Mittra of the Birbal Sahni Institute of Paleobotany in Lucknow. He found that indiscriminate use of agricultural chemicals as well as ecological changes due to new agricultural practices are to blame.

The study lists nearly 40 uses of such plants and points out that these were not discovered accidentally but were part of the traditional culture of rural and forest folk, passed on from generation to generation. Dr. Mittra cautions that his survey is by no means complete, and the very first thing to be done is to carry out a comprehensive search for these species.

THE BHARATPUR BIRD SANCTUARY, which is equidistant from the Taj Mahal and the new Mathura oil refinery in northwest India, is being invaded by water buffalos. The animals are destroying birds' nests in the 30-kilometer-wide sanctuary and are said to be disturbing its ecological system. The sanctuary is one of the best in Asia and attracts some 250 species of migratory birds from as far away as Siberia.

Local farmers, who live on the outskirts of the sanctuary, are insisting on their right to graze a total of some 4,000 head of cattle, and powerful local politicians are backing them.

## Attempt to dramatize eco-issues fails

LONDON--An international public hearing on the environment, presenting the views of well-known leaders in the field, was held here recently before a five-man "jury" led by Judge Manfred Lachs of the International Court of Justice.

The hearing, on "The Human Environment: Action or Disaster," was meant to be a dramatic, star-studded sequel to the month-long, 10-years-after-Stockholm proceedings at UN Environment Program headquarters in Nairobi (WER, June 30, 1982). However, future action was little discussed, and several participants felt that therefore it was somewhat of a disaster. At the end of the first (of two) day's testimony here, the London Times had this headline comment: "The Man in the Street Is None the Wiser."

The purpose was to debate environmental policy for the next 10 years. Russell Peterson, President of the U.S. National Audubon Society, in his keynote speech said that, generally, world leaders lack "the understanding, the caring and the political will" to face long-range global problems. After hearing testimony from the likes of Thor Heyerdahl, Maurice Strong, IUCN Director Lee Talbot, Jacques-Yves Cousteau and Edward Ayensu of the Smithsonian, the judges' verdict was a "disappointment," Peterson felt. They came to no joint conclusion for action, he said, just made set speeches. Others felt the entire hearing was disappointing in that it did not get the kind of worldwide attention hoped for.

While the discussion leaders--all experts--presented their topics well, the floor debate was not responsive to the program directive: "Speakers will focus attention on the need to formulate policies and adopt measures to ensure greater progress during the forthcoming decade." Only a few of the guests, invited from 39 countries, responded to UNEP's request for constructive criticism, new ideas and directions. The lack of responsiveness finally brought UNEP director Dr. Mostafa Tolba to the microphones with a plea for more direct attention to future environmental challenges.

There were suggestions that women be more involved in the environmental movement. And Russell Peterson suggested that citizens' groups rally behind such established organizations as UNEP and IUCN, which are starved for funds and attention by authori-

ties, to strengthen them so that they can compete in the political arena.

The public hearing was sponsored by UNEP, United Nations University, Japan Broadcasting Corporation, Swedish Committee for the Stockholm Conference, World Wildlife Fund-U.K., and Asahi Shimbun.

MURRAY SILBERMAN

## Hong Kong has new air pollution bill

HONG KONG--The Executive Council here recently approved an Air Pollution Control Bill (1982), replacing the Clean Air Ordinance (1959) which covered only the emission of smoke and grit.

A government spokesman said the new bill contains emergency "abatement notice" procedures similar to those in the old Clean Air Ordinance but widened to cover all air pollutants. "These will give the Bill's control authority (the Commissioner for Labor) a speedier and more effective capability to handle serious air pollution problems which affect aviation safety or endanger public health," the spokesman said.

The new bill also provides a scheme for air quality management and planning. It involves the declaration of air control zones, for which air quality objectives will be set. "Major polluting activities will be declared specified processes and will be subject to detailed licensing conditions to control their emissions," he said. Existing emitters in the specified process category will be eligible for exemption from licensing but this exemption will be ineffective as soon as the emitters are replaced.

The new bill is the third in a series of major bills covering the protection of Hong Kong's environment. The Waste Disposal Ordinance and the Water Pollution Control Ordinance, covering solid waste and water pollution respectively, were enacted in 1980. Another piece of legislation, that on noise control, is in the early stages of drafting. "Once all four are in place," the spokesman said, "Hong Kong will benefit from a comprehensive system of controls comparable to those existing in any territory worldwide." SPECIAL TO WER

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## Acid rain treaty to be ratified soon

STOCKHOLM--The 1979 long-range air pollution treaty may finally be ratified by year's end.

Before the 1982 Stockholm Conference on Acidification of the Environment opened (in late June) only 13 of the 33 signatories had ratified the Geneva Convention on Long-Range Transboundary Air Pollution. But during the political portion of this year's meeting, the Common Market countries, with the exception of Greece, said they would deposit their ratification papers with the UN General Secretariat in mid-July. Then, the chief delegates from Switzerland and Austria announced that they would complete ratification before the end of the year. This will bring ratifications to the 24 required for the Convention formally to take effect.

The Stockholm conference paper summing up its work, however, disclosed no concrete, binding agreement to limit the sulphur discharges from industrial and power plants that drift across national boundaries and fall as "acid rain."

The closing document appeared to be a compromise between countries hardest hit by "acid rain" and industrial giants such as the United States, West Germany, England and France, which are said to have the highest discharge of pollution.

Environmental experts, who met the week before the political side of the conference began, debated recommending a 0.5 gram fall of sulphur per square meter of ground per year to be a norm under which tolerable conditions could prevail. But the final sum-up did not take up the question of a norm.

Sweden's Agriculture Minister Anders Dahlgren, who initiated the meeting, told newsmen that the conference was a "political manifestation," and that politicians recognize "this grave environment problem will worsen unless we quickly take concrete action."

Sweden (where 20,000 lakes are now said to be "dead"), Norway and Canada have been hit hard by the sulphur and nitrogen oxide emissions originating in other countries. West German delegates provided evidence that a million hectares of forest in Middle Europe are damaged by acidification. But the problem is not wholly northern. Acid deposition now affects Asia and Latin America--and even tiny Bermuda.

The conference recognized that even if acid fallout remains stable, "deterioration of soil and water will continue and may increase unless additional control measures are implemented and existing control policies are strengthened."

The political conferees agreed that "further concrete action is urgently needed within the framework of the Geneva convention to reduce air pollution, including long-range transboundary air pollution." They recommended the following actions:

- \* Consultations within the Convention aimed at establishing concerted programs for reduction of sulphur and nitrogen oxide emissions, taking into account environmental needs, socio-economic priorities and energy considerations.

- \* The use of the "best available," economically feasible technology for reducing pollution discharge. They wrote off high smokestacks in place of emission control devices as an obsolete abatement mechanism.

- \* Further development and implementation of energy conservation measures.

- \* Continue development of the North American monitoring programs as well as the European Monitoring and Evaluation program through better geographical coverage, improved emission data as well as standardization of sampling and measurement methods.

Mats Segnestam, spokesman for the non-governmental organizations (NGOs) whose representatives attended as observers, commented that the conference conclusions and recommendations were "a definite step forward" even though it would require "concerted action to reduce emissions in each polluting country before the acidification problem can be seriously confronted."

Segnestam, executive director of Sweden's largest environmental organization--the Swedish Union for Protection of Nature--criticized the U.S. and the U.K. for arguing that further steps to reduce acid deposition should not be taken until research is completed. We hope, he said, that they will be able "to reconcile their own announced preference for further delay with their endorsement of the Conference's call for urgent action to reduce acid-causing emissions."

SPECIAL TO WER

## More on acid rain

SWITZERLAND CLAIMS IT GETS MORE ACID RAIN than any other nation in Europe.

The Interior Minister explained that Switzerland, because of its geographic location in the center of the Continent, re-

ceives rain that has been polluted with acid residues from all the other European countries.

The Ministry said that Austria is in second place as the worst affected, followed in order by Luxembourg, The Netherlands, Norway, Sweden, Czechoslovakia, Hungary, West Germany and France.

The acid rain, the Ministry declared, is probably the major cause of destruction of many sections of Swiss forest and also is polluting much of this country's groundwater, lakes and rivers.

## Rio's polluted bay gets clean-up plan

RIO DE JANEIRO--After several years of talking, the Brazilian government has announced it will go ahead with plans to clean up Rio's highly polluted Guanabara Bay.

The announcement was made by Minister of the Interior Mario Andreazza. He said that after detailed studies, a new anti-pollution system was developed that would make the bay 80 percent free of pollution in a period of three years, at a cost of about \$200 million. Previous proposals for the cleanup estimated its cost at double that figure and the time needed up to 10 years.

The minister said that FEEMA (Rio de Janeiro State's environment agency) designed a project to utilize an underwater current which forms a channel in the middle of the bay into which sewage and wastes would be pumped. This natural channel would then take the wastes into the open seas. The Bay of Guanabara, a large body of salt water, has a very narrow opening to the sea.

The bay for centuries has been used as a dumping ground for human and industrial wastes, but in the last two decades, as the population expanded to eight million, its wastes have become saturated with industrial effluents, garbage and sewage, killing off most of the fish and turning once popular beaches into wastelands.

Most of the sewage from Rio and its surroundings is dumped raw into the bay. Complaints and proposals to remedy the situation have been voiced for years, but because of a lack of a cohesive plan and the lack of funds, nothing concrete had been done about it. Now six sets of pipes will be laid from different locations to the natural channel in the center of the bay, stricter control of sewage dumping is

promised, and it is to be regulated according to the tides to take advantage of the natural outflow. The work is to start this year and will be completed within two years.

GEORGE HAWRYLYSHYN

## New ecology stations set up in Brazil

RIO DE JANEIRO--Brazil's President Figueiredo recently signed a decree bringing four new ecology stations into being, adding 124,000 hectares to the 9.7 million hectares of parks and conservation areas already established in the country.

The four new ecology stations are located in the four corners of Brazil and bring distinctly different regions into the project. Largely the work of Secretary of the Environment Paulo Nogueira Neto, who founded the ecology station project in 1974, they serve first to preserve natural environments representing the major ecosystems in Brazil, second to provide an infrastructure for universities and research institutes to carry out field study, and also to provide background data on the comparative evaluation of non-protected environments for future action.

The Guaraquecaba station in southern Parana state contains 13,700 hectares of mangrove swamps and is the natural habitat for a large number of fish and crustaceans. The Serido station in the northeastern state of Rio Grande do Norte encompasses 1,200 hectares of Brazil's driest terrain, the caatinga. The Serra das Araras station in central-western Mato Grosso state covers 28,000 hectares of dense mountainous forests. Finally, the Caracarai station in the Roraima territory, north of Amazonas, includes 80,500 hectares of tropical forests and shrub-covered swamps.

These new stations bring the total to 17 of the originally planned 25 stations at the project's conception. Some dozen additional areas are under study or in various stages of incorporation into the program, according to Sara Castro of the Secretary of the Environment's office.

CHARLES THURSTON

## More on parks...

LITTLE ECUADOR has established 12 outstanding parks and reserves--10 within the last seven years, reports Parks Magazine. Each area has a supervisor and parks guards to administer and protect it.



## Australian officials agree on eco-policy

PERTH--A far-reaching Declaration on Environment and Conservation was made by ministers of the Australian Environment Council (AEC) and the Council of Nature Conservation Ministers (CONCOM) when they met for the first time recently in joint session.

They represented all Commonwealth, State and Territory Governments.

The ministers declared they will continue to:

- \* control all forms of pollution of the environment in order to avoid adverse effects on human health and to enhance the beneficial uses of the environment;
- \* apply the "polluter pays" principle to encourage environmental protection;
- \* improve arrangements for monitoring and reporting on major indicators of the state of the Australian environment;
- \* prevent extinction of Australian species of flora and fauna, and protect their habitats;
- \* incorporate at an early stage environment and nature conservation considerations in government decision-making;
- \* encourage and provide opportunities for constructive public participation in decisions with potentially significant environmental consequences;
- \* support environmental education and promote community awareness of environment and nature conservation issues;
- \* contribute to international activities directed toward safeguarding and improving the global environment.

ANNE BLOEMEN

## Australians review river basin damage

PERTH--Australia's Commonwealth Scientific & Industrial Research Organization (CSIRO) has begun a review of environmental problems in the one million square kilometer Murray-Darling Basin, fourth largest in the world.

The Minister for Science and Technology said the review was aimed at:

- \* identifying those areas and issues most in need of scientific investigation; and
- \* determining how CSIRO's research programs could best provide useful answers.

The Murray-Darling Basin is bounded by the Darling Downs in Queensland and Murray Mouth in South Australia, and is centered on the 2,200 kilometer Murray River.

It is common knowledge that parts of the Basin are affected by salinity, water-logging and accelerated erosion and that these are causing damage to flora and fauna, reducing land productivity and degrading water supplies, especially those for Adelaide.

The CSIRO team planned to complete its report by mid-July and to convene a public conference later in the year to discuss its findings. Any persons or organizations interested in contacting the study team can write to: Murray-Darling Study, CSIRO Division of Land Use Research, P.O. Box 1666, Canberra City, ACT 2601, Australia.

ANNE BLOEMEN

## More on Australia...

THE AUSTRALIAN GOVERNMENT is spending \$500,000 on a television advertising campaign to educate Australians on the natural environment. The theme featured in the two-month campaign of 60- and 30-second commercials is Australia as "Mother Nature's Playground."

The Minister for Home Affairs and Environment, Tom McVeigh, said that "Since the days of the First Fleet, Australia has lost more than 80 percent of its woodlands, 70 percent of its eucalyptus forests and 90 percent of its rain forests. There are many species of Australian native mammals in danger of extinction and some 800 varieties of native plants are now judged as being under threat."

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# World Environment Report

News and Information on International Resource Management

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## Nile studies find high dam did more good than harm

CAIRO--Egypt's Aswan High Dam may control the Nile, but many believe its environmental impacts went out of control. Although the dam has been the target of much emotional criticism, it is not the environmental disaster once feared, and economically it has already proven itself.

The Nile is Egypt's lifeline. Rising out of mountainous Lake Tana in Ethiopia and placid Lake Victoria in Uganda, the two Niles, the Blue and the White, meet in Khartoum and flow sluggishly through the Sudan to Egypt. For more than 10,000 years, Egyptians tried to tame the Nile, the world's longest river. Dams had been built before, but none was big enough to keep back a major flood or ensure ample water when the rains failed in far-off Ethiopia and Uganda. In this century, with its staggering population increases, the need to control the Nile became even more important, and thus President Nasser in 1960 began construction of the Aswan High Dam; it was officially completed in 1971.

Before the high dam was built, about a quarter of the Nile's flood washed out to sea. Now the annual flood is held behind the dam in Lake Nasser. Dr. Khalil Hosny Mancy, an Egyptian-American who headed a seven-year study of the dam's environmental effects, said: "In 1972 Egypt would have had a terrible drought if it had not completed the Aswan High Dam. Then, in 1974, there was an exceptionally high flood. Without the dam, a lot of land would have been inundated, villages washed away and people killed." The loss in crops that the '72 drought would have caused could have cost the country \$600 million, more than half the dam's cost of \$1 billion.

Today, with the conversion of basin-irrigated land to perennial irrigation in Upper Egypt (the area nearest the dam), about 293,000 hectares of land can be farmed year-round, which means three crops a year rather than one. In addition, some 526,000 hectares of land have been reclaimed from the desert for farming and are now under perennial irrigation. (Unfortunately, about an equal amount of land has been lost to urban sprawl during that same time.)

The dam generates 40 percent of Egypt's electricity, but the full 2,100-megawatt installed capacity will not be used so as to safeguard irrigation

schemes and to protect the river banks (the sediment-free water has a scouring action). Electricity production is 1,500 Mw during the summer and 500 during the winter.

While the economic benefits of the dam have generally been favorable, its full environmental impact has yet to be determined. Studies are continually underway. These include a United Nations and National Research Center study on coastal erosion. The World Bank is financing a fisheries study and West Germany's Bayer is investigating the spread and control of bilharzia, or schistosomiasis, a parasitic disease transmitted by snails that live in slow-moving irrigation water.

The most comprehensive study was that conceived by Dr. Mancy and carried out by his institution, the University of Michigan, and the Egyptian Academy of Scientific Research and Technology. This seven-year study--the River Nile and Lake Nasser Research Projects--arrived at conclusions close to predictions made by preliminary studies in the 1950s.

Anticipated was the loss of mud for traditional brickmaking. Landowners still exploit the dwindling resource for a quick profit, but the practice is being curbed with the introduction of modern brickmaking factories.

Silt trapped behind the dam is proving to be less of a problem than expected. At the rate it is collecting in the 30 billion cubic meter dead-water area it will take 500-700 years to fill. Meanwhile, it appears to have sealed the earth and rockfill dam and slowed seepage.

Claims of the fertilizing benefits of the annual flood's silts have been exaggerated as 90 percent of it was lost to the sea.

A major criticism of the dam is that it is responsible for a continuing drop in crop yields brought about by a rising water table and waterlogging. Salinity, the end result of waterlogging, affects 80 percent of Egypt's cultivated land. Researchers, however, say salinity was a problem in the Nile Valley and Delta long before construction of the high dam. The cure, say experts, is better drainage. Towards this end, Egypt has invested \$800 million for tile drainage on two million hectares, two-thirds of the country's cultivated land.

Coastal erosion, however, is a new phenomenon in Egypt and can be squarely blamed on the dam. The Delta has suffered the most damage, but the entire Egyptian coastline is affected as is a good part of the Libyan. Corrective measures have yet to be

taken, but the National Research Center's study on the problem recommends constructing a series of dikes along the coast.

The once-flourishing sardine fishing industry along the Mediterranean coast has ended as have the livelihoods of the fishermen there. The sardines were fed by nutrients swept along in the annual floodwaters. The potential for a fishing industry in Lake Nasser exceeds that of the former Mediterranean fishing ground. Fishermen from the Aswan region were relocated along the lakeshore, and although there is a potential catch of 25,000 tons a year from the lake, problems of storage and transportation nearly 900 kilometers downstream to Egyptian population centers have not yet been overcome.

One great environmental health fear was that increased perennial irrigation, possible because of the dam, would spread the parasitic disease, bilharzia. This has not happened. Although farmers who already had bilharzia have spread the disease geographically onto the reclaimed lands, the prevalence has decreased, not increased: fewer Egyptians per thousand now have bilharzia than 40 years ago, Dr. Mancy said their study found. In recent times there has been an exodus to the cities and other Arab countries, and Egypt has modernized its health education and treatment centers, obtained drugs to cure bilharzia, and set up water treatment systems and snail control.

One growing problem, Dr. Mancy said, is river pollution. With industrialization and a burgeoning urban population, what water and sewage treatment facilities there are, are overstrained. "The pollution problem in the river is very serious," he told WER. "There is a potential health hazard unless the country does something." He said the U.S. Agency for International Development is putting money into industrial waste problems, but much more needs to be done now that the flood no longer cleanses the river every year.

Generally, the dam's long-term, negative side effects--although still under close study--appear to be manageable. Its unquestioned benefits include low-cost hydroelectric power, ample water reserves for territorial Egypt and a release from the fear of drought or excessive flooding.

The dam is now considered by many former critics, in the words of the late President Sadat, to be: "After the Pyramids of the Pharaohs, the...greatest construction erected by the Egyptians in their history."

JOHN M. BRADLEY

## Two dams collapse in New Zealand

WELLINGTON--New Zealand's Commission on the Environment is, in effect, saying "I told you so" after the recent collapse of two earth dams here.

The commission claims that authorities did not act upon recommendations it made in May, 1977, after it appraised a dam proposed for Wheao. The authorities are now confronted by the collapse of it and another dam.

The problem at Wheao was the disintegration of a canal which wrecked the power house.

In its original appraisal, the commission noted that the government's Ministry of Works and its Department of Scientific and Industrial Research (DSIR) doubted that brown ash (formed by volcanic eruptions 9,000 to 15,000 years ago) would form a stable base for the canal. In addition, the DSIR was concerned that there could be leaching through the brown ash, which might affect the water table. When naturally moist brown ash is dried, it cracks, and the cracks do not close up when it is re-moistened, a DSIR soil survey had found. Therefore, it stated, brown ash "is tricky material for engineering work."

The commission did not take these points further, but it did make recommendations on ways to ensure that design criteria and specifications were checked before construction was approved. It also recommended a regular surveillance system once the structures were in service. These suggestions were not acted upon, the commission said.

The commission asserted years ago that it was the responsibility of the government's Ministry of Works and Development to check for sufficient margins of safety in projects funded through local authorities' loans boards. New Zealand has more than 40 small hydroelectric schemes operated or under construction by local bodies.

The present commissioner, Ken Piddington, has now drawn attention to the old recommendations and has been supported by the government's Minister of the Environment, Dr. Ian Shearer.

However, a spokesman for the Institution of Professional Engineers, J.H.H. Galloway, said it was premature to speculate that because there had been a collapse it followed

that the commission's recommendations and the warning on the suitability of brown ash had been ignored.

A preliminary government investigation points to "an engineering fault," and there will be a public inquiry. JACK KELLEHER

## More big & small hydro...

THE MALAYSIAN GOVERNMENT SCRAPPED its controversial plan to build a 110 megawatt hydroelectric power project in peninsular Malaysia's only national park, Taman Negara (WER, Dec. 15, 1982, p.2).

Deputy Prime Minister Datuk Musa Hitam said the National Action Council made the decision after re-examining the country's energy needs. He said present hydroelectric projects and a new natural gas project were sufficient to meet energy needs.

"We also took into account the environmental factors in making the decision," he said.

Environmental groups throughout the country mounted a campaign against flooding 7.5 percent of the park: Sahabat Alam Malaysia (Friends of the Earth) collected 45,000 signatures in seven months, and thousands of "Save Taman Negara" postcards produced by the Malayan Nature Society were sent to the Prime Minister.

ISRAEL'S FIRST HYDROELECTRIC STATION was recently inaugurated at Kibbutz Hagoshrim in the upper Galilee. The station, producing 200 kilowatts of electricity, utilizes spring waters which are used for irrigation purposes in the summer.

The turbine will work in conjunction with installations of the Israel Electric Corporation in the north and will supply two-thirds of the kibbutz's electricity needs. The Energy Ministry--which participated in 30 percent of the investment--expects to encourage the establishment of additional small hydroelectric plants in the north utilizing tributaries of the Dan River.

FAST NEW COMPUTERIZED FLOOD-WARNING SYSTEMS are now in use in the U.S., Pakistan, Argentina, Brazil and Honduras. Their use in forecasting flood and drought is the subject of an international conference sponsored by the World Meteorological Organization and the U.S. Weather Service (NOAA) September 19-23 in Sacramento, California. Contact: Robert J.C. Burnash, California-Nevada River Forecast Center, 1416 9th St., Sacramento, CA 95814; telephone 916/422-1201.

## Israel is recycling wastewater for farms

JERUSALEM--A higher percentage of municipal wastewater is used for agricultural irrigation in Israel than in any other country, and there are plans to ultimately tap 80 percent or more of urban wastewater for such purposes. In 1981 over 30 percent of Israel's wastewater was recycled.

Official estimates of water demand forecast an annual shortage of approximately 400-500 million cubic meters (MCM) by the year 2000.

Israel already utilizes essentially all of its known replenishable fresh water sources, amounting to some 1500 MCM/year, and it uses water from marginal and unconventional sources to close the gap between the actual demand of about 1700 MCM/year and the available water supply. Wastewater recycling programs are therefore high on the agenda for research and development.

Israel's national sewage project, launched with World Bank aid, will make a marked contribution toward solving the problems of disposal and purification of over 250 MCM wastewater produced annually. The Dan Region Sewage Reclamation Project is Israel's largest-scale project in wastewater recovery. In its final stage it will recover 160 MCM of water per year. The project provides for biological treatment of wastewater followed by chemical treatment. The treated wastewater will be used for agriculture; over 75 percent of Israel's water reserve is allocated to this sector. The urban population is thus assured a supply of high quality water for domestic purposes while highly treated effluent is allocated for agricultural use.

The Mekorot Water Company, the public organization which is the main supplier of water in the country, recently reported that 84 MCM of wastewater are currently reused with plans to recover 220 MCM for recycling in the near future.

Plans are underway to enable 100 MCM of purified wastewater from the Dan (Tel Aviv) region to flow southward to irrigate fields in 67 Negev settlements by 1985. This volume is equivalent to about 6 percent of the country's annual water supply. In order to avoid health and environmental problems possibly connected with the use of this treated wastewater, a monitoring and control system will be established by the

Health Ministry's Institute for Environmental Health Research. SHOSHANA GABBAY

## Britain's farmland is fast disappearing

LONDON--Britain's farmland has been disappearing faster over the past four years due to "serious inadequacies" in the Government's policies for safeguarding it against urban development. The accusation comes from a conservation pressure group, The Council for the Preservation of Rural England (CPRE), in a letter of protest to Agriculture Minister Peter Walker.

It quotes an increase in approved building plans for 46,000 acres (18,616 hectares) in 1981 as against only 29,000 (11,736) in 1978. CPRE's director, Robin Grove-White, is particularly worried about a 51.4 percent increase over the same period in the amount of farmland allowed to transfer to other uses.

CPRE investigations show that urban development is not just restricted to disused or poor quality land but includes an increasing amount of Grades 1-3 farmland. This situation does not reflect an overall increase in planning activity but simply a change in the type of land being developed.

For this the CPRE blames the Ministry of Agriculture, which it says sometimes overrides local authority objections to planning developments, but more often permits them too much discretion. It calls for much tighter guidelines and monitoring.

BARBARA MASSAM

## Britain working on whale-saving plants

LONDON--British horticulturalists may help save the sperm whale, hunted near the point of extinction for its oil. The bean of the jojoba plant, a native of the American and Mexican deserts, provides a fluid with qualities identical to sperm-whale oil, and it is already being used by some tanning and cosmetic firms.

The problem is the slow growth of the plant and the horticultural and agricultural expertise needed to produce it in suffi-

ciently large quantities to be commercially viable.

Although the frosty British climate is quite unsuitable for its growth, scientists in Twyford Laboratories near Glastonbury in Somerset have devised a method of multiple propagation and accelerated growth.

The plant is grown on a jelly, or agar, which is injected with a mixture of nutrients and hormones and exposed to the right conditions of light and temperature. This vastly increases the growth of small shoots which in turn propagate as independent plants.

A laboratory spokesman estimated that the plants would produce fruit within 18 months of leaving the laboratory instead of the four or five years usual under natural conditions. Twyford Laboratories believe they are the only tissue culture company in the world actually producing jojoba plants, and they have already exported trial quantities to the major American firm in the field, American Jojoba Industries of Bakersfield, California. BARBARA MASSAM

## Canada sells Egypt waterweed harvesters

CAIRO--A Canadian firm has won a US\$750,000 contract to build 34 marine harvesters to clear underwater weeds from the Nile River. If the harvesters prove a success, the Egyptian government is expected to order another 200 machines worth US\$4 million.

The harvester, chosen over 12 other entries, was bought because it is simply designed, easy to maintain, lightweight and inexpensive. The one-ton vessel costs about US\$8,000 while its closest rival starts at three times that price.

The manufacturer, Trobee Marine Equipment Inc. of Perth, Ontario, won the contract through a Canadian connection, Kenting Earth Sciences Ltd. of Ottawa, a company conducting a hydrological survey of the Nile.

The marine weed harvester was not originally designed for the Nile but to control plants clogging Ontario's rivers and lakes. Because of the harvester's simplicity and the ready availability of spare parts, it is considered ideally suited for Third World markets.

Countries such as Egypt are struggling to raise their food production, and one of the

many obstacles is the explosive growth of weeds that clog irrigation canals and interfere with pumping water onto the fields.

In addition, oil-based aquatic herbicides, a commonly used method of weed control, are becoming increasingly expensive because of high oil prices. And their frequent use kills not only water weeds but crops.

Under the contract, Trobee will build 30 5.6-meter harvesters for use in the narrow irrigation canals that crisscross the Delta and four 8-meter craft for work on the Nile. JOHN M. BRADLEY

## Venezuela passes new agro-environment law

CARACAS--Reforms in Venezuela's Agrarian Courts Law have extended the authority of judges from forest, land and water to the use or conservation of renewable resources and threats to the environment. They now have powers to take preventive security measures against illegal activities.

Dr. Henrique Meier, legal advisor to the Environment Ministry, said such reforms have created a special "agro-environment" jurisdiction which is not only new to Venezuelan law but to Latin America. It brings together agrarian reform laws and the environment law.

The Environment Ministry, in promoting this "new order of relations between society and nature," last year decreed Special Farming Zones in three states to protect fertile soils from developers and also decreed green belts around certain cities.

More than 12,000 fines and taxes totaling \$2.7 million were levied by the ministry last year. At the same time, close to 30,000 requests were made to the ministry for approval of activities that could affect the environment. HILARY BRANCH

## More on Venezuela...

VENEZUELA HAS A NEW ENVIRONMENT MINISTER, J.J. Cabrera Malo. Cabrera Malo, a forestry engineer, started the massive Uverito pine plantation in southwest Venezuela. He won the Conservation Prize a couple of years ago and, for the last several years, has been in charge of the National Reforestation Plan.

## Acid rain picture is cloudy in W. Germany

BONN-Reports continue to come in from forest authorities throughout West Germany of spreading damage to the country's forests, attributed to acid rain. But there is a striking lack of unanimity as to the exact cause of the damage and, even among those who agree on the cause, as to its source.

According to data presented by Alfred Dick, Environmental Minister for the State of Bavaria, 560,000 hectares have been critically damaged, or around 8 percent of the country's total forest area. The most seriously affected species are fir, Scotch pine and spruce. In the past few years serious damage has been observed in beech forests as well, though the beech shows a greater ability to recover from damage than do the coniferous varieties, probably, according to Minister Dick, because it sheds its leave annually, thus sloughing off contaminants.

Large coal-burning industrial plants shoulder most of the blame for emitting the pollutants, notably sulphur dioxide (SO<sub>2</sub>), which are thought to be killing the trees, perhaps because they are highly conspicuous. Yet coal-burning power plants are most efficiently operated here and employ the most sophisticated equipment for the cleaning of stack gases. Large they are, but dirty they are not.

The latest large power plant to come on stream, the Bloc A plant of STEAG at Voerde in the Ruhr District, has a capacity of 710 megawatts, consumes a million tons of coal a year and was built at a cost of just over a billion German marks (\$245 million). Of the total cost, DM260 million was expended on environmental protection equipment, including electro-filters that reduce SO<sub>2</sub> emissions to 850 mg. per cubic meter of flue gas, as prescribed by current environmental regulations.

The Government is now considering reducing the allowable SO<sub>2</sub> emission to 650 mg. per cubic meter. Asked how much a reduction to that level would have added to the cost of the Voerde plant, a STEAG spokesman said he could provide no exact figure, but that it would be "extremely high." One authoritative estimate is that to accomplish a 2 to 3 percent reduction of SO<sub>2</sub> in the atmosphere by equipping older plants so as to match the performance of

the Voerde plant would cost between two and three billion marks.

There is doubt whether cleaning up the older plants would improve appreciably the health of the forests. According to the power industry, coal-fired power plants account for only 14 percent of all SO<sub>2</sub> in the atmosphere. Other industries, burning oil and gas as well as coal, account for 60 percent, households and commerce 23 percent and traffic 3 percent. The Federal Interior Ministry, responsible for environmental regulations, however, uses a far different figure, attributing 56 percent of the atmospheric SO<sub>2</sub> to power plants and district heating installations. In any case, the difference between the two loses much of its importance when it is recalled that at least 50 percent of all pollutants in the German atmosphere, including SO<sub>2</sub>, comes from neighboring countries, many of which have much lower standards than West Germany.

Finally, there is no certainty that SO<sub>2</sub> is the leading culprit. Nitrous oxide emissions from motor vehicles are judged by many experts to be equally as damaging as sulphur. Other contenders for the blame are calcium, manganese and the heavy metals, many of which come from a wide variety of sources, more difficult to pin down than power stations. All of these elements have been observed in damaged forests in concentrations up to 10 times their natural distribution.

Adding his voice to the rejection of the sulphur-nitrogen explanation for forest damage is Dr. Gerhard Petsch of the Community Association of the Ruhr District. As the most heavily industrialized area in all Germany, it should be practically deforested by now if sulphur from coal were the chief offender, since for over a hundred years Ruhr industries burned mountains of coal, with little or no attention paid to emissions of any kind. Yet in the Haard Forest on the northern edge of the District is what Dr. Petsch describes as one of the most idyllic forest recreation areas in all of Germany, developed as such by the Association at a cost of DM3.5 million per year. "The decisive factor," says Dr. Petsch, "is not in the atmosphere but in proper forest management, of growing the trees that are best suited to the particular soil." Nor is the Haard Forest the only healthy forest in or around the Ruhr. Dr. Petsch's contention appears to have some support in the fact that most of the forest damage in recent years has occurred

in Bavaria and Baden Wurttemberg, areas with very little heavy industry.

For the future, there is the prospect of using liquified gas in place of gasoline as a motor fuel, allowing for the drawback that most of the gas would either have to be imported (as is now the case with gasoline) or derived from coal, which is not yet economical. In addition, the switch-over would take many years to accomplish, while the gas would reduce only SO<sub>2</sub> and carbon monoxide emissions, not nitrogen.

One route for eliminating all pollutants from coal-fired power and district heating plants is that of nuclear energy, with no atmospheric pollution. But the necessary strict safety regulations preclude nuclear energy's reducing substantially the country's dependence on coal for electric power for at least 15 years.

Meanwhile, there is the prospect of more research into the causes of forest damage and a continuation of current policies of strict control over the burning of all fossil fuels and a vast investment in the cleansing of their discharges with the hope that the process catches the damaging pollutants.

J.M. BRADLEY

## W. Germany complains about neighbors' air

MUNICH--Franz Josef Strauss, Premier of the West German state of Bavaria, has formally complained to neighboring Czechoslovakia and East Germany that industrial air pollution from their countries has been causing severe environmental damage in the northern regions of Bavaria.

The complaints were made in letters sent to the Czechoslovak Ambassador to West Germany, Jiri Goetz, and to the head of East Germany's permanent representation in Bonn, Ewald Moldt.

In his letters Strauss said forests in northeastern Bavarian border areas were now in acute danger.

Strauss also asked West German Foreign Minister Hans-Dietrich Genscher and Interior Minister Friedrich Zimmermann to initiate through diplomatic channels what he described as "an ecological East-West dialogue" to bring about a decrease of trans-border air pollution.

Soon thereafter, it was announced that Genscher had been assured by the Czechs

that they were willing to cooperate on environmental problems.

At about the same time Strauss took these initiatives, a study by a West Berlin research group expressed serious concern about the increasing use of soft coal in East Germany. It said that the combination of a shortage of hard currency in East Germany, coupled with scarcer and more expensive Soviet oil, could trigger critical environmental problems in both East and West Germany.

The German Institute for Economic Research (DIW) found that because supplies of Soviet crude oil have decreased and therefore become costly, East Germany has been forced to open new soft coal mines during the past few years. If more new mines are opened in other areas where the sulphur content of the soft coal is high--about 2 percent--then, the experts concluded, "sulphur dioxide air pollution in the Halle/Leipzig regions will be higher than ever before during the 1980s." During the '70s an oil-powered industry was developed in the Halle/Leipzig region and this helped reduce the amount of air pollution.

The West Berlin group was particularly concerned about the possible increase of "acid rain" which increasingly is destroying German woodlands and plant life on both sides of the border.

WILLIAM G. MAHONEY

## Romanian eco-official says industry is lax

BUCHAREST--A leading Romanian environmental official blamed an "important number" of industrial enterprises for their "lack of responsibility" in maintaining air purification and water cleaning equipment, which cost the government US\$100 million last year alone.

Virgil Ianovici, chairman of the National Council for Environmental Protection, told the weekly magazine "Flacara" in a rare interview that of the 7,373 air cleaning stations in Romania last summer, 6.6 percent were out of commission and 7 percent "partially working." He said this allowed 13.3 million cubic meters of "totally impure" emissions each hour.

However, Ianovici said, "The overall situation in 1982 was a slight improvement in air quality compared with 1981, but maximum admissible concentrations of pollutants



were exceeding legal norms at some major industrial complexes."

The worst cited were in Transylvania where lead from non-ferrous metals plants was up to 40 times over permissible norms. Ianovici said this had led to cases of lead poisoning, respiratory ailments and malign tumors in adults, chronic bronchitis and anemia in children.

Romania has 3,801 water purification stations but, Ianovici said, 27.3 percent were not functioning well and 1.7 percent were completely out of use, letting a waterflow of 11,271 cubic meters an hour go "fully" unfiltered. He said Romanian rivers last year received 1.5 million tons of chlorides, 1.1 million tons of organic substances, 900,000 tons of ammonium salts, 300,000 tons of sulphates and 30,000 tons of nitrates.

The environmental official said that in three oilrefining centers "important amounts of petroleum products are maintained in the groundwater layer."

In addition, Ianovici said, 115,000 hectares of forests were "under the influence of pollution," particularly in western and central Romania. He said "unscientific" cutting had deforested large areas in the Carpathian Mountains, which cover one-quarter of Romania's territory.

"This," he said, "contributed to the speeding up of soil erosion, formation of water torrents, muddying of low farmfields and the clogging of hydroelectric storage lakes and rivers."

He said there was an urgent need for devising a law for the "functional division into zones of woods" according to their age, species and altitude for a "more rational forest exploitation." VIOREL URMA

## More in Europe...

THE BULGARIAN Parliamentary Committee for Environmental Protection commented that increased mechanization and use of chemicals had "violated" the ecological balance in extensive parts of the country.

Radio Sofia said that deputies and experts had provided a number of examples of reduction of humus in the soil, of soil pollution by industry and agriculture and of intensified erosion.

The Committee urged the government to bring its long-term program and plans for development into full harmony with ecological requirements.

AN INTERNATIONAL SYMPOSIUM on Environmental Impact Assessment will be held on the island of Crete April 10-17. It will cover both environmental and social impact assessment and will focus on current research on various aspects of EIA. The fee for the symposium is US\$740. For information: Sandra M. Ralston, Organizers, PADC, Department of Geography, University of Aberdeen, High Street, Old Aberdeen AE9 2UF, Scotland, U.K. Telex: 73458.

BIOTECH '83 is the first major international combined conference and exhibition on the latest developments in biotechnology. Wembley Conference Center, London, May 4-6, 1983. For further information: Online Conference Ltd., Argyle House, Northwood Hills, Middx. HA6 1TS, U.K. International Telephone: 44-9274 28211.

A BIO-ENERGY WORLD CONFERENCE and exhibition will be held in Gothenburg, Sweden, June 18-21, 1984. It is being sponsored by three Swedish organizations and the Bio-Energy Council of Washington, DC. Its purpose is to focus on the total concept of biomass for energy. The main language will be English with simultaneous interpretation into French and German. For information: The Bio-Energy Council, 1625 Eye Street, N.W., Suite 825A, Washington, DC 20006.

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## Nile studies find high dam did more good than harm

CAIRO--Egypt's Aswan High Dam may control the Nile, but many believe its environmental impacts went out of control. Although the dam has been the target of much emotional criticism, it is not the environmental disaster once feared, and economically it has already proven itself.

The Nile is Egypt's lifeline. Rising out of mountainous Lake Tana in Ethiopia and placid Lake Victoria in Uganda, the two Niles, the Blue and the White, meet in Khartoum and flow sluggishly through the Sudan to Egypt. For more than 10,000 years, Egyptians tried to tame the Nile, the world's longest river. Dams had been built before, but none was big enough to keep back a major flood or ensure ample water when the rains failed in far-off Ethiopia and Uganda. In this century, with its staggering population increases, the need to control the Nile became even more important, and thus President Nasser in 1960 began construction of the Aswan High Dam; it was officially completed in 1971.

Before the high dam was built, about a quarter of the Nile's flood washed out to sea. Now the annual flood is held behind the dam in Lake Nasser. Dr. Khalil Hosny Mancy, an Egyptian-American who headed a seven-year study of the dam's environmental effects, said: "In 1972 Egypt would have had a terrible drought if it had not completed the Aswan High Dam. Then, in 1974, there was an exceptionally high flood. Without the dam, a lot of land would have been inundated, villages washed away and people killed." The loss in crops that the '72 drought would have caused could have cost the country \$600 million, more than half the dam's cost of \$1 billion.

Today, with the conversion of basin-irrigated land to perennial irrigation in Upper Egypt (the area nearest the dam), about 293,000 hectares of land can be farmed year-round, which means three crops a year rather than one. In addition, some 526,000 hectares of land have been reclaimed from the desert for farming and are now under perennial irrigation. (Unfortunately, about an equal amount of land has been lost to urban sprawl during that same time.)

The dam generates 40 percent of Egypt's electricity, but the full 2,100-megawatt installed capacity will not be used so as to safeguard irrigation

schemes and to protect the river banks (the sediment-free water has a scouring action). Electricity production is 1,500 Mw during the summer and 500 during the winter.

While the economic benefits of the dam have generally been favorable, its full environmental impact has yet to be determined. Studies are continually underway. These include a United Nations and National Research Center study on coastal erosion. The World Bank is financing a fisheries study and West Germany's Bayer is investigating the spread and control of bilharzia, or schistosomiasis, a parasitic disease transmitted by snails that live in slow-moving irrigation water.

The most comprehensive study was that conceived by Dr. Mancy and carried out by his institution, the University of Michigan, and the Egyptian Academy of Scientific Research and Technology. This seven-year study--the River Nile and Lake Nasser Research Projects--arrived at conclusions close to predictions made by preliminary studies in the 1950s.

Anticipated was the loss of mud for traditional brickmaking. Landowners still exploit the dwindling resource for a quick profit, but the practice is being curbed with the introduction of modern brickmaking factories.

Silt trapped behind the dam is proving to be less of a problem than expected. At the rate it is collecting in the 30 billion cubic meter dead-water area it will take 500-700 years to fill. Meanwhile, it appears to have sealed the earth and rockfill dam and slowed seepage.

Claims of the fertilizing benefits of the annual flood's silts have been exaggerated as 90 percent of it was lost to the sea.

A major criticism of the dam is that it is responsible for a continuing drop in crop yields brought about by a rising water table and waterlogging. Salinity, the end result of waterlogging, affects 80 percent of Egypt's cultivated land. Researchers, however, say salinity was a problem in the Nile Valley and Delta long before construction of the high dam. The cure, say experts, is better drainage. Towards this end, Egypt has invested \$800 million for tile drainage on two million hectares, two-thirds of the country's cultivated land.

Coastal erosion, however, is a new phenomenon in Egypt and can be squarely blamed on the dam. The Delta has suffered the most damage, but the entire Egyptian coastline is affected as is a good part of the Libyan. Corrective measures have yet to be

taken, but the National Research Center's study on the problem recommends constructing a series of dikes along the coast.

The once-flourishing sardine fishing industry along the Mediterranean coast has ended as have the livelihoods of the fishermen there. The sardines were fed by nutrients swept along in the annual floodwaters. The potential for a fishing industry in Lake Nasser exceeds that of the former Mediterranean fishing ground. Fishermen from the Aswan region were relocated along the lakeshore, and although there is a potential catch of 25,000 tons a year from the lake, problems of storage and transportation nearly 900 kilometers downstream to Egyptian population centers have not yet been overcome.

One great environmental health fear was that increased perennial irrigation, possible because of the dam, would spread the parasitic disease, bilharzia. This has not happened. Although farmers who already had bilharzia have spread the disease geographically onto the reclaimed lands, the prevalence has decreased, not increased: fewer Egyptians per thousand now have bilharzia than 40 years ago, Dr. Mancy said their study found. In recent times there has been an exodus to the cities and other Arab countries, and Egypt has modernized its health education and treatment centers, obtained drugs to cure bilharzia, and set up water treatment systems and snail control.

One growing problem, Dr. Mancy said, is river pollution. With industrialization and a burgeoning urban population, what water and sewage treatment facilities there are, are overstrained. "The pollution problem in the river is very serious," he told WER. "There is a potential health hazard unless the country does something." He said the U.S. Agency for International Development is putting money into industrial waste problems, but much more needs to be done now that the flood no longer cleanses the river every year.

Generally, the dam's long-term, negative side effects--although still under close study--appear to be manageable. Its unquestioned benefits include low-cost hydroelectric power, ample water reserves for territorial Egypt and a release from the fear of drought or excessive flooding.

The dam is now considered by many former critics, in the words of the late President Sadat, to be: "After the Pyramids of the Pharaohs, the...greatest construction erected by the Egyptians in their history."

JOHN M. BRADLEY

## Two dams collapse in New Zealand

WELLINGTON--New Zealand's Commission on the Environment is, in effect, saying "I told you so" after the recent collapse of two earth dams here.

The commission claims that authorities did not act upon recommendations it made in May, 1977, after it appraised a dam proposed for Wheao. The authorities are now confronted by the collapse of it and another dam.

The problem at Wheao was the disintegration of a canal which wrecked the power house.

In its original appraisal, the commission noted that the government's Ministry of Works and its Department of Scientific and Industrial Research (DSIR) doubted that brown ash (formed by volcanic eruptions 9,000 to 15,000 years ago) would form a stable base for the canal. In addition, the DSIR was concerned that there could be leaching through the brown ash, which might affect the water table. When naturally moist brown ash is dried, it cracks, and the cracks do not close up when it is re-moistened, a DSIR soil survey had found. Therefore, it stated, brown ash "is tricky material for engineering work."

The commission did not take these points further, but it did make recommendations on ways to ensure that design criteria and specifications were checked before construction was approved. It also recommended a regular surveillance system once the structures were in service. These suggestions were not acted upon, the commission said.

The commission asserted years ago that it was the responsibility of the government's Ministry of Works and Development to check for sufficient margins of safety in projects funded through local authorities' loans boards. New Zealand has more than 40 small hydroelectric schemes operated or under construction by local bodies.

The present commissioner, Ken Piddington, has now drawn attention to the old recommendations and has been supported by the government's Minister of the Environment, Dr. Ian Shearer.

However, a spokesman for the Institution of Professional Engineers, J.H.H. Galloway, said it was premature to speculate that because there had been a collapse it followed

that the commission's recommendations and the warning on the suitability of brown ash had been ignored.

A preliminary government investigation points to "an engineering fault," and there will be a public inquiry. JACK KELLEHER

## More big & small hydro...

THE MALAYSIAN GOVERNMENT SCRAPPED its controversial plan to build a 110 megawatt hydroelectric power project in peninsular Malaysia's only national park, Taman Negara (WER, Dec. 15, 1982, p.2).

Deputy Prime Minister Datuk Musa Hitam said the National Action Council made the decision after re-examining the country's energy needs. He said present hydroelectric projects and a new natural gas project were sufficient to meet energy needs.

"We also took into account the environmental factors in making the decision," he said.

Environmental groups throughout the country mounted a campaign against flooding 7.5 percent of the park: Sahabat Alam Malaysia (Friends of the Earth) collected 45,000 signatures in seven months, and thousands of "Save Taman Negara" postcards produced by the Malayan Nature Society were sent to the Prime Minister.

ISRAEL'S FIRST HYDROELECTRIC STATION was recently inaugurated at Kibbutz Hagoshrim in the upper Galilee. The station, producing 200 kilowatts of electricity, utilizes spring waters which are used for irrigation purposes in the summer.

The turbine will work in conjunction with installations of the Israel Electric Corporation in the north and will supply two-thirds of the kibbutz's electricity needs. The Energy Ministry--which participated in 30 percent of the investment--expects to encourage the establishment of additional small hydroelectric plants in the north utilizing tributaries of the Dan River.

FAST NEW COMPUTERIZED FLOOD-WARNING SYSTEMS are now in use in the U.S., Pakistan, Argentina, Brazil and Honduras. Their use in forecasting flood and drought is the subject of an international conference sponsored by the World Meteorological Organization and the U.S. Weather Service (NOAA) September 19-23 in Sacramento, California. Contact: Robert J.C. Burnash, California-Nevada River Forecast Center, 1416 9th St., Sacramento, CA 95814; telephone 916/422-1201.

## Israel is recycling wastewater for farms

JERUSALEM--A higher percentage of municipal wastewater is used for agricultural irrigation in Israel than in any other country, and there are plans to ultimately tap 80 percent or more of urban wastewater for such purposes. In 1981 over 30 percent of Israel's wastewater was recycled.

Official estimates of water demand forecast an annual shortage of approximately 400-500 million cubic meters (MCM) by the year 2000.

Israel already utilizes essentially all of its known replenishable fresh water sources, amounting to some 1500 MCM/year, and it uses water from marginal and unconventional sources to close the gap between the actual demand of about 1700 MCM/year and the available water supply. Wastewater recycling programs are therefore high on the agenda for research and development.

Israel's national sewage project, launched with World Bank aid, will make a marked contribution toward solving the problems of disposal and purification of over 250 MCM wastewater produced annually. The Dan Region Sewage Reclamation Project is Israel's largest-scale project in wastewater recovery. In its final stage it will recover 160 MCM of water per year. The project provides for biological treatment of wastewater followed by chemical treatment. The treated wastewater will be used for agriculture; over 75 percent of Israel's water reserve is allocated to this sector. The urban population is thus assured a supply of high quality water for domestic purposes while highly treated effluent is allocated for agricultural use.

The Mekorot Water Company, the public organization which is the main supplier of water in the country, recently reported that 84 MCM of wastewater are currently re-used with plans to recover 220 MCM for recycling in the near future.

Plans are underway to enable 100 MCM of purified wastewater from the Dan (Tel Aviv) region to flow southward to irrigate fields in 67 Negev settlements by 1985. This volume is equivalent to about 6 percent of the country's annual water supply. In order to avoid health and environmental problems possibly connected with the use of this treated wastewater, a monitoring and control system will be established by the

Health Ministry's Institute for Environmental Health Research. SHOSHANA GABBAY

## Britain's farmland is fast disappearing

LONDON--Britain's farmland has been disappearing faster over the past four years due to "serious inadequacies" in the Government's policies for safeguarding it against urban development. The accusation comes from a conservation pressure group, The Council for the Preservation of Rural England (CPRE), in a letter of protest to Agriculture Minister Peter Walker.

It quotes an increase in approved building plans for 46,000 acres (18,616 hectares) in 1981 as against only 29,000 (11,736) in 1978. CPRE's director, Robin Grove-White, is particularly worried about a 51.4 percent increase over the same period in the amount of farmland allowed to transfer to other uses.

CPRE investigations show that urban development is not just restricted to disused or poor quality land but includes an increasing amount of Grades 1-3 farmland. This situation does not reflect an overall increase in planning activity but simply a change in the type of land being developed.

For this the CPRE blames the Ministry of Agriculture, which it says sometimes overrides local authority objections to planning developments, but more often permits them too much discretion. It calls for much tighter guidelines and monitoring.

BARBARA MASSAM

## Britain working on whale-saving plants

LONDON--British horticulturalists may help save the sperm whale, hunted near the point of extinction for its oil. The bean of the jojoba plant, a native of the American and Mexican deserts, provides a fluid with qualities identical to sperm-whale oil, and it is already being used by some tanning and cosmetic firms.

The problem is the slow growth of the plant and the horticultural and agricultural expertise needed to produce it in suffi-

ciently large quantities to be commercially viable.

Although the frosty British climate is quite unsuitable for its growth, scientists in Twyford Laboratories near Glastonbury in Somerset have devised a method of multiple propagation and accelerated growth.

The plant is grown on a jelly, or agar, which is injected with a mixture of nutrients and hormones and exposed to the right conditions of light and temperature. This vastly increases the growth of small shoots which in turn propagate as independent plants.

A laboratory spokesman estimated that the plants would produce fruit within 18 months of leaving the laboratory instead of the four or five years usual under natural conditions. Twyford Laboratories believe they are the only tissue culture company in the world actually producing jojoba plants, and they have already exported trial quantities to the major American firm in the field, American Jojoba Industries of Bakersfield, California.

BARBARA MASSAM

## Canada sells Egypt waterweed harvesters

CAIRO--A Canadian firm has won a US\$750,000 contract to build 34 marine harvesters to clear underwater weeds from the Nile River. If the harvesters prove a success, the Egyptian government is expected to order another 200 machines worth US\$4 million.

The harvester, chosen over 12 other entries, was bought because it is simply designed, easy to maintain, lightweight and inexpensive. The one-ton vessel costs about US\$8,000 while its closest rival starts at three times that price.

The manufacturer, Trobee Marine Equipment Inc. of Perth, Ontario, won the contract through a Canadian connection, Kenting Earth Sciences Ltd. of Ottawa, a company conducting a hydrological survey of the Nile.

The marine weed harvester was not originally designed for the Nile but to control plants clogging Ontario's rivers and lakes. Because of the harvester's simplicity and the ready availability of spare parts, it is considered ideally suited for Third World markets.

Countries such as Egypt are struggling to raise their food production, and one of the

many obstacles is the explosive growth of weeds that clog irrigation canals and interfere with pumping water onto the fields.

In addition, oil-based aquatic herbicides, a commonly used method of weed control, are becoming increasingly expensive because of high oil prices. And their frequent use kills not only water weeds but crops.

Under the contract, Trobee will build 30 5.6-meter harvesters for use in the narrow irrigation canals that crisscross the Delta and four 8-meter craft for work on the Nile.

JOHN M. BRADLEY

## Venezuela passes new agro-environment law

CARACAS--Reforms in Venezuela's Agrarian Courts Law have extended the authority of judges from forest, land and water to the use or conservation of renewable resources and threats to the environment. They now have powers to take preventive security measures against illegal activities.

Dr. Henrique Meier, legal advisor to the Environment Ministry, said such reforms have created a special "agro-environment" jurisdiction which is not only new to Venezuelan law but to Latin America. It brings together agrarian reform laws and the environment law.

The Environment Ministry, in promoting this "new order of relations between society and nature," last year decreed Special Farming Zones in three states to protect fertile soils from developers and also decreed green belts around certain cities.

More than 12,000 fines and taxes totaling \$2.7 million were levied by the ministry last year. At the same time, close to 30,000 requests were made to the ministry for approval of activities that could affect the environment.

HILARY BRANCH

## More on Venezuela...

VENEZUELA HAS A NEW ENVIRONMENT MINISTER, J.J. Cabrera Malo. Cabrera Malo, a forestry engineer, started the massive Uverito pine plantation in southwest Venezuela. He won the Conservation Prize a couple of years ago and, for the last several years, has been in charge of the National Reforestation Plan.

## Acid rain picture is cloudy in W. Germany

BONN-Reports continue to come in from forest authorities throughout West Germany of spreading damage to the country's forests, attributed to acid rain. But there is a striking lack of unanimity as to the exact cause of the damage and, even among those who agree on the cause, as to its source.

According to data presented by Alfred Dick, Environmental Minister for the State of Bavaria, 560,000 hectares have been critically damaged, or around 8 percent of the country's total forest area. The most seriously affected species are fir, Scotch pine and spruce. In the past few years serious damage has been observed in beech forests as well, though the beech shows a greater ability to recover from damage than do the coniferous varieties, probably, according to Minister Dick, because it sheds its leave annually, thus sloughing off contaminants.

Large coal-burning industrial plants shoulder most of the blame for emitting the pollutants, notably sulphur dioxide (SO<sub>2</sub>), which are thought to be killing the trees, perhaps because they are highly conspicuous. Yet coal-burning power plants are most efficiently operated here and employ the most sophisticated equipment for the cleaning of stack gases. Large they are, but dirty they are not.

The latest large power plant to come on stream, the Bloc A plant of STEAG at Voerde in the Ruhr District, has a capacity of 710 megawatts, consumes a million tons of coal a year and was built at a cost of just over a billion German marks (\$245 million). Of the total cost, DM260 million was expended on environmental protection equipment, including electro-filters that reduce SO<sub>2</sub> emissions to 850 mg. per cubic meter of flue gas, as prescribed by current environmental regulations.

The Government is now considering reducing the allowable SO<sub>2</sub> emission to 650 mg. per cubic meter. Asked how much a reduction to that level would have added to the cost of the Voerde plant, a STEAG spokesman said he could provide no exact figure, but that it would be "extremely high." One authoritative estimate is that to accomplish a 2 to 3 percent reduction of SO<sub>2</sub> in the atmosphere by equipping older plants so as to match the performance of

the Voerde plant would cost between two and three billion marks.

There is doubt whether cleaning up the older plants would improve appreciably the health of the forests. According to the power industry, coal-fired power plants account for only 14 percent of all SO<sub>2</sub> in the atmosphere. Other industries, burning oil and gas as well as coal, account for 60 percent, households and commerce 23 percent and traffic 3 percent. The Federal Interior Ministry, responsible for environmental regulations, however, uses a far different figure, attributing 56 percent of the atmospheric SO<sub>2</sub> to power plants and district heating installations. In any case, the difference between the two loses much of its importance when it is recalled that at least 50 percent of all pollutants in the German atmosphere, including SO<sub>2</sub>, comes from neighboring countries, many of which have much lower standards than West Germany.

Finally, there is no certainty that SO<sub>2</sub> is the leading culprit. Nitrous oxide emissions from motor vehicles are judged by many experts to be equally as damaging as sulphur. Other contenders for the blame are calcium, manganese and the heavy metals, many of which come from a wide variety of sources, more difficult to pin down than power stations. All of these elements have been observed in damaged forests in concentrations up to 10 times their natural distribution.

Adding his voice to the rejection of the sulphur-nitrogen explanation for forest damage is Dr. Gerhard Petsch of the Community Association of the Ruhr District. As the most heavily industrialized area in all Germany, it should be practically deforested by now if sulphur from coal were the chief offender, since for over a hundred years Ruhr industries burned mountains of coal, with little or no attention paid to emissions of any kind. Yet in the Haard Forest on the northern edge of the District is what Dr. Petsch describes as one of the most idyllic forest recreation areas in all of Germany, developed as such by the Association at a cost of DM3.5 million per year. "The decisive factor," says Dr. Petsch, "is not in the atmosphere but in proper forest management, of growing the trees that are best suited to the particular soil." Nor is the Haard Forest the only healthy forest in or around the Ruhr. Dr. Petsch's contention appears to have some support in the fact that most of the forest damage in recent years has occurred

in Bavaria and Baden Wurttemberg, areas with very little heavy industry.

For the future, there is the prospect of using liquified gas in place of gasoline as a motor fuel, allowing for the drawback that most of the gas would either have to be imported (as is now the case with gasoline) or derived from coal, which is not yet economical. In addition, the switch-over would take many years to accomplish, while the gas would reduce only SO<sub>2</sub> and carbon monoxide emissions, not nitrogen.

One route for eliminating all pollutants from coal-fired power and district heating plants is that of nuclear energy, with no atmospheric pollution. But the necessary strict safety regulations preclude nuclear energy's reducing substantially the country's dependence on coal for electric power for at least 15 years.

Meanwhile, there is the prospect of more research into the causes of forest damage and a continuation of current policies of strict control over the burning of all fossil fuels and a vast investment in the cleansing of their discharges with the hope that the process catches the damaging pollutants.

J.M. BRADLEY

## W. Germany complains about neighbors' air

MUNICH--Franz Josef Strauss, Premier of the West German state of Bavaria, has formally complained to neighboring Czechoslovakia and East Germany that industrial air pollution from their countries has been causing severe environmental damage in the northern regions of Bavaria.

The complaints were made in letters sent to the Czechoslovak Ambassador to West Germany, Jiri Goetz, and to the head of East Germany's permanent representation in Bonn, Ewald Moldt.

In his letters Strauss said forests in northeastern Bavarian border areas were now in acute danger.

Strauss also asked West German Foreign Minister Hans-Dietrich Genscher and Interior Minister Friedrich Zimmermann to initiate through diplomatic channels what he described as "an ecological East-West dialogue" to bring about a decrease of trans-border air pollution.

Soon thereafter, it was announced that Genscher had been assured by the Czechs

that they were willing to cooperate on environmental problems.

At about the same time Strauss took these initiatives, a study by a West Berlin research group expressed serious concern about the increasing use of soft coal in East Germany. It said that the combination of a shortage of hard currency in East Germany, coupled with scarcer and more expensive Soviet oil, could trigger critical environmental problems in both East and West Germany.

The German Institute for Economic Research (DIW) found that because supplies of Soviet crude oil have decreased and therefore become costly, East Germany has been forced to open new soft coal mines during the past few years. If more new mines are opened in other areas where the sulphur content of the soft coal is high--about 2 percent--then, the experts concluded, "sulphur dioxide air pollution in the Halle/Leipzig regions will be higher than ever before during the 1980s." During the '70s an oil-powered industry was developed in the Halle/Leipzig region and this helped reduce the amount of air pollution.

The West Berlin group was particularly concerned about the possible increase of "acid rain" which increasingly is destroying German woodlands and plant life on both sides of the border.

WILLIAM G. MAHONEY

## Romanian eco-official says industry is lax

BUCHAREST--A leading Romanian environmental official blamed an "important number" of industrial enterprises for their "lack of responsibility" in maintaining air purification and water cleaning equipment, which cost the government US\$100 million last year alone.

Virgil Ianovici, chairman of the National Council for Environmental Protection, told the weekly magazine "Flacara" in a rare interview that of the 7,373 air cleaning stations in Romania last summer, 6.6 percent were out of commission and 7 percent "partially working." He said this allowed 13.3 million cubic meters of "totally impure" emissions each hour.

However, Ianovici said, "The overall situation in 1982 was a slight improvement in air quality compared with 1981, but maximum admissible concentrations of pollutants



were exceeding legal norms at some major industrial complexes."

The worst cited were in Transylvania where lead from non-ferrous metals plants was up to 40 times over permissible norms. Ianovici said this had led to cases of lead poisoning, respiratory ailments and malign tumors in adults, chronic bronchitis and anemia in children.

Romania has 3,801 water purification stations but, Ianovici said, 27.3 percent were not functioning well and 1.7 percent were completely out of use, letting a waterflow of 11,271 cubic meters an hour go "fully" unfiltered. He said Romanian rivers last year received 1.5 million tons of chlorides, 1.1 million tons of organic substances, 900,000 tons of ammonium salts, 300,000 tons of sulphates and 30,000 tons of nitrates.

The environmental official said that in three oil refining centers "important amounts of petroleum products are maintained in the groundwater layer."

In addition, Ianovici said, 115,000 hectares of forests were "under the influence of pollution," particularly in western and central Romania. He said "unscientific" cutting had deforested large areas in the Carpathian Mountains, which cover one-quarter of Romania's territory.

"This," he said, "contributed to the speeding up of soil erosion, formation of water torrents, muddying of low farmfields and the clogging of hydroelectric storage lakes and rivers."

He said there was an urgent need for devising a law for the "functional division into zones of woods" according to their age, species and altitude for a "more rational forest exploitation." VIOREL URMA

## More in Europe...

THE BULGARIAN Parliamentary Committee for Environmental Protection commented that increased mechanization and use of chemicals had "violated" the ecological balance in extensive parts of the country.

Radio Sofia said that deputies and experts had provided a number of examples of reduction of humus in the soil, of soil pollution by industry and agriculture and of intensified erosion.

The Committee urged the government to bring its long-term program and plans for development into full harmony with ecological requirements.

AN INTERNATIONAL SYMPOSIUM on Environmental Impact Assessment will be held on the island of Crete April 10-17. It will cover both environmental and social impact assessment and will focus on current research on various aspects of EIA. The fee for the symposium is US\$740. For information: Sandra M. Ralston, Organizers, PADC, Department of Geography, University of Aberdeen, High Street, Old Aberdeen AE9 2UF, Scotland, U.K. Telex: 73458.

BIOTECH '83 is the first major international combined conference and exhibition on the latest developments in biotechnology. Wembley Conference Center, London, May 4-6, 1983. For further information: Online Conference Ltd., Argyle House, Northwood Hills, Middx. HA6 1TS, U.K. International Telephone: 44-9274 28211.

A BIO-ENERGY WORLD CONFERENCE and exhibition will be held in Gothenburg, Sweden, June 18-21, 1984. It is being sponsored by three Swedish organizations and the Bio-Energy Council of Washington, DC. Its purpose is to focus on the total concept of biomass for energy. The main language will be English with simultaneous interpretation into French and German. For information: The Bio-Energy Council, 1625 Eye Street, N.W., Suite 825A, Washington, DC 20006.

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## Thai afforestation plan: Let private sector do it

BANGKOK--A new approach to Thailand's reforestation projects is being considered by the Ministry of Agriculture and Cooperatives: turning over the whole program to the private sector. If approved by the ministry and the Cabinet, this would be a major change in government policy. At present, the work is undertaken by government agencies or private firms hired for the task.

The ministry feels that the entire program could be speeded up if it is handled solely by the private sector. However, one condition attached to the proposal is that the private sector must get concession rights for commercial logging in allocated forest areas.

The government has not been successful in meeting its annual afforestation targets because the agencies concerned have been hampered by a lack of capability and funds. One example is the Forestry Industry Organization (FIO), which has been unable to meet its yearly 800-hectare target because of limited funds. The reason: FIO submits about 70 percent (between US\$8-10 million) of its annual income to the government.

In a related move, the ministry is also planning, in cooperation with the Interior and Defense Ministries, to lay down a policy on forest encroachment prevention in the near future.

ISLAMABAD--If the Pakistani government's three-year experiment cultivating fast-growing Ipil-Ipil trees proves the success it now looks, it is likely to invite the private sector to cooperate in expanding the country's forest cover. Forest officials believe that in view of the quick returns promised by the "super tree" and the growing demand for timber and firewood, the private sector might find this a highly lucrative business.

According to official estimates, Pakistan is likely to face a production and demand gap of 29 million cubic feet of timber and 813 million cubic feet of firewood by June of this year. At present, the country is importing wood worth more than US\$66 million, and the firewood gap is being partly bridged by other sources such as natural gas, kerosene, agricultural refuse and cow dung.

This situation led the Appropriate Technology De-

velopment Organization (ATDO) and the Provincial Forest Department in Sind to collaborate three years ago on the experimental planting of Ipil-Ipil trees on four nearly two-hectare sites. ATDO also is cultivating Ipil-Ipil in the Punjab in conjunction with the Irrigation Drainage Flood Control Rehabilitation Cell.

Ipil-Ipil trees reportedly produce timber at a rate of 88 cubic meters per hectare along with 20 tons of foliage for animal feed after six years.

Pakistan's forested area is about three million hectares, or 3.7 percent of the total land. Ecological experts say that to maintain a healthy ecological balance, the minimum requirement is 20 percent. Even if the present rate of government-sponsored afforestation is doubled to 24,000 hectares a year, experts believe that will still not be enough.

DACCA--The Bangladeshi military government recently distributed about seven million Ipil-Ipil saplings on an experimental basis for intensive cultivation in two northern villages. Forest employees reportedly have trained village elders in taking proper care of the trees, which are new to Bangladesh.

If the experiment proves successful, forest officials said, the government plans to extend the experiment to 4,000 villages, using a US\$15.3 million loan provided by the Manila-based Asian Development Bank and the UN Development Program.

The impetus for this program was a recent UN Environment Program Asia-Pacific report on forests, which said that 8,000 hectares of forest were being cut down in the northern part of this country every year. This would reduce Bangladesh's wooded area to 8.6 percent of its total land by 1985. At an international seminar on remote sensing technology held here recently, Mohammad Abdul Jabbar of the Bangladesh Space Research and Remote Sensing Organization disclosed that satellite images had shown at least 7,300 square kilometers of this country's four northern districts were now vulnerable to desertification. Jabbar said that despite monsoon rains, the northern region faces a seven-month dry season and that there now were not enough trees to preserve soil moisture during the long, hot summers.

The government hopes the Ipil-Ipil tree will provide one solution to this problem. It has already proven itself in one sector. The tree was first imported from the Philippines in 1980 by the local licensee of

a cigarette manufacturing multinational to provide firewood for curing tobacco.

Ruhul Amin Mazumbar of the Bangladesh Tobacco Company--largest in the country--said, "Once our own farmers began growing the trees, other farmers with problems of firewood started coming to us for saplings."

Bangladesh's Inspector General of Forests Abdul Hamid said he hoped Ipil-Ipil cultivation would prevent desperate rural families from cutting down their own fruit trees for fuelwood.

Compiled from reports by:

TONY OLIVER in Thailand, MOHAMMAD AFTAB in Pakistan and AHMED FAZL in Bangladesh

## Trans-Sahara treebelt is growing slowly

RABAT--North African states are making progress with a grandiose plan to plant a barrier of trees 20 kilometers wide and 3,600 kilometers long between the Atlantic and the Red Sea. The idea is to arrest the encroachment of the Sahara Desert, which has been inching its way northward at rates of over one kilometer a year for more than a century.

At a conference in the Algerian city of Batna late last year, forestry experts from Algeria, Egypt, Libya, Morocco and Tunisia reported substantial progress with the plan drawn up 10 years ago. Algeria is the most advanced with its sector of 1,500 kilometers between the Moroccan and Tunisian frontiers. It has planted millions of trees in a green belt, while Tunisia has been working for nine years on a project to regenerate pasturelands in the south to form a basis for another green belt. Libya is planting grasses designed to immobilize sand dunes.

The basic assumption is that desert encroachment is made worse by the depredations of man: the wholesale felling of trees for fuel and building, and uncontrolled grazing by the nomadic tribes' flocks. With the degradation of vegetation, the climate became warmer and drier as there was nothing to retain water.

Promoters of the green belt are convinced that tree planting will change the climate eventually, besides protecting existing farmland on the littoral and creating a valuable source of timber. Today, nearly

all timber has to be imported by the five states involved.

There is abundant scientific evidence that the Sahara used to be covered with vegetation in prehistoric times, and in a relatively recent era North Africa was known as the "Granary of Rome," the evidence of which are the ruins of many fortified Roman farms in what is now waterless desert in the center of Libya. Aerial surveys have confirmed the presence of numerous large rivers and lakes which have dried up, marked today by a few isolated oases.

The Batna conference decided to set up a permanent committee to coordinate the project and exchange information on techniques to stem desertification and eventually turn the tide of the advancing desert.

STEPHEN O. HUGHES

## Sudan plants trees to stop the desert

CAIRO--The Sudan's natural forests cover about 28 percent (584,362 square kilometers) of the country's total area. This is a high per capita share of Africa's forests, three times that for all of Africa. Yet the majority of the timber stands are scattered and of poor quality.

The reason: Pressure on wood resources through uncontrolled cutting for fuel and clearance for agricultural development has resulted in wide-spread destruction of valuable forests in recent years.

The desert, which covers an area of 650,000 square kilometers, represents 28.7 percent of the country. It is creeping at an annual rate of five to six kilometers, and has marched southward 100 kilometers in the last 17 years. A look at the agricultural projects of the Northern Region show how many of them fell victim to the desert: Nori agricultural project now covers an area of 1,538 hectares instead of an original 1,700, El Kulud dropped to 1,012 from 2,145, El Gaba 283 instead of 1,012 and Hoadh el-Sulaim is down to 15,640 hectares from 36,422. To reverse the desert drift a reforestation program was begun five years ago.

The program is a joint venture between the government of Sudan and the Sudan Council of Churches (SCC), with the Swedish Free Mission, Bread for the World (West Germany), and Christian Aid of the United Kingdom as supporting agencies. The objec-

tive is to protect agricultural projects from desert encroachment through planting wind belts and timber stands for firewood, building materials and shelter for man and animals.

The program includes the education and mobilization of local farmers on six agricultural projects that cover 25,495 hectares and which employ 8,351 tenants.

To date the program is fairly on schedule. It has achieved 94 percent of its plans at four sites and 36 percent at a fifth. Some 167 hectares of wind belts and timber stands have been planted. Two nurseries have been established in Shendi and el-Damer with government assistance. The program has also resulted in the provision of fodder and shade for livestock, reduced the cost of cleaning irrigation canals and increased agricultural yields in areas adjacent to wind belts.

Encouraged by the project's results, the government has decided to extend the program for another three years. It will plant an additional 162 hectares and sponsor more agricultural education programs. The cost of the extended program is US\$1.5 million (at official exchange rates). This will be borne by the government with US\$261,000, involved farmers will cover US\$29,000, and the balance will be raised through foreign aid agencies.

JOHN M. BRADLEY

## More on forestry...

ONE FIFTH OF CHINA'S FARMLAND, or 20 million hectares, is protected by belts of trees and barriers of trees interplanted with crops, according to the Institute of Forestry under the Chinese Academy of Forestry Science. Some 16.67 million hectares are sheltered by tree belts, and 3.33 million hectares by trees planted alternately with crops.

Tests show that wind velocity and water evaporation in farmland protected by tree belts are reduced by 30 to 40 percent, while moisture is increased by 10 to 20 percent. China's tree belts were first planted in the early 1950s; in the 1960s, many people's communes built tree belts along the sides of fields, roads and ditches. These belts, which occupy little farmland, have appeared in populous southern China and the Sichuan Basin. They produce large quantities of timber, fuel, fruit and fodder annually, thus increasing peasants' income.

## Forestry & fuelwood...

THREE UN AGENCIES sponsored a seminar in Moscow Dec. 4-11 to seek new, rational uses of forest resources, and how to reduce losses of wood biomass during logging and conversion operations while preventing damage to the environment.

The sponsor was the Joint FAO/ECE/ILO Committee on Forest Working Techniques, a body of the Food and Agriculture Organization, the Economic Commission for Europe and the International Labor Organization.

BAVARIAN ENVIRONMENTAL PROTECTION Minister Alfred Dick dedicated West Germany's first production plant for "woodlets"--briquettes made from wood scraps--and predicted that the new product would help shrink this country's dependence upon oil and gas.

Speaking at the EBS-Holzkraft GmbH at Wackersdorf, Dick said that "woodlets" were "a solid fuel that can be burned in private small furnaces as well as in huge automatic-feed commercial furnaces." Furthermore, he said, they were made from "a biomass presently not used, but wasted."

Dick said that total annual production at this first plant would correspond to a heating value of about 30 million tons of oil--an amount that could heat more than 7,000 row houses.

TWO PROTOTYPE SOLAR CONCENTRATORS have been installed at a refugee camp in Djibouti--sandwiched between Ethiopia and Somalia at the southern end of the Red Sea--and are expected to help solve the problem of vanishing fuelwood in desert areas.

Two French engineers now working with the United Nations Development Program have produced a simplified solar concentrator which they believe can give reliable service in remote locations. The plant cooks food for the refugees and powers a sterilizer at the medical dispensary in Dikhil, Djibouti, where there is plentiful sunshine but very little firewood.

The UN wants to encourage wider use of solar cookers to reduce the use of firewood for cooking in similar areas.

LUMBERING CONCESSIONS will be given for exploitation of nearly 1.9 million hectares of Venezuela's forest reserves, the Environment Ministry announced recently.

Production of 600,000 cubic meters of timber a year is expected to satisfy na-

tional demand and save some \$35 million in foreign exchange. Secondary products, pasteboard and plywood, would utilize a million cubic meters in offcuts.

"If mature trees are not extracted from the forest," said Vice Minister Elias Mendez, "it is impossible to carry out new planting which is the desired goal for improving and enriching Venezuela's forests."

Shortly after the creation of the Environment Ministry in 1975 lumbering activities were restricted and all new concessions stopped. Now, the government will introduce tariffs to protect native woods from foreign competition.

THE SOARING NUMBER OF TREKKERS is damaging the Himalayan ecosystem, according to environmentalists who have studied the problem recently. The influx into the upper slopes has increased the demand for firewood, leading to a severe depletion of the natural cover in an ecologically sensitive area. Nepal's revenue from tourism, which was only \$2.2 million in 1971, has now shot up to \$52 million.

INDIA'S AGRICULTURE MINISTRY is sending experts to several northern states to verify how many trees planted in afforestation schemes survive. Irregular rains had disrupted the government's plans to plant a total of 2 billion seedlings last year: So far, only one-sixth of the target has been achieved. The ministry has also sought a ban on felling trees in the hills over a certain altitude. It is trying to involve local communities in these schemes: In one area, for instance, families are paid to grow and maintain trees and are later able to earn an income from them.

THE PHILIPPINE BUREAU OF FOREST DEVELOPMENT is working out a master plan for the reforestation of 1.1 million hectares of denuded forest lands in the country. The plan, prepared by the Bureau's 12 regional directors and technical experts, is expected to be approved early this year.

THE PHILIPPINES-JAPAN TRAINING CENTER for Forest Conservation was recently inaugurated in Carranglan, Nueva Ecija, to train Filipino forestry officials and technicians in modern conservation techniques, including large-scale erosion control work and forest mechanization. The 23 million peso (US\$2.6 million) center was a donation from Japan as part of the exchange of notes signed in 1978 between the two countries.

THE INDONESIAN DIRECTORATE GENERAL OF FORESTRY will appoint 12,000 special policemen to protect forests over the next four years. The forest police force now is estimated at 1,500 members. They protect not only forests within specifically designated locations but also forest products circulating far beyond the forest districts concerned. For this purpose, check points are set up in certain locations to control the traffic of forest products and wildlife protected by law.

Indonesia's forested area is estimated to cover 64 percent of the country's land, 122 million hectares of rain, seasonal, mangrove and marsh forests. They contain some 4,000 wood species, of which 400 have commercial value.

THE MALAYSIAN GOVERNMENT'S move to conserve forests is beginning to show results. According to Minister of Primary Industries Datuk Leong Khee Seong, logging activities in the country have decreased from 365,967 hectares in 1978 to 214,197 hectares in 1981. And there was an increase in timber yield in the three-year period from 25.7 cubic meters per hectare to 48.7 cubic meters per hectare in 1981. Leong said logging activities will be further reduced to 149,000 hectares by 1986.

He said the more efficient utilization of forest resources had been due to requiring the timber industry to utilize smaller diameter logs as well as less popular species to compensate for the shortfall in the supply of prime quality logs. Also, the proportion of rehabilitated forest to the amount of land annually logged had increased from 59 percent in 1979 to 83 percent last year, he said. He said of the 6.4 million hectares of total forest area in Peninsular Malaysia, 4.6 million have been earmarked as permanent forests.

MORE THAN FOUR MILLION HECTARES OF TREES and 370,000 hectares of saplings were afforested in China between January and August 1982, according to the Chinese Ministry of Forestry. Almost all able-bodied persons participated in the campaign, the Xinhua News Agency said. More attention has been paid to scientific afforestation. Tree varieties which are fast-growing, widely adaptable and resistant to disease were developed. The Ministry said the survival rate of trees is now higher than usual. For example, in a tree planting center in Beijing, more than 90 percent survived last year.

## U.S. postpones road in Honduran forest

WASHINGTON--A report that the Reagan administration wants to build a road through one of the few remaining virgin rainforests in Honduras has been quashed by the U.S. Agency for International Development.

According to James D. Nations, Senior Researcher at the Texas-based Center for Human Ecology, its primary purpose would be as a military access road "to facilitate the flow of equipment and troops to the volatile Honduras-Nicaragua border."

Nations wrote: "According to foresters in Honduras, this road will be an economic and ecological disaster. It will cut through the heart of one of Honduras's few remaining virgin tropical rainforests, threatening wildlife, watershed protection and indigenous peoples with equal disregard."

Nations' alert led two U.S. Congressmen to write M. Peter McPherson, AID Administrator. Representatives Don Bonker of Washington, Chairman of the Subcommittee on Human Rights and International Organizations, and Michael Barnes of Maryland, Chairman of the Subcommittee on Inter-American Affairs wrote:

"Our concerns focus on the project's potentially serious environmental impact as well as on the limited economic benefit the road is likely to produce."

The Congressmen urged McPherson to postpone construction until a thorough environmental and economic review of the project has been completed.

An AID spokesman, who said he'd seen several drafts but not the final copy of McPherson's letter of response, said the situation on the road was now this:

"For the present time AID does not plan to fund the Mosquitia access road. The project has not been programmed into our FY (fiscal year) 1983 or 1984 budget. Even if additional financing were available, we would have to have satisfactory economic and environmental feasibility studies before AID assistance could be provided. Such studies have not been initiated and would require considerable time to complete."

Although this sounds as though the matter of the road is finished, a Congressional staff aide told WER they are not yet satisfied that the road is dead. One staff aide was to travel to Honduras in January to get further information.

SPECIAL TO WER

## Ugandan wildlife is finally recovering

MURCHISON FALLS--For nearly a decade Uganda's elephants and rhinos were mown down by Kalashnikov rifles and other automatic weapons until the herds were near extinction. Now, the government with some outside help is making a determined effort to save what is left and help the herds to recover.

In Murchison Falls National Park the elephant population fell from 14,000 in 1973 to just 2,000 today. Frank Poppleton, a Briton heading the UN's antipoaching project in Uganda, said a census taken last summer found that the population had "stabilized" at 2,000. Poppleton told The Washington Post that the dramatic reduction in poaching was due to the government's hopes to revive tourism and to the UN Development Program's \$1 million antipoaching project, which helped station about 100 Ugandan rangers in each of the country's three game parks. Even though the illegal ivory trade has been virtually halted, the remaining elephants are so wary of man that they remain in remote areas of the park.

A sadder fate befell the small herd of white rhino which was moved into the Murchison Falls park in the 1960s to save it from poachers. Only one white rhino remains alive out of more than 20. Rhino horn commands huge prices in Asia, where it is used for medicinal and other purposes.

However, hippos and crocodiles, which in effect do not carry a price on their heads, appear as numerous as ever. On a recent trip this correspondent saw thousands of hippos and hundreds of crocodiles along the Nile right up to the foot of Murchison Falls.

In Queen Elizabeth National Park in western Uganda (opened in 1954 by Britain's Queen Elizabeth), only a few hundred elephants remain. There are, however, large numbers of buffalos, hippos, antelopes and lions.

Kidepo Valley National Park in northeast Uganda suffered from across-the-border poaching, from adjoining Sudan.

But in all three parks, a dedicated staff of Ugandans now controls the poaching, and experts believe the game herds will recover, given time and continued stability.

Meanwhile, the ecological news is not all bad. Foliage in the parks is flourishing because of the absence of the animals that

once fed so heavily on it.

Tourism, which provides revenues to maintain the national parks, is recovering slowly. Efforts are being made to revive the tourist trade which formerly brought thousands of visitors here every year. Paraa and Chobe Safari Lodges, once on the itineraries of most tourists, get few visitors these days. They are able to provide simple food and accommodation although they have no electricity or refrigeration. At present, the limited tourist facilities and the difficulties of travel in this country are holding back any significant revival of what had been a major income-earner.

Recently, a new national park was created on a 466-square-kilometer site around Lake Mburo in southwest Uganda. But so far there are no funds available to develop this area for visitors. CHARLES HARRISON

## More elephants & rhinos...

IN SOUTH AFRICA, ELEPHANT POACHING with automatic AK47 (Kalashnikov) rifles is on the increase, an Afrikaans-language newspaper, Beeld, reports. It said that at least 137 elephants have been killed in Kruger National Park by Mozambican poachers using automatic rifles. An unknown number of elephants have been wounded.

The Parks Board is particularly concerned over the recent death of Groot Haaktand (the Shawu bull), one of the largest in the world. One of the so-called Magnificent Seven, his tusks weighed more than 50 kilograms each. Most of the elephants shot were believed to be bulls. If each was carrying about 50 kilograms of ivory (a conservative estimate), the final price for it would have been more than US\$550,000.

YEMEN, the world's biggest market for rhinoceros horn, has banned its importation. As described in the August 3, 1981 (p.1) WER, Yemen was importing about 1,000 rhino horns a year to make ceremonial dagger handles. As the African rhinoceros populations declined rapidly, conservationists began pressuring the Yemeni government to stop the import trade, which was said to account for up to 40 percent of all rhinos killed in Africa. A spokesman for the Washington-based African Wildlife Leadership Foundation, which played a leading role in persuading the Yemeni government to ban the trade, said the decree would be difficult to enforce because "smuggling is endemic in that part of the world."

RHINO HUNTING SAFARIS are being run in Pilanesberg National Game Park in Bophuthatswana--a South African homeland--with the blessing of the International Union for the Conservation of Nature and Natural Resources (IUCN).

The 60,000-hectare reserve was opened in 1980 and rapidly stocked with game in one of the biggest translocations of wild animals on the African continent. In order to raise funds for conservation projects and because culling is already necessary in the reserve, the management decided to run 10 safaris a year.

So far in 1982 six safaris have been run and five rhino shot at \$5,000 a time. Because the white rhino is an endangered animal in the rest of Africa, whereas in South Africa there are too many, strict control is kept on the export of rhino horn.

Hunters--mostly Americans, Germans and Italians--pay up to \$15,000 for a fortnight's guided shooting. It is estimated that \$150,000 will be raised each year by the project. Twenty percent of that will go to the Tswana people living around the park to subsidize clinics and education facilities. Animal products, such as meat, horns and skins, are also sold cheaply to the locals.

## Campaign controls river blindness

WASHINGTON--The international campaign to control river blindness, or onchocerciasis, in West Africa has had a good deal of success, the World Bank reports.

A recent World Bank News, reporting on a meeting of donors and affected countries, said that since the program's inception in 1974:

- \* 65 percent of the 750,000 square kilometer area (in seven countries) is now "absolutely free" of transmission of the parasitic disease.

- \* Some one million children born since 1974 (out of a population of 15 million) have not been exposed to infection.

- \* Eye lesions contracted prior to the control program have not worsened. And there are no new cases of blindness due to onchocerciasis.

- \* Gradual resettlement of uninhabited fertile areas freed from the disease is now possible, and the productivity of rural workers freed from the disease is expected

to rise.

Onchocerciasis is commonly known as river blindness, since the female blackflies which transmit the disease breed in fast-growing rivers and streams. A result is that people in the affected area shun the fertile river valleys and settle in relatively drier lands.

The only feasible and most cost-effective method of killing the larvae--often in inaccessible sites--is by the aerial spraying of larvicide over waterways.

All in all, about 30 million people in tropical Africa, the Yemen, Central and South America are affected by the disease. The plain region of the Volta River Basin in West Africa is one of the worst endemic river blindness zones in the world.

Therefore, the Onchocerciasis Control Program (OCP) focused on that area. It is the largest health program and financing exercise in West Africa and is being funded in six-year phases. The program is at the midpoint of Phase II (1980-85), which should cost about US\$130 million. Parts of seven countries are involved: Benin, Ghana, Ivory Coast, Mali, Niger, Togo and Upper Volta. OCP is financed by 20 donor governments and agencies and by the beneficiary countries. The World Health Organization is its executing agency, and the World Bank is fund raiser and custodian of the Oncho Special Fund.

The World Bank's A. David Knox said the program is facing four major challenges: reinvasion of the control areas by blackflies; larvicide resistance by a minor species of blackfly; finding a drug suitable for mass application to help completely eliminate the disease; and extension of the program to adjacent areas and countries (Guinea, Guinea-Bissau, Senegal and Sierra Leone) hitherto not served by the program.

At a recent meeting in Bamako, Mali, the OCP's governing body agreed to undertake four major tasks in the following order of priority:

- \* Developing larvicides to counter the problems of blackfly resistance.

- \* Promoting the development of a river blindness drug.

- \* Extending the control program southward (subject to the development of new larvicides since resistant flies are found in that region).

- \* Extending the program westward to include other countries.

The World Bank was asked to increase its fund raising efforts for these programs.

SPECIAL TO WER



## Great Barrier reef needs more protection

PERTH--Australia's Great Barrier Reef is the largest construction on Earth made by living creatures.

The reef begins some 50 kilometers from the mainland drawing closer in more northerly latitudes and then stretching eastward into the Pacific. Formed from the skeletons of countless coral polyps, the reef is based on an ancient mountain range that is slowly subsiding. As the mountains once rose in peaks and fell into canyons, so do the living coral structures. In all, the labyrinth of reefs and coral islands stretches 20,000 kilometers from north of Brisbane to the Papua New Guinea coastline.

The upward growth is limited by prolonged exposure to the atmosphere, and the reef tops tend to be stunted and close knit. It takes million of years for a reef to grow and millions more for an island to develop and become vegetated.

The Great Barrier Reef region covers 350,000 square kilometers. Of this, 12,000 square kilometers of the southern part have been zoned as the Capricornia section of the reef's marine park. This does not mean total protection, but it is a good start. A second part of the marine park is now being zoned. Located to the north, out from Cairns, it covers 36,000 square kilometers and is the largest marine park in the world.

Diver Valerie Taylor writes in the Australian publication, "The Bulletin," that "The reef would benefit greatly if three rules covered the whole length--to protect the reef against commercial mineral exploration, commercial spearfishing and spearfishing by people using scuba gear.

"By 1983 the Great Barrier Reef Marine Park Authority will control only 13 percent of the reef. So far, less than one-twentieth is protected totally against abuse of any kind and only one individual reef has national park status."

Taylor says the reef is "home of the richest varieties of marine animals on Earth. It has stood for centuries untouched. But progress has turned its destructive gaze upon this great reef. The dangers of drilling the reef for oil are apparent. Mining claims dot the more remote Coral Sea islands, and oil exploration is underway in the sea itself. Commercial dredging for shells, as well as prawn and

scallop trawling, leave a path of dead bottom dwelling creatures in their wake. Overfishing by both commercial and sports fisherman has caused a tremendous decline in edible fish species. The Great Barrier Reef doesn't belong to any one person or group of persons. It belongs to all of us."

And although there are conflicting pressures on the reef, the government has begun the process of protecting it. ANNE BLOEMEN

## And back in England...

### GREAT BRITAIN'S ENVIRONMENT MINISTER

Michael Heseltine has a new Cabinet position, Defense Minister. According to reports from London, the 49-year-old minister was named to the post despite the fact that Prime Minister Margaret Thatcher is known to be wary of him: He is not considered a full-fledged Thatcherite and is a potential rival well liked by the Tory rank-and-file.

As Environment Minister, Heseltine won a reputation as a slasher of government spending. For that reason as well as others, the New York Times reported, the uniformed chiefs of the British armed services were believed to have resisted his appointment. As Defense Minister, he will be relied on to respond to the increasingly vocal critics of nuclear weapons.

The new Environment Minister will be Tom King, Heseltine's former deputy.

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## Thai afforestation plan: Let private sector do it

BANGKOK--A new approach to Thailand's reforestation projects is being considered by the Ministry of Agriculture and Cooperatives: turning over the whole program to the private sector. If approved by the ministry and the Cabinet, this would be a major change in government policy. At present, the work is undertaken by government agencies or private firms hired for the task.

The ministry feels that the entire program could be speeded up if it is handled solely by the private sector. However, one condition attached to the proposal is that the private sector must get concession rights for commercial logging in allocated forest areas.

The government has not been successful in meeting its annual afforestation targets because the agencies concerned have been hampered by a lack of capability and funds. One example is the Forestry Industry Organization (FIO), which has been unable to meet its yearly 800-hectare target because of limited funds. The reason: FIO submits about 70 per cent (between US\$8-10 million) of its annual income to the government.

In a related move, the ministry is also planning, in cooperation with the Interior and Defense Ministries, to lay down a policy on forest encroachment prevention in the near future.

ISLAMABAD--If the Pakistani government's three-year experiment cultivating fast-growing Ipil-Ipil trees proves the success it now looks, it is likely to invite the private sector to cooperate in expanding the country's forest cover. Forest officials believe that in view of the quick returns promised by the "super tree" and the growing demand for timber and firewood, the private sector might find this a highly lucrative business.

According to official estimates, Pakistan is likely to face a production and demand gap of 29 million cubic feet of timber and 813 million cubic feet of firewood by June of this year. At present, the country is importing wood worth more than US\$66 million, and the firewood gap is being partly bridged by other sources such as natural gas, kerosene, agricultural refuse and cow dung.

This situation led the Appropriate Technology De-

velopment Organization (ATDO) and the Provincial Forest Department in Sind to collaborate three years ago on the experimental planting of Ipil-Ipil trees on four nearly two-hectare sites. ATDO also is cultivating Ipil-Ipil in the Punjab in conjunction with the Irrigation Drainage Flood Control Rehabilitation Cell.

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## Trans-Sahara treebelt is growing slowly

RABAT--North African states are making progress with a grandiose plan to plant a barrier of trees 20 kilometers wide and 3,600 kilometers long between the Atlantic and the Red Sea. The idea is to arrest the encroachment of the Sahara Desert, which has been inching its way northward at rates of over one kilometer a year for more than a century.

At a conference in the Algerian city of Batna late last year, forestry experts from Algeria, Egypt, Libya, Morocco and Tunisia reported substantial progress with the plan drawn up 10 years ago. Algeria is the most advanced with its sector of 1,500 kilometers between the Moroccan and Tunisian frontiers. It has planted millions of trees in a green belt, while Tunisia has been working for nine years on a project to regenerate pasturelands in the south to form a basis for another green belt. Libya is planting grasses designed to immobilize sand dunes.

The basic assumption is that desert encroachment is made worse by the depredations of man: the wholesale felling of trees for fuel and building, and uncontrolled grazing by the nomadic tribes' flocks. With the degradation of vegetation, the climate became warmer and drier as there was nothing to retain water.

Promoters of the green belt are convinced that tree planting will change the climate eventually, besides protecting existing farmland on the littoral and creating a valuable source of timber. Today, nearly

all timber has to be imported by the five states involved.

There is abundant scientific evidence that the Sahara used to be covered with vegetation in prehistoric times, and in a relatively recent era North Africa was known as the "Granary of Rome," the evidence of which are the ruins of many fortified Roman farms in what is now waterless desert in the center of Libya. Aerial surveys have confirmed the presence of numerous large rivers and lakes which have dried up, marked today by a few isolated oases.

The Batna conference decided to set up a permanent committee to coordinate the project and exchange information on techniques to stem desertification and eventually turn the tide of the advancing desert.

STEPHEN O. HUGHES

## Sudan plants trees to stop the desert

CAIRO--The Sudan's natural forests cover about 28 percent (584,362 square kilometers) of the country's total area. This is a high per capita share of Africa's forests, three times that for all of Africa. Yet the majority of the timber stands are scattered and of poor quality.

The reason: Pressure on wood resources through uncontrolled cutting for fuel and clearance for agricultural development has resulted in wide-spread destruction of valuable forests in recent years.

The desert, which covers an area of 650,000 square kilometers, represents 28.7 percent of the country. It is creeping at an annual rate of five to six kilometers, and has marched southward 100 kilometers in the last 17 years. A look at the agricultural projects of the Northern Region show how many of them fell victim to the desert: Nori agricultural project now covers an area of 1,538 hectares instead of an original 1,700, El Kulud dropped to 1,012 from 2,145, El Gaba 283 instead of 1,012 and Hoadh el-Sulaim is down to 15,640 hectares from 36,422. To reverse the desert drift a reforestation program was begun five years ago.

The program is a joint venture between the government of Sudan and the Sudan Council of Churches (SCC), with the Swedish Free Mission, Bread for the World (West Germany), and Christian Aid of the United Kingdom as supporting agencies. The objec-

tive is to protect agricultural projects from desert encroachment through planting wind belts and timber stands for firewood, building materials and shelter for man and animals.

The program includes the education and mobilization of local farmers on six agricultural projects that cover 25,495 hectares and which employ 8,351 tenants.

To date the program is fairly on schedule. It has achieved 94 percent of its plans at four sites and 36 percent at a fifth. Some 167 hectares of wind belts and timber stands have been planted. Two nurseries have been established in Shendi and el-Damer with government assistance. The program has also resulted in the provision of fodder and shade for livestock, reduced the cost of cleaning irrigation canals and increased agricultural yields in areas adjacent to wind belts.

Encouraged by the project's results, the government has decided to extend the program for another three years. It will plant an additional 162 hectares and sponsor more agricultural education programs. The cost of the extended program is US\$1.5 million (at official exchange rates). This will be borne by the government with US\$261,000, involved farmers will cover US\$29,000, and the balance will be raised through foreign aid agencies.

JOHN M. BRADLEY

## More on forestry...

ONE FIFTH OF CHINA'S FARMLAND, or 20 million hectares, is protected by belts of trees and barriers of trees interplanted with crops, according to the Institute of Forestry under the Chinese Academy of Forestry Science. Some 16.67 million hectares are sheltered by tree belts, and 3.33 million hectares by trees planted alternately with crops.

Tests show that wind velocity and water evaporation in farmland protected by tree belts are reduced by 30 to 40 percent, while moisture is increased by 10 to 20 percent. China's tree belts were first planted in the early 1950s; in the 1960s, many people's communes built tree belts along the sides of fields, roads and ditches. These belts, which occupy little farmland, have appeared in populous southern China and the Sichuan Basin. They produce large quantities of timber, fuel, fruit and fodder annually, thus increasing peasants' income.

## Forestry & fuelwood...

THREE UN AGENCIES sponsored a seminar in Moscow Dec. 4-11 to seek new, rational uses of forest resources, and how to reduce losses of wood biomass during logging and conversion operations while preventing damage to the environment.

The sponsor was the Joint FAO/ECE/ILO Committee on Forest Working Techniques, a body of the Food and Agriculture Organization, the Economic Commission for Europe and the International Labor Organization.

BAVARIAN ENVIRONMENTAL PROTECTION Minister Alfred Dick dedicated West Germany's first production plant for "woodlets"--briquettes made from wood scraps--and predicted that the new product would help shrink this country's dependence upon oil and gas.

Speaking at the EBS-Holzskraft GmbH at Wackersdorf, Dick said that "woodlets" were "a solid fuel that can be burned in private small furnaces as well as in huge automatic-feed commercial furnaces." Furthermore, he said, they were made from "a biomass presently not used, but wasted."

Dick said that total annual production at this first plant would correspond to a heating value of about 30 million tons of oil--an amount that could heat more than 7,000 row houses.

TWO PROTOTYPE SOLAR CONCENTRATORS have been installed at a refugee camp in Djibouti--sandwiched between Ethiopia and Somalia at the southern end of the Red Sea--and are expected to help solve the problem of vanishing fuelwood in desert areas.

Two French engineers now working with the United Nations Development Program have produced a simplified solar concentrator which they believe can give reliable service in remote locations. The plant cooks food for the refugees and powers a sterilizer at the medical dispensary in Dikhil, Djibouti, where there is plentiful sunshine but very little firewood.

The UN wants to encourage wider use of solar cookers to reduce the use of firewood for cooking in similar areas.

LUMBERING CONCESSIONS will be given for exploitation of nearly 1.9 million hectares of Venezuela's forest reserves, the Environment Ministry announced recently.

Production of 600,000 cubic meters of timber a year is expected to satisfy na-

tional demand and save some \$35 million in foreign exchange. Secondary products, pasteboard and plywood, would utilize a million cubic meters in offcuts.

"If mature trees are not extracted from the forest," said Vice Minister Elias Mendez, "it is impossible to carry out new planting which is the desired goal for improving and enriching Venezuela's forests."

Shortly after the creation of the Environment Ministry in 1975 lumbering activities were restricted and all new concessions stopped. Now, the government will introduce tariffs to protect native woods from foreign competition.

THE SOARING NUMBER OF TREKKERS is damaging the Himalayan ecosystem, according to environmentalists who have studied the problem recently. The influx into the upper slopes has increased the demand for firewood, leading to a severe depletion of the natural cover in an ecologically sensitive area. Nepal's revenue from tourism, which was only \$2.2 million in 1971, has now shot up to \$52 million.

INDIA'S AGRICULTURE MINISTRY is sending experts to several northern states to verify how many trees planted in afforestation schemes survive. Irregular rains had disrupted the government's plans to plant a total of 2 billion seedlings last year: So far, only one-sixth of the target has been achieved. The ministry has also sought a ban on felling trees in the hills over a certain altitude. It is trying to involve local communities in these schemes: In one area, for instance, families are paid to grow and maintain trees and are later able to earn an income from them.

THE PHILIPPINE BUREAU OF FOREST DEVELOPMENT is working out a master plan for the reforestation of 1.1 million hectares of denuded forest lands in the country. The plan, prepared by the Bureau's 12 regional directors and technical experts, is expected to be approved early this year.

THE PHILIPPINES-JAPAN TRAINING CENTER for Forest Conservation was recently inaugurated in Carranglan, Nueva Ecija, to train Filipino forestry officials and technicians in modern conservation techniques, including large-scale erosion control work and forest mechanization. The 23 million peso (US\$2.6 million) center was a donation from Japan as part of the exchange of notes signed in 1978 between the two countries.

THE INDONESIAN DIRECTORATE GENERAL OF FORESTRY will appoint 12,000 special policemen to protect forests over the next four years. The forest police force now is estimated at 1,500 members. They protect not only forests within specifically designated locations but also forest products circulating far beyond the forest districts concerned. For this purpose, check points are set up in certain locations to control the traffic of forest products and wildlife protected by law.

Indonesia's forested area is estimated to cover 64 percent of the country's land, 122 million hectares of rain, seasonal, mangrove and marsh forests. They contain some 4,000 wood species, of which 400 have commercial value.

THE MALAYSIAN GOVERNMENT'S move to conserve forests is beginning to show results. According to Minister of Primary Industries Datuk Leong Khee Seong, logging activities in the country have decreased from 365,967 hectares in 1978 to 214,197 hectares in 1981. And there was an increase in timber yield in the three-year period from 25.7 cubic meters per hectare to 48.7 cubic meters per hectare in 1981. Leong said logging activities will be further reduced to 149,000 hectares by 1986.

He said the more efficient utilization of forest resources had been due to requiring the timber industry to utilize smaller diameter logs as well as less popular species to compensate for the shortfall in the supply of prime quality logs. Also, the proportion of rehabilitated forest to the amount of land annually logged had increased from 59 percent in 1979 to 83 percent last year, he said. He said of the 6.4 million hectares of total forest area in Peninsular Malaysia, 4.6 million have been earmarked as permanent forests.

MORE THAN FOUR MILLION HECTARES OF TREES and 370,000 hectares of saplings were afforested in China between January and August 1982, according to the Chinese Ministry of Forestry. Almost all able-bodied persons participated in the campaign, the Xinhua News Agency said. More attention has been paid to scientific afforestation. Tree varieties which are fast-growing, widely adaptable and resistant to disease were developed. The Ministry said the survival rate of trees is now higher than usual. For example, in a tree planting center in Beijing, more than 90 percent survived last year.

## U.S. postpones road in Honduran forest

WASHINGTON--A report that the Reagan administration wants to build a road through one of the few remaining virgin rainforests in Honduras has been quashed by the U.S. Agency for International Development.

According to James D. Nations, Senior Researcher at the Texas-based Center for Human Ecology, its primary purpose would be as a military access road "to facilitate the flow of equipment and troops to the volatile Honduras-Nicaragua border."

Nations wrote: "According to foresters in Honduras, this road will be an economic and ecological disaster. It will cut through the heart of one of Honduras's few remaining virgin tropical rainforests, threatening wildlife, watershed protection and indigenous peoples with equal disregard."

Nations' alert led two U.S. Congressmen to write M. Peter McPherson, AID Administrator. Representatives Don Bonker of Washington, Chairman of the Subcommittee on Human Rights and International Organizations, and Michael Barnes of Maryland, Chairman of the Subcommittee on Inter-American Affairs wrote:

"Our concerns focus on the project's potentially serious environmental impact as well as on the limited economic benefit the road is likely to produce."

The Congressmen urged McPherson to postpone construction until a thorough environmental and economic review of the project has been completed.

An AID spokesman, who said he'd seen several drafts but not the final copy of McPherson's letter of response, said the situation on the road was now this:

"For the present time AID does not plan to fund the Mosquitia access road. The project has not been programmed into our FY (fiscal year) 1983 or 1984 budget. Even if additional financing were available, we would have to have satisfactory economic and environmental feasibility studies before AID assistance could be provided. Such studies have not been initiated and would require considerable time to complete."

Although this sounds as though the matter of the road is finished, a Congressional staff aide told WER they are not yet satisfied that the road is dead. One staff aide was to travel to Honduras in January to get further information.

SPECIAL TO WER

## Ugandan wildlife is finally recovering

MURCHISON FALLS--For nearly a decade Uganda's elephants and rhinos were mown down by Kalashnikov rifles and other automatic weapons until the herds were near extinction. Now, the government with some outside help is making a determined effort to save what is left and help the herds to recover.

In Murchison Falls National Park the elephant population fell from 14,000 in 1973 to just 2,000 today. Frank Poppleton, a Briton heading the UN's antipoaching project in Uganda, said a census taken last summer found that the population had "stabilized" at 2,000. Poppleton told The Washington Post that the dramatic reduction in poaching was due to the government's hopes to revive tourism and to the UN Development Program's \$1 million antipoaching project, which helped station about 100 Ugandan rangers in each of the country's three game parks. Even though the illegal ivory trade has been virtually halted, the remaining elephants are so wary of man that they remain in remote areas of the park.

A sadder fate befell the small herd of white rhino which was moved into the Murchison Falls park in the 1960s to save it from poachers. Only one white rhino remains alive out of more than 20. Rhino horn commands huge prices in Asia, where it is used for medicinal and other purposes.

However, hippos and crocodiles, which in effect do not carry a price on their heads, appear as numerous as ever. On a recent trip this correspondent saw thousands of hippos and hundreds of crocodiles along the Nile right up to the foot of Murchison Falls.

In Queen Elizabeth National Park in western Uganda (opened in 1954 by Britain's Queen Elizabeth), only a few hundred elephants remain. There are, however, large numbers of buffalos, hippos, antelopes and lions.

Kidepo Valley National Park in northeast Uganda suffered from across-the-border poaching, from adjoining Sudan.

But in all three parks, a dedicated staff of Ugandans now controls the poaching, and experts believe the game herds will recover, given time and continued stability.

Meanwhile, the ecological news is not all bad. Foliage in the parks is flourishing because of the absence of the animals that

once fed so heavily on it.

Tourism, which provides revenues to maintain the national parks, is recovering slowly. Efforts are being made to revive the tourist trade which formerly brought thousands of visitors here every year. Paraa and Chobe Safari Lodges, once on the itineraries of most tourists, get few visitors these days. They are able to provide simple food and accommodation although they have no electricity or refrigeration. At present, the limited tourist facilities and the difficulties of travel in this country are holding back any significant revival of what had been a major income-earner.

Recently, a new national park was created on a 466-square-kilometer site around Lake Mburo in southwest Uganda. But so far there are no funds available to develop this area for visitors. CHARLES HARRISON

## More elephants & rhinos...

IN SOUTH AFRICA, ELEPHANT POACHING with automatic AK47 (Kalashnikov) rifles is on the increase, an Afrikaans-language newspaper, Beeld, reports. It said that at least 137 elephants have been killed in Kruger National Park by Mozambican poachers using automatic rifles. An unknown number of elephants have been wounded.

The Parks Board is particularly concerned over the recent death of Groot Haaktand (the Shawu bull), one of the largest in the world. One of the so-called Magnificent Seven, his tusks weighed more than 50 kilograms each. Most of the elephants shot were believed to be bulls. If each was carrying about 50 kilograms of ivory (a conservative estimate), the final price for it would have been more than US\$550,000.

YEMEN, the world's biggest market for rhinoceros horn, has banned its importation. As described in the August 3, 1981 (p.1) WER, Yemen was importing about 1,000 rhino horns a year to make ceremonial dagger handles. As the African rhinoceros populations declined rapidly, conservationists began pressuring the Yemeni government to stop the import trade, which was said to account for up to 40 percent of all rhinos killed in Africa. A spokesman for the Washington-based African Wildlife Leadership Foundation, which played a leading role in persuading the Yemeni government to ban the trade, said the decree would be difficult to enforce because "smuggling is endemic in that part of the world."

RHINO HUNTING SAFARIS are being run in Pilanesberg National Game Park in Bophuthatswana--a South African homeland--with the blessing of the International Union for the Conservation of Nature and Natural Resources (IUCN).

The 60,000-hectare reserve was opened in 1980 and rapidly stocked with game in one of the biggest translocations of wild animals on the African continent. In order to raise funds for conservation projects and because culling is already necessary in the reserve, the management decided to run 10 safaris a year.

So far in 1982 six safaris have been run and five rhino shot at \$5,000 a time. Because the white rhino is an endangered animal in the rest of Africa, whereas in South Africa there are too many, strict control is kept on the export of rhino horn.

Hunters--mostly Americans, Germans and Italians--pay up to \$15,000 for a fortnight's guided shooting. It is estimated that \$150,000 will be raised each year by the project. Twenty percent of that will go to the Tswana people living around the park to subsidize clinics and education facilities. Animal products, such as meat, horns and skins, are also sold cheaply to the locals.

## Campaign controls river blindness

WASHINGTON--The international campaign to control river blindness, or onchocerciasis, in West Africa has had a good deal of success, the World Bank reports.

A recent World Bank News, reporting on a meeting of donors and affected countries, said that since the program's inception in 1974:

- \* 65 percent of the 750,000 square kilometer area (in seven countries) is now "absolutely free" of transmission of the parasitic disease.

- \* Some one million children born since 1974 (out of a population of 15 million) have not been exposed to infection.

- \* Eye lesions contracted prior to the control program have not worsened. And there are no new cases of blindness due to onchocerciasis.

- \* Gradual resettlement of uninhabited fertile areas freed from the disease is now possible, and the productivity of rural workers freed from the disease is expected

to rise.

Onchocerciasis is commonly known as river blindness, since the female blackflies which transmit the disease breed in fast-growing rivers and streams. A result is that people in the affected area shun the fertile river valleys and settle in relatively drier lands.

The only feasible and most cost-effective method of killing the larvae--often in inaccessible sites--is by the aerial spraying of larvicide over waterways.

All in all, about 30 million people in tropical Africa, the Yemen, Central and South America are affected by the disease. The plain region of the Volta River Basin in West Africa is one of the worst endemic river blindness zones in the world.

Therefore, the Onchocerciasis Control Program (OCP) focused on that area. It is the largest health program and financing exercise in West Africa and is being funded in six-year phases. The program is at the midpoint of Phase II (1980-85), which should cost about US\$130 million. Parts of seven countries are involved: Benin, Ghana, Ivory Coast, Mali, Niger, Togo and Upper Volta. OCP is financed by 20 donor governments and agencies and by the beneficiary countries. The World Health Organization is its executing agency, and the World Bank is fund raiser and custodian of the Oncho Special Fund.

The World Bank's A. David Knox said the program is facing four major challenges: reinvasion of the control areas by blackflies; larvicide resistance by a minor species of blackfly; finding a drug suitable for mass application to help completely eliminate the disease; and extension of the program to adjacent areas and countries (Guinea, Guinea-Bissau, Senegal and Sierra Leone) hitherto not served by the program.

At a recent meeting in Bamako, Mali, the OCP's governing body agreed to undertake four major tasks in the following order of priority:

- \* Developing larvicides to counter the problems of blackfly resistance.

- \* Promoting the development of a river blindness drug.

- \* Extending the control program southward (subject to the development of new larvicides since resistant flies are found in that region).

- \* Extending the program westward to include other countries.

The World Bank was asked to increase its fund raising efforts for these programs.

SPECIAL TO WER



## Great Barrier reef needs more protection

PERTH--Australia's Great Barrier Reef is the largest construction on Earth made by living creatures.

The reef begins some 50 kilometers from the mainland drawing closer in more northerly latitudes and then stretching eastward into the Pacific. Formed from the skeletons of countless coral polyps, the reef is based on an ancient mountain range that is slowly subsiding. As the mountains once rose in peaks and fell into canyons, so do the living coral structures. In all, the labyrinth of reefs and coral islands stretches 20,000 kilometers from north of Brisbane to the Papua New Guinea coastline.

The upward growth is limited by prolonged exposure to the atmosphere, and the reef tops tend to be stunted and close knit. It takes million of years for a reef to grow and millions more for an island to develop and become vegetated.

The Great Barrier Reef region covers 350,000 square kilometers. Of this, 12,000 square kilometers of the southern part have been zoned as the Capricornia section of the reef's marine park. This does not mean total protection, but it is a good start. A second part of the marine park is now being zoned. Located to the north, out from Cairns, it covers 36,000 square kilometers and is the largest marine park in the world.

Diver Valerie Taylor writes in the Australian publication, "The Bulletin," that "The reef would benefit greatly if three rules covered the whole length--to protect the reef against commercial mineral exploration, commercial spearfishing and spearfishing by people using scuba gear.

"By 1983 the Great Barrier Reef Marine Park Authority will control only 13 percent of the reef. So far, less than one-twentieth is protected totally against abuse of any kind and only one individual reef has national park status."

Taylor says the reef is "home of the richest varieties of marine animals on Earth. It has stood for centuries untouched. But progress has turned its destructive gaze upon this great reef. The dangers of drilling the reef for oil are apparent. Mining claims dot the more remote Coral Sea islands, and oil exploration is underway in the sea itself. Commercial dredging for shells, as well as prawn and

scallop trawling, leave a path of dead bottom dwelling creatures in their wake. Overfishing by both commercial and sports fisherman has caused a tremendous decline in edible fish species. The Great Barrier Reef doesn't belong to any one person or group of persons. It belongs to all of us."

And although there are conflicting pressures on the reef, the government has begun the process of protecting it. ANNE BLOEMEN

## And back in England...

### GREAT BRITAIN'S ENVIRONMENT MINISTER

Michael Heseltine has a new Cabinet position, Defense Minister. According to reports from London, the 49-year-old minister was named to the post despite the fact that Prime Minister Margaret Thatcher is known to be wary of him: He is not considered a full-fledged Thatcherite and is a potential rival well liked by the Tory rank-and-file.

As Environment Minister, Heseltine won a reputation as a slasher of government spending. For that reason as well as others, the New York Times reported, the uniformed chiefs of the British armed services were believed to have resisted his appointment. As Defense Minister, he will be relied on to respond to the increasingly vocal critics of nuclear weapons.

The new Environment Minister will be Tom King, Heseltine's former deputy.

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## Editor's Note...

*This special year-end issue marks the end of one era, the beginning of another.*

*We leave behind us the first decade of international effort to identify and deal with increasingly complex problems of environmental management. During this decade, there has been an enormous growth in environmental infrastructure.*

*Natural resource management agencies now operate in 144 countries--a 500 percent increase over the last 10 years. In the Third World alone, the number stands at 105, up from 11 at the time of the 1972 UN Conference on the Human Environment. Of the industrialized countries at that conference, only 15 had environmental agencies.*

*During this same period, hundreds, perhaps even thousands of non-governmental environment groups came into being all over the world. Many have gained in strength within their countries, and they have formed regional and international networks.*

*Cooperative international efforts have grown between nations and development assistance agencies. The need for coordination and cooperation on all levels has been recognized along with the magnitude of the problems, which transcend borders.*

*But building an infrastructure is only the beginning. During this next decade, the real problem is finding the political will and the financial way to provide a productive and habitable world for a billion new citizens and their families.*



## SPECIAL YEAR-END REVIEW

### "Governments have the UN agency they deserve"

This was the year in which an economically battered and internally bruised United Nations Environment Program tried to recreate the enthusiasm and interest of the first UN Conference on the Human Environment in 1972.

But, as Indonesia's environment minister Emil Salim said upon his return to Jakarta, the month-long reunion in Nairobi was a disappointment. Most countries, bogged down in economic problems, sent lower-level officials. The conference was, Salim said, long on speeches but short on action, and "the spirit of Stockholm was lacking."

Nevertheless, some 90 countries were represented along with many international organizations for a total of well over 1,000 delegates. They produced a Nairobi Declaration, renewing the commitment first made at Stockholm in 1972 (but never quite fulfilled). And they gave UNEP a new set of guidelines, priorities and objectives designed to concentrate its activities in the next decade. There were so many though that one UNEP official lamented: "How can they all be priorities?"

Environmental monitoring of a different sort was undertaken by non-governmental environmental activists who came from 55 countries and represented scores of groups.

Their symposium was organized by the Environment Liaison Center, an international networking office in Nairobi. They hammered out a statement, which was presented to UNEP's special session. In it they took the nations of the world to task:

"Governments everywhere have failed to carry forward the spirit of Stockholm. Unratified conventions, unenforced laws, underfunded agencies, inadequate national institutions and declining support for international efforts have traced a record of neglect and irresponsibility."

The NGOs went on to say: "The governments of the world have obtained the UN agency they deserve. They have contributed only \$30 million to the Environment Fund, less than is spent in half-an-hour on armaments. They have not promoted the priorities of UNEP consistently in the other UN agencies. They have authorized a secretariat of under 200, less than the staff of several individual NGOs. They

have indicated a multitude of tasks and priorities, yet have provided no means of execution and enactment."

The NGOs then recommended, as did several UNEP founders interviewed by WER, that governments provide clear political and scientific priorities. They urged that UNEP not be just an isolated environmental agency of the UN but that a true UN-wide environment program be carried out.

## International efforts

UNEP is just one of many international organizations working toward a better-managed world environment. They range from the 24 free-market nations' group, the Organization for Economic Cooperation and Development (OECD) to the Association of Southeast Asian Nations (ASEAN). It includes the 10 multilateral aid organizations that signed, two years ago, a Declaration of Environmental Policies and Practices. It includes also such wide-ranging environmental groups as the International Union for the Conservation of Nature and Natural Resources (IUCN) and the World Wildlife Fund (WWF)--and many, many others.

### The OECD on Interdependence

The OECD, which might best be described as cautious in its assessments, nevertheless this year published one of the strongest--and briefest--definitions of the environmental situation at this time. In its 86-page report, "Economic and Ecological Interdependence," it says that the security of every nation depends on a definition that includes environmental risks.

It notes that these environmental security risks "are virtually unknown to traditional diplomacy..., are beyond the reach of national governments..., cannot be fitted into received theories of competitive interstate behavior..., are coming increasingly to dominate world affairs..., cannot be wished away, and...are indifferent to military force."

The OECD defined three broad categories of environmental risk: environmental pollution, resource issues and management issues. Within these categories, the organization singled out such problems as carbon dioxide and climate change, acid precipitation, chemicals and the international movement of hazardous wastes. It was concerned with maintaining biological diversity, the

loss of cropland and soil degradation. And it urged more attention to the environmental aspects of bilateral development cooperation, multinational investment and environmental impact assessment.

Jim McNeill, who heads the OECD's Environment Directorate, cautioned: "One characteristic that marks (some of these) issues...is uncertainty" as to their nature, their causes and their consequences. "The question of how governments, industry and the public deal with uncertainty is an issue that itself needs further exploration... When uncertainty clouds understanding of possible changes in natural phenomena, it takes on a special significance, especially if those changes could have serious economic and social consequences."

Political consensus, in the absence of scientific consensus, is hard to achieve at the international level. But, as one expert noted, "If governments wait for scientific near-certainty, it will often be too late for them to act at all."

### The World Charter

Political near-consensus was reached toward the end of the year when almost all nations of the world voted to adopt a World Charter for Nature at the UN. The vote was 111 to 1 (U.S. against) with 18 abstentions.

The Charter is well-intentioned though many admit its imperative language will make it hard to comply with.

Its preamble states: "Man must acquire the knowledge to maintain and enhance his ability to use natural resources in a manner which ensures sustainable utilization of species and ecosystems for the benefit of present and future generations."

It then goes on to declare 24 basic principles which all "shall" adhere to. Some are not so easily accomplished. For example: "Nature shall be secured against degradation caused by warfare or other hostile activities;" or "Funds, programmes and administrative structures necessary to achieve conservation objectives shall be provided;" and "...each person (on earth) shall strive to ensure that the objectives and requirements of this Charter are met."

The probability is that very few people on earth will know that this Charter exists. However, governments and international organizations do, and in many ways they have been trying to promote its basic principles of resource conservation and use.

For example, the OECD's Development Assistance Committee (of bilateral aid

agencies) met this year and called on all member governments to ensure that their development loans support projects that safeguard the environment.

IUCN along with the World Wildlife Fund and UNEP formed a Conservation for Development Center as a follow-up to their World Conservation Strategy. It will help nations promote and develop their own national conservation strategies.

The 10-nation South Asia Cooperative Environment Program was formally launched in Sri Lanka, and in Southeast Asia and the South Pacific regional environmental programs got underway. The Caribbean nations formally began their joint environment and development program under the auspices of UNEP. And regional efforts continued in the Middle East, Africa and Latin America.

On a one-to-one basis, environmental agreements were reached between Switzerland and Austria, Switzerland and France, Bulgaria and Bavaria in West Germany, and between East and West Germany.

It became even more apparent during the past year that environmental cooperation can make a start in overcoming political differences.

## National actions

This past year proved that many developing nations feel there is an urgent need to cope with environmental issues--belief waning among some Western nations.

As the World Environment Center found in its 1982 survey, 105 developing countries now have environment and natural resources management agencies. Ten years ago, only 11 did. With this growth in governmental awareness have come national environmental policies and legislation.

President Suharto signed Indonesia's first basic environmental law based on the precept that industrial development and preservation of the environment are mutually enhancing. Hampering its effective implementation and the evolution of more specific regulations, however, was the lack of environmental lawyers--only four in a country of 147 million people.

Saudi Arabia's new environmental pollution standards are based on those of the world's industrial nations. Yet, as the vice president of Saudi Arabia's environmental protection agency told WER, they are correlating their environmental laws with the precepts of the Sharia, the sacred law

of the Koran. He believes that, eventually, this incorporation of traditional law into environmental law could act as a guideline for other countries, for it takes into account the values of 600 million Moslems.

The new Turkish constitution, for the first time, incorporates a clause on environmental protection. This was the result of consultation between the new government's Constitutional Commission and several local organizations, among them the non-governmental Environmental Problems Foundation of Turkey, which had submitted detailed environmental programs and reports to the government.

This spring, Pakistan's Cabinet approved a national environmental protection law. This became necessary when state governments and their local agencies said they were unable to control pollution and preserve the environment.

Taiwan, as one of the fastest developing nations, earlier this year established an Environmental Protection Agency with a staff of 198 to run 37 monitoring stations. Special committees were being set up to study the causes of pollution and to work out protection measures.

One of Africa's fastest growing nations, Nigeria, also was considering a bill to establish a Federal Environmental Protection Agency. Its general provisions would apply not only to the general public but would govern oil operations as well.

Mexico, another oil producer, proclaimed a new federal environmental law in January. It requires environmental impact reports for large industrial developments, can limit industrial growth in deteriorated areas and stipulates penalties for violators. It also provides tax incentives and credits for those who purchase pollution control equipment.

India, the second most populous country on earth, has a prime minister, Indira Gandhi, who is deeply committed to the idea of environmental protection. Yet, because of the country's size, its problems of poverty and illiteracy in the countryside, many of its environmental programs--such as social forestry, soil conservation and rural energy supply through biogas--have failed as much as they have succeeded. This led the first national conference of India's legislators to recommend that the Department of Environment be upgraded to Ministry status.

Among the most fascinating environmental stories of the year is that of China, the most populated country on earth. Although

it has had environmental protection agencies for nine years, only this year have reports come out that "China's environment, natural and man-made, is in poor shape now and deteriorating rapidly."

These reports, compiled for The World Bank, were based almost exclusively on Chinese domestic publications and broadcasts. China, it was revealed, is in the grip of environmental pressures caused by large-scale deforestation, loss of cropland, reclamation of lakes, erosion and desertification. In some cases this was the result of misguided state policies; in others as a result of resource exploitation and desperate actions by poor peasants.

This current awareness of environmental degradation is in sharp contrast with earlier attitudes and shows a major change in policy. Over the past five years environmental organizations and journals have been founded, meetings held both in China and with international organizations, and new plans and stringent laws created. Even so, China is constrained, as are Indonesia and many other Third World countries, for it has only 600 people educated in ecology in a nation of one billion.

#### In The First World

An interesting phenomenon gathered momentum in Europe: the growth of the "green" political movement. In West Germany, they got enough of a vote to be a factor in the change in government. In France, the new Socialist government began a dialogue with them after they got 5 percent of the vote in a nationwide survey.

The Mitterrand government through its Environment Minister Michel Crepeau started decentralizing environmental responsibility. The Ministry encouraged 4,000 associations to experiment officially with various environmental programs. It set up Regional Environment Assemblies in more than 20 towns and cities. Each drew up a "white book" of environmental problems in the region, which were compiled into a national white book. Crepeau planned to draw up a Charter for the Environment based on their findings.

On the other side of the Channel, England's undersecretary of environment, John Rowcliffe, told WER that "environmental protection is not high on the political agenda in the U.K." He acknowledged that in order to meet European Community environmental directives, "We will have to have tighter controls and put pressure on local authorities." Nevertheless, he was relatively sanguine about the state of the en-

vironment in his country, for, he said, many of its major pollution problems have been brought successfully under control: "This has been achieved despite the unfavorable economic climate which has affected us since the first major rise in oil prices." Even so, many English environmental research schemes had cuts in funding this past year.

The U.S. policy-making Council on Environmental Quality said in its annual report: "...The United States has established a record of leadership in the protection of the environment and should continue to exert this leadership. The government should endeavor to work cooperatively with all nations, developed and developing, and with all responsible and relevant elements of the societies involved to attain this end."

However, the U.S. decided not to sign the Law of the Sea treaty; it was the only nation to vote against the World Charter for Nature; it temporarily held up the OECD's environmental brief, "Economic and Ecological Interdependence," reportedly because of the acid rain section; and it is still reviewing its Hazardous Substances Export Policy--nearly 24 months after President Reagan revoked his predecessor's executive order that had strengthened it.

## Renewable energy

The cost of energy continued to be a major factor in most countries' balance of payments. As the economics of supplying traditional sources of energy to remote areas became prohibitive, alternative and renewable sources became more feasible.

A big solar-energy pilot project was jointly backed by the World Health Organization, the U.S. Center for Disease Control and the U.S. National Aeronautics and Space Administration (NASA). It provided solar systems to be field-tested for two years in several Third World nations. One of its major purposes was to fuel refrigerators to store vaccine in rural areas for WHO's worldwide immunization program. Other photovoltaic systems would power water pumps, lights and other necessities for the rural poor in developing countries.

Other interesting solar experiments included Saudi Arabia's prototype solar pond in the salt flats of the eastern desert, which were found to be relatively cheap: about \$10 a square meter. Researchers

estimated that solar ponds could supply as much as 5 percent of the country's energy needs by the year 2000.

West Germany was active in solar projects, helping Greece build a 435-family solar village near Athens and helping Portugal with a solar energy center to produce industrial steam for a state-owned dairy. Israel also was using solar energy for industrial steam, for a food-processing plant on a kibbutz.

Windpower, considered an alternative form of solar power, continued to be tested. For example, Sri Lanka's Water Resources Board began a pilot project testing 50 inexpensive windmills for irrigation in its dry zones. And in the Greek Cyclades islands an experimental "windmill park" was set up on the isle of Kithos, as a way to reduce dependence on imported oil.

#### Hydropower

The most widely used form of alternative energy was hydropower, Czech authorities, offering loan incentives, urged factories, cooperative farms and even individuals to build new mini-hydropower stations or restart old ones to improve the country's energy situation. At the other end of the world, Papua New Guinea was planning to build two mini-hydro projects in each of its provinces this year.

Huge hydroelectric schemes ran into local opposition in some places. In Malaysia, a plan to build a dam in the country's only national park was countered by a nationwide signature campaign. In Bangalore, India, a major hydro project has been held up since 1978, in part due to local opposition based on environmental impact. And lawyers in Thailand said they would sue the government and the state electricity authority if a dam was built just outside a national park. They say it will disrupt the park's ecology and water resources, which is counter to Thai conservation law.

Other huge hydropower plans went ahead with little environmental opposition. Venezuela announced what could only be termed a megaproject: producing 43,000 megawatts of power from 88 sites on 47 rivers. But nowhere in the government power company reports is there recognition that four dams would be within a national park and would affect internationally famous natural sites. The Tehri Dam in north-west India, third highest in the world, went ahead despite its being in a mountainous seismic zone. The fate of Tehri's 30,000 citizens was virtually ignored.

But some waterpower projects were taking

the environment into account, for example Egypt's proposed Qattara Depression scheme. The idea is to blast a channel from the Mediterranean Sea to the huge depression 100 kilometers away. Not only would the flow of water provide electricity but it could help reclaim desert land. However, consultants commented, all "depends ultimately on the conclusions of environmental impact studies" due at the end of 1983.

In the U.K., several wave power experiments were underway, one, a SEA Clam in Loch Ness, where some claim a sea monster lives. The SEA Clam, however, was found to be more reliable, and it was low in cost. But a plan to use tidal power from South Korea's Karolim Bay was postponed. It was found not commercially viable until after 1990.

Most hydropower schemes use the force of the water; in Scotland they were using the warmth of the Gulf Stream to heat a 1,200-year-old religious shrine and to provide hot water for the small island community.

#### Biogas

Biogas plants became more feasible on a commercial level. In the Brazilian city of Pirai do Sul, a trash and sewage biogas digester was to provide gas to 10,000 inhabitants at less than two-thirds the cost of present gas prices.

In India, where 40 percent of energy needs are met by farm waste and animal dung, its biggest wheat-producing area, Bulandshahr, installed a record number of biogas plants. They led to entirely new occupations, like tractor tire repair which uses gas-fired vulcanizers. They even became a status symbol: fathers with marriageable daughters preferred homes with biogas to ease their girls' lives. But in another part of India, Gujarat, work on a community gas plant was halted because "untouchable" peasants would "pollute" the service.

And in China, long regarded as the most successful biogas program in the world, it was revealed that 45 percent of its seven million digesters were unable to generate biogas. Many units were abandoned by peasants who complained about high labor needs, high cost and poor performance.

## **Nuclear wastes**

The problems of safely disposing of nuclear wastes continued to dominate discussion of nuclear power.

In July, the International Organization for Standardization, based in Geneva, issued the first-ever standards for testing radioactive wastes. They contained detailed procedures to simulate a wide variety of conditions, such as storage over thousands of years. The purpose was to set a uniform, high safety level for the final disposal of highly radioactive wastes.

Britain, which is responsible for dumping 90 percent of all man-made radioactivity in the sea, was found in a government investigation to be inadequately monitoring its ocean disposal processes. After another government committee warned that Britain's nuclear waste disposal problems would soon be seriously out of hand, the Thatcher government set up a special body to handle disposal of low and intermediate-level wastes. This was considered essential as the U.K. has an ambitious plan to build one new nuclear power plant every two years.

The United States, which has had a moratorium on dumping radioactive wastes at sea, began considering dumping military wastes. The nuclear industry was watching this proposal with interest, for it faces political difficulties in on-shore disposal. A coalition of environmental groups urged that the moratorium be continued indefinitely as drums previously dumped at sea had imploded and leaked.

Earlier in the year, the Nuclear Energy Agency (part of the OECD), developed a plan for research and environmental surveillance of the North-East Atlantic nuclear dumping site off Britain's Cornish peninsula. The environmental group Greenpeace said the action was years too late as the London Dumping Convention required surveillance and monitoring all along.

As a result of public pressure, the Dutch government announced in September that it planned to stop dumping nuclear wastes at sea immediately, even though the Ministry of Public Health and Environment was convinced it was safe.

Conflicts were likely to continue: Two international energy agencies predicted the industrial nations would face a serious energy supply situation within 20 years unless more reactors were built.

## Forests & parks

The loss of forests worldwide grew more serious, not only the loss of tropical forests with their biological riches but

the loss of northern forests to "acid rain."

The rate of deforestation in the tropics continued high. A new UN survey said it was 73,000 square kilometers a year for the outright elimination of forests. It said that nine countries could be virtually treeless in 30 years: Costa Rica, El Salvador, Haiti and Paraguay, the Ivory Coast, Gambia and Nigeria, Nepal and Sri Lanka.

At the same time, fuelwood demand was estimated by the UN to be growing at a rate of at least 2.2 percent a year. This means that by 1994 there would be fuelwood shortages of about 650 million cubic meters, or about 25 percent of projected needs.

To halt the loss, often caused by slash and burn farmers, India, China and Thailand called in the army to plant trees and protect forests.

In Bali, Indonesia, at the World Parks Conference, two major environmental groups, IUCN and World Wildlife Fund launched a campaign to halt the destruction of tropical rainforests.

To save the forest habitat, new national parks were set up from West Africa to Indonesia, Taiwan to Costa Rica and many other places in between. Burma, which had been isolated for so many years, was working with the Food and Agriculture Organization to investigate the status its natural areas and wildlife so as to create its first national parks.

Wise management in and around parks was saving wildlife. For example, strictly managed tourism was saving the gorillas in Rwanda. In Kenya, now that industrial and other pollution is better controlled around Lake Nakuru, the flamingos have returned. And in Zimbabwe, the government's program to share the wealth from wildlife has changed the attitudes of rural people who beforehand had considered animals pests.

But in South Africa, a threat to mine coking coal in Kruger national park was lifted not because of the 100,000-signature campaign against mining there but because the price for coke had fallen.

Energy needs and use and the fate of forests became increasingly intertwined.

In the northern hemisphere, acid rain and its effect on forests and aquatic life grew more serious. Millions of trees in East and West Europe were dying, and buildings were becoming acid-pocked.

In West Germany, foresters and nature conservation organizations reported that forest damage was widespread and would worsen. Said one: "The green lung of the country will soon become the black lung."

The cause of its formation was contested, but many agreed it was sulphur dioxide and nitrogen oxide emissions from industrial activity and motor vehicles.

Europe-wide, the OECD found, sulphur precipitation in 1978 was 46.62 kilograms (103 pounds) per capita a year and growing. The worst offender was said to be East Germany, followed by Czechoslovakia.

West Germany's state of North Rhine-Westphalia, site of the Ruhr industrial area, and a major utility agreed to a comprehensive program to reduce sulphur dioxide emissions. But, with so much SO<sub>x</sub> coming from outside, international efforts were needed.

In June, the 1982 Stockholm Conference on Acidification of the Environment opened, but no concrete, binding agreement to limit sulphur discharges came from it. However, it was thought the 1979 long-range air pollution treaty might be ratified by year-end.

## Agriculture

More than one-third of the world's arable cropland could be lost, destroyed or damaged by the year 2000, according to the OECD.

There were two basic reasons for cropland loss: either it was being paved or built over, or it was being mismanaged.

In Czechoslovakia, for example, despite land-protection laws, 173,000 hectares were lost within the past five years to housing, industry and farm building. In Egypt, remote sensing found that 70 percent of Cairo's expansion in the past two years has come at the expense of agricultural land, which is in extremely short supply there. And in England, a new Wildlife and Countryside Act was called a failure as sites to be saved were lost as a result of loopholes in the law.

Mountains, seemingly so invulnerable, were being eroded and destroyed, leading to floods in the plains below because of deforestation and bad farming practices on their hillsides. This was true in Nepal and India, in Tanzania, Ethiopia and Morocco, in Thailand and the Philippines, among others. And it was leading in some areas to the spread of desertification.

The situation was considered extremely serious as population projections between now and the year 2000 estimate there will be nearly 2 billion more mouths to feed.

Land-use strategies were urgently needed,

but generally this was considered a low priority by most governments.

However, in Africa's Sahel, oil-rich Arab states drew up a master plan to channel millions of dollars into schemes to control drought and to develop an entirely new approach to agriculture and livestock rearing in the entire area south of the Sahara.

Another way of coping with the problem was by creating centers to save seed germplasm and to increase the productivity of various foodcrops.

The Israelis set up the world's first wild grain germplasm bank. Vegetable and rice research institutes in Asia expanded their efforts to several countries. The UN Food and Agriculture Organization decided to prepare an international convention to protect crop germplasm. Today, three-quarters of the world's stored seed is in the developed countries, although most of it was collected in the Third World. The convention would require the free exchange of germplasm to the countries in which it originated, and it would establish a chain of seed banks administered by FAO. However, since North American and European companies control much of the seed trade, this convention had an uncertain future.

Another north-south agriculture problem was that of pesticides.

For example, endrin, a pesticide widely advertised in Burma, was being used to catch fish. In the U.S., if endrin is found in the water, the area is posted "no fishing" for six months to a year because it is so toxic. In Burma, the misuse of this pesticide has harmed bird and other life where it is used.

A case study made in Malaysia found that many farm workers knew of the dangers of pesticides but few took precautions. The chemicals were also used soon before harvest so that pesticide elements in the blood serum of Malaysian people were 14 times higher than in the American public. The study also found that 14 pesticides restricted or banned elsewhere are widely used in Malaysia.

The University of Venezuela found that foods commonly sold are highly contaminated with DDT and other pesticides.

To improve this situation, a coalition of non-governmental pressure groups from 16 nations met in Penang, Malaysia, to form the Pesticide Action Network (PAN). Its purpose was not to abolish the use of chemical pesticides but to ask for increased information and notification and to develop alternative methods of pest control.



In the U.S., an Agricultural Chemicals Dialogue group was formed comprised of concerned U.S. industry, church organizations and environmental groups. Their purpose was to develop new guidelines for the safe use of pesticides in developing countries.

## Oceans & waterways

"Save our seas" continued to be an important international priority.

This year, 10 years after its inception, the most comprehensive international treaty to fight marine pollution was finally ratified. MARPOL 73/78 deals with pollution from oil, noxious liquids, harmful substances contained in packages, sewage and garbage. It will come into effect next October.

The UN published a report on "The Health of the Oceans" and found that generally they are in fine shape but that coastal waters are ill. They recommended new techniques for waste disposal offshore.

The UN Environment Program's regional seas program continued on its successful way. The Mediterranean Sea Action Plan headquarters opened in Athens; East African states agreed on a draft action plan for the eastern Indian Ocean; South Pacific nations launched a regional environment program; the East Asian Seas Action Plan got financial help, and the Caribbean Action Plan got underway in Jamaica.

International cooperation on other seas also continued this year. Oslo and Paris Convention officials announced they were making progress with environmental problems in the North Sea and Northeast Atlantic. All the countries around the Baltic cooperated on the first real assessment of the effects of pollution on their mutual sea. And Denmark and West Germany signed an agreement for joint effort on oil spills in the North Sea and western Baltic.

The International Maritime Organization announced that the volume of oil in the sea from ships was less than a decade ago. Still, the Danish Naval Command reported increased shipping-caused oil pollution in the North Sea. The British reported that oil spills off their coasts increased 5 percent in 1981, and the South Koreans said marine pollution increased 16.3 percent--more than 87 percent of the cases were caused by oil.

To combat this, the Greek shipping industry, with the world's largest merchant ma-

rine fleet, announced in June an environmental initiative aimed at controlling ocean pollution. They planned to computerize and monitor oil spills and, if necessary, penalize Greek shippers who violate the law.

South Africa, around which much of the world's oil tanker traffic plies, announced it was slapping a 900 percent increase on the fine imposed on polluting oil tankers and their captains: \$20,000 or five years in jail. The Indian Parliament passed an amendment that allows the government to levy a pollution tax on ships using Indian ports. The Port of Singapore Authority said that all ships carrying more than 2,000 tons of oil calling there without insurance or financial security to cover pollution liability will be fined up to \$93,458.

Inland seas and lakes got cleanups as well. Israel's Knesset acted to clean up its Sea of Galilee, which provides 40 percent of the nation's drinking water. In Venezuela, a semi-governmental institute was set up to clean and conserve the country's biggest lake, Maracaibo. And the Asian Development Bank was helping South Korea with an environmental master plan to save that nation's most important and polluted river basin.

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# World Environment Report

## News and Information on International Resource Management

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### Editor's Note...

*This special year-end issue marks the end of one era, the beginning of another.*

*We leave behind us the first decade of international effort to identify and deal with increasingly complex problems of environmental management. During this decade, there has been an enormous growth in environmental infrastructure.*

*Natural resource management agencies now operate in 144 countries--a 500 percent increase over the last 10 years. In the Third World alone, the number stands at 105, up from 11 at the time of the 1972 UN Conference on the Human Environment. Of the industrialized countries at that conference, only 15 had environment agencies.*

*During this same period, hundreds, perhaps even thousands of non-governmental environment groups came into being all over the world. Many have gained in strength within their countries, and they have formed regional and international networks.*

*Cooperative international efforts have grown between nations and development assistance agencies. The need for coordination and cooperation on all levels has been recognized along with the magnitude of the problems, which transcend borders.*

*But building an infrastructure is only the beginning. During this next decade, the real problem is finding the political will and the financial way to provide a productive and habitable world for a billion new citizens and their families.*

### SPECIAL YEAR-END REVIEW

## "Governments have the UN agency they deserve"

This was the year in which an economically battered and internally bruised United Nations Environment Program tried to recreate the enthusiasm and interest of the first UN Conference on the Human Environment in 1972.

But, as Indonesia's environment minister Emil Salim said upon his return to Jakarta, the month-long reunion in Nairobi was a disappointment. Most countries, bogged down in economic problems, sent lower-level officials. The conference was, Salim said, long on speeches but short on action, and "the spirit of Stockholm was lacking."

Nevertheless, some 90 countries were represented along with many international organizations for a total of well over 1,000 delegates. They produced a Nairobi Declaration, renewing the commitment first made at Stockholm in 1972 (but never quite fulfilled). And they gave UNEP a new set of guidelines, priorities and objectives designed to concentrate its activities in the next decade. There were so many though that one UNEP official lamented: "How can they all be priorities?"

Environmental monitoring of a different sort was undertaken by non-governmental environmental activists who came from 55 countries and represented scores of groups.

Their symposium was organized by the Environment Liaison Center, an international networking office in Nairobi. They hammered out a statement, which was presented to UNEP's special session. In it they took the nations of the world to task:

"Governments everywhere have failed to carry forward the spirit of Stockholm. Unratified conventions, unenforced laws, underfunded agencies, inadequate national institutions and declining support for international efforts have traced a record of neglect and irresponsibility."

The NGOs went on to say: "The governments of the world have obtained the UN agency they deserve. They have contributed only \$30 million to the Environment Fund, less than is spent in half-an-hour on armaments. They have not promoted the priorities of UNEP consistently in the other UN agencies. They have authorized a secretariat of under 200, less than the staff of several individual NGOs. They

have indicated a multitude of tasks and priorities, yet have provided no means of execution and enactment."

The NGOs then recommended, as did several UNEP founders interviewed by WER, that governments provide clear political and scientific priorities. They urged that UNEP not be just an isolated environmental agency of the UN but that a true UN-wide environment program be carried out.

## International efforts

UNEP is just one of many international organizations working toward a better-managed world environment. They range from the 24 free-market nations' group, the Organization for Economic Cooperation and Development (OECD) to the Association of Southeast Asian Nations (ASEAN). It includes the 10 multilateral aid organizations that signed, two years ago, a Declaration of Environmental Policies and Practices. It includes also such wide-ranging environmental groups as the International Union for the Conservation of Nature and Natural Resources (IUCN) and the World Wildlife Fund (WWF)--and many, many others.

### The OECD on Interdependence

The OECD, which might best be described as cautious in its assessments, nevertheless this year published one of the strongest--and briefest--definitions of the environmental situation at this time. In its 86-page report, "Economic and Ecological Interdependence," it says that the security of every nation depends on a definition that includes environmental risks.

It notes that these environmental security risks "are virtually unknown to traditional diplomacy..., are beyond the reach of national governments..., cannot be fitted into received theories of competitive interstate behavior..., are coming increasingly to dominate world affairs..., cannot be wished away, and...are indifferent to military force."

The OECD defined three broad categories of environmental risk: environmental pollution, resource issues and management issues. Within these categories, the organization singled out such problems as carbon dioxide and climate change, acid precipitation, chemicals and the international movement of hazardous wastes. It was concerned with maintaining biological diversity, the

loss of cropland and soil degradation. And it urged more attention to the environmental aspects of bilateral development cooperation, multinational investment and environmental impact assessment.

Jim McNeill, who heads the OECD's Environment Directorate, cautioned: "One characteristic that marks (some of these) issues...is uncertainty" as to their nature, their causes and their consequences. "The question of how governments, industry and the public deal with uncertainty is an issue that itself needs further exploration.... When uncertainty clouds understanding of possible changes in natural phenomena, it takes on a special significance, especially if those changes could have serious economic and social consequences."

Political consensus, in the absence of scientific consensus, is hard to achieve at the international level. But, as one expert noted, "If governments wait for scientific near-certainty, it will often be too late for them to act at all."

### The World Charter

Political near-consensus was reached toward the end of the year when almost all nations of the world voted to adopt a World Charter for Nature at the UN. The vote was 111 to 1 (U.S. against) with 18 abstentions.

The Charter is well-intentioned though many admit its imperative language will make it hard to comply with.

Its preamble states: "Man must acquire the knowledge to maintain and enhance his ability to use natural resources in a manner which ensures sustainable utilization of species and ecosystems for the benefit of present and future generations."

It then goes on to declare 24 basic principles which all "shall" adhere to. Some are not so easily accomplished. For example: "Nature shall be secured against degradation caused by warfare or other hostile activities;" or "Funds, programmes and administrative structures necessary to achieve conservation objectives shall be provided;" and "...each person (on earth) shall strive to ensure that the objectives and requirements of this Charter are met."

The probability is that very few people on earth will know that this Charter exists. However, governments and international organizations do, and in many ways they have been trying to promote its basic principles of resource conservation and use.

For example, the OECD's Development Assistance Committee (of bilateral aid

agencies) met this year and called on all member governments to ensure that their development loans support projects that safeguard the environment.

IUCN along with the World Wildlife Fund and UNEP formed a Conservation for Development Center as a follow-up to their World Conservation Strategy. It will help nations promote and develop their own national conservation strategies.

The 10-nation South Asia Cooperative Environment Program was formally launched in Sri Lanka, and in Southeast Asia and the South Pacific regional environmental programs got underway. The Caribbean nations formally began their joint environment and development program under the auspices of UNEP. And regional efforts continued in the Middle East, Africa and Latin America.

On a one-to-one basis, environmental agreements were reached between Switzerland and Austria, Switzerland and France, Bulgaria and Bavaria in West Germany, and between East and West Germany.

It became even more apparent during the past year that environmental cooperation can make a start in overcoming political differences.

## National actions

This past year proved that many developing nations feel there is an urgent need to cope with environmental issues--belief waning among some Western nations.

As the World Environment Center found in its 1982 survey, 105 developing countries now have environment and natural resources management agencies. Ten years ago, only 11 did. With this growth in governmental awareness have come national environmental policies and legislation.

President Suharto signed Indonesia's first basic environmental law based on the precept that industrial development and preservation of the environment are mutually enhancing. Hampering its effective implementation and the evolution of more specific regulations, however, was the lack of environmental lawyers--only four in a country of 147 million people.

Saudi Arabia's new environmental pollution standards are based on those of the world's industrial nations. Yet, as the vice president of Saudi Arabia's environmental protection agency told WER, they are correlating their environmental laws with the precepts of the Sharia, the sacred law

of the Koran. He believes that, eventually, this incorporation of traditional law into environmental law could act as a guideline for other countries, for it takes into account the values of 600 million Moslems.

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One of Africa's fastest growing nations, Nigeria, also was considering a bill to establish a Federal Environmental Protection Agency. Its general provisions would apply not only to the general public but would govern oil operations as well.

Mexico, another oil producer, proclaimed a new federal environmental law in January. It requires environmental impact reports for large industrial developments, can limit industrial growth in deteriorated areas and stipulates penalties for violators. It also provides tax incentives and credits for those who purchase pollution control equipment.

India, the second most populous country on earth, has a prime minister, Indira Gandhi, who is deeply committed to the idea of environmental protection. Yet, because of the country's size, its problems of poverty and illiteracy in the countryside, many of its environmental programs--such as social forestry, soil conservation and rural energy supply through biogas--have failed as much as they have succeeded. This led the first national conference of India's legislators to recommend that the Department of Environment be upgraded to Ministry status.

Among the most fascinating environmental stories of the year is that of China, the most populated country on earth. Although

it has had environmental protection agencies for nine years, only this year have reports come out that "China's environment, natural and man-made, is in poor shape now and deteriorating rapidly."

These reports, compiled for The World Bank, were based almost exclusively on Chinese domestic publications and broadcasts. China, it was revealed, is in the grip of environmental pressures caused by large-scale deforestation, loss of cropland, reclamation of lakes, erosion and desertification. In some cases this was the result of misguided state policies; in others as a result of resource exploitation and desperate actions by poor peasants.

This current awareness of environmental degradation is in sharp contrast with earlier attitudes and shows a major change in policy. Over the past five years environmental organizations and journals have been founded, meetings held both in China and with international organizations, and new plans and stringent laws created. Even so, China is constrained, as are Indonesia and many other Third World countries, for it has only 600 people educated in ecology in a nation of one billion.

#### In The First World

An interesting phenomenon gathered momentum in Europe: the growth of the "green" political movement. In West Germany, they got enough of a vote to be a factor in the change in government. In France, the new Socialist government began a dialogue with them after they got 5 percent of the vote in a nationwide survey.

The Mitterrand government through its Environment Minister Michel Crepeau started decentralizing environmental responsibility. The Ministry encouraged 4,000 associations to experiment officially with various environmental programs. It set up Regional Environment Assemblies in more than 20 towns and cities. Each drew up a "white book" of environmental problems in the region, which were compiled into a national white book. Crepeau planned to draw up a Charter for the Environment based on their findings.

On the other side of the Channel, England's undersecretary of environment, John Rowcliffe, told WER that "environmental protection is not high on the political agenda in the U.K." He acknowledged that in order to meet European Community environmental directives, "We will have to have tighter controls and put pressure on local authorities." Nevertheless, he was relatively sanguine about the state of the en-

vironment in his country, for, he said, many of its major pollution problems have been brought successfully under control: "This has been achieved despite the unfavorable economic climate which has affected us since the first major rise in oil prices." Even so, many English environmental research schemes had cuts in funding this past year.

The U.S. policy-making Council on Environmental Quality said in its annual report: "...The United States has established a record of leadership in the protection of the environment and should continue to exert this leadership. The government should endeavor to work cooperatively with all nations, developed and developing, and with all responsible and relevant elements of the societies involved to attain this end."

However, the U.S. decided not to sign the Law of the Sea treaty; it was the only nation to vote against the World Charter for Nature; it temporarily held up the OECD's environmental brief, "Economic and Ecological Interdependence," reportedly because of the acid rain section; and it is still reviewing its Hazardous Substances Export Policy--nearly 24 months after President Reagan revoked his predecessor's executive order that had strengthened it.

## Renewable energy

The cost of energy continued to be a major factor in most countries' balance of payments. As the economics of supplying traditional sources of energy to remote areas became prohibitive, alternative and renewable sources became more feasible.

A big solar-energy pilot project was jointly backed by the World Health Organization, the U.S. Center for Disease Control and the U.S. National Aeronautics and Space Administration (NASA). It provided solar systems to be field-tested for two years in several Third World nations. One of its major purposes was to fuel refrigerators to store vaccine in rural areas for WHO's worldwide immunization program. Other photovoltaic systems would power water pumps, lights and other necessities for the rural poor in developing countries.

Other interesting solar experiments included Saudi Arabia's prototype solar pond in the salt flats of the eastern desert, which were found to be relatively cheap: about \$10 a square meter. Researchers

estimated that solar ponds could supply as much as 5 percent of the country's energy needs by the year 2000.

West Germany was active in solar projects, helping Greece build a 435-family solar village near Athens and helping Portugal with a solar energy center to produce industrial steam for a state-owned dairy. Israel also was using solar energy for industrial steam, for a food-processing plant on a kibbutz.

Windpower, considered an alternative form of solar power, continued to be tested. For example, Sri Lanka's Water Resources Board began a pilot project testing 50 inexpensive windmills for irrigation in its dry zones. And in the Greek Cyclades islands an experimental "windmill park" was set up on the isle of Kithos, as a way to reduce dependence on imported oil.

#### Hydropower

The most widely used form of alternative energy was hydropower, Czech authorities, offering loan incentives, urged factories, cooperative farms and even individuals to build new mini-hydropower stations or restart old ones to improve the country's energy situation. At the other end of the world, Papua New Guinea was planning to build two mini-hydro projects in each of its provinces this year.

Huge hydroelectric schemes ran into local opposition in some places. In Malaysia, a plan to build a dam in the country's only national park was countered by a nationwide signature campaign. In Bangalore, India, a major hydro project has been held up since 1978, in part due to local opposition based on environmental impact. And lawyers in Thailand said they would sue the government and the state electricity authority if a dam was built just outside a national park. They say it will disrupt the park's ecology and water resources, which is counter to Thai conservation law.

Other huge hydropower plans went ahead with little environmental opposition. Venezuela announced what could only be termed a megaproject: producing 43,000 megawatts of power from 88 sites on 47 rivers. But nowhere in the government power company reports is there recognition that four dams would be within a national park and would affect internationally famous natural sites. The Tehri Dam in north-west India, third highest in the world, went ahead despite its being in a mountainous seismic zone. The fate of Tehri's 30,000 citizens was virtually ignored.

But some waterpower projects were taking

the environment into account, for example Egypt's proposed Qattara Depression scheme. The idea is to blast a channel from the Mediterranean Sea to the huge depression 100 kilometers away. Not only would the flow of water provide electricity but it could help reclaim desert land. However, consultants commented, all "depends ultimately on the conclusions of environmental impact studies" due at the end of 1983.

In the U.K., several wave power experiments were underway, one, a SEA Clam in Loch Ness, where some claim a sea monster lives. The SEA Clam, however, was found to be more reliable, and it was low in cost. But a plan to use tidal power from South Korea's Karolim Bay was postponed. It was found not commercially viable until after 1990.

Most hydropower schemes use the force of the water; in Scotland they were using the warmth of the Gulf Stream to heat a 1,200-year-old religious shrine and to provide hot water for the small island community.

#### Biogas

Biogas plants became more feasible on a commercial level. In the Brazilian city of Pirai do Sul, a trash and sewage biodigester was to provide gas to 10,000 inhabitants at less than two-thirds the cost of present gas prices.

In India, where 40 percent of energy needs are met by farm waste and animal dung, its biggest wheat-producing area, Bulandshahr, installed a record number of biogas plants. They led to entirely new occupations, like tractor tire repair which uses gas-fired vulcanizers. They even became a status symbol: fathers with marriageable daughters preferred homes with biogas to ease their girls' lives. But in another part of India, Gujarat, work on a community gas plant was halted because "untouchable" peasants would "pollute" the service.

And in China, long regarded as the most successful biogas program in the world, it was revealed that 45 percent of its seven million digesters were unable to generate biogas. Many units were abandoned by peasants who complained about high labor needs, high cost and poor performance.

## **Nuclear wastes**

The problems of safely disposing of nuclear wastes continued to dominate discussion of nuclear power.

In July, the International Organization for Standardization, based in Geneva, issued the first-ever standards for testing radioactive wastes. They contained detailed procedures to simulate a wide variety of conditions, such as storage over thousands of years. The purpose was to set a uniform, high safety level for the final disposal of highly radioactive wastes.

Britain, which is responsible for dumping 90 percent of all man-made radioactivity in the sea, was found in a government investigation to be inadequately monitoring its ocean disposal processes. After another government committee warned that Britain's nuclear waste disposal problems would soon be seriously out of hand, the Thatcher government set up a special body to handle disposal of low and intermediate-level wastes. This was considered essential as the U.K. has an ambitious plan to build one new nuclear power plant every two years.

The United States, which has had a moratorium on dumping radioactive wastes at sea, began considering dumping military wastes. The nuclear industry was watching this proposal with interest, for it faces political difficulties in on-shore disposal. A coalition of environmental groups urged that the moratorium be continued indefinitely as drums previously dumped at sea had imploded and leaked.

Earlier in the year, the Nuclear Energy Agency (part of the OECD), developed a plan for research and environmental surveillance of the North-East Atlantic nuclear dumping site off Britain's Cornish peninsula. The environmental group Greenpeace said the action was years too late as the London Dumping Convention required surveillance and monitoring all along.

As a result of public pressure, the Dutch government announced in September that it planned to stop dumping nuclear wastes at sea immediately, even though the Ministry of Public Health and Environment was convinced it was safe.

Conflicts were likely to continue: Two international energy agencies predicted the industrial nations would face a serious energy supply situation within 20 years unless more reactors were built.

## Forests & parks

The loss of forests worldwide grew more serious, not only the loss of tropical forests with their biological riches but

the loss of northern forests to "acid rain."

The rate of deforestation in the tropics continued high. A new UN survey said it was 73,000 square kilometers a year for the outright elimination of forests. It said that nine countries could be virtually treeless in 30 years: Costa Rica, El Salvador, Haiti and Paraguay, the Ivory Coast, Gambia and Nigeria, Nepal and Sri Lanka.

At the same time, fuelwood demand was estimated by the UN to be growing at a rate of at least 2.2 percent a year. This means that by 1994 there would be fuelwood shortages of about 650 million cubic meters, or about 25 percent of projected needs.

To halt the loss, often caused by slash and burn farmers, India, China and Thailand called in the army to plant trees and protect forests.

In Bali, Indonesia, at the World Parks Conference, two major environmental groups, IUCN and World Wildlife Fund launched a campaign to halt the destruction of tropical rainforests.

To save the forest habitat, new national parks were set up from West Africa to Indonesia, Taiwan to Costa Rica and many other places in between. Burma, which had been isolated for so many years, was working with the Food and Agriculture Organization to investigate the status its natural areas and wildlife so as to create its first national parks.

Wise management in and around parks was saving wildlife. For example, strictly managed tourism was saving the gorillas in Rwanda. In Kenya, now that industrial and other pollution is better controlled around Lake Nakuru, the flamingos have returned. And in Zimbabwe, the government's program to share the wealth from wildlife has changed the attitudes of rural people who beforehand had considered animals pests.

But in South Africa, a threat to mine coking coal in Kruger national park was lifted not because of the 100,000-signature campaign against mining there but because the price for coke had fallen.

Energy needs and use and the fate of forests became increasingly intertwined.

In the northern hemisphere, acid rain and its effect on forests and aquatic life grew more serious. Millions of trees in East and West Europe were dying, and buildings were becoming acid-pocked.

In West Germany, foresters and nature conservation organizations reported that forest damage was widespread and would worsen. Said one: "The green lung of the country will soon become the black lung."

The cause of its formation was contested, but many agreed it was sulphur dioxide and nitrogen oxide emissions from industrial activity and motor vehicles.

Europe-wide, the OECD found, sulphur precipitation in 1978 was 46.62 kilograms (103 pounds) per capita a year and growing. The worst offender was said to be East Germany, followed by Czechoslovakia.

West Germany's state of North Rhine-Westphalia, site of the Ruhr industrial area, and a major utility agreed to a comprehensive program to reduce sulphur dioxide emissions. But, with so much SO<sub>x</sub> coming from outside, international efforts were needed.

In June, the 1982 Stockholm Conference on Acidification of the Environment opened, but no concrete, binding agreement to limit sulphur discharges came from it. However, it was thought the 1979 long-range air pollution treaty might be ratified by year-end.

## Agriculture

More than one-third of the world's arable cropland could be lost, destroyed or damaged by the year 2000, according to the OECD.

There were two basic reasons for cropland loss: either it was being paved or built over, or it was being mismanaged.

In Czechoslovakia, for example, despite land-protection laws, 173,000 hectares were lost within the past five years to housing, industry and farm building. In Egypt, remote sensing found that 70 percent of Cairo's expansion in the past two years has come at the expense of agricultural land, which is in extremely short supply there. And in England, a new Wildlife and Countryside Act was called a failure as sites to be saved were lost as a result of loopholes in the law.

Mountains, seemingly so invulnerable, were being eroded and destroyed, leading to floods in the plains below because of deforestation and bad farming practices on their hillsides. This was true in Nepal and India, in Tanzania, Ethiopia and Morocco, in Thailand and the Philippines, among others. And it was leading in some areas to the spread of desertification.

The situation was considered extremely serious as population projections between now and the year 2000 estimate there will be nearly 2 billion more mouths to feed.

Land-use strategies were urgently needed,

but generally this was considered a low priority by most governments.

However, in Africa's Sahel, oil-rich Arab states drew up a master plan to channel millions of dollars into schemes to control drought and to develop an entirely new approach to agriculture and livestock rearing in the entire area south of the Sahara.

Another way of coping with the problem was by creating centers to save seed germplasm and to increase the productivity of various foodcrops.

The Israelis set up the world's first wild grain germplasm bank. Vegetable and rice research institutes in Asia expanded their efforts to several countries. The UN Food and Agriculture Organization decided to prepare an international convention to protect crop germplasm. Today, three-quarters of the world's stored seed is in the developed countries, although most of it was collected in the Third World. The convention would require the free exchange of germplasm to the countries in which it originated, and it would establish a chain of seed banks administered by FAO. However, since North American and European companies control much of the seed trade, this convention had an uncertain future.

Another north-south agriculture problem was that of pesticides.

For example, endrin, a pesticide widely advertised in Burma, was being used to catch fish. In the U.S., if endrin is found in the water, the area is posted "no fishing" for six months to a year because it is so toxic. In Burma, the misuse of this pesticide has harmed bird and other life where it is used.

A case study made in Malaysia found that many farm workers knew of the dangers of pesticides but few took precautions. The chemicals were also used soon before harvest so that pesticide elements in the blood serum of Malaysian people were 14 times higher than in the American public. The study also found that 14 pesticides restricted or banned elsewhere are widely used in Malaysia.

The University of Venezuela found that foods commonly sold are highly contaminated with DDT and other pesticides.

To improve this situation, a coalition of non-governmental pressure groups from 16 nations met in Penang, Malaysia, to form the Pesticide Action Network (PAN). Its purpose was not to abolish the use of chemical pesticides but to ask for increased information and notification and to develop alternative methods of pest control.



In the U.S., an Agricultural Chemicals Dialogue group was formed comprised of concerned U.S. industry, church organizations and environmental groups. Their purpose was to develop new guidelines for the safe use of pesticides in developing countries.

## Oceans & waterways

"Save our seas" continued to be an important international priority.

This year, 10 years after its inception, the most comprehensive international treaty to fight marine pollution was finally ratified. MARPOL 73/78 deals with pollution from oil, noxious liquids, harmful substances contained in packages, sewage and garbage. It will come into effect next October.

The UN published a report on "The Health of the Oceans" and found that generally they are in fine shape but that coastal waters are ill. They recommended new techniques for waste disposal offshore.

The UN Environment Program's regional seas program continued on its successful way. The Mediterranean Sea Action Plan headquarters opened in Athens; East African states agreed on a draft action plan for the eastern Indian Ocean; South Pacific nations launched a regional environment program; the East Asian Seas Action Plan got financial help, and the Caribbean Action Plan got underway in Jamaica.

International cooperation on other seas also continued this year. Oslo and Paris Convention officials announced they were making progress with environmental problems in the North Sea and Northeast Atlantic. All the countries around the Baltic cooperated on the first real assessment of the effects of pollution on their mutual sea. And Denmark and West Germany signed an agreement for joint effort on oil spills in the North Sea and western Baltic.

The International Maritime Organization announced that the volume of oil in the sea from ships was less than a decade ago. Still, the Danish Naval Command reported increased shipping-caused oil pollution in the North Sea. The British reported that oil spills off their coasts increased 5 percent in 1981, and the South Koreans said marine pollution increased 16.3 percent--more than 87 percent of the cases were caused by oil.

To combat this, the Greek shipping industry, with the world's largest merchant ma-

rine fleet, announced in June an environmental initiative aimed at controlling ocean pollution. They planned to computerize and monitor oil spills and, if necessary, penalize Greek shippers who violate the law.

South Africa, around which much of the world's oil tanker traffic plies, announced it was slapping a 900 percent increase on the fine imposed on polluting oil tankers and their captains: \$20,000 or five years in jail. The Indian Parliament passed an amendment that allows the government to levy a pollution tax on ships using Indian ports. The Port of Singapore Authority said that all ships carrying more than 2,000 tons of oil calling there without insurance or financial security to cover pollution liability will be fined up to \$93,458.

Inland seas and lakes got cleanups as well. Israel's Knesset acted to clean up its Sea of Galilee, which provides 40 percent of the nation's drinking water. In Venezuela, a semi-governmental institute was set up to clean and conserve the country's biggest lake, Maracaibo. And the Asian Development Bank was helping South Korea with an environmental master plan to save that nation's most important and polluted river basin.

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# World Environment Report

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## U.S. may dump nuclear wastes at sea again

NEW YORK--After a hiatus of nearly two decades, the United States is considering dumping low-level nuclear wastes at sea.

The U.S. Navy wants to decommission its old nuclear submarine reactors by scuttling the vessels in deep water. And the Department of Energy wants to dump contaminated soil from cleanups around atomic weapons facilities. The nuclear industry is reportedly watching these government plans with interest, for it faces political difficulties in dumping low-level commercial wastes onshore.

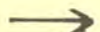
Opponents in a coalition of environmental groups, whose efforts are being coordinated by the Center for Law and Social Policy in Washington, are urging an indefinite moratorium on dumping nuclear wastes at sea. The group's legal counsel, Clifton Curtis, told WER they want a moratorium until there is a comprehensive plan for monitoring past and proposed dumping for its effects on the marine environment and human health. To this end the coalition expects to testify before the U.S. Congress, government agencies, and two international groups, the London Dumping Convention and the Nuclear Energy Agency.

The focus of what is expected to be an intensive debate is the U.S. Environmental Protection Agency, now responsible for ocean dumping; it should publish new regulations within the next couple of months.

These revisions to existing laws were prompted in part by the desire to bring U.S. policy into line with international law, the London Dumping Convention, which sets standards for disposal of a variety of wastes, including radioactive wastes.

European nations, in particular Great Britain, already dump thousands of barrels annually into the Atlantic. Japan, which temporarily halted its nuclear dumping plans after protests by Pacific Islanders, now expects to start jettisoning its low-level wastes at sea next year.

In the 25 years during which the U.S. dumped radioactive wastes at sea (the last permit was issued in 1960, although some wastes were dumped up till 1970), less than 100,000 curies of radioactivity was disposed of, according to EPA estimates. In contrast, Science magazine said, Europe is dumping about



100,000 curies each year off Land's End, England; Britain's Windscale reprocessing plant emits more than 100,000 curies a year into the sea; and Japan plans to dump similar quantities.

Science reported that some 90,000 drums of U.S. radioactive waste were buried at sea between 1946 and 1970. Most were disposed of off San Francisco and New Jersey. Packaged in concrete-lined, 55-gallon (208-liter) drums, the wastes generally came from weapons laboratories operated by the Atomic Energy Commission. However, since the AEC was not required to keep detailed records, there is minimal knowledge of what happened to the radionuclides in the marine environment.

Surveyors from EPA and the National Oceanic and Atmospheric Administration in recent years had difficulties finding the drums. At the Pacific site off San Francisco, only 200 of approximately 47,000 drums were found. Of them, about a quarter had imploded and several had leaked. Sediment samples showed higher levels than expected of long-lived isotopes. However, not enough research has been done to show whether and how they may have entered the marine food chain.

Only now is the international Nuclear Energy Agency beginning a coordinated study of the amount of radionuclides entering the marine environment and the food chain (WER, Feb. 15, p.1).

One EPA official told Science, "We now know more about what the oceans can assimilate." But the Rand Corporation, a U.S. think-tank, commented, "The most significant transport pathways for radionuclides are not fully known."

Nevertheless, as land dumping gets more costly politically and economically, it is likely the U.S. will "harmonize" its practices with those of its allies--especially since only a minority of people consider the ocean their backyard. SPECIAL TO WER

## Australian uranium foes plan campaign

PERTH--Anti-nuclear activists are planning vigorous campaigns at federal, state and trade union levels in Australia to prevent the establishment of a uranium enrichment industry. At the same time numerous overseas firms have increased their efforts to

win contracts for the country's first plant.

Consortiums are looking at putting a plant in Queensland, South Australia, Western Australia or the Northern Territory. The contract to supply Australia with an enrichment plant is one of the most valuable to occur in the world's civil nuclear industry; hence, the tours of visiting teams of experts and the competition among the four states for the plant.

Estimates are that the first enrichment plant would cost \$1 billion and would involve a huge transfer of foreign technology.

Anti-nuclear activists and Friends of the Earth point to a recent uranium pond spillage in the Northern Territory as an example of the dangers inherent in mining uranium, let alone enriching it in Australia. The Friends of the Earth spokesman, John Hallam, said, "The Uranium Enrichment Group of Australia study assumes that the demand for enrichment will pick up, but this is impossible since there are virtually no new nuclear reactors scheduled to come on line when the UEGA plant will be operating after 1990. By 1990 the nuclear industry could well be shrinking rather than expanding, and a uranium enrichment plant would be a billion-dollar white elephant." ANNE BLOEMEN

## More nuclear news...

A NUCLEAR REACTOR STUDY and training center will be built by the National Institute of Nuclear Investigations (ININ) in the northwest Mexican state of Sonora. A joint announcement by ININ and Sonora Governor Samuel Ocana Garcia said a 300-hectare site has been selected. An earlier proposed site near Lake Patzcuaro in Michoacan state was rejected after a public outcry by environmentalists, naturalists and anthropologists.

The country's first nuclear-electric generating station, at Laguna Verde, Veracruz, is not yet in operation.

THE JAPANESE GOVERNMENT plans to build a new port facing the open sea in Aomori Prefecture for use by the nuclear-powered ship "Mutsu," Japan's only nuclear-powered freighter. The need for a new port for the "Mutsu" arose due to protests by local fishermen in Ominato, Aomori, after the ship suffered a radiation leak during a trial run from its berth there.

THE SPIDERWORT, a common wild flower, has long been known as an indicator of pollution from pesticides, auto exhausts and

sulphur dioxides. Now the tiny plant can apparently serve as an ultra-sensitive monitor of ionizing radiation.

When it is exposed to as little as 150 millirems of radiation, the hair cells of the stamens mutate from blue to pink. (We all receive around 500 millirems per year from our natural surroundings.) The reason for the change in color is that radiation rapidly destroys the genetic material that gives rise to the usually dominant blue pigmentation. Dr. Sadeo Ichikawa of the Brookhaven National Laboratory on Long Island, New York, says the number of pink cells serves as a measure of the amount of radiation injury.

The spiderwort's stamens turn pink within a mere 10-18 days of exposure, whereas humans can take as much as 15-40 years before the effects become noticeable--sometimes in the form of cancers.

## Ankara smog scare may happen again

ANKARA--Earlier this year air pollution in this Turkish capital reached disastrous proportions. Several people were taken to hospitals, schools were closed for four days, residents were asked to turn off their central heating, and the use of solid fuel stoves was banned. Car use was limited, and all factories using polluting fuels were closed down temporarily.

These restrictions remained in force for one week. However, even at the best of times, Ankara's air is considered by many as the most dangerous in the world.

Although the pollution crisis provoked a lot of official and unofficial comment and new official promises to take more effective measures, hardly any real action followed. The situation has been deteriorating every winter for the last decade. A NATO Agency has been studying the problem for some time but seems to have made little progress.

The most obvious answer is to replace the coal, which is a primary energy source, with "smokeless fuel" for domestic heating and coke for industry.

The first smokeless fuel project, introduced in the early 1970's, was to produce a total of 130,000 tons of lignite coke--although today the city would need 10 times this amount to convert completely to smoke-

less fuel. A plant was constructed in Seyitomer, with German technology and with loans from the World Bank. But it was discovered only recently that the process of converting lignite into smokeless coke, as introduced by the German firm, was not efficient and that the area where the plant was established was too far from Ankara. As a result, the plant has not gone into service and may be dismantled next spring.

Another factor in delaying any effective measures has been the inability of successive governments and various state agencies to decide on the best way to solve Ankara's pollution problem. Over the years various ideas have been put forth, from a natural gas pipeline to electricity. A "clean air bill" was on Parliament's agenda for almost 10 years without being enacted. The bidding for importing equipment to measure the pollution levels has twice been cancelled. Even such simple measures as the use of filters could not be put into effect.

Experts therefore expected this year's pollution crisis, and they now believe the worst may come again, unless effective short- and long-term measures are taken.

The Under-Secretary for Environmental Problems (attached to the office of the Prime Minister) Refet Erim said the way to solve the problem is "to introduce a new strategy," stopping the use of coal and fuel oil and replacing them gradually with natural gas and electricity, as well as nuclear energy in the future. He said that short-term measures would include the creation of "green areas," the introduction of "cleaner" fuels and the introduction of new designs (smaller windows, thicker walls) in housing. Erim also added that the air pollution problem was deteriorating in such cities as Kayseri, Erzurum, Izmit, Corum, Yozgat, Eckisehir and Elazig--not to mention Istanbul.

SAM COHEN

## More on air...

THE UN WORLD METEOROLOGICAL Organization warned that pollution is continuing to reduce the ozone layer that protects life on earth from ultraviolet radiation.

According to the WMO report, there has been no improvement on the situation since 1978--the date of its last report. WMO placed the blame on pollution from aerosol sprays, industrial processes, cars, trucks, aircraft and refrigeration systems.

Ozone is a form of oxygen and is concentrated at an altitude of from 20 to 25 kilometers. Since it serves to screen out

part of the sun's harmful ultraviolet rays, it is considered vital to protecting life on earth.

139 BRITISH MEMBERS OF PARLIAMENT are backing CLEAR, the Campaign for Lead Free Air, whose aim is lead-free gasoline by 1985.

Britain has been slow in implementing EEC directives on lead levels in gasoline. A fixed limit of 0.15 grams per liter is due to be introduced by 1985.

CLEAR is supported by a wide range of conservation and environmental interests, and is trying to raise £250,000 (\$467,500) for a program of parliamentary lobbying.

SULPHUR EMISSIONS from fossil fuel combustion in Europe are likely to be no higher by 2000 than they were in 1975, according to a report by CONCAWE, an international air and water study group of 28 European oil companies. The group predicted that as refineries are converted to meet the demand for lighter products, which means a considerable reduction in sulphur emissions, that coal could take over from petroleum as the predominant source of SO<sub>2</sub>.

The 31-page report, "SO<sub>2</sub> Emission Trends and Control Options in Western Europe," reviews also health and environmental effects, legislation and regulations relating to sulphur and SO<sub>2</sub> in Western Europe, and various energy scenarios. It is available from: CONCAWE, Babylon-Kantoren A, Koningin Julianaplein 30-9, 2595 AA Den Haag, Netherlands.

## German air pollution regulations examined

BONN--In March West German Interior Minister Gerhart Rudolf Baum issued a "clarifying statement" regarding extensive revisions proposed for the government's environmental protection regulations. The changes sought were previously referred to in the WER of January 1 in a report on forest damage due to sulphur dioxide emissions.

"The objective of the government's policy," said Minister Baum, "must be a more strenuous effort than has been exercised in the past to lower air pollution levels and common noise levels." He asked, rhetorically, "Where would we stand now if we had not taken severe measures years ago--despite opposition--to hold down air pollu-

tion and where will we stand 10 years from now if we are satisfied with the status today?" Answering his own question, he said: "Environment protection simply means the continuous reform of policy. There can be no standing still if we want to make safe our natural living conditions."

Since passage of the First (Federal) Emission Protection Law in March 1974, the discharge of sulphur dioxide (SO<sub>2</sub>) and organic compounds such as chromium hydrocarbons has been stabilized. SO<sub>2</sub> discharges, 90 percent from the energy sector, have been stabilized at 3.5 million tons a year. In contrast, dust and particulate emissions have been substantially reduced through the development and compulsory use of dust collecting devices; so too has the discharge of lead compounds in motor vehicle exhaust.

Control of nitrogen monoxide emissions has been less successful. They have increased to 3.1 million tons a year due to a 16.7 percent growth in the number of motor vehicles in use.

The automobile industry assured government officials in July, 1981, that it would attain a 20 percent reduction in emissions by reducing fuel consumption, as well as by improving combustion and through the use of filtering devices. Detailed discussions between the auto industry and government are scheduled to be held this summer to determine specific measures to be taken to attain government objectives. Ultimately, it is hoped that exhaust emissions can be reduced 50 percent by 1985, an objective agreed to by the European Community.

Progress has been made in restricting the use of asbestos fibers in products that are dangerous to health or the environment. Industry spokesmen have assured the Environmental Office of the Interior Ministry that they have developed an innovative program that will reduce the asbestos content in cement products by 30 to 50 percent during the next three to five years.

In the European Community an agreement had been reached to hold down the production of fluoro-chlorine hydrocarbons so as to cut the use of aerosols by 30 percent by the end of 1981, compared to the 1970 level. The German chemical industry has already attained a reduction of 40 percent, and the Interior Ministry is pushing for an even greater reduction.

The least encouraging sector is that of noise reduction, with the greatest progress attained in the aircraft industry. However, little improvement has been made in cities, thanks to the continuous growth of

motor vehicle traffic. In response to government pressure and demands of the motoring population, the auto industry is gradually lowering the noise level of its newer products, but it will take years before the new, quieter vehicles replace the older, noisier ones. Motorcycles are individually the worst offenders, and their quieting down in the short-term will be the most readily attained.

Noise in construction is often inherent to the nature of the work. Such improvements as have been attained are due mainly to progress made by manufacturers of construction machinery. But the quiet operation of the machine itself is of minor importance when its designed job is the breaking up of concrete paving or the hammering of steel rivets. J.M. BRADLEY

THE WEST GERMAN STATE of North Rhine-Westphalia has launched a one-year project to study the impact of acid rain there.

The state's Land Office for Ecology, Land Development and Forestry Planning at Recklinghausen, working with the Forestry Faculty of Gottingen University, will collect acid rain samples at seven different measuring sites. Two stations--at Einsiedelei and Haard--are already in operation; five remaining stations will soon be set up.

A state spokesman noted that there were reports of trees dying in North Rhine-Westphalia and Bavaria.

## Indonesia debating its first eco-bill

JAKARTA--The Indonesian Parliament's special committee on the environment has approved a draft of the country's first environmental bill.

The draft provides for heavy fines and/or jail sentences for industry abuses against the environment. It lays considerable emphasis on forestry and fresh-water resources. According to the UN Environment Program, Indonesia had the highest rate of deforestation in the Asia-Pacific region, losing half a million hectares a year.

Composers of the draft bill were the Minister for Development Supervision and the Environment Emil Salim and professors from Pajajaran University, the Bandung Institute of Technology, the University of Indonesia and the Bogor Institute of Agri-

culture. Mrs. Erna Witoelar, Executive Secretary of the Indonesian Environment Forum, also assisted in its preparation.

There was no immediate indication of how long it would take for the draft to be amended, ratified and approved by the President. KATE WEBB

## More governmental eco-action...

POLAND'S MARTIAL-LAW GOVERNMENT acknowledged its environmental problems when Radio Warsaw recently declared that in some areas the quality of the environment had deteriorated to such an extent that the situation was close to "total ecological ruin."

It announced that the Council for Environmental Protection had prepared a report on this deplorable situation and added its recommendations for improvement.

BUNBEI HARA, the new Director General of Japan's Environment Agency, has been environmentally involved since October 1965, when he became president of the Environmental Pollution Control Service, a post he held for five years. Now, as Japan's top environmental official, he has pledged to develop "a long-term picture of environmental administration" and to "work for the legalization of an environmental impact assessment system to head off pollution." He stated: "We intend to pursue international cooperation in various fields, such as pollution control and the protection of the natural environment."

CONSERVATIONISTS IN MALAYSIA have criticized the government for neglecting environmental issues in the country's new five-year plan. They were particularly critical of the failure to allocate sufficient funds for forest protection at a time when there is a serious problem with the disappearance of forest land for agricultural and other use. Less than 100,000 hectares, or only about 13 of 64 areas recommended by the Malaysian Nature Society for special conservation measures, were included in the development plan.

THE VENEZUELAN ENVIRONMENT MINISTRY, in taking on industries with contamination problems, has organized a series of courses in pollution detection in government-run plants. Executives and technical staff of the national petrochemical plant and, more recently, the national steel mill, were given three days instruction.

## Solution suggested for fuelwood crisis

NAIROBI--Millions of Third World citizens have as much trouble heating their supper bowl as filling it. Well over one billion cubic meters of fuelwood are required each year. Already many people find less than they need.

According to estimates presented at the UN Energy Conference in Nairobi last August, fuelwood demand is likely to grow at a rate of at least 2.2 percent per year. This will mean, according to calculations by the World Bank and the Food and Agriculture Organization (FAO), that by 1994 there will be fuelwood shortages totalling 650 million cubic meters, about 25 percent of projected needs.

Ironically, in certain sectors of the Third World huge amounts of wood are sent up in useless smoke. Roughly 30 million families, or about 200 million people, are small-scale farmers. If each family clears and burns half a hectare of forest per year (a minimum estimate), and if each half hectare contains 50 cubic meters of potentially usable fuelwood, this amounts to a loss of 750 million cubic meters each year. In fact, many tropical forests contain at least twice as much potentially usable fuelwood per hectare. In similar style, cattle ranchers in Latin America, clearing forests to establish pasturelands, account for several million hectares of forest each year, causing at least another 250 million cubic meters of wood to be consumed with a fuel benefit to no one. In short, the present waste of wood more than matches the wood deficit.

Clearly, if fuelwood seekers could make common cause with some fuelwood wasters, their problem would be lessened. The difficulty is that in most countries in question the people with too much wood live far from those with too little--and wood, being bulky and heavy, cannot readily be transported over long distances.

What prospect for resolving this ironic situation? There is an emergent technology that may be the answer. It is being promoted by agencies as diverse as FAO, the UN Development Program, the U.S. Agency for International Development and the World Bank, together with a number of private commercial enterprises. Known as "densification of wood biomass," it compresses

dried-out wood into small-volume blocks, in the form of briquettes or pellets.

A small-scale forest farmer could use simple tools and confine his attention to branches and wood debris. A rudimentary lever press, such as a village smith can manufacture in a day, exerts sufficient pressure to agglomerate the material into tolerably light and compressed form. A more sophisticated screw-type press (similar to that used in pressing grapes), can exert two tons of pressure to produce a hand-sized briquette suitable for marketing through commercial networks. And there is advanced, automated machinery that can handle the large amounts of wood felled in ranching operations. It incorporates a wood chipper or grinder to accommodate tree trunks, a suspension drier, a piston-type truss (that generates 50 times as much pressure as the simpler devices), and a packaging machine to prepare the densified-wood product for bulk marketing.

The key question is how well do these compressed materials burn? According to preliminary experiments by AID in Ghana and Indonesia, a good-quality briquette can release 4,500 kilocalories per kilogram, making it comparable to hard coal. Moreover the densified wood, containing little air, burns slowly, allowing the material to last longer and do a far better job.

NORMAN MYERS

### More on forestry...

FOREST MANAGEMENT AND REFORESTATION in the Asia-Pacific region have made little impact on the alarming rate of deforestation of 5,000 hectares per day. A recent study on deforestation by UN Environment Program and the UN Food and Agriculture Organization revealed that deforestation will increase over the next four years in Indonesia, Malaysia, Cambodia and Sri Lanka. On the other hand, there will be decreased deforestation in Thailand, the Philippines, Brunei and Laos because accessible forest land there has already been exploited. According to last year's figures, Indonesia ranks first with the highest annual deforestation rate of just one-half a million hectares, Thailand comes second with 337,000 hectares, Burma, India, Malaysia, Laos, and the Philippines range between 100,000 to more than 250,000 hectares. The report recommends controls over logging operations, intensive management over the post-harvesting period, and setting up programs of agroforestry and fuelwood plantations.

## People are key to saving watersheds

NEW YORK--"Watershed projects deal with people," says John Spears, a World Bank forestry expert.

In the Bank's magazine, *Finance & Development*, Spears states that investment in flood control structures, reforestation or soil conservation will, in themselves, achieve little "unless the farmers and herders residing in the upland catchment area are given the means to move away from ecologically destructive shifting cultivation."

He suggests, based on several years of experience, that investments in conservation have to be matched--and often exceeded--by substantial investments in improvements for the farmer himself, such as the inputs for better farming, marketing systems and social services.

The key to securing people's participation, Spears believes, lies in designing strategies based on an understanding of their perceived needs and priorities--particularly of local land tenure and rights to the use of land.

Regulating upland grazing and the voluntary closing of rangeland, in particular, may frequently run up against sociological and religious attitudes, especially in Africa and Asia, he has found. Time is needed to change these attitudes, and experience has shown that herders need a clear demonstration that it is more profitable to keep fewer but better livestock.

Agroforestry provides a good compromise. Although natural forests provide the best protection for watersheds, Spears says that evidence from East Africa and elsewhere shows that perennial tree crops, such as tea, oil palm, rubber or coconut can be almost as effective--providing their cultivation is combined with soil conservation measures such as terracing.

The conventional wisdom that reforestation is needed to restore eroded catchment areas is not borne out by experience, he has found. Reforestation is expensive--at least \$1,000 a hectare; a cheaper solution is to let the area regenerate naturally or to augment the regeneration by sowing grasses, legumes or low shrubs. He suggests reforesting gulleys only where there is a serious risk of deepening erosion.

Spears, who was a principal author of the Bank's 1978 forestry sector paper, says

there are three main constraints on reforestation: Local people are often unwilling to support long-term forestry investments--unless there are incentives and subsidies; sufficient land is frequently not available because it is urgently needed for agriculture--meaning trees may have to be planted along farm boundaries or around homesteads; and it is difficult to protect young trees from grazing and fire.

In addition to reforestation and regeneration of eroded catchment areas, Spears recommends that other investments be made to prevent erosion and flooding. Depending on the topography, these could include levees, terracing, run-off drains, retaining walls, farm ponds or silt traps. Headwater dams are often a good investment, but because they are major structures--usually rockfill or concrete and sometimes 15 meters high--they may require more engineering capability than is found in the area.

To rehabilitate and manage watersheds successfully, Spears says organization and management capabilities are essential, particularly when several institutions are involved. In the past, he noted, rehabilitation programs have failed because planners had too technocratic an approach; they paid too little attention to the social and cultural aspects.

But once the farmers' desires and needs have been taken into account, there are many benefits, both direct and indirect. There is a general improvement in their lives--greater agricultural production and farm income. The restoration of forests allows for increased output of forest products, which can be sold. It increases the life span of irrigation and power works and, outside the catchment area, can lead to diminished loss and damage of human life and property. And, finally, rehabilitation means conservation of the region's natural resources of soil and water.

To be truly effective, Spears says there must be strong central government commitment, which includes adequate financial resources and effective monitoring and evaluation of the project.

Spears concludes: "Perhaps the most important lesson learned from experience is that it may take up to 10 years of more institutional strengthening, educational training, research, and small-scale projects before the practices of improved agriculture, forestry and soil conservation lead to a discernible improvement in watershed land use, in erosion and in perennial stream flow."

LIBBY BASSETT



## Program begins to save Uganda parks

NEW YORK--The years of killing in Uganda--of people and wildlife--have led to enormous pressures upon that nation's once-sacrosanct national parks and reserves.

Now that most of the turmoil is over, the World Bank projects that Uganda's population will nearly double, from 13 million to 24 million, within the next 20 years. As a result, the game and forests of Uganda--once the envy of East Africa--are in jeopardy.

The World Wildlife Fund (WWF) states that "poaching is undoubtedly the most pressing conservation problem in Uganda today.... In the long-term, however, poaching probably represents a less serious threat to the future of conservation areas (and the ultimate livelihood of the people) than habitat destruction. The pressure for agricultural development has meant that illegal encroachment in several game and forest reserves has now reached critical proportions."

One barrier to solving the problem lies with the present system of safeguarding these areas. According to WWF, Uganda's current conservation system was developed in the 1930's and "clearly needs to be completely revised and strengthened in light of the enormous changes which have taken place in the country." The old system, WWF stated, is "inflexible.... If Uganda's natural resources are to be effectively safeguarded, the role, legal status and management of the conservation areas needs to be totally reassessed."

Before a remedy can be prescribed, it is necessary to determine the extent of the problem. During the course of this year, WWF, along with the International Union for Conservation of Nature and Natural Resources (IUCN) and the People's Trust for Endangered Species, will carry out an aerial survey. Concurrently, ground surveys of the reserves are being made in collaboration with the nation's Game and Forests Departments. The aim is to get a full and accurate picture of the current status in the reserves, particularly the extent of human encroachment and poaching and the number and distribution of wildlife.

This, then, will provide the basis for a National Conservation Strategy for Uganda, built on the basic premises of the World Conservation Strategy, launched two years ago under the aegis of WWF, IUCN, several

UN agencies and with input from 100 governments and agencies. SPECIAL TO WER

## More on resource management...

SAUDI ARABIA'S Dr. Abdulbar alGain, Vice President of the Meteorology and Environmental Protection Administration, will speak on his nation's environmental problems, policies and prospects to members of the International Environment Forum on April 13. IEF, a program of the World Environment Center, quarterly brings a leading environmental official from overseas to New York to meet with corporate officers with environmental responsibilities. For information, contact Dr. Whitman Bassow, (212) 986-7200, or write the Center, 605 Third Ave., 17th floor, New York, NY 10158.

THE CLUB OF ROME, the international group of intellectuals whose 1972 study, "The Limits to Growth," set off a worldwide debate on resource management, met recently in Washington and called for more rational and equitable management of natural resources. Several of the 200 participants argued that current U.S. policies were setting a bad course for creating a sustainable and equitable global society, not only ecologically but economically. They suggested political negotiations would do a great deal more good than political confrontations.

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## Swiss industries face cadmium crackdown next year

**GENEVA**—Many Swiss industries—especially those manufacturing batteries, paints and synthetics—are bracing for a Federal crackdown on cadmium-containing products in 1983.

The new Swiss Federal environmental protection law goes into force next year and Article 26 gives the Federal Council (the executive arm of the government) the competence to ban all materials considered dangerous to humans or the environment or, at least, to place them under extremely strict controls.

A lobbying battle is in full swing. On one side, factors include the national balance of payments—Switzerland must import raw materials and export finished, sophisticated and competitive products to survive—and the domestic unemployment rate, which at present is probably the lowest in the industrialized world.

On the other, the country's media is reporting fully, citing the danger of progressive accumulation of cadmium in the environment; German and Swedish findings that cadmium is highly cancer-causing; and that it damages lungs, veins and the bones. Even Dr. Felix Kieffer, a top chemist at Switzerland's leading pharmaceutical and chemical exporter, Sandoz, has declared: "This substance rates at the very top of the list of enemies of the environment and of health." The stories note that both Germany and Sweden have taken the lead in banning almost all plastics containing cadmium, including ceramics, toys, paints and dyes.

Swiss industry uses about 120 tons of cadmium annually and adversaries of the metal claim the true figure should be 300 tons. Of this, at the very least, 49 tons find their way into the country's water, land and atmosphere.

Many paint, battery and synthetics factories are already planning replacement products that can be on the production line by 1983. But one major segment of the industry—the vinyl-polymers branch—which makes such popular plastic products as shopping bags, luminous protective tapes, and low-cost bottles—cannot substitute easily. If they drop their brilliant colors, they will no longer be competitive in the European marketplace. They must use approximately 10 kilograms of cadmium per ton for plastic production.

The Federal Office for the Protection of the Environment in Bern sees only one solution: limit the production of such items that are thrown away after usage. Opposing this vehemently is the Swiss Association of Manufacturers of Synthetic Materials. A cutback or limitation of use of cadmium would mean loss of sales, they say. The consumers would then switch to similar products produced under more lenient rules abroad.

WILLIAM G. MAHONEY

## Water wise ...

### SOME CAUTIONARY EMPIRICAL KNOWLEDGE

applicable to the current clean water and sanitation decade comes from the Indian organization, Action for Food Production (AFPRO). It has found that just providing latrines is not enough, a sanitation education program is necessary. "To people not used to using shut-in latrines, the concept is bizarre and most definitely obnoxious," their February report states.

As for clean water, interviews with rural community workers—undoubtedly male—provide another point of view. The benefits of providing piped water "are very minimal. The women save some time, that's all!" Others say that piped water will produce neurotic women "as the time expended in fetching the water is the only time they can get away from their mothers-in-law."

AFPRO suggests getting women involved in all phases of rural development, from water to sanitation to biogas production, and then perhaps attitudes will change.

**MAJOR INDIAN PORTS** will soon be authorized to levy heavy fines on vessels that pollute the coastal waters, according to India's Minister of Shipping and Transport, Veerendra Patil.

**INDIA LAUNCHED A MAJOR SCIENTIFIC** expedition in December to map the southernmost reaches of the Indian Ocean as part of its oceanic research program.

A Norwegian ship, chartered for the cruise, carried 20 scientists, a crew of 11 and two helicopters.

The team, led by Dr. S.Z. Qasim, Secretary of the Department of Environment, will map the sea bed, study thermal energy currents, monsoons, wind currents, ocean temperatures and humidity over the 70-day project. The cost is nearly \$2 million, and its purpose is to build a profile of all seabed resources.

**ANOTHER SECTION** of Australia's Great Barrier Reef has been declared part of the reef's marine park—the 36,000-square-kilometer Cairns section. Prime Minister Malcolm Fraser announced before Parliament that the Queensland state government would be stopped from any actions that might damage the reef, such as oil drilling. However, Queensland Premier Joh Bjelke-Petersen said the federal government had no power to control areas within the five-kilometer offshore limit. The first section of Great Barrier Reef Park was the Capricornia, also off Queensland.

## Romania, running out of water, launches \$8.3 billion program

**BUCHAREST**—If energy is the problem for the 1980s, water may well be the problem of the '90s for Romania, a government official warned recently.

Ion Iliescu, chairman of the National Council of Water Husbanding, said water consumption jumped from 2.6 billion cubic meters in 1960 to 20 billion in 1980. Romania's water needs by 1990 are estimated at 45 billion cubic meters.

The country's network of rivers and waterways carries 37 billion cubic meters of water a year on an average. Groundwater supplies an additional 8 billion cubic meters, but only half of that can be used.

Iliescu said the dramatic growth in water demand was due to post-war industrialization, farm irrigation and population growth. Industry has been the biggest consumer, using almost half the annual water supply.

"It's not an idyllic situation... our resources are modest and (in the long run) insufficient," Iliescu said.

The situation is even more critical due to the lack of uniformity of the hydrographic network, particularly the extreme changes in river flow during the four seasons.

To cut down on water demand, Iliescu said industrial technologies which are currently big water consumers will be discarded. Water will be recirculated in some industrial processes, while losses in distribution networks and installations will be cut down.

To save the country from the destructive effects of recurrent floods and drought, Iliescu said Romania will spend 100 billion lei (\$8.3 billion) between 1981 and 1985 to control its rivers and for irrigation and afforestation along some river banks.

This effort is part of a long-term national program estimated to cost \$83 billion to create by the year 2005 some 1,400 storage lakes, 2,000 kilometers of canals and pipelines, double the amount of land under irrigation and to build scores of hydroelectric stations.

Meanwhile, Romanian experts warned that river pollution by domestic and industrial wastes and fertilizers added new complications to the problem (*WER*, May 25, 1981, p. 8). Even though 3,600 water purification plants currently operate on the country's rivers, not all operate flawlessly, officials said. **VIOREL URMA**

## Pakistan proposes clean water and sanitation measures

**ISLAMABAD**—Only 34 percent of the Pakistani population of 83 million has clean, piped drinking water and only 13 percent has sewage and drainage facilities, according to Ghulam Ishaq Khan, Minister for Finance and Planning.

Speaking at a four-day national water conference held here

recently, Khan said there was a wide disparity between urban and rural facilities. In urban areas safe water was available to 72 percent of the population and sanitation to 42 percent; in rural areas access to clean water was available to 20 percent only while only 2 percent had any sort of sanitation facilities.

The Finance Minister made the following proposals to the delegates:

- The expertise of international and national participants should be directed towards suggesting a concrete plan of action, keeping in view the financial, economic, manpower and material resources of the country, as well as the social and cultural habits of the inhabitants of the various regions.
- Greater attention should be given the problems of the rural areas, where the bulk of the population resides and which hitherto remained largely neglected.
- In urban areas, the question of evolving appropriate tariff policies deserves special attention so that services are provided on a no-profit no-loss basis. Urban areas also face the problem of squatter settlements. The provision of water and sanitation facilities to these fringe areas will, of necessity, have to be of a different type, reflecting standards commensurate with their income levels.

Yet another problem facing the cities and towns is the high wastage in Pakistan's urban water supply systems, sometimes 50-60 percent of the total water produced. Reduction in wastage and leakages can go a long way towards reducing the demand for production of more water which is so capital intensive.

- Adequate attention should be given the choice of technology, finding least-cost solutions. In rural areas, in particular, future water supply schemes should be based, subject to feasibility, on solar and wind energy or on biogas or biomass, which can be locally produced. Considerable work has been done at the international level on the technological options and the delegates should consider the relevance of this work for Pakistan.
- Greater emphasis needs to be placed in future planning on the operation, maintenance and quality control of the water supply and sanitation systems once they are completed. Experience in Pakistan shows that certain schemes set up in rural areas and small towns had to be abandoned due to lack of adequate maintenance facilities.
- Institutional arrangements for research and development are weak and uncoordinated. Efforts need to be made to strengthen this aspect.
- There is need for a detailed study of the water supply problems of coastal areas and saline zones. In these areas, the costly option of desalination of water may have to be considered. Also, greater work needs to be done on recycling and reusing water for agricultural and other uses.
- Lastly, a public information program should be considered.

The Conference was held as part of the UN's Water Supply and Sanitation Decade, 1981-90. It was attended by international experts from the World Health Organization, UNICEF and the World Bank.

MOHAMMAD AFTAB

## Water quality...

**THE SOUTH KOREAN** Office of Environment has signed a \$5.4 million service contract with Engineering Science Incorporated (ESI) of the U.S. for the Han River basin environmental conservation master plan project. ESI and its Korean partners—the Hyundai Engineering Co. and Hyosung Engineering Co.—will conduct a two-year survey of the quality of water, air and waste matter along the 27,000 square-kilometer-wide Han River system, which runs through 11 Korean cities and 28 towns.

**TO CONTROL LITTERING** in Hong Kong harbor, the Marine Department recently added two "waterwitches" to its fleet of 46 refuse-collection vessels. A Marine Department spokesman said each waterwitch is capable of lifting on average from eight to nine tons of floating refuse daily. Dawn helicopter patrols will soon be undertaken to pinpoint particularly bad slicks of floating refuse. The whereabouts of these slicks will be relayed to the pollution control until which will then send its fleet to the troubled waters.

**INDIA'S CENTRAL BOARD** for Prevention and Control of Water Pollution has warned that millions of people inhabiting the basin of the Ganges River are in peril unless stringent pollution controls are speedily implemented.

A study of the river since 1979 indicates that long stretches near Kanpur and Varanasi are fit only for navigation and not for any other human use. "Natural defenses are breaking down and urgent steps are called for to halt the degradation of the river," says the study, the final report of which will be published in December this year. None of the large cities along the Ganges has a sewage treatment plant.

**SUSTAINABLE CLEAN WATER** is the theme of a Regional Workshop on Limnology (the study of fresh water) and Water Resources Management in Developing Countries of Asia and the Pacific, to be held November 29-December 5 in Kuala Lumpur, Malaysia. Organized by the University of Malaya and The International Society of Theoretical and Applied Limnology (SIL), its purpose is to identify issues for further ecological research and training. It also hopes to promote communication between natural and social scientists from the industrialized and developing countries involved in the region. For information: Organizing Chairman, Regional Water Workshop 1982, c/o Department of Zoology, University of Malaya, Kuala Lumpur, Malaysia.

## International cooperation...

**THE UN DEVELOPMENT PROGRAM** in a year-end report said it put \$45 million into 283 environment-related projects during 1980. It reported also that the cumulative total of follow-up investment for projects dealing with natural resources was \$950 million, for environmental health \$478.4 million, for agriculture, forestry and fisheries \$417.5 million, for human settlements \$167.7 million and to aid social conditions \$1.3 million.

**THE MILK MARKETING BOARD** of England and Wales and America's Corning Glass Works have formed a 50-50 joint venture to turn cheese whey—a waste by-product—into a protein-rich sweet syrup for use in such foods as ice cream, jams, candy and baked goods. The joint venture with Dairy Crest, the U.K.'s largest cheese maker, will be called Specialist Dairy Ingredients. According to Corning, the result of four years of collaborative research and development will culminate in a small industrial plant to begin operation March 1, at Aston in Cheshire.

Corning, a glass company, 20 years ago developed a technique for bonding enzyme molecules to porous silica particles no larger than grains of sand. This allows the costly enzymes to be used repeatedly. Now the lactose in millions of tons of waste whey can be split into two valuable sugars, glucose and galactose, through the use of bonded lactase enzymes. Cheese whey flows into the top of a column filled with these immobilized enzymes and comes out as glucose-galactose syrup.

**TEN YEARS AFTER THE LAST ORYX** was killed in central Oman, a group of 10 were returned to the vast stony plateau of central Oman on the Arabian peninsula. The Arabian oryx that were returned were part of a herd of 150 that have been preserved and bred in the United States, with support from IUCN (International Union for the Conservation of Nature and Natural Resources) and World Wildlife Fund.

The Harasis, a tribe of nomads, were entrusted by the Sultan of Oman to protect the oryx from poachers. This project is part of a major IUCN-WWF effort to establish large, well-managed conservation areas in the Arabian Peninsula. The conservation groups have worked also with Egypt, Israel, Jordan, Saudi Arabia and Syria.

## SPECIAL REPORT The OECD's environment chief outlines his priorities

**NEW YORK**—In the clubby lounge of the Algonquin, where America's best writers and humorists once held forth and where *WER* went to interview him, Jim MacNeill's red sweater was a stand-out. So is he in the world of international environment policy. For the past three years this casual Canadian has been Director of the OECD's Environment Directorate. And the OECD, or Organization for Economic Cooperation and Development, is where the 24 most industrialized free-market countries in the world make the policy decisions that affect them all.

MacNeill, on a flying visit to the U.S. from his Paris headquarters, agreed to tell *WER* about the origins and priorities of his Environment Directorate.

"The OECD was the first international, inter-governmental organization to examine the economic and trade dimensions of environmental issues. In the 1970s, national environmental policies began to emerge that could have created tariff and trade barriers unless they were harmonized. This led to the realization that the OECD had to look at these questions so, in 1970, the OECD Council established an Environment Committee. This primary committee is made up of top people in the environment from member countries, and it reports directly to the Council," which makes policy.

Over the course of years, the Environment Committee has looked at the economic and trade dimensions of its members' water and air policies (it invented the "polluter pays principle"), at transboundary pollution, and the legal principles that underly all international conventions that might affect its member countries.

The OECD is a consensus organization, MacNeill said, with four levels of action. Ranging upward in force, they are a declaration, which is a statement of intention "to do good;" a recommendation, which is morally binding; a decision, which is legally binding but within the context of national law; and international conventions and treaties, which when ratified are enforceable in international law.

The Environment Directorate's current program had its origins in a 1979 meeting of environment ministers. "They asked us to focus on four priorities: the economics of environment, energy, chemicals, and the state of monitoring changes in the environment."

MacNeill said, "The greatest success is in chemicals." The Council agreed it was a necessity to establish a special program to control chemicals. Why? "The economic and trade dimensions are crucial," MacNeill said. "Chemicals account for \$100 billion of trade a year between OECD countries alone, or one-tenth of their total annual trade. It is a principal employment and investment generator. Now there are about 70,000 chemicals in commercial trade, and OECD nations put 1,000 new ones on the market every year."

Up till 1978, only a handful of countries had chemical control legislation in place, but others were thinking about it and, MacNeill said, "There was a danger that unless this legislation

were harmonized, it would lead to unintended trade barriers."

With 35 scientists from industry working on various committees, by last year 10 OECD nations had legislation in place, and "as a result of our consultations, the new legislation is harmonious.

"It is fundamental that data on new chemicals need to be exchanged if we are going to have an international system. Last year," MacNeill said, "the Council handed down a decision on the mutual acceptance of data." Some member countries had legislation that would have precluded exchanges, so the countries have agreed to change their laws, he said.

As a result of a recommendation by the Council, an agreement was reached to exchange data on new chemicals generated in labs that adhere to good lab practices, chemicals generated in accord with over 100 internationally recognized test guidelines.

"Now that we are completing our work on new chemicals, we will hold a high-level meeting of environment ministers this October," to approve the program and move on. MacNeill expects the next three-year program will gradually incorporate controls over chemicals that already exist in the market.

MacNeill said OECD governments have recently been "pre-occupied with the economic impact of environmental policies" on jobs and on investment. In 1979, the Council and OECD environment ministers asked for two studies: a reassessment of economic impact and an assessment of the economic and social benefits of environmental measures. The first study, focusing on investment, employment, productivity, balance of payments and trade should be ready early next year, MacNeill said—after a seminar with industry to be held later this year. The second study, gathering together "everything we can find" should also be ready early next year.

The Environment Directorate's third priority program, energy, focuses on three areas: the environmental aspects of alternative energy systems, transportation from the end-user's point of view; and electricity as such because "it is so important." Reports on the first and third phases should be ready early next year, MacNeill said, with transportation coming along later. Coal is considered such an important alternative, he said, that the OECD is sponsoring an international symposium in Holland at the end of May to look at the economics of coal pollution abatement techniques.

As to the future, the disposal of hazardous wastes is becoming such a worrisome issue that it probably will be next on the Environment Directorate's agenda.

LIBBY BASSETT

## Australia has established a water research center

**PERTH**—Australia's first Water Research Center has been established at the University of Western Australia in this state capital.

The Minister for Water Resources, Andrew Mensaros, said that as it is a joint venture, the state government and university would each contribute \$500,000 over the next five years.

Initially, the Center will carry out water quality studies, fisheries research and investigate coastal pollution.

ANN BLOEMEN

## Toxics...

**CHEMICAL MANUFACTURERS** in the 10 countries of the European Economic Community (EEC) are now required to inform workers, local officials and neighboring member countries of the risks involved with their production of hazardous chemicals. According to Hazardous Materials Intelligence Report, this so-called "Seveso Directive" was recently approved by the EEC Commission and is the result of the dioxin accident that took place in Seveso, Italy, in 1976. The "Directive on the Major Hazards of Certain Industrial Activities" requires disclosure of: quantities and types of dangerous substances produced; potential chemical recombinations that could occur; the topographical and meteorological situation of the plant; pollution control technology installed; contingency plans for an emergency. It does not apply to toxic disposal plants, nuclear plants and military installations.

**A MYSTERIOUS "DUST RAIN"** fell over a wide area around the Swiss capital of Bern in January, and meteorologists have not been able to discover the source.

A spokesman at the Swiss Meteorological Office at Zurich said that "it could not be ruled out" that the source was chimney exhaust from a French industrial area hundreds of kilometers away. A second theory, he said, was that freak winds carried the "dust" from the Spanish sandy seacoast.

**SOME 12,000 PEOPLE** residing near the Onsan Industrial Complex in Ulsan, South Korea, will be given compensation of 42,389 million won (\$62.34 million) for relocation from the heavily polluted complex by 1984. The government will provide \$16.96 million while \$45.38 million will come from the nine factories in the complex.

**AUSTRALIA'S FOUNDATION 41 WILL CONDUCT** a scientific study of children of Vietnam veterans to determine whether Agent Orange has had any effect on their chromosomes.

The main study will involve 250 children of veterans and 250 other age-matched children; it will take about a year to complete.

Dr. William McBride, who first established the link between birth defects and thalidomide, will conduct the study. Dr. McBride says that if Agent Orange was responsible for abnormalities in the children, it would show up in chromosomal change. He established Foundation 41 over 10 years ago to study the causes of birth defects. This project is expected to cost \$100,000.

## Environmental management . . .

**EFFORTS TO FIGHT POLLUTION** in Bangkok, the capital of Thailand, have received support from members of the Association of Southeast Asian Nations. Indonesia has contributed \$60,000, Malaysia \$34,000, and the Philippines \$38,000 to the project. The coordinating body of the ASEAN countries will implement the plan and meet periodically with its expert group on environment. Seven projects have been set up for the next two years. They include oceanography, oil pollution, pollution arising from domestic and industrial waste, mangroves and coral reefs, waste disposal, and information exchange.

**LEGISLATORS IN HONG KONG** are studying a proposal to keep litter offense records on computer. A spokesman for the Urban Council said the move is aimed at providing the courts with histories of previous convictions so as to decide fines for repeat litterers. Since there is no legislation in Hong Kong to keep computer data on a confidential basis, the Urban Council spokesman said, "Due consideration will be given to prevent unauthorized access and release of data in the system."

**THE INDIAN GOVERNMENT** has decided to use computers for environmental monitoring, in particular of tiger reserves and of flora and fauna.

The director of the project, H.S. Panwar, was sure that the computers would help them interpret changes and evaluate management practices. The data will also include vegetation classification and animal behavior.

**THE JAPANESE PRIME MINISTER'S** office recently conducted a poll to measure the public's understanding and wishes on its public parks system and nature conservation. The survey marked the 50th anniversary of Japan's national parks system. It found that about two-thirds of all Japanese visit a nature site anywhere from three to dozens of times a year, mostly to enjoy outdoor sports and the beauty of the area. Their primary complaint (50 percent) was that the landscape was marred by litter. The great majority (71 percent) said they felt a balanced effort should be made to preserve an environment and its wildlife so that man can enjoy it. As to why they felt nature conservation was important, 79 percent said nature puts them at ease and gives them comfort, 49 percent said it is healthy and educational for children. However, more than half (57 percent) said they felt the government was not doing enough to protect nature.

## Four Asian environmental management plans underway

**NEW YORK**—The nations of South Asia and the South Pacific have made impressive progress in working together on four major programs.

- First, the 10-nation South Asia Cooperative Environment Program was formally launched in Colombo, Sri Lanka, following ratification by the Parliaments of three member countries—Sri Lanka, India and the Maldives. According to the UN Environment Program (UNEP), which is a sponsor, the other member countries—Afghanistan, Bangladesh, Bhutan, Burma, Nepal, Pakistan and Iran—are in various stages of ratification.

This program, the first in the region, will have its secretariat in Colombo. Its purpose is to facilitate an exchange of information and expertise, to use local resources for implementing projects, and to encourage support from donor countries and other sources. The UN Development Program offered an initial contribution of \$500,000.

Priority projects are improving environmental quality standards, wildlife and genetic resource conservation, education and training, conservation of mountain ecosystems, island ecosystems, watersheds and mangrove areas, social forestry, energy and cost-benefit quantification.

- In East Asia, members of the Association of Southeast Asian Nations (ASEAN) contributed \$172,000 to finance the East Asian Seas Action Plan over the next two years. UNEP pledged \$200,000 to the program. The ASEAN nations—Indonesia, Malaysia, the Philippines, Thailand and Singapore—established a regional coordinating body, which will meet periodically with the existing ASEAN expert group on the environment.

In Bangkok recently, ASEAN officials identified areas for action over the next two years: oceanography, assessing and controlling oil pollution, studying pollution from domestic and industrial wastes, waste disposal, mangroves and coral reefs, and an information exchange. UNEP's Regional Seas Center in Geneva will coordinate the technical aspects of the plan.

- In March, 22 South Pacific island nations and territories will gather in the Cook Islands for a Conference on the Human Environment in the South Pacific. Observers from regional and international agencies, universities, non-governmental organizations and the media have also been invited.

The foundation for this Conference was the two-year-long environmental and development assessment most of the countries (all but two) undertook. These country reports already have led Fiji and Tuvalu to set up new environmental committees within their governments.

A wide range of environmental issues emerged: nuclear residues from testing and dumping, coastal erosion, forest felling, water management and oil spills, for example.

The March meeting will launch the second phase of the South Pacific Regional Environmental Program. The proposed plan of action will continue environmental assessment in the region, work out methods of adapting management procedures and,

perhaps most important, improve national legislation and adopt mechanisms for management of the region which covers 6 percent of the earth's surface, yet has a population of only 4.7 million.

● Finally, WER's Anne Bloemen reports that Papua New Guinea and five other Pacific Island nation groups have signed an agreement to cooperate in the management of fisheries resources of common interest. The five are the Federated States of Micronesia, Kiribati, Marshall Islands, Palau and the Solomon Islands. The signing took place in Nauru this January.

The six countries agreed to establish a coordinated approach to fishing common stocks. And they set uniform terms and conditions for licensing foreign fishing vessels. SPECIAL TO WER

## Plans to afforest India's biggest desert area go awry

**BOMBAY**—India has 61 people per square kilometer of desert, compared with an average of only 3 worldwide. In India's northwestern state of Rajasthan, the desert is spreading at the rate of 800 meters a year, and Rajasthan has 60 percent of all arid land in this country.

According to Dr. H.S. Mann, director of the Central Arid Zone Research Institute (CAZRI), afforestation can help not only in Rajasthan's 11 desert districts but also in other arid zones in the country. Groundwater reserves are so meager and saline that only plantations can replenish them, he said. However, some forestry experts in Rajasthan point out that the apathy of the people, coupled with the depredations of rodents and termites and the vagaries of the weather are posing a serious challenge to the state's social forestry schemes.

While the official annual target of planting 30 million trees by March 1982 was surpassed, (34 million had been planted by October) the "mortality rate" was alarming. The experts say that such projects can only work with the full cooperation of the people, which has not been forthcoming.

According to the Jodhpur district forest officer, villagers oppose the declaration of any area as closed for social forestry. People often encroach on areas earmarked for development and steal fuelwood and fodder from government land. Legal action taken against offenders is a laborious process and only alienates the local community further.

The forest department provides cash incentives—about 10 cents for planting a tree during the monsoon and an equivalent amount every year for three years. However, because of severe rainfall shortages—this is the third drought in succession—farmers aren't able to keep the trees alive. They also complain that the pesticides provided by the government haven't proved effective. About 4,400 hectares have been planted with such subsidies this year.

DARRYL D'MONTE

## Forestry...

**THE INDIAN BRANCH OF A MULTINATIONAL** company, Ion Exchange, wanted to lease barren lands in a drought-prone district to plant fast-growing trees like *ku babul* (*leucaena leucocephala*), but the state government used an antiquated law to thwart the scheme.

According to the managing director, G.S. Ranganathan, an avid conservationist, his firm had applied under the Maharashtra government's scheme to lease such lands at a nominal rent of around 10 cents (US) a year. However, it was told—after selecting 200 hectares just outside Bombay—that they would only be able to reap the fruit and not harvest the trees themselves. Why? An antiquated forest law that dates back to Victorian times.

**PUSAN** in South Korea has set up a target of planting 13,150,000 trees by 1986 with an outlay of \$6.09 million to improve its appearance before the 1988 Olympics. The government is also encouraging individuals to plant trees on birthdays and marriages.

**SCIENTISTS IN CHINA** have selected 35 kinds of trees for planting near chemical plants to help clean the air of chlorine, carbon dioxide and other harmful gases.

The official New China News Agency said scientists at the South China Institute of Botany under the Chinese Academy of Sciences have, through nearly nine years of work, selected these trees from among 500 tropical and subtropical species which they have tested for use in pollution control.

**THE JAPANESE PAPER AND PULP** industry is studying the feasibility of setting up an afforestation project in Southeast Asia to secure paper pulp materials. A spokesman for the Japan Afforestation Committee said that the project calls for afforestation of 120,000 hectares of land in four places—Mindanao in the Philippines, Balikpapan in Indonesia, Open Day in Papua New Guinea and Guadalcanal in the Solomon Islands. In the first phase, the industry plans an investment of \$90.9 million, for the production of two million cubic meters of pulp annually over a period of 10 to 15 years, accounting for 15 percent of Japan's annual pulp imports. If successful, the second phase will be conducted on a three to five times larger scale. The association will seek low-interest financing from the governmental Japan International Corporation Agency and the Overseas Economic Cooperation Fund on behalf of its 11 members. The Philippines enacted an industrial tree plantation law last year to induce more capital for the afforestation project.



## Fuelwood ...

**A CLAY AND SAND COOKSTOVE**—which can be built by almost anyone, and which saves firewood by controlling combustion and using all the heat generated—has been designed by the Center for Studies and Research on Renewable Energy Sources at Dakar University, Senegal.

It is called Ban Ak Souf (which, in the local Wolof language, means clay and sand) and can be built in large or small dimensions, without tools or equipment. It uses between one-third and one-half the amount of wood used by an open cooking fire, so it has special attractions for areas (like the Sahel region of West Africa) where firewood is scarce and where the remaining forests are already endangered.

An illustrated handbook (in French) entitled "Les Cuisinières Ban Ak Souf" is available from the Center for Studies and Research on Renewable Energy Sources, Dakar University, P.O. Box 476, Dakar, Senegal.

**THE AGA KHAN'S** Fondation de Bellerive, which has had great success in devising wood-fuel-efficient cookstoves, has now published an informative guidebook, "Modern Stoves for All." It explains the basic components and shows how to build 12 different stoves that can use wood or briquettes. It also gives information on better cooking pots and alternative fuels such as pressing together bundles of twigs, bark, straw, weeds, leaves or garbage. The 60-page booklet is available from the Bellerive Foundation, Case Postale 6, 1211 Geneva 3, Switzerland. Payment should be by check for US dollars, in Europe \$10, in the rest of the world \$12.

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## IUCN's president discusses ways to stop desertification

**NEW YORK**—There are more than nine million square kilometers of man-made desert in our world, according to Dr. Mohammed El-Kassas, an expert on desertification who is President of IUCN, the International Union for Conservation of Nature and Natural Resources.

Writing in the American *EPA Journal*, he explained, "This is the area of land that was once productive and now is not.... To appreciate its size, let me tell you that the remaining food-producing land in our world today is about 13 million square kilometers."

Deserts created by climatic conditions—about 48 million square kilometers—cover about 36.3 percent of earth's land surface. By adding on man-created deserts, the total comes to 43 percent.

Man-made deserts are caused by deterioration from inside as land becomes non-productive. Every year, Dr. El-Kassas stated, nearly six million hectares of land are lost that once were productive. Over the next 20 years, he estimated 300,000 square kilometers of land will be overrun by urbanization and an equal amount of cropland lost through land degradation. However, "the total capacity to reclaim new land by the year 2000 would be no more than 300,000 square kilometers.

"It means whatever we do, if we let present trends continue, the total cropland of the world would be less by almost one-third of a million square kilometers by the year 2000. If we want to increase productivity, we need to think very differently."

What is necessary, he contended, is to understand the relationship between three interacting systems: the biosphere, or natural environment; the technosphere, or man-created structures and systems; and the social sphere, in which man creates the systems to manage his life.

An example of this interrelatedness comes from Dr. El-Kassas's native Egypt. For 7,000 years the Egyptians successfully tilled the Nile Valley—"an achievement unparalleled in the world." However, when Egypt, in a developmental push, decided to expand its agricultural land into the desert, the result was massive environmental problems, of waterlogging and salinization. This, he believed, was "because we moved into the deserts with the same technology that was successfully applied in a different ecosystem—the Nile Valley.... The incompatibility between the biosphere and the technosphere was the reason for the failure."

In 1950, Dr. El-Kassas noted, the United States faced droughts no less hazardous than in the 1930's, but it did not cause (another) dust bowl." The reason, he said, was that the U.S. had passed laws on grazing, created the machinery to enforce them, transported the animals by rail and road instead of trekking them across the pasturelands, and developed new sciences of range management, soil conservation and applied ecology. "The combination and the integration of these elements enabled the United States, and would equally have enabled any other country, to manage the relationship between the biosphere, the technosphere, and the social sphere. With this approach," Dr. El-Kassas stated, "we can combat desertification."

SPECIAL TO WER



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## Briefly ...

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## American billionaire's dream of Amazon development fails

**NEW YORK**—Daniel K. Ludwig sank more than \$1 billion into the largest development project ever devised by an individual entrepreneur. His goal was to change the face of a huge tract of Amazon jungle by turning it into a massive forestry-industrial-mining-agriculture complex. In the end, the environment defeated him: not only had he misjudged the capacity of the Amazon soil, but he had misjudged his relationship with Brazil's people and politicians.

After 15 years of long-distance and rather secretive rule, Ludwig, now 84, late last year decided to abandon his dream of a jungle empire. During all that time he made not one penny in profit. By the time this issue of *WER* is published, a consortium of more than 20 Brazilian companies and banks—and a Brazilian friend of Ludwig's—will have taken over Jari Florestal e Agropecuaria Ltda., for \$280 million to be paid over the next three years.

What Ludwig accomplished was impressive. He towed two floating factories—a fuelwood power station and a pulp mill—half-way round the world from Japan up the Amazon to Jari, his 4 million acre (1.6 million hectare) fiefdom in northeast Brazil. He had believed that there would be a shortage of pulp and paper by the 1980s, so he planned what was to be the world's biggest tree farm. His foresters planted 116,000 hectares of Jari with three types of fast-growing trees, clearing away the 125 species normally found on each hectare of virgin Amazon forest. But the tree he had set his hopes on, the gmelina aborea, from southeast Asia, which grows there at the spectacular rate of four meters a year, did not do well at Jari. For all his planning, Ludwig reportedly had not made thorough soil surveys, and the gmelina was a failure. Thousands of hectares of the "miracle tree" had to be cleared and replanted in Caribbean pine and eucalyptus. And the shortage of pulp and paper that Ludwig had foreseen never materialized.

He mined kaolin, the fine white clay that goes into paper finishes, medicine bases and processed foods, but had to scrap plans for a paper mill. His proposed hydro-electric dam also was scrapped. Part of its power would have supplied an aluminum smelter, but the bauxite that was found near the kaolin deposit was never mined.

Ludwig also had dreams of creating the world's largest (14,000 hectares) rice plantation. After persistent losses, the project was drastically reduced in size.

He had created an impressive infrastructure to support his



## In Latin America ...

**THE FIRST COLOMBIAN PROJECT** concerned solely with water resource management and environmental protection is going ahead with assistance from the World Bank. This is a test project, to be completed in 1986, to find the best methods for reversing ecological deterioration in the upper reaches of the Magdalena, Colombia's most important river. Three small watershed areas have been selected for study because of their economic importance (rice and hydro-electricity) and because they have a range of climate, soils and agricultural activities. The \$27.3 million project, financed also by the government, several banks, and the beneficiaries, is designed to: introduce soil conserving cropping patterns, improve livestock management, reforest vulnerable areas, and build structures to reduce erosion. Information from this project will be the basis for a follow-up project covering the entire Upper Magdalena Watershed.

**A VENEZUELAN GOVERNMENT** commission involving four ministries and the national oil company has recommended a series of ordinances to strengthen oil and electricity conservation. The legislation, which affects industry and transportation, will result in energy conservation at the consumer level, its chairman said. If applied as recommended to the executive branch, it would be in force January 1, 1982. The ordinances cover factory energy consumption, home appliance labeling, public buildings, public and private transport, and gasoline smuggling to neighboring countries.

**FOR YEARS, COLLECTORS PILLAGED AND LOOTED** Costa Rica's archeological (primarily pre-Columbian) artifacts. To stop it the Legislative Assembly recently passed strict legislation prohibiting commerce in, and/or the exportation of these items.

The law contains sanctions including fines of up to about \$2,000 and prison terms up to five years.

One of the most important national parks is built around the ancient Indian metropolis of Guayaabo containing interesting petroglyphs, aqueducts and mounds.

**PETROBRAS**, the Brazilian state oil company, faced with a law that requires large companies to have sewage treatment systems, is developing a process to treat both sewage and garbage to produce biogas and manure. Its R&D center, CENPES, figures this will cut down the treatment costs when the system is put into effect at its Duque de Caxias Refinery (Reduc) in Rio de Janeiro.

dream: thousands of kilometers of roadways, a railway, four towns, an airport, schools, hospital and a fully equipped port. But these needed to be supported by twice the existing productive capacity: not just the pulp and kaolin but also paper and timber, rice, meat (he had 11,000 head of cattle and buffalo at Jari), cheese, tropical fruits and the aluminum.

A combination of forces defeated him: not only the jungle environment that experts predicted would not sustain his fast-growing trees but also more than a score of project managers in just 14 years and labor turnover of up to 200 percent. In 1980 Jari finally broke even, but it never made a profit. The final difficulty was Ludwig's personality. More often than not, he ran Jari by remote control from the United States. His high-handed secretiveness offended both his project managers and Brazilian politicians, and he began to be considered an imperialist.

Ludwig thought he had clear title to his tract, but the government would not confirm this. He asked for financial help to pay his \$6 million-a-year infrastructure cost, but the government was not forthcoming. So last July he refused to repay \$30 million in loans, which had been guaranteed by Brazil's National Development Bank. His close friend, Augusto Antunes, bought shares Ludwig owned in an Antunes company and repaid the debt. At the end of last year, President Figueiredo asked Antunes to buy a 40 percent stake in Jari, and with high-level official pressure, the other members of the consortium agreed to buy the rest of the project.

According to one source (Ludwig does not give interviews freely), the octogenarian billionaire has a new scheme in mind: buying 400,000 hectares of land in Paraguay to grow grain and to ship coal to America's east coast.

LIBBY BASSETT

## Biggest Brazilian biogas plant set for Parana state

**RIO DE JANEIRO**—A trash and sewage biodigester scheduled to begin functioning next year in Pirai do Sul in Parana state will be the largest methane producing facility of its kind in Brazil, according to city officials.

The equivalent of 2,000 barrels of gas a year will be supplied to the city of 10,000 inhabitants at less than two-thirds of present gas prices. The facility, which is to be constructed by the Sanitation Company of Parana at a cost of \$700,000, was designed by Celso Saveli of Sanepar.

The facility consists of two bacteria-acted tanks of 27-meter diameter for liquid sewage treatment, 12 tanks of 60 square meters for solid waste treatment, and 10 other tanks of 60 square meters for agricultural waste treatment. The gas produced from the sealed tanks will be piped primarily to the outskirts of the city where no gas and sewage lines yet exist. Solid fertilizer residues will be given to local farmers.

It is estimated that 30 percent of the city's sewage and trash is presently dumped into the Pirai River, but that once the facility is functioning, the discharge should be reduced to 5 percent.

GEORGE HAWRYLYSHYN

## Venezuela's oil industry an ecological watchdog

**CARACAS**—The oil industry is one of the most vigilant watchdogs of ecological interests in Venezuela, aware that almost all its activities pose possible hazards to the environment.

Because Lake Maracaibo has been the scene of heavy production for more than 50 years, it is the subject of special controls by subsidiaries of Petroleos de Venezuela.

An Inter-Company Committee for the Conservation of Lake Maracaibo, set up in 1964, has developed methods to deal with oil pollution and, where possible, to avoid it. According to Maraven director Ramon Cornieles, the company drills and produces practically without pollution in Lake Maracaibo. Drilling mud from rig floors is prevented from reaching the lake by what is, in effect, a giant drip-pan installation; all solid waste is collected from drilling barges and shipped ashore. In land operations, drilling mud is stored at the site and then removed by tank trucks on completion of the well.

Pipelines are under permanent watch. The company has over 2,500 kilometers of pipelines and 9,700 wells. Maraven considers the introduction of telemetry to be an invaluable anti-pollution addition, enabling instant monitoring of wells, block stations and plants on the lake.

Environmental impact studies have been ordered by the oil companies of coastal areas chosen for offshore drilling and of the Orinoco Oil Belt. The latter, which they call a "truly comprehensive environmental study to, initially, cover an eight-year period," is being carried out by Venezuelan universities, research organizations and foreign consultants.

The companies generally engage in industrial and urban clean-up campaigns, large-scale tree planting and landscaping projects both within and outside their oil camps.

Maraven constructed the first modern sewage treatment plants in the Lake Maracaibo region and now is starting one in Cardon, where its largest refinery is located. Together with Lagoven, another subsidiary of PDVSA (Petrobras de Venezuela Sociedad Anonima—the national oil holding company), Maraven built a third effluent treatment plant on the east coast of Lake Maracaibo, for a combined capacity of 27 million liters a day.

A modern environmental control laboratory is in service in the Cardon Refinery on the Paraguana Peninsula.

Until now, areas around oil installations have lain fallow. Today, the industry sees no reason—when adequate attention is paid to safety and environmental protection—why oil technology and agriculture should not be good neighbors. So Maraven has invited Fusagri, a farm research foundation, to set up on the western shore of Lake Maracaibo, where the Company has 131 production wells and a steam plant. Fusagri will be given 430 hectares and \$1.6 million to produce 240,000 kilos of beef, 260,000 kilos of poultry, as well as 90,000 kilos of sorghum a year.

HILARY BRANCH

## Environment & industry...

**NIGERIA RECORDED SOME 784 OIL SPILLS** between 1976 and 1980, with a loss of about 1.8 million barrels of oil.

About six million tons of petroleum products enter the ocean from different sources yearly in Nigeria. Out of this quantity accidental oil spills account for only about 600,000 tons. The remaining 5.4 million tons of oil pollution is caused by the ordinary activities of all phases of the oil industry, from exploration to utilization.

These facts were disclosed in Warri, Nigeria, during a recent seminar on the petroleum industry and the Nigerian environment.

Petroleum products also enter Nigerian waters through fallout from gas flares, spent lubricating oils, ballast water and leakages from marine vessels.

Spills caused by equipment failure accounted for 50 percent of all incidents, the seminar was told.

**DANISH PAINTING UNIONS**, paint manufacturers, employer groups and research institutions have authorized a four-year, \$145,000 study of possible ill effects associated with use of water-soluble paints.

Recent studies have indicated a good number of cases of brain damage suffered by painters using paints containing solvents.

Results of the study, to be carried out by the Danish Worker Environment Foundation, will presumably influence new legislation on use of various types of paints.

**AN AUSTRALIAN SENATE INQUIRY** condemned the federal and state governments for their handling of the alumina industry.

The 72-page report released by the Senate Standing Committee on National Resources said that secrecy surrounding environmental reports on bauxite mining in the Darling Ranges of West Australia should be lifted and that there was no justification for special concessions to companies involved in alumina projects. The report expressed concern over the lack of effective Commonwealth control over the growing industry and over tax avoidance by the big companies.

The report also made the following points:

- Bauxite mining was being allowed to go ahead in the Darling Ranges despite misgivings about damage to the environment.
- Project developers made statements about their plans to protect the environment without necessary information to show that they could.

There are three bauxite mines in the Darling Ranges area with a combined capacity of 13.5 million tons a year.

## Water quality...

**THE PORT OF SINGAPORE AUTHORITY** said that all ships carrying more than 2,000 tons of oil calling at Singapore without insurance or financial security to cover pollution liability will be fined up to \$93,458 (Singapore \$200,000). The measure has been in force since Dec. 15, 1981.

**A POLLUTION CONTROL COMPUTER** program will be introduced in Hong Kong shortly for the planning and management of Tolo Harbor. A government spokesman announced that an agreement had been signed between the Town Development Office and Binny and Partners (Hong Kong). The computer will be used to monitor water quality and also as a tool for future development around the harbor and the catchment area draining into the harbor and channel. The computer program can predict effects of inputs of effluent, reduction of waste, fresh water flow, etc. The program should have a life span of up to 20 years, depending on future technical developments in this field. Its cost is about \$70,175.

**A COORDINATED STUDY** of India's sacred Ganges river "from ocean to sky"—as Sir Edmund Hillary's expedition two years ago was named—is being planned by research institutes located along the river.

Pollution of a large perennial river like the Ganges is a major concern not only because of the transmission of water-borne disease and destruction of fish but also because crops are affected.

The problems have increased because more Ganges water is now being used for irrigation in states along the river, which lowers the level in the estuary and affects the catch of fish, the biggest in eastern India.

The Ganges travels 2,525 kilometers. The river basin, spread over 900,000 square kilometers in seven states, is one of India's lifelines.

**A 50-PAGE REPORT** released by the Environmental Protection Authority of Western Australia has set water quality criteria to be used as guidelines for bodies managing the state's marine and estuarine waters.

The report sets quality criteria for 16 beneficial uses of water, such as swimming or water skiing, fishing, salt recovery, maintenance of aquatic ecosystems and supply of industrial cooling water. The criteria are not intended for application to effluent outfalls which would be subject to specific controls by the Water Pollution Control Agency.

## Sea of Galilee so polluted that Knesset acts to clean it

**JERUSALEM**—The Sea of Galilee has had historic and religious significance for thousands of years (scientists believe the lake is 20,000 years old). Today it has even greater significance for Israel. It provides about 40 percent of the nation's drinking water, and it is becoming polluted. Its 167 square kilometers provide the country with fresh water through a series of pipes, open canals, reservoirs and tunnels.

As the population and agricultural development of Israel's northern region increased, Lake Kinneret, as it is known in Hebrew, became a receptacle for large quantities of sewage, chemical fertilizers and pesticides. The increase in the lake's pollution level has been verified by laboratory tests showing relatively high concentrations of fecal coli bacteria at various points along the National Water Carrier.

A decision recently taken by the National Water Company to allow wastewater from Tiberius, a town on the shores of the Kinneret, to temporarily flow into the lake, further complicated the problem.

Faced with a need to repair its saline spring water and sewage carrier, the company had to make a difficult decision: whether to allow the saline carrier to be exposed to potential disintegration which could send 60,000 tons of salt into the Kinneret, thus causing serious damage to agricultural production, or to let Tiberius's sewage, estimated at 3000 cubic meters per day, stream temporarily into Lake Kinneret, following chlorination.

The decision to opt for the second possibility caused a public outcry in Israel. While pressure by the Health Ministry helped reduce the period needed for repair from 70 days to 17 days, renewed awareness of the seriousness of the problem led to accusations and counter-accusations by the various bodies responsible for water quality control.

Last year alone, nearly 11 million cubic meters of waste water—some treated, some untreated—flowed into the Sea of Galilee.

The recent public outcry against the continuous deterioration of water quality in Israel's major reservoir resulted in the convening of emergency meetings of various bodies. The Knesset (Parliament) environmental committee was called upon to prepare short- and long-term plans for water pollution prevention. Guided by expert opinion, the committee decided that all necessary steps must be taken to prevent—once and for all—the penetration of sewage into the lake. The committee decided to present the Treasury with a proposal to allocate 800 million Israeli Shekels (approximately \$5.3 million) over the next four years for the establishment of sewage treatment plants throughout the Kinneret Basin.

While the issue is certainly one of high national priority, it remains questionable whether the needed funds will be found at a time when Israel is faced with staggering economic problems.

SHOSHANA GABBAY

## Saudi Arabia's salt flats may become solar energy ponds

**DHAHRAN**—The salt flats, or sabkhas, of eastern Saudi Arabia may be used as solar ponds.

Experimental work undertaken at the Research Institute of Dhahran's University of Petroleum and Minerals may eventually turn these vast desert areas into "salt gradient" solar energy producers.

A prototype pond built at the Research Institute registered a temperature of 129 degrees Fahrenheit (54°C) in its salt-saturated region shortly after start-up. Institute scientists hope to raise the temperature of such ponds, whose high-saline density counteracts the loss of heat by convection, to about 200 degrees F. (93°C) at which point pond water could be used to generate electricity via a turbine.

One attractive feature of solar ponds is their relatively cheap cost: Excavated in sabkhas, they run about \$10 per square meter, less than a fifth the cost of conventional solar thermal collectors. They are also fairly easy to construct. Institute personnel simply bulldoze a depression in the sabkha, line it, fill it, and, if need be, augment its salt content.

It has been estimated that solar ponds might supply as much as 5 percent of the country's energy needs by the year 2000.

ROBERT FRAGA

## West Germany helps Greece build solar energy village

**ATHENS**—An agreement between Greece and West Germany to build a six-system solar energy village near Athens was recently finalized here.

The agreement calls for construction to begin by the end of last year in Lykovrissi, a suburb north of Athens. The jointly financed project will cost a total of \$33.3 million. West Germany will finance two-thirds of the technological cost of the village, while Greece will undertake the remaining third as well as the cost of construction.

The two-story buildings will house 435 families, and the community will include parks, restaurants, a central market, schools and a library.

The solar residences will be built in place of a low-income housing project originally earmarked for the site and will be occupied primarily by workers. Officials estimate energy-related living expenses will be reduced by 90 percent per family.

Passive and active energy technologies will be combined into six different experimental energy systems within the village. It will utilize central heat pumps, waste heat utilization, high passive energy utilization techniques such as "direct gain" and "mass storage walls," solar air collectors for heating, and solar water collectors for heating and hot water supply, with both short term and interseasonal storage supplies.

KYRIACOS CONDOULIS

## Renewable energy...

**ISRAEL'S FIRST COMMERCIAL SYSTEM** for the solar production of industrial steam, reputed to be the most efficient in the world, has been inaugurated at the Tapud food-processing plant at Kibbutz Shaar Hanegev. The system, developed by the Luz International Company of Jerusalem, utilizes parabolic solar collectors to generate 2.5 megawatts of power when fully operating. The parabolic reflectors constantly and precisely track the sun via the use of a computerized control system. Once the sun's rays are concentrated onto a heat-collecting pipe, the oil in it is pumped to a heat exchanger where industrial steam is generated.

Luz claims that under certain conditions its solar system may replace 20 percent of Israel's industrial energy consumption. Several other Israeli plants are already in line for the system and three American plants have contracted for it.

**WEST GERMANY WILL FINANCE** 60 percent of a solar energy center to produce industrial steam in Portugal. The project will cost \$2 million, with the remaining financing by the center's user, a state-owned dairy concern. The project will be the largest of its kind in Europe when it starts operation in 1984, saving an estimated \$400,000 a year in fuel imports. Another solar energy project, a Spanish-Portuguese joint venture for a "solar tower," has been delayed due to technical difficulties. West Germany is expected to make a decision as to the possibility of financing the tower within the next few months.

**CHINA SAVES 25,000 TONS OF COAL** a year by using solar water heaters, Xinhua News Agency reports. The country currently has 100,000 square meters of solar heaters in use and each square meter can save up to 300 kilograms of coal per year. In Shanghai alone, 1,500 tons of coal are saved annually. The 30 solar water heater factories in the country can produce 50,000 square meters of solar heaters a year.

**PAKISTAN RECENTLY INAUGURATED** its first five-kilowatt solar energy unit, at the village of Mam Niala, about 50 kilometers south of Islamabad. It cost \$130,000 and will provide electricity for 30 points, help pump water, and run two television sets in the community center. The unit, expected to last 20 years, was built with help from an American firm, Near East Development Group, Inc.

## Energy sources...

**VOLCANO POWER** may provide the Philippines with nearly 20 percent of the country's power needs by 1985. There are several major areas of geothermal activity that the Philippines is harnessing, one near Mounts Makiling and Banahao is known as Mak-Ban, another, further south of Luzon Island takes its name from the nearest town, Tiwi. Mak-Ban already has a 220-megawatt plant and a 110-megawatt plant is scheduled for 1983. Tiwi has the same power set-up. Nearly 900 megawatts of geothermal power are planned for fields on Negros and Leyte Islands by 1985, and two 110-megawatt plants will soon be developed in Benguet and Davao Provinces, a total capacity of 1,726 megawatts.

**THE PHILIPPINES IS EXPERIMENTING WITH PEAT** as a substitute for oil-based fuel. Abercio V. Rotor, assistant director for corporate farming at the National Food Authority, said the experiments were done in northeastern Leyte. Peat deposits there have been estimated at 350 million cubic meters. In parts of Europe, peat is dug, cut in blocks, dried thoroughly and used as fuel. It is also used in gasifiers. Its coke content has been found suitable as fuel for motor transport.

**THE PORTUGUESE GOVERNMENT** was forced to reverse its decision to build a coal-operated thermal electric power station at Viana do Castelo in northern Portugal after protest movements by local residents. Men, women and children marched on several consecutive weekends to oppose the government's decision, which would have brought very little benefit to the region but a high degree of pollution. The government must now choose another site.

**ZIMBABWE** undertook a detailed ecological study to determine the environmental impact of a dam planned to produce electricity from the Zambesi River. With expert help from IUCN (the International Union for Conservation of Nature and Natural Resources) and funding from Sweden, it was suggested the plant not be built at the proposed Mupata Gorge site, which would drown an enormous amount of riverine vegetation and displace thousands of game animals. They recommended instead a site at Batoka Gorge (both river sites would have to be jointly owned with Zambia) or a coal-fired plant to utilize coal deposits going to waste, or getting additional power from the existing Kariba hydro plant.

## Household waste will provide energy for Romania's cities

**BUCHAREST**—Household waste is to become an energy source in Romania.

Thirteen big incineration plants to burn urban household waste will be completed by 1985 in Bucharest and 11 other Romanian cities, to save the equivalent of 26,000 tons of conventional fuel a year.

Long-term plans envisage the commissioning of eight more such plants, so that all Romanian cities with over 150,000 population will save a total of 40,000 tons of conventional fuel a year.

Apart from converting household waste into energy, the incineration plants are to turn out 20,000 tons of scrap iron and 50,000 cubic meters of bricks made of slag and ashes for light structures.

The National Institute for Scientific and Technical Creation and the National Council for Science and Technology have devised an experimental plant to burn household residues from a Bucharest district, and this will become the prototype for future big plants. The 40-million lei (\$3.6 million) plant in Iasi, the first major industrial installation for urban waste incineration, is to be completed by the end of the year.

For cities with less than 150,000 population, where the incineration system devised for the large cities is not economical, other technologies are under study for the recovery of useful material, press reports said.

VIOREL URMA

## W. Germany plans to increase use of waste heat in homes

**DUSSELDORF**—West Germany hopes to increase its use of waste heat to warm 25 percent of all homes and offices by the end of the century, the Economist reports.

Currently, nearly 8 percent of all West German homes and offices use district heat (the use of industrial or power plant waste heat for room and water heating). Late last year, the nation's federal and state governments announced a DM2.1 billion (\$917 million) five-year scheme to expand district heating.

West Germany relies primarily on industry for its waste heat. With present technology, district heating can be piped only about 8-10 kilometers from the waste heat source. The Economist says that nuclear co-generation power plants, which are much hotter, could extend the maximum piping distance to 25 kilometers. But environmentalists in West Germany, already a vocal lot, would howl if the reactors were sited in heavily populated areas.

The Ruhr industrial district in North Rhine-Westphalia has led the way in district heating. The federal and district state governments hope that by the year 2000, half of all homes and offices in the Ruhr will use district heating, but present pipeline restriction laws could make that physically impossible. To reach

the government's projected goal, using waste heat in a quarter of all West German homes and offices by 2,000, the Economist estimates it could cost, at today's rates, perhaps DM120 billion (\$52.4 billion).

SPECIAL TO WER

## W. Germany's waste exchange expands to nearby countries

**BONN**—West Germany's waste exchange is celebrating its seventh anniversary, and over the years it has proven such a success that its activities have expanded to include Austria, Switzerland, northern Italy and France.

Founded in 1974 by the West German Chamber of Commerce (DIHT), the exchange has brokered 16,000 offers and more than 5,600 requests for waste material suitable for recycling. There have been 39,000 queries in response to advertisements placed in the Chamber's publications, all from industries eager to buy or sell some sort of waste.

A survey made in 1980 showed that one in four manufacturers with waste to sell found a buyer through the exchange and one in three seeking waste found a seller.

Otto Wolf von Amerongen, president of the DIHT, said the exchange has also generated considerable bartering among companies for waste in exchange for finished products.

Besides its German service, the DIHT has begun working with chambers of commerce in neighboring countries, providing them with free advertising space for their members.

According to von Amerongen, West Germany is a world leader in recycling waste and was even before it became popularized by the Club of Rome several years ago. Recycling in West Germany dates to the turn of the century when the Siemens-Martin smelting process was perfected and put into wide use.

In waste metal alone the exchange has handled over 2,000 requests and 1200 offers which received a total of 4000 replies.

West German households throw away over 700,000 tons of tin plate a year of which only a third or less is recovered, although, according to von Amerongen, the percentage is on the rise. Between 1976 and 1977, 100,000 tons of tin plate were recycled and by 1980 the figure had increased to 200,000 tons. In the years between 1974 and 1980 the quantity of glass similarly reclaimed rose from 30 to 40 percent.

In the chemical industry recycling has become standard. The recycling of used solvents and oil, for example, has become a big business in Germany, one in which even the underworld has become involved.

Last year more than 300,000 tons of plastics were recycled. Often plastic waste destined for recycling is exported to Italy for processing as German industrial standards frequently prohibit the use of recycled plastics. Nonetheless, the finished Italian products often find their way back to West Germany and the recycling process is started anew. "...and this is precisely what we wish to encourage through our exchange," said von Amerongen.

JOHN M. BRADLEY

## Waste treatment...

**CAN ECONOMIC INCENTIVES** and penalties help solve the growing problem of managing the solid waste that our industrialized societies produce in increasing quantities? The Organization for Economic Cooperation and Development, made up of the 24 major free-market nations, says "yes" in its recently published report, "Economic Instruments in Solid Waste Management." It reviews its members' experience, outlining four proven economic instruments, to be used individually or in combination: user and product charges, refundable deposits and financial assistance. It discusses initiatives used, such as waste exchanges and tax regulations. And it provides several case studies, e.g., waste oil recovery in West Germany; how Sweden and Norway deal with car hulks; how Denmark, France and Switzerland collect used mercury cells; and Japanese incentives for municipal waste collection and recovery. The 193-page book is available either from national OECD offices or from the main office, 2 rue Andre-Pascal, 75775 Paris Cedex 16, France.

**HUNGARY, POOR IN ENERGY** and raw material, is planning a major recycling effort, its state news agency MTI reports. It said that in developed capitalist countries secondary utilization of waste materials accounts for 15 percent of the total raw materials consumed; this rate is 10 percent in East Germany but only 2 percent in Hungary.

MTI said great efforts were being made to promote secondary processing in waste disposal. In the new five-year plan (1981-85) more than 10,000 million forints will be spent on secondary use of raw materials, by-products and waste. As a result of this investment, it said, 18 percent more scrap iron and 38 percent more non-ferrous metal waste will be melted in furnaces; secondary use of textiles will grow by 38 percent; and by the end of the five-year period, some 560,000 vehicle tires can be remolded.

**A SEMI-MECHANIZED COMPOST PLANT** has gone into operation on the outskirts of New Delhi. It will convert 150 tons of garbage into fertilizer every day.

Built at a cost of over \$15 million, the plant will help solve the problems of disposal of huge quantities of garbage and will provide fertilizer for overworked soils. Officials estimated that 12.5 million tons of nutrients were lost every year for the production of 125 million tons of food, and only 5 million tons of nutrients were replenished through chemical fertilizers. This pilot project is just a starting point to fill the gap, officials said.



## Eco-politics . . .

**STRONG LOBBYING**, both within the U.S. Congress and by concerned citizens, resulted in the restoration of much of the UN Environment Program's U.S. contribution. From \$10 million last year, the administration first suggested that UNEP get zero funding, which was then raised to a token \$2 million (WER, Oct. 30, 1981, p. 1; Dec. 15, p.2). By the end of the year a final figure was reached—\$7.85 million. The administration is now discussing its funding levels for fiscal 1983, and voluntary contributions to international organizations (the category UNEP falls into) are likely to be cut. Also Congress is planning an investigation into UNEP's management, which could affect next year's funding.

**SWEDEN PLANS TO CARRY ON ITS FIGHT** against acid rain with an international conference of adherents to the Geneva convention on acid rain. Agricultural Minister Anders Dahlgren has invited the 33 signatories to Stockholm late in June to see what can be done to implement the convention. According to the Swedes, 24 of the signatories will have ratified the convention during this year so that it can go into effect.

Sweden and Norway in particular are adversely affected by acid rain because there is little lime in their granite soil to neutralize the acid. In Denmark, on the other hand, acid rain is often considered a blessing in disguise, because it provides nutrients to the soil.

The Swedish state budget for 1982 includes appropriations for continued neutralization (liming) of affected lakes. Emission standards for coal-fired power plants are also to be tightened up.

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## Martial law may hinder Polish industry cleanup

**NEW YORK**—Last year, when Solidarity was a force to be reckoned with, it lobbied the Polish government for increased environmental health controls on state-owned industries. Now that martial law has been imposed on the country—and on Solidarity—it seems likely that last year's environmental measures may be the last taken for some time.

Pressure from officials in Cracow, Solidarity and the Polish Ecological Club led the government to close polluting aluminum and cellulose plants (WER, Feb. 16, 1981, p. 5; May 11, 1981, p.5). They had hoped also to establish a national environmental council separate from the government, but that idea now seems unlikely.

Nevertheless, the problems remain, and they are serious. According to information published last year in *New Scientist*, the industrial heartland around Cracow and Katowice in southern Poland is so badly polluted that people have been killed and crippled and their farms destroyed. Acid rain has so corroded railway tracks that trains are restricted to 25 miles (40 kilometers) an hour.

During the brief time that the union Solidarity helped to overturn scientific censorship, one regional official commented: "People are getting nervous about the (environmental health) situation. But the region cannot deal with this problem itself, as Polish industry is centrally planned."

The Katowice region abuts Czechoslovakia. Although it has just 2 percent of Poland's land area, it contains 10 percent of its people. Nearly 24 percent of all cases of occupational disease are found in Katowice, and the people of the region have far more circulatory system problems, tumors and respiratory diseases than other Poles. The lead content in home gardens belonging to workers was hundreds of times the national permissible limit, and cadmium ranged from four to 16 times the prescribed limit. The Polish Ecological Club, which made the study from which these figures are drawn, recommended that at least 17 percent of the region's farmland be taken out of production.

This industrial pollution blows 67 kilometers east to the ancient and architecturally beautiful city of Cracow, which is sited in a valley between a 20th century aluminum plant and the Lenin steelworks. Farmers around Cracow have had to give up growing certain crops, and water trucks spray the central square and marketplace to keep the dust down—dust which has nine times more pollutants than the law supposedly allows.

And, for the workers, now without a voice, the *New Scientist* reports that in 1980, at the Lenin steelworks, 80 percent of all workers leaving the plant did so because of disability.

SPECIAL TO WER

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# World Environment Report

News and Information on International Resource Management

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## West Germany's great forests "can no longer be saved"

**BONN**—Despite numerous reports from West German industrial and governmental sources attesting to a decrease in air pollution during the past 20 years, changes in the makeup of the pollution have caused vast damage to the country's forests. In a comprehensive article published recently in *Der Spiegel*, foresters from around the country and nature conservation organizations gave shocking reports of forest damage already suffered and forecasts of worse to come.

In the Franconian and Alpine areas of Bavaria some 55,000 hectares of coniferous forest have been totally destroyed, according to the Federal Association for Environmental Protection. A forest biologist in the State of Baden-Wuerttemberg reported 64,000 hectares of fir forest "in a state of decrepitude," with thousands of spruce trees in scattered locations dying. There were similar reports from Frankfurt-Wiesbaden, North Rhine Westphalia and from the flat country between Hannover and Hamburg. The Commissioner for the State of Hesse, Karl-Friedrich Wenzel, says the whole ecological system is endangered, adding, "We are sitting on a time bomb." Other expert comments: "The green lung of the country will soon become the black lung," and "The first great forests will die within the next five years. They can no longer be saved."

It is generally agreed that sulphur dioxide (SO<sub>2</sub>) is the principal culprit, aided by carbon monoxide and various by-products of metal refining processes. Notwithstanding the reports that SO<sub>2</sub> emissions have been reduced in industrial areas, the fact remains that 3.5 million tons of SO<sub>2</sub> are discharged into the atmosphere annually, twice as much as in the 1950's. All processes that burn fossil fuels contribute to this load.

Today's high level of industrial activity and 26 million motor vehicles are the direct cause of the increase in sulphur discharges. During the 1950s a certain amount of air pollution was accepted as an inevitable by-product of a healthy economy. As the affected populations became less tolerant, plant operators installed filters in smokestacks. These made the air appear cleaner but they had no effect on sulphur compounds and other gases. To deal with them, at least so far as local effect was concerned, the height of smokestacks was steadily raised, often to 300 meters and more. These had the desired effect in the immediate vicinity but have facilitated the spread of these gases to previously unpolluted areas.

Inadequate and faulty as West German pollution control



## Forestry...

**AS A RESULT OF DISASTROUS FLOODING** late last summer, a massive tree-planting and reforestation campaign is underway in China's Sichuan Province.

Officials said destruction caused by the flooding of the Yangtze River was primarily caused by years of indiscriminate cutting of trees.

An article in the authoritative Sichuan Daily, the Communist Party organ of China's most populous province (more than 100 million people), said that of 4.3 million trees planted along roadways in the province between last winter and last spring, only 50,000 remained.

The article also called for stiff punishment of persons guilty of indiscriminate tree cutting.

The campaign to plant new trees in Sichuan will concentrate initially on afforestation along 50,000 kilometers of the 82,000 kilometers of roads which are suitable.

**A 1,500 HECTARE PLANTATION** has been set aside in Indonesia to preserve different species of coconut. The chief of Balitri, the Industrial Crop Research Board in Manado, said he did not yet know the number of species of coconuts Indonesia has. He said 100 trees of each species will be preserved. The plantation in Luwu, South Sulawesi, will be managed by Balitri-Manado under the guidance of the National Pollen Commission. Three similar boards coordinate and develop coconut research in Bogor (West Java), Malang (East Java) and Tanjung Karang (South Sumatra).

**A TIMBER LICENSE AGREEMENT** signed with Southeast Aquatic Corp. was cancelled by the Philippine Ministry of Natural Resources for gross violations of forestry rules. With the cancellation of the firm's permit, an annual allowable cut of 40,670 cubic meters of timber is expected to be saved. At present, there are about 366 timber concessions throughout the Philippines. Since 1972, 284 licenses have been cancelled and this year 11 have been suspended.

**LARGE-SCALE DESTRUCTION OF FORESTS** is being viewed with alarm by officials in the hilly northeastern states of India, the largest of which is Assam. The North Eastern Council proposes to control the amount of timber being felled as well as the methods.

The council is concerned that contractors entrusted with logging do not know how to scientifically manage these operations. Forest workers are also to be trained to use modern techniques for cutting trees, and nurseries are being started to plant tropical pines and other fast-growing species to take their place.

These northern states include 12.5 million hectares of forests, one-third of which are "reserved" or controlled by government. The region produces much of India's paper and pulp.

measures are and have been, the country is far better off than most of its neighbors. According to data compiled by the OECD, the quantity of airborne sulphur being dumped on European territory doubled between 1950 and 1972 and is still climbing. By 1978 sulphur precipitation throughout Europe came to 46.62 kilograms (103 pounds) per capita, 1.6 times as much as in West Germany. The worst offender in this regard is the German Democratic Republic (East Germany), with 118 kilograms, followed by Czechoslovakia, with 106 kilograms.

Thus, so far as the West German forests are concerned, their rescue, if there is to be one, can be accomplished only partially through West German efforts, air currents having no regard for national boundaries. To that end, a revised bill is now being prepared for consideration by the Upper House of Parliament. It will provide for a radical overhaul of current air pollution laws. But since state delegates vote as a bloc, the forested states may be at odds with the industrial states. When the vote comes later this year, it is likely to reflect a combination of environmental, economic and social considerations.

J.M. BRADLEY

## Despite laws, Czechs losing much of their arable land

**PRAGUE**—With less than half a hectare of arable land per person, Czechoslovak authorities and the press have for years expressed concern over the continuing loss of land to housing, industry and farm building.

In spite of admirable land-protection laws, 173,000 hectares of arable land, enough to feed almost 400,000 people, were lost within the last five years, Communist party agricultural chief Frantisek Pitra revealed at a recent party session.

He said that in the future, land will be released for industrial construction only if the investor carries out—at his own cost—cultivation of land not in agricultural use of at least the size he is demanding. Urban plans which involve building large housing estates or dormitory towns on high-quality land are to be re-assessed and exceptions from the law, when they are granted, will be much more costly.

Farming establishments were likewise urged to utilize land better, not only by curtailing construction on arable land but also by using high quality seeds for higher yields.

Not all farm land was lost to industry and housing. Some, especially in the mountain district, has been reforested and some was lost to the building of lakes and reservoirs. The loss was partly offset by an ambitious program of reclamation of waterlogged areas and irrigation of dry land.

In comparison with 0.44 hectares of arable land per capita in Czechoslovakia, Austria had 0.49, Poland 0.55, France 0.60 and Hungary 0.63.

IVA DRAPALOVA

## First real assessment on Baltic Sea pollution

**COPENHAGEN**—The first real assessment of the effects of pollution on the Baltic Sea has just been released by the Helsinki Commission and the International Council for the Exploration of the Sea, the latter based there.

The report, which has been condensed into a 30-page English-language summary, terms the Baltic "one of the largest brackish water areas in the world," dependent on the straits connecting it with the North Sea for new supplies of salty, oxygen-bearing water. Major concern has been directed towards the levels and effects of chlorinated hydrocarbons, heavy metals, oil and nutrients from paper and pulp industries.

Dead bottom areas, termed "benthic deserts," can be found at various places, particularly around the Swedish island of Gotland. The oxygen content of bottom waters has decreased measurably during the present century, with a resulting increase in hydrogen sulfide concentrations inhibiting bottom life. Phosphate concen-

trations in the Baltic's central basins have increased by 100-300 percent since the 1950s.

Changes definitely traceable to human activity include increasing concentrations of nutrients, chlorinated hydrocarbons, PCBs and heavy metals. On the other hand, DDT levels in Baltic fish have decreased in recent years due to the ban by most countries in the area on this chemical.

The report leaves a number of questions unanswered, including how much of the Baltic's deterioration is natural, how much man-caused. There is too little information on the specific results due to introduction of various chemicals and industrial or human waste products. Because of national sensitivities in some Baltic countries, the assessment didn't get to grips with the conditions of coastal waters, which is where most of the waste input takes place. Nevertheless, the baseline assessment is seen as a real scientific achievement which can be used as a yardstick for measuring changes in coming years. The results, qualified as they are, carry more value than earlier studies. Scientists in Baltic countries are beginning to standardize their sampling methods, so that findings will mean more or less the same thing in various countries.

The Helsinki Commission, more officially the "Baltic Marine Environment Protection Commission," consists of all countries around the Baltic, from Denmark in the west to the Soviet Union in the east.

The English summary of "Assessment of the Effects of Pollution on the Natural Resources of the Baltic Sea, 1980," is obtainable from: Secretariat, Helsinki Commission, Etelaesplanadi 22 C 43, SF 00130 Helsinki 13, Finland.

A.E. PEDERSON

## Ocean management...

**SOVIET NEWSPAPERS REPORTED** recently that thousands of local people helped experts clean up an oil slick around the Soviet Baltic port of Klaipeda.

The reports said that the 20,000-ton Gibraltar-registered tanker, *Globe Asimi*, ran aground and broke up in November as it attempted to sail out of the Lithuanian port during a storm. An estimated 16,000 tons of fuel oil were spilled.

The newspaper "Trud" reported that the oil was 30 to 40 centimetres deep in places and had polluted the beaches near Klaipeda—described as Lithuania's finest. Thousands of residents turned out to work as clean-up crews, the report said, and experts flew in from as far away as Soviet Azerbaijan.

**NEW ZEALAND** has just published an atlas, the first of its kind, on its coastal resources. Its 16 full-color maps indicate the type of coastline and its sensitivity to oil pollution, coastal currents and tidal ranges, reserves on land and in the sea, fishing activity, bird colonies, marine mammal colonies, major ports, and commercial mineral sites. The 60-page book includes a gazetteer and 18 diagrams. It costs NZ\$29.50 (US\$24.50) with postage about US\$2.50 from the Government Bookshop, Private Bag, Wellington, New Zealand.

**THE MALAYSIAN GOVERNMENT** is planning to increase the number of marine parks along its 4,800-kilometer-long coast to protect coral reefs and other marine life.

The Minister of Science, Technology and Environment said reef damage was affecting spawning grounds important to the country's economy.

**INDIA'S MAIN SPACE RESEARCH** center at Thumba faces an unusual hazard. The sea is threatening to undermine its launch pads.

Scientists from the National Institute of Oceanography warned the Indian Space Research Organization that erosion could soon affect rocket launches. The problem is most serious during the monsoon, which is also the peak period for launching meteorological rockets.

More than 1000 Indian, American, British and Soviet-made rockets have taken off from the Kerala State site.

Its position on the southwestern coast of India near the equator makes it ideal for launching rockets to examine the atmosphere and ionosphere.

In 1969 the Indian Government declared it an international center at the disposal of the United Nations.

## Water quality...

**WEST GERMANY CONTROLS** only 15 percent of the catchment area of the Elbe River; the rest is in East Germany and Czechoslovakia, where most of the runoff of farm wastes, sewage and industrial wastes emanates. Particularly worrying to the West Germans is the runoff of heavy metals: cadmium, lead and mercury. Lead can affect the synthesis of blood proteins and damage the kidneys and nervous system. Mercury damages the central nervous system, and cadmium can cause kidney and possibly bone and liver damage. The amounts of these metals in the lower Elbe are dangerous, although no one knows what harmful effects long-term exposures might cause. Therefore, the West Germans are trying to get information from their eastern neighbors on sources of the metals (according to the Economist they have had no data from them for 20 years.) Meanwhile, the West Germans are analyzing pre-industrial-revolution deep sediments of the Elbe to determine the natural levels of the metals.

**THIRTY-SIX YEARS AFTER BOMBARDMENT** of a Czech oil refinery, pollution continues to spread, endangering underground water springs. The refinery, situated about 40 kilometers east of Prague, was hit by American forces in March, 1945.

Rapid pollution of surrounding areas was prevented by the heavy clay soil, but the pollution continues to expand, though slowly, and has spread since the end of the war about 200-300 meters in the direction of the Elbe river.

Seepage into the river is unlikely, as the river banks consist of reinforced clay, but sources of drinking water in the area between Kilin and Podebrady are endangered. To deal with the problem a wall, 1,400 meters long and sunk to a depth of 12-15 meters, is to be built to cut across water flowing away from the refinery. Three wells will be built to collect the underground water from the area. This then will be pumped into the refinery cleaning plant and the oil separated and used as raw material in further distillation.

**AN ENVIRONMENTAL MASTER PLAN** for South Korea's most important and polluted river basin is underway with a \$4.1 million technical assistance loan from the Asian Development Bank. Total cost of the project is \$6.8 million. Thirty percent of the country's population lives in the project area, which contains over 8,000 industries and the cities of Seoul and Incheon. Under the project, to be implemented by the Office of the Environment, linkages between water and air pollution and solid waste management will be studied so that an appropriate and cost-effective strategy can be developed.

## Germany is taking a hard look at North Sea pollution

**BONN**—When a tanker dumped 500 tons of crude in Hamburg harbor last July, the environmental damage was minimal. But the potential disaster served a warning, and officials are taking a close look at the environmental state of the North Sea and their ability to cope with a more serious accident in the future.

Barely a year ago a report submitted by an environmental advisory board to the Ministry of Interior warned that just such an accident involving an oil tanker or chemical-laden ship was overdue.

Hamburg, with a population of 1.5 million, is West Germany's second biggest port. It hosts 19 refineries and oil-related industries. They ship out 10 million tons of oil a year. The port and surrounding industries are located 113 kilometers inland and connect with the North Sea by the Elbe river.

Some of the larger ships, when fully loaded, barely clear the river bed, allowing little room for navigational error.

Since the near-disaster, a number of proposals to reduce the threat of accidents have been forwarded, such as a 300-kilometer-long pipeline to the port of Wilhelmshaven or a terminal in the Elbe estuary.

While long-term solutions are being debated, Alfons Pawlczyk, head of Hamburg's home affairs department, would like to see ships screened more carefully before being allowed to enter the Elbe.

The problem is not merely confined to crowded harbors such as Hamburg and Wilhelmshaven. The entire North Sea from the Elbe estuary to the Thames floats so much traffic that it has accounted for 50 percent of the world's collisions between ships of over 500 tons. In 1981 an estimated 655 million tons of crude oil and petroleum products will be shipped in North Sea waters between London and Hamburg.

There have been improvements in the flow of traffic and safety of ships at sea in recent years and efforts are being stepped up for more.

In May of this year the Safety at Sea agreement was enacted. One of its stipulations is that all new ships have a backup electrical and steering system. It was the steering that failed on the *Afran Zenith* causing her to run aground in Hamburg harbor. She was built in Spain in 1972, and there are hundreds more like her at sea which the agreement will not cover.

Another international agreement, drawn up in 1973 but yet to be ratified, is on maritime pollution (MARPOL). Were its provisions in force, according to the Bonn report, the world's marine environment could be rated much better.

It includes many technical details such as the requirement for double bulwarks, though many marine engineers object to this clause for fear dangerous gases could collect between them

creating an even greater danger. It also calls for strict arrangement and size of tanks aboard a tanker with a view to keeping spillage to a minimum in the event of an accident. A particularly strongly worded clause is one prohibiting the pumping of bilges at sea.

The qualifications of seamen is another area receiving international attention. Repeatedly there are tales of untrained crews, masters' licenses that can be bought for a small fee in certain consulates and national shipping authorities that turn a blind eye to such practices.

MARPOL and the seamen's qualifications agreement would permit port authorities to refuse offending ships docking facilities, or, if discrepancies are discovered while a ship is in port, to impound the ship and arrest her captain. Ratification of MARPOL is expected next year when Common Market countries meet to hammer out final details.

Besides entering into international agreements, West Germany is taking unilateral measures to protect her coast. The most ambitious of these is an agreement reached by the coastal states of Lower Saxony, Schleswig-Holstein, Bremen and Hamburg. It calls for the raising and investment of DM100 million (about \$44 million) to convert five tenders to sea-going oil vacuum cleaners. Left-over funds will go towards the purchase of chemical agents to soak up oil slicks and hundreds of yards of breakwater, the waterborne equivalent of sandbags.

Environmentalists applaud these efforts, but insist on more. The North Sea is one of the most polluted bodies of water in the world. Shipping-related accidents cannot be blamed for all its pollution. Industrial runoff and sea dumping of waste are considered more menacing. The government is in agreement.

According to statistics recently released by the Ministry of Interior, the 14 countries which have access to the North Sea together dump 8.8 million tons of industrial waste a year, including 1.3 million tons of potential carcinogens. They also dump 400,000 tons of toxic metals into rivers which flow into the sea.

Of all the rivers draining into the North Sea, the Rhine is Europe's most noxious. Its most potent effluent is 10,000 tons a year of organic chlorine, a chemical used in pesticides which is notoriously long lasting and which can be concentrated in sea creatures and passed along the food chain to man. The Rhine also carries 17,000 tons of toxic metals into the North Sea, including lead, zinc, cadmium and mercury.

Causing the most concern among environmentalists is the yearly dumping of two million tons of titanium dioxide from West German and Dutch paint manufacturers. Scientists believe this dumping is the direct cause of diseases afflicting between 20 and 50 percent of the fish caught in the German Bight area. Added to this annual runoff is 400,000 tons of oil, most of which reaches the sea through rivers and drainage channels from the heart of Europe.

JOHN M. BRADLEY

## Water wise ...

**THE BRITISH GOVERNMENT** has been asked to strengthen reporting and labeling regulations for ships carrying hazardous cargoes in U.K. waters, according to Hazardous Materials Intelligence Report. The U.K. Association of County Councils wants legislation requiring carriers to report dangerous, lost cargoes and to clearly mark all primary packages of chemicals for identification and tracing if lost. IMCO, the Inter-Governmental Maritime Consultative Organization, has a voluntary loss reporting scheme. Its Safety of Life At Sea (SOLAS) Convention does not require that ships' manifest carry information on packages of chemicals carried.

From December 1979 through February 1980, more than 5000 packages of chemicals, some highly toxic, washed onto U.K. beaches, and 20 people were hospitalized. The high cost of recovering the chemicals—about \$120,000—was because 50 percent of the packages were unlabeled.

**THE PHILIPPINES WILL SUFFER** fish shortages by 1990 if nothing is done to control pollution of the country's surrounding seas, according to a survey done recently. The findings show that the most polluted harbors are in Manila, Batangas, Cebu, Iloilo, Bacolod, Davao and Zamboanga.

**AUSTRALIAN GOVERNMENT PLANS** to have the entire Great Barrier Reef declared a national marine park are running into opposition from the premier of Queensland State, Joh Bjelke-Peterson. At present, only a relatively small portion of the reef is protected by legislation that makes it a marine park.

Australian Premier Malcolm Fraser told a recent meeting of the World Heritage Committee in Sydney that his government intends to protect the entire reef and was "actively seeking a cooperative approach with the Queensland Government."

But Bjelke-Peterson said the area the federal government wanted to include was too great. He said Queensland wanted it reduced to "retain some freedom along the coastline."

Opposition Labor Party leaders said the federal plan does not go far enough. They also said that one of the reasons Queensland was opposing the plan was because it might hamper proposed oil drilling operations.

Fraser said no oil drilling would be permitted in the Great Barrier Reef area in the foreseeable future.

## International cooperation ...

**THE EUROPEAN COMMUNITY's** environment ministers last month agreed, after a five-year deadlock, on a directive controlling discharges of mercury from chlor-alkali plants. The policy to control particularly toxic chemicals that accumulate and do not degrade in the environment, goes back to 1976. That EC directive, ENV 131, allows discharges of these chemicals as long as they do not exceed limits prescribed by implementing directives. On mercury, the conflict was resolved by a clause obliging firms to buy the latest anti-pollution equipment. But for the other listed chemicals, negotiations could take even more years. Cadmium is next on the list; but unlike mercury, it is used in several industries.

**LEADERS OF KEY ENVIRONMENTAL GROUPS** met in Brussels late last year to plan their participation in the UN Environment Program's 10th anniversary session. It was decided to invite 80 representatives of non-governmental organizations (NGOs) to Nairobi for the session. Not only will they express their views at the UNEP meeting but they will also discuss plans for their future and for better cooperation. The Environment Liaison Center, which coordinates NGOs worldwide, is handling the logistics with a proposed budget of \$150,000.

**THE 24 MOST INDUSTRIALIZED NATIONS**, who form the Organization for Economic Cooperation and Development (OECD), last year approved a recommendation on systematic procedures for recalling unsafe products. Now the OECD has published a report, which was the basis for the agreement, that describes the various phases of recall procedures, from identifying the hazard to replacement or compensation. The report describes the actual experience of OECD states, especially that of the United States. The 64-page report, "Recall Procedures for Unsafe Products Sold to the Public" is available from OECD sales agents, or from its Publications Office, 2 rue Andre-Pascal, 75775 Paris Cedex 16, France.

**"THE ENVIRONMENT: CHALLENGES FOR THE 80s"** was the subject of an OECD meeting last year. Now proceedings of that high-level meeting between top environmental officials of the 24 most industrialized nations have been published. Among the issues discussed for collective action were: climate change, hazardous wastes, tropical forest destruction and loss of genetic materials. The 52-page proceedings (ISBN 92-64-12249-4) are at OECD sales agents or its Publications Office, 2 rue Andre Pascal, 75775 Paris Cedex 16, France.

## WER interviews Britain's pollution control director

**NEW YORK**—"Environmental protection is not high on the political agenda in the U.K.," said John P.G. Rowcliffe, undersecretary in that nation's Department of the Environment. It's not even all that high within the Department, he said, for other areas that fall within their purview now are more pressing, things like housing policy, local government finance and inner city land-use problems.

Rowcliffe was in New York to speak before the World Environment Center's International Environment Forum. Prior to his speech, he talked with WER.

Rowcliffe heads one of three directorates in the U.K.'s Department of the Environment. It is his job to cope with environmental pollution, chemicals and heavy metals, the international arena and to help his Secretary of State Michael Heseltine in his coordinating role across all sectors of government.

He said the Department doesn't have a budget for all the environmental works it oversees. "We don't have grants for water. That comes from the (10 regional) water authorities. Most of what's spent on waste disposal, most of what goes for air pollution is spent by local governments who get block grants from the government."

"What our law does is put responsibility on local pollution control authorities." His department's role is to encourage and oversee the local authorities and to deal with objections from the public. "We may still have laggards" in the local authorities, he admitted; "we may still have to encourage them to act. To meet European Community environmental directives, we will have to have tighter controls and put pressure on local authorities."

However, Rowcliffe is relatively sanguine about the state of the environment in his country. Although England's first piece of air pollution legislation dates back to 1863, there have been major developments during the last decade in water and air pollution control (by 1980, ground-level concentrations of smoke in urban areas were 10 percent of those prevailing in 1952), and toxic waste disposal and control. "This is, I think, no mean achievement for a country which gave birth to the Industrial Revolution, and where a wide range of heavy industries operated virtually without controls for well over a century."

"This," he continued, "has been achieved despite the unfavorable economic climate which has affected us since the first major rise in oil prices" in 1973. But, he noted, "not all environmental improvements that we have experienced have been due to the effects of public policy and foresight. A major reason for the reduction in air pollution over the last 20 years has been North Sea gas" and recession-reduced industrial output.

There are, he conceded, places where environmental conditions "are not as good as they might be." The lower reaches and estuaries of several rivers are still polluted, and there are "hot

spots" of air pollution in some cities.

"We are now faced with the need not so much to tackle large and obvious problems," Rowcliffe said, "as to keep a 'watching brief' on a much larger number of potential problems," such as long-term, low-dose exposure to chemicals. "The emphasis," he said, "will continue to shift from gross pollution problems towards a preventive approach, towards the development of a more sophisticated scientific basis for policy, and towards a greater concern with questions of resources," for example, recovering potentially toxic substances.

However, continued pollution control depends on a reasonably healthy economy: "It is difficult for industry to invest in better equipment and processes during a recession," he commented. A return to industrial growth won't necessarily lead to an increase in pollution levels, Rowcliffe believes, for studies have shown that the trend in the U.K. is towards the development of industries that create far fewer pollution problems.

A main function of his department is to look at the environmental and workplace consequences of chemicals. In 1977, the U.K. began a chemicals notification scheme, for testing results to be published before a chemical goes on the market. As of this year a similar scheme (the sixth amendment to the European Community's 1967 directive on the classification, packaging and labeling of dangerous substances) will go Europe-wide. Under the sixth amendment, all new chemicals will have to be tested for potential hazards. Full information will have to be supplied to the government where the chemical is first marketed 45 days before it can be sold. Then a summary of its properties is provided to the European Commission in Brussels, and the chemical can be sold freely throughout the 10-nation E.C.

The European Community also, Rowcliffe said, for the first time in its 1982-86 action program, is planning to cooperate with the developing countries on environmental matters. According to the proposal now before the European Commission, which initiates action, "The Community...should henceforth regard environmental protection as an integral part of its aid to development policy...It will be specially receptive to requests for technical assistance in training environmental specialists.

"The priority aims will be conservation of tropical forests, the fight against the spread of deserts, water management, introduction of agricultural systems and forms of energy use which are compatible with the environment. Particular attention will be given to education and information activities so that developing countries will become able to undertake these tasks by themselves in future."

Although this may well become E.C. policy, and the U.K. is a member of the community, Rowcliffe admitted there is "very little interest" in his country on global environmental issues. Why? Perhaps, he said, "because the English have a pragmatic approach of looking at things as they are, or because of our philosophical tradition." Or, it could be that England, deeply concerned with its internal problems has narrowed its view from the world it once practically owned.

LIBBY BASSETT

## Toxics

**IN THE LATEST MOVE** toward "normalization" of dioxin-polluted Seveso in northern Italy, health authorities lifted a five-year ban on garden cultivation in a 1,200 hectare area.

Luigi Noe, the government commissioner on duty for reclamation of Seveso, near Milan, said prolonged checks and analyses showed there was no longer a hazard in eating fruit and vegetables cultivated in the kitchen gardens of the R zone, close to the most polluted zones, which are still off-limits.

Residents in the area were also allowed to grow rabbits and chickens again.

Large areas of Seveso were evacuated and farming banned on July 1976 after leakage of highly toxic dioxin from the Swiss-owned Icmesa firm. It is considered Italy's worst ecological disaster.

**OVER 80 PERCENT OF POLLUTION** in Ireland comes from domestic and farming activities, the head of the country's Chemical Industries Federation has claimed.

John Burns said that industry was carefully controlled by government regulation, and the Federation wanted to see toxic waste dumps in Ireland—a long-standing debate which has not yet been resolved.

**CZECHOSLOVAKIA IS BUILDING** a national centralized toxic waste incinerator in the district of Hradec Kralove, about 150 kilometers east of Prague. The furnace is designed to incinerate normal municipal wastes as well. When it begins operating, in 1984, its waste heat will be used in a nearby agricultural cooperative to process fodder.

Czechoslovakia produces about 2000 metric tons of toxic waste a year, mostly as byproducts of heat or surface metal refining. Most factories so far have simply stored it.

The incinerator technology was worked out in the Prague Technical-Economic Institute of Heavy Engineering.

**RADIO BUDAPEST** reported that a pharmaceutical factory that has been blamed over the years for polluting drinking water in Hungary has burned 350 tons of chemical waste on the firm's grounds. Health and environment officials oversaw the three-day conflagration, the report said. Experts believed the water pollution was caused by the company dumping chemical wastes in waterways near the city of Vac.

The radio report added that the Chinoin company will no longer store chemical waste in the region. Unusable chemicals and medicines, which this year amounted to some 1,000 tons, will be transported to Vienna and burned in installations there. Meanwhile the Chinoin firm will begin building its own modern incinerator.



## Agriculture ...

**TO MINIMIZE THE USE OF PESTICIDES**, a new computer-management system for cotton growing, known as SIRATAC, was recently introduced into Australia by the Commonwealth Scientific and Industrial Research Organization.

Scientists from CSIRO and the New South Wales Department of Agriculture, who led the development team, said that SIRATAC would encourage similar computer-based management systems for wheat, oil seeds and other rural industries.

The computer processes data in the field on insect pests and their predators, on weather conditions and cotton maturity. This gives the cotton farmer advice about water use and whether or not to spray.

**PRODUCING ANIMAL FEED** from Brazil's agricultural waste will be a challenge to the agricultural industry over the next few years. Research indicates that animals fed from organic wastes show lower levels of fat, which reduces cholesterol levels and cardiac problems for human consumers. More importantly, recycling the large mass of agricultural waste in Brazil will improve both product and productivity.

**TO CUT DOWN ON IMPORTS** of expensive oil-based fuels and inorganic fertilizer and at the same time alleviate pollution from animal wastes, the Philippines in January starts work on an agricultural waste recycling project. With consultant services provided by the Asian Development Bank, the Ministry of Agriculture will be looking into biogas production and the production of organic fertilizer. Crop yields are expected to improve and, the ADB says, there will be considerable environmental and public health benefits.

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## Pesticide use in Malaysia "a grim warning to others"

**PENANG**—"Our experience in Malaysia is a grim warning to other countries of the problems and dangers associated with (pesticide) use," wrote Dr. Lim Teck Ghee of Sahabat Alam Malaysia (SAM), the national Friends of the Earth group.

SAM's recent study on "Pesticide Problems in a Developing Country—a case study of Malaysia," revealed that at least 14 pesticides restricted or banned elsewhere are widely used in Malaysia. They include DDT, Chlordane, Aldrin, Dieldrin, BHC, 2,4-D and 2,4,5-T.

Sahabat Alam Malaysia also reports the results of a survey of 83 farms in two areas of the country. The surveyors found that more than 60 percent of the farmers use pesticides as a preventive measure rather than to stop an outbreak of pests. More than 72 percent bought pesticides on the recommendation of the local shopkeeper, 12.6 percent on the recommendation of a salesman, and only 3.6 percent of the farmers made a choice based on the recommendation of an agricultural department officer.

Although more than three-quarters of the farm workers interviewed said they knew of the dangers of pesticides, only a quarter of them said they followed instructions or heeded the warnings.

A survey of commercial estates revealed that not a single one took precautions to ensure the safety of their workers. Masks and gloves were not supplied and although 78 percent of the workers were aware of the dangers, their small earnings precluded their purchase of protective gear.

Some estates surveyed by SAM use unlabelled pesticides, and the surveyors found that workers sometimes use their bare hands to stir and mix the chemicals.

Malaysian farmers work with pesticides, on average, every four or five days. About 94 percent use them up to nine days or less before harvest—"hardly enough time for the pesticide to be washed off," the study team noted.

As a result, Wong Kien Keong, Acting Dean of the Department of Environmental Sciences of the Universiti Pertanian Malaysia, found pesticide elements in the blood serum of the Malaysian population at levels up to 14 times higher than that in the general American population.

In its study SAM recommends several alternative methods of pest control, an education program for farmers and proper enforcement of the Pesticides Act of 1974. This Act regulates the importation, manufacture, sale and storage of pesticides in Malaysia. It provides regulations to control pesticide residues in food and it requires reporting and investigating accidents and injury. To date, SAM stated, there has been no real enforcement of the Act.

SPECIAL TO WER

"Pesticide Problems in a Developing Country—a case study of Malaysia" costs \$6, which includes postage. It is available from Sahabat Alam Malaysia, 7 Cantonment Road, Penang, Malaysia.



# World Environment Report

News and Information on International Resource Management

- 5 JAN 1982 DECEMBER 15, 1981

## Editor's Note

*As World Environment Report predicted at the beginning of the '80s, after a decade in which environmental awareness expanded enormously, this has become a decade of concern about energy, alternative energy sources, resource management and economic development.*

*But no one could have predicted the extraordinary U.S. budget cuts and their effect on certain international environmental efforts. The United Nations Environment Program has been forced to cut its 1982 program in half because of a reduced U.S. contribution. Officials from several nations told WER they fear this might lead to a chain reaction of reduced contributions from other countries. Again, because of U.S. opposition, the World Bank's proposed energy lending affiliate went unfunded.*

*Yet, the situation internationally is far from bleak. Grassroots support for environmental measures has never been higher, not only in the Americas but in Europe, Asia, Australia, the MidEast and several countries of Africa. On the whole, there has been a strengthening of environmental law and regulations worldwide. And in the developing world, governmental concern for resource management has never been higher.*

*To put some perspective on this crucial year, World Environment Report, for the first time, looks back at the multitude of issues and areas of interest covered by our network of 60 correspondents during the past twelve months. It is our hope that this brief review will help us all to better plan and deal with the coming year.*

LB

**CONTENTS:** Energy 2, Forestry 3, Species and tribal peoples 4, Land 5, Air 6, Water 7, Industry 8.

## THE YEAR IN REVIEW

### America abdicates as others assert ecological leadership

**In 1981, the United States began abdicating its leadership of the global environmental movement—more, perhaps, by default than design.** By the end of the year, the signals were clear: the Reagan administration considered environment an expendable issue. Both domestically and internationally it suffered worst as budget-cutting ran its course.

Probably the most striking example was the administration's decision to cut its contribution to the UN Environment Program by 80 percent—from \$10 million to \$2 million, although the Senate was trying to restore some funding. UNEP, nevertheless, had to cut its 1982 program in half.

Concerned U.S. State Department officials held a conference to plot a strategy to save life on earth through biological diversity. An inter-agency task force was recommended to focus government attention on the most urgent steps toward genetic preservation. But a similar U.S. task force to discuss all Global 2000 Report issues (of which genetic diversity was just one) did not get off the ground.

The Carter administration's Global 2000 Report on probable changes in population, resources and environment by the end of the century was generally ignored by the new administration, although it received widespread attention in other countries.

World Bank President A.W. Clausen, in one of his first major speeches, said he was "encouraged that environmental concerns have become more widespread in the Third World over the last decade.... It isn't that Third World countries are better able to afford environmental protection than they were 10 years ago. They are hard-pressed by slow growth, high energy prices and high interest rates. But awareness is spreading that environmental precautions are essential for continued economic development over the long run."

Countries such as Norway and West Germany said they would tie their aid to environmentally sound development. The bishops of Costa Rica formulated an environmental encyclical that was preached from every pulpit. The Caribbean nations agreed to a regional plan that combined environment and development. Regional environmental programs were formed in South Asia, the South Pacific, in East and West Africa, in the Middle East and on the west coast of Latin America.

By 1981, the World Environment Center found, 133 nations had environment agencies, ministries or departments—a clear indication that environmental preservation is now a global concern.

## Eco-politics . . .

**UN ENVIRONMENT PROGRAM** officials have cut its program by 50 percent, and are not taking on new commitments because of uncertainty about its financial position.

UNEP executive director Mostafa K. Tolba has appealed to European nations to lead a renewed world commitment to the environmental cause. He spoke at the European Parliament's environment committee meeting in Brussels in November.

Tolba's appeal to Europe followed an informal consultation in Nairobi between UNEP and representatives of the 58 governments who make up its Governing Council. At the Nairobi consultation, Sweden's representative Bertil Hagerhall called on world governments to prevent a threatened disruption of UNEP's work by stepping up their cash contributions.

Sweden has pledged to donate \$5 million to UNEP's Environment Fund in the next two years—a 35 percent increase on its 1980-81 contribution.

Tolba told the meeting that UNEP would start 1982 with a shortfall of \$23 million and had no choice but to slash its planned activities. He feared the cutbacks would have to involve the highly successful Regional Seas Program and the Infoterra system, which provides an international reference library on environmental material.

Tolba said UNEP's catalytic role, helping other agencies carry out environmental programs, may have hidden the real value of UNEP's work. The May 1982 10th anniversary meeting may decide whether this situation should be changed so that UNEP itself gets more of the credit which now goes to the executing agencies.

**A YEAR AFTER ITS FORMATION** the Year 2000 Committee held its first meeting this November. The Committee (*WER*, Oct. 15, p. 2) is comprised of 17 U.S. leaders concerned about global environment, population and resource issues.

There was, said Tod Heisler, one of three staff members, a "tentative consensus" on purpose. Executive Director Joel Horn, an intense and energetic Californian, said the session was "to get ideas out on the table, to discuss why other, similar groups have failed and what is feasible for this group to accomplish."

Said committee member Lester Brown of Worldwatch Institute: "The thing that's unique about the group is its members have access to the corridors of power." Some members have already met with U.S. Cabinet officials and similar meetings are planned.

Actual projects for implementation were also discussed but, says Horn, it will take two-three months for project preparation and an equal time before they begin to be implemented.

## The nations agree on the need for an energy transition

**Energy costs nearly quadrupled during the past eight years, crippling many economies. Finally, this year, the world's attention focused on energy alternatives.** The UN Conference on New and Renewable Sources of Energy brought 5,000 people to Nairobi in August to discuss an orderly energy transition to such sources as solar, wind and wave power, biogas, fuelwood and animal power. To achieve this, the World Bank estimated that an investment of \$54 billion was needed every year, just in the developing countries.

The Bank had hoped to launch an energy lending affiliate, but the budget-ridden U.S. government refused to go along. Bank officials now are devising alternatives of their own.

Fuelwood provides energy for more people than any other source, and forests are fast disappearing. The UN Energy Conference called for a five-fold increase in forest plantation by the end of the century.

Two countries led in the use of other biomass forms for energy. China's seven million biogas plants provide fuel for 30 million people, but elsewhere biogas was not so successful, for people disliked using human waste for cooking. Brazil was well on its way to its 1985 goal of producing 10.7 billion liters of fuel alcohol from sugarcane every year, and several nations followed its lead. However, there were environmental problems: fuel vs. food competition for land, masses of organic waste produced by the process, and concern about the effect of alcohol-fueled auto emissions.

The same sun that grows biomass can be a direct form of energy, and several nations launched major solar projects. Israel began using the Dead Sea as a solar pond, hoping it would provide 20 percent of its electricity by the year 2000. Italy began building "the world's biggest" solar plant—1.5 megawatts, and Australia inaugurated the world's longest—1600 kilometers—solar communications system. In Asia, regional workshops were held to explore joint research and development programs and demonstration projects. Saudi Arabia, with U.S. help, was building three large solar desalination plants.

Perhaps the most widely used renewable energy source was hydropower. Egypt began an ecological study of its plan to dig a channel from the Mediterranean into the Western Desert. Israel broke ground on its Mediterranean to Dead Sea canal. Major hydro-dams were planned in Sri Lanka (which required an impact assessment for funding) and Colombia—the biggest loan ever made to a Latin American country. These big projects can create big problems: flooding of wildlands, waterborne disease, displacement of people, erosion of land and siltation. Smaller hydropower projects began looking more attractive and were considered in places like Sweden and Wales.

Tidal power projects were seen as feasible by England in the Severn estuary and by Canada in the Bay of Fundy.

Windpower became a more possible alternative, with one

projection that it could provide up to 30 percent of energy needs in many countries. Norway, England and Ireland began looking into its use. Japan found small windmills for electricity not feasible, but big windpower farms were being tried—the biggest in Hawaii, built with Swedish help.

Conservation became an energy “source” as well: World primary energy consumption fell in 1980 for the first time in two decades.

## Forestry for firewood and soil conservation

**A combination of forces caused continuing depletion of tropical forest lands: the search for fuelwood, for agricultural land, and unrestricted or illegal logging.**

Sri Lanka said though it planted more than 7,000 hectares of trees a year, it was losing up to 70,000 annually. Thailand, once the world's richest habitat, lost half its timberland in just eight years. If the present rate of felling continued, the Forestry Department predicted Thailand would be treeless in 20 years.

UN experts, meeting in Bangkok, said that in Asia alone 67 million people do not have enough wood for both cooking and heating. By century's end, a billion people could be forced to cut more than their environment can bear to meet minimum fuelwood requirements.

Overcutting on the upper reaches of the Yangtse River, said the party leader in Sichuan, China, was the main cause of two devastating floods during the summer. India's national parks director said his nation lost 600 million tons of fertile soil every year due to erosion, choking up \$12 billion worth of dams and ruining the land on which 800 million people and 500 million cattle will have to live.

Tree planting campaigns thus were of top priority, and international and bilateral aid agencies responded with major funding.

In India, local people, supposed to be the beneficiaries of social forestry, were being displaced by commercial tree plantations. In Bihar, this led to a “tree war” that caused at least 25 deaths. However, a grass roots movement, the Chipko “tree hugger” conservationists, was having notable success in the Himalayan foothills.

In Tanzania, a six-month afforestation education campaign at the village level was so successful that officials decided to make it nationwide.

And in the Amazon, the biggest stretch of tropical forest in the world, experts found that during the past four years, 12 million hectares of national parks and protected areas have been established—an area the size of Mississippi.

To make the use of wood more efficient, several groups devised better cookstoves, and pilot plants in Ghana and India used forest wastes—sawdust, leaves and grass—to make fuel pellets, charcoal, tar and gas.

## Energy sources...

**THE U.S. NATIONAL RESEARCH COUNCIL** has taken a second look at small-scale energy technologies for developing countries and finds that, for the most part, “Either the cost is too high relative to current conventional energy sources or the current technology is not sufficiently reliable.” However, they reported in a five-years-later review, many alternative energy technologies “represent highly promising possibilities for the developing countries.” But right now, they say, “too many of these technologies remain beyond (the) reach of individuals and communities in poverty.” *Energy for Rural Development: Renewable Resources and Alternative Technologies for Developing Countries. Supplement*, 250 pages, is available from the Board on Science and Technology for International Development, NRC, 2101 Constitution Avenue, N.W., Washington, DC 20418, USA

**A PLAYFUL ENERGY SOURCE** has been invented by a laboratory in Zimbabwe. It's a swing pump, literally a swing for children which lifts water through a standard borehold pump. The design is simple, children enjoy the swinging part, and information is available from Blair Research Laboratory, Box 8105, Salisbury, Zimbabwe.

**A SOLAR-POWERED MOTORBIKE**, the first of its kind in the world, has been developed by Sri Lankan scientists. The bike, an ordinary push cycle fitted with a small motor and a battery charged with power generated by the sun, has a speed of 35 miles an hour (56 kph). Designed by scientists from the Institute of Engineers, the bike has a head cover supported by an aluminum frame. The head cover serves as a photo collector which converts solar energy into electricity. A small ammeter tells the rider how much electricity has been charged into the battery, while another ammeter mounted on the handles tells him the amount of electricity he consumes while riding. The motorbike can travel for distances of up to 20 miles at any one time.

**ONE MILLION WATER HEATERS** will switch from electric power to solar energy by 1990, Italy's state-controlled electric power company, Enel, and the government announced.

The change will allow Italy to save 600,000 equivalent petroleum tons, or 200 billion lire (\$160 million) a year. The cost will be about 2 million lire (\$1,600) per family, Enel experts estimated.

The state will reimburse citizens 30 percent of the amount while Enel will finance the balance of the expense, getting back the advanced money, without any interest, through increased bills for a period.

## Wildlife . . .

**SPHERICAL PLASTIC PELLETS** used to reduce deck friction during containerized vessel loading operations in the Ecuadorian port of Guayaquil are fouling the Galapagos Archipelago, Geo Magazine reports.

Blown or swept overboard, the pellets are carried by currents 1100 kilometers west to the Darwinian islands where they enter the food chain. The pellets are consumed by fish, blue-footed boobies eat the fish and short-eared owls eat the boobies. Non-biodegradable plastics in many forms are now being found on all global shores and represent a major international pollution problem.

**NOEL VIETMEYER**, a specialist in unexplored resources for the U.S. National Academy of Sciences, suggests that the world add two Latin American items to its menu, a Chilean toad and a large rodent, the Capybara, which lives in South and Central America.

The foot-long green toad, almost as large as its name, "calyptocephalella caudiverbera" "tastes like a cross between lobster and chicken," according to Vietmeyer. He said that the toad, which is eaten in Colombia and Venezuela, where it has been raised by private interests, is also being raised domestically at the University of Chile.

"You can count on the fingers of one hand the various domestic animals which produce almost all of humankind's meat and milk," he said. This selection was made more than 10,000 years ago by our Neolithic ancestors, yet the earth teems with at least one million species of animals. "Why limit ourselves to cattle, pigs and sheep?" he asks.

**"PROJECT TIGER,"** which was started eight years ago in the 10 states of India to increase the dwindling population of tigers, has helped that species but harmed the local people.

To make way for the tiger project about 22 tribal villages with a population of 6000 were resettled away from the forested areas. There is a plan to shift five more villages. Project officials claim that they have tried their best to help, but the tribals say the lands given them were either too small or barren. They have complained that there is not enough fodder and water for their animals.

**THE LARGEST SEA TURTLE** in the world, the leatherback, is now totally protected in its nesting area in Papua New Guinea. They cannot be killed, even with traditional weapons.

The leatherback has a shell up to six feet long, and it is the heaviest of the world's reptiles. Individual leatherbacks have weighed 544 kilograms. The latest estimate of the world's leatherback population is between 30,000 and 40,000.

## A strategy develops to save endangered forms of life

**As WER's environmental analyst Norman Myers pointed out, we are losing one species a day right now, probably one an hour by 1990, and by the end of the century, out of earth's five to 10 million species, possibly one million will be gone.**

1981 was the year when the international community began acting on the fact that all living matter, not just whales and whooping cranes, was endangered. This potential for massive extinction represented an irreversible loss of valuable natural material. In the U.S. alone, wildlife-derived drugs were worth \$6 billion a year. And genetic engineering—potentially a \$100 billion industry by the end of the decade—relied on a diversity of germplasm.

Therefore, the U.S. government organized a strategy conference to preserve as much of this biological diversity as possible. The financial resources for such a massive project are slim at best.

Nevertheless, 1981 saw several steps forward. At the Royal Botanic Gardens in England, a computer was installed to store information on the most endangered plants and areas of the world. The Convention on International Trade in Endangered Species met in New Delhi and agreed to control trade on several more species. The International Whaling Commission voted a ban on sperm whaling, but by year's end several whaling nations had filed objections to it.

Nevertheless, life forms as big as elephants and as generally ignored as coral were in danger from poaching and commercial interests, from increasing human populations and from their pollution.

## Tribal peoples—an untapped source of ecological lore

**Tribal peoples can be, and have been destroyed or cheated out of their birthright by thoughtless development.** As populations expand and governments pursue the development of remote, marginal areas, the 200 million tribal peoples of the world must be protected or acculturated, or they and their environmental knowledge will disappear. Some fight back.

In the Indian state of Bihar, hundreds of tribals were arrested and at least 25 died in a "tree war." In two years they destroyed about \$6 million worth of teak which replaced the indigenous trees that fed and cured them. "We are against any kind of plantation because it reduces us to laborers on the land over which we formerly had rights," one headman explained.

As Robert Goodland of the World Bank pointed out in his study of development and tribal peoples, preservation of tribal knowledge and peoples can be a significant economic opportunity for the world, not a luxury.

Tribal peoples, he explained, are familiar with the thousands of

biological species in their ecosystems and understand their inter-relationships far better than do most scientists. This indigenous knowledge of the species that make up their own pharmacology, foods and poisons has not yet been investigated in the context of an entire biota.

## The demand for land in farms and cities

**As populations increase, the demand for land becomes increasingly fierce.** In Europe, the amount of land averaged about a half-hectare a person; in Asia, it ranged down to a tenth of a hectare.

This has led to a massive migration to towns and cities. By the year 2000, the World Bank projects that more than 2.5 billion people will be crowded into the cities of the Third World. In the Mozambican capital of Maputo, a model shanty-town upgrading project was undertaken by the UN's Habitat, with active planning participation by its residents. The system was so successful it will be used in other areas.

Unplanned growth has caused Bangladesh to lose a quarter of its fertile farmland, Egypt to lose an amount equal to the land reclaimed from the desert, and England to lose a third of its wildlands.

Because of land abuse, widespread tree cutting and mismanagement, 80 percent of all cultivated lands in South America and the Caribbean suffer from some degree of erosion and as a result, a Latin American expert said, 40 million people there suffer from problems due to malnutrition. A UN Food and Agriculture Organization study said soil degradation is so far advanced in many countries that world food production is threatened.

Adding to this problem is the excessive use of agro-chemicals to increase crop yields: South Korea nearly doubled its use in just five years. Farmers in Third World nations, such as Malaysia, Thailand, Colombia, Costa Rica and Kenya, were sold agro-chemicals banned in the United States, or overused normally safe chemicals because they were unaware of proper applications methods. This has caused serious illness, even death, and has increased the level of toxic chemicals in mother's milk worldwide. This is not just a Third World problem: The Swiss this year issued a brochure nationwide on the dangers of pesticides.

To counter decreased yields, aid agencies made massive loans this year to nations such as Romania, Ecuador, Tunisia and the Sudan for increased irrigation and soil conservation measures. In Mexico, a nearly \$800 million soil and water conservation project was begun to increase production in nine districts representative of the country's ecological zones.

The use of wastes increased farm yields. For example, in Romania pig farm wastes doubled yields; in Britain waste heat from a coal-burning power plant grew tomatoes under glass; and waste treatment plants produced fertilizer used in Europe and Thailand.

## Agriculture ...

**AN INSECT** until now unknown in Africa has destroyed much of the corn in Tanzania's central Tabora region and has made famine in the area a certainty, British experts say.

Both the team of British entomologists sent to identify the pest and Tanzanian agricultural officials have termed the situation "very serious."

"*Prostephanus truncatus*," commonly known as the "Greater Grain Borer," is known in Central America and parts of the United States. There is speculation that the bug accidentally arrived here in a U.S. food aid shipment. "It's multiplying and gobbling up everything," an agronomist stated.

Diplomats estimate that up to 40,000 tons of corn will be needed to prevent starvation when Tanzania's limited corn supply runs out in late December. Emergency food aid is being sought but is unlikely to arrive in time.

In an effort to eliminate the pest, which has already spread to parts of neighboring regions, the region is being quarantined and grain stores sprayed.

**CHILE HAS DECLARED** itself the first South American nation to be free of hoof-and-mouth disease (Aftosa). The dreaded disease causes domestic animals—cattle, sheep, pigs and goats to lower meat and milk production. Most potential foreign markets quarantine animal products from afflicted countries.

Starting about 15 years ago, Chile's Agriculture and Livestock Service increased its technical skills and augmented its personnel to help identify sick animals and vaccinate healthy ones.

**77 PERCENT OF THE FRESH VEGETABLES** eaten by Venezuelans contain a residue of insecticides equivalent to double the limit established by the World Health Organization.

Mauro Fernandez, former dean of Agronomy, Central University of Venezuela, reported that a person eating 100 grams of tomato, sweet pepper or cabbage also eats 6.7 parts per million of insecticide.

In some cases, analysis showed that the levels of toxins was eight times greater than permissible limits. The overuse of insecticides is blamed on lack of information reaching farmers, monoculture, irrational application of products including some insecticides which are in theory prohibited, and failure to suspend spraying before harvest time.

The report was published in the first issue of the *Ecology Letter* (*Carta Ecologica*) prepared by a Venezuelan oil company, Lagoven.

## Recycling . . .

**A FILIPINO FARM** with 22,000 pigs, 6,000 ducks and some cattle has developed a total waste recycling system which controls pollution and generates fuel gas.

All 38 tons of manure is channeled daily into a huge biogas and energy conservation system where even the heat from the exhaust pipes is used. Maya Farms currently produces 66,000 cubic feet of biogas a day, or 60 percent of its energy needs for the meat processing and canning plants. The biogas also fuels water and slurry pumps, feed mixers, refrigeration systems and electric generators and dryers. It may be the first in the world to use biogas on an industrial scale, UNEP reports.

**RIO DE JANEIRO'S** centralized wholesale fruit and vegetable market recycles 6.5 million tons of waste yearly for the production of biomass fertilizer by Fertilub, the municipal organic compost facility.

Over 100 tons of compost are produced daily by the Fertilub facility, which has been utilizing the Brazilian city's vegetable wastes since 1978. The organic compost is sold for Cr 450 (about \$12) a bag to local farmers.

At the Ceasa market, located in a Rio suburb, approximately 35 percent of the vegetable waste collected is spoiled produce, mostly tops, husks and packing materials. It is estimated that about 30 to 40 percent of the agricultural production in Brazil as a whole is burned or buried.

**1982 IS GLASS RECYCLING YEAR** in Britain with plans by the Glass Manufacturers Federation (GMF) to recycle 150,000 tons of glass by April 1982, rising to an annual rate of 250,000 tons by April 1984.

Three hundred bottle banks already exist in towns throughout Britain. By the end of this year the GMF expects this number to rise to 700, and to a target of 1,500 by 1984.

**INDIA'S ACTION FOR FOOD** Production (AFPRO), a non-profit organization, recently learned a hard truth: If you give something for nothing, it's not valued. AFPRO built a biogas plant for a man in Chirag Delhi as a pilot program for the village. When they went back to see how it was doing, the plant was burnt out and in total disrepair. They figured out why. The man didn't cook, his wife did, so the biogas stove was no use to him. He didn't pay for it so he felt no obligation to maintain it; he felt that was up to AFPRO. The buffalo dung used in the biogas plant brought money when made into cakes and sold. AFPRO did get some good out of it, their report said: It provided training for their masons, and they were able to remedy defects during its teething stage.

## Forceful international action on transboundary air problems.

**Some nations grew more militant in 1981 as air pollution from other nations destroyed their lakes, rivers and forests.** Canadians considered acid rain their primary problem with the United States, since, they said, American-emitted oxides caused 70 percent of the damage in Canada.

Sweden also said acid rain was its most serious environmental problem. A five-year study foresaw a worsening of the situation that has already severely affected lakes and streams in the southwest coastal area and now threatens a quarter of the country. Some 75 percent of the emissions come from England and the Continent, Swedish officials said. Norway also completed an acid rain study which took nine years, cost \$15 million and came to similar conclusions. Sweden called for a conference next year to strengthen implementation of the 1979 international agreement on controlling air pollution across national boundaries.

In central Europe itself, there were symptoms of damage from acid deposition. In West Germany's Ruhr area, all of its forests were affected by air pollution.

Archeological treasures hundreds, even thousands, of years old were being eaten away by acid deposition in Egypt (the pyramids and Sphinx) and in Rome, Venice and Milan, which banned traffic in certain areas and spent enormous sums of money for restoration. France said air pollution costs it about \$5.5 billion annually. The OECD (Organization for Economic Cooperation and Development) estimated that making European air 50 percent cleaner by 1985 would cost \$4.6 billion. However, its study found, this would be more than compensated by savings on improved lake quality, health, crops and building damage.

Even clean Switzerland had air pollution problems, its new national monitoring system found. The government announced that in 1982 it would switch from European auto emission standards to the more severe ones imposed by the U.S. and Japan. In Mexico City, Mayor Carlos Hank Gonzalez kept his promise to smog-weary residents: He cancelled the contracts of three dozen urban buslines and took steps to clean up the 4,500 buses.

On the carbon dioxide problem, caused by burning fossil fuels, both the OECD and experts from UN agencies and the International Council of Scientific Unions urged further study and research—in light of increasing awareness that a CO<sub>2</sub> buildup could cause a worldwide increase in temperatures.

This autumn, an international meeting on depletion of the ozone layer (due to increased use of chlorine compounds) agreed that a real threat of damage exists—ozone depletion lets in rays that cause skin cancer. In January legal and technical experts from 13 countries and several international organizations will meet in Stockholm to start framing an international convention on protection of the ozone layer.

## Massive programs begin to provide clean water for all

**A massive international program began this year to provide clean water and decent sanitation for all by the end of the decade.**

The United Nations, in overseeing this awesome effort, said that 80 percent of the world's rural population had no reasonable access to safe water and nearly a quarter of its urban residents were similarly deprived; the sanitation scene was even worse, it said.

By year's end, hundreds of millions of dollars in loans had been invested in water and sanitation projects for Nigeria, Paraguay, Morocco, Colombia, India, Thailand and other nations—well before the mid-1982 UN deadline for formulating national plans.

Similarly, many nations began cleaning up their lakes and rivers. For Japan, it was top priority, and South Korea launched a 10-year river revitalization project. The politically dissident nations of Laos, Vietnam and Thailand worked together on projects in and around their shared Lower Mekong Basin. A plan to clean Venezuela's Lake Maracaibo, the largest oil-producing area in the country, was in its final stages. In Mexico, the President ordered all semi-state enterprises to clean up wastes being dumped into that nation's rivers. Colombia devised a master plan to rejuvenate its main waterway, the Magdalena River and basin, which provides water for 75 percent of the population. In West Germany, communities and industries were required to pay the cleanup costs of water they polluted.

Australia announced initiatives to improve its management of marine resources, as did India. Pakistan set up its own oceanographic institute. And the UN Economic and Social Commission for Asia and the Pacific launched a four-year project to tackle problems in the marine environment. In West Africa, 13 nations approved a program to protect and clean up their coastal waters.

Oil spills became an increasingly serious problem. Oil pollution in the North Sea doubled in just five years. Another busy waterway, the Straits of Malacca between Indonesia and Malaysia, the site of numerous spills, instituted sea traffic separation regulations on May 1. In the Indian Ocean, the Seychelles passed a tough law: polluters faced five years in jail and fines up to \$34,000. A Greek ship captain was fined \$400,000 for polluting the sea near Athens. In Israel, tough laws and vigilant inspection have significantly decreased oil pollution. The OECD Council recommended oil spill cleanups be the responsibility of the polluter. But one enterprising Brazilian was making a fortune cleaning up spills in Guanabara Bay, recycling the oil and selling it to the state oil company.

All this gave impetus to the UN Environment Program's Regional Seas Program. Scores of nations, overcoming political differences, agreed on plans to protect, develop and clean up 10 regional seas.

Oh a less positive note, the Law of the Sea ran aground when the new U.S. administration wanted more time for review, particularly of the deepsea mining provisions.

## Water wise . . .

**THE COMMITTEE ON WATER PROBLEMS** of the UN Economic Commission for Europe met in Geneva recently and endorsed a program to set up or improve monitoring and evaluation systems for transboundary pollution. ECE members are the major industrial nations of Europe and North America.

The committee recommended measures to strengthen international cooperation on shared water resources. It also distributed a survey to provide a technical basis for policy guidance in preparing national plans and programs on water resources.

**TWO ENVIRONMENTAL TREATIES** and an action plan covering the entire Pacific coast of South America were approved this November in Lima, Peru.

Five Pacific countries—Panama, Colombia, Ecuador, Peru and Chile—signed the agreement, which capped six years of careful preparation by the UN Environment Program and the Permanent Commission for the South Pacific.

This was the fourth action plan approved in the past 10 months as part of its Regional Seas Program, UNEP announced. The others were in the Caribbean, West and Central Africa, and East Asia. In all, UNEP's ocean program involves 10 seas and more than 120 countries.

**SWITZERLAND IMPORTED 4,000 ALGAE-EATING** Asian carp to see if they can improve the waters of lakes in this Alpine country.

The test began in 1976 when the fish were transplanted into small Moossee Lake near Bern. Communities bordering the lake picked up the cost of the imports.

The Federal Environmental Protection Office explained that grease, chemicals and waste water residues carried into small lakes has caused an exaggerated growth of algae and other underwater vegetation, which sharply reduces oxygen content.

The environmental office said that first results from the test have shown that the phosphorus content of the water has dropped and the quantity of algae seems to be diminishing. But it is still too soon to say, the spokesman said, if this improvement can be credited to the carp or to the better protection of streams and surrounding water sources.

**AUSTRALIA'S GREAT BARRIER REEF**, off Queensland, the uranium-rich Kakadu National Park in the Northern Territory and the Sillandra Lakes region in New South Wales are now listed as untouchable sites after their approval by UNESCO's committee for inclusion on the World Heritage List.



## Environment & industry...

**MALAYSIA'S MOST POLLUTING INDUSTRIES** are also its most important—palm oil and rubber. Half of the daily discharge of 900 tons of organic effluent flowing into the nation's rivers come from just those two industries. Sewage accounts for the other half.

However, government regulations are reducing this pollutant load. About 80 percent of the 149 palm oil mills have installed treatment plants; others are setting them up.

Some of the bigger companies, UNEP reports, are deriving benefits from their pollution control. One uses the methane gas generated for drying rubber sheets. Others use treated effluent as fertilizer for oil palms.

**THE SOUTH KOREAN CABINET** has approved an amendment to the country's Environmental Preservation Law which imposes fines on factories releasing pollutants instead of closing them down. The fines collected will contribute to the Environmental Contamination Preservation Fund. The amended law also enables the Office of Environment administrator, city mayors and provincial governors to utilize land and facilities if necessary for establishment of pollution-measuring equipment. The use of environmental impact assessments will be expanded to all administrative and public organizations and government-invested enterprises. At present, only large construction projects undertaken by government offices are subject to the assessment.

**AUSTRALIA WILL USE LEAD-FREE** gas starting in 1986. Under the new policy, lead-free gasoline will become available July 1985, and cars manufactured after January 1, 1986, will have to be designed for lead-free fuel and fitted with catalytic devices. The issue has been the subject of a lengthy and heated debate, with the oil companies strongly opposing the idea.

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## Regulation of industry increases worldwide

**Industry in some countries, like the U.S., Japan and Brazil, complained of over-regulation and, in 1981, worked to ease certain laws they considered onerous. But in most other countries, both industrialized and developing, increased regulation was the rule.**

Mexico's President in November declared that "industry is too big and the fines are too small" and proposed a tough new environmental protection law with heavy prison sentences and fines. At the same time, the government's central bank announced formation of an industrial equipment fund to give preferential credits to industry for anti-contamination equipment. This followed an earlier agreement between the government and five major industrial sectors which pledged to control air and water pollution.

In Asia, Thailand imposed heavier penalties for industrial pollution and made it compulsory for all factories to appoint environmental engineers. Thailand's Industrial Works Department said it would move 3,000 factories away from Bangkok over the next three years; so far it's closed or relocated 7,500 factories. South Korea also announced it would start cracking down on polluting industries as of September 25.

In Eastern Europe because workers and residents complained, plants were closed. Poland's biggest aluminum smelter was shut down as was a cellulose plant, and the union Solidarity promised to clean up other pollution centers. In Hungary, after several warnings, an alloy plant was closed permanently.

The increasing use, and misuse, of toxic substances continued to be a major problem. The World Health Organization urged all nations to enact stricter laws covering the use of toxic chemicals in consumer products and drew up a model act as a guideline for legislation. Norway was ahead of them, requiring that all consumer products be labeled for possible cancer hazards. The UN's International Register of Potentially Toxic Chemicals went into full operation, with information on 40,000 chemicals and priority given to 400, particularly agro-chemicals because of their effects on health and the environment.

However, the OECD nations agreement to harmonize test data before marketing chemicals—adopted in May, 1980—was being held up because the U.S. required further clarification. NATO environment ministers, meeting this October in Washington, predicted that an international convention on the cross-border transport of hazardous substances would be in effect within a decade.

The new U.S. administration, in one of its first acts, reversed President Carter's pioneering policy controlling the export of hazardous products, because of its cost to the public and private sector. Meanwhile, a growing body of literature detailed scores of instances where industrial nations sold potentially or actually dangerous products to developing nations with little or no useful explanatory information.

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## Clausen outlines strong World Bank eco-policy

**WASHINGTON**—"Environmental spoilation is an international cancer. It respects no boundaries. It erodes hard-won gains and the hopes of the poor."

These are not the words of an alarmist. They are the beliefs of A.W. Clausen, the new President of the World Bank, in one of his first major speeches. He was, he said, the first banker to make the annual Fairfield Osborn Lecture sponsored by the Conservation Foundation, and he did so because, "I want to reach the citizens of the world."

"Many of the world's environmental problems increasingly depend on Third World cooperation for their solution," Clausen stated, adding, "I'm encouraged that environmental concerns have become more widespread in the Third World over the last decade." He cited World Environment Center figures listing 102 developing countries with environmental ministries or similar top-level agencies.

"It isn't that Third World countries are better able to afford environmental protection than they were 10 years ago," he said. "They are hard-pressed by slow growth, high energy prices, and high interest rates. But awareness is spreading that environmental precautions are essential for continued economic development over the long run."

In a briefing before his speech, the World Bank president stated that, "Today, it's not difficult to get agreement on environmental concerns" from the developing country members of the World Bank. They realize that "environment and development are not mutually exclusive," he said, and that it may be necessary to have "short-term (financial) hurt for long-term gain."

In the industrialized countries, Clausen said, there have been "massive expenditures on retrofitting plants, and that is a principal reason why productivity has slowed or retrogressed. On the other hand, a developing country can start with environmental measures, and the additional costs are minimal. It costs only 3 to 5 percent of a project to take care of environmental concerns."

In his speech, Clausen said, "As a matter of policy, we won't finance a project that seriously compromises public health or safety, causes severe or irreversible environmental deterioration, displaces people without adequate provision for resettlement, or has important transnational environmental implications."

The cost of these measures, he said, "has proved not to place an unacceptable burden on our borrowing countries. And we've learned, as have many private corporations, that the cost tends to be lower the earlier that environmental problems are identified and handled."

LIBBY BASSETT

## Environment & development . . .

**A SEPARATE WORLD BANK** energy-lending affiliate may still "fly," according to a top bank official, but in a somewhat different form. He said the subject was on the agenda during Bank President A.W. Clausen's recent trip to the Middle East. The oil-producing Arab nations have consistently advocated searches for alternatives to oil. The Bank official said it would take about two months to formulate this new energy-lending approach so that it could be presented to member countries. Until then, Bank President Clausen said they have increased their regular energy lending 25 percent, to \$3 billion.

**THE WORLD BANK'S** International Development Association is lending Bangladesh \$27 million for a flood control project in three areas covering nearly 80,000 hectares. The Bank says all the investments will be labor-intensive, low cost per hectare and be quick yielding economically.

**DESPITE A DECADE OF POPULATION** growth, Bogota has decreased its density by opening new green spaces. With a population in 1972 of 2.8 million and a density of 178 inhabitants per hectare, the present population has increased to 5 million, but the density has declined to 158 per hectare.

In the shadow of the Andes, the 2,700-meter-high city has expanded to the west by providing increased habitable land due to drainage works and dredging of the Bogota river.

Bogota officials say that much of this reclaimed land will be devoted to green spaces and parks and predict that during the next decade these will increase about tenfold while built-up areas will increase by threefold.

**NIGERIA** has initiated a five-year (1981-1985) Food Production Plan to increase production, ease its increasingly serious food deficit and improve smallholders' standards of living. The plan includes reorganizing the Federal Department of Rural Development and expanding it with trained and experienced staff, initially through international recruitment. Other agricultural support installations will also receive assistance, and a Federal Agricultural Coordinating Unit will be established. The project as a whole will cost \$120.1 million, and the World Bank is lending Nigeria \$47 million for it, over 20 years.

## World Bank's top environment official outlines his program

**WASHINGTON**—As the World Bank's Office of Environmental Affairs enters its second decade, its Director, Dr. James A. Lee, is concerned with problems and projects only vaguely discerned in 1971. And with new Bank leadership, Dr. Lee said, there will be increasing efforts to involve the private sector.

Lee's office will be engaged in energy projects, on the problems of massive Third World cities and will work with countries to sustain development patterns as populations multiply. "Between now and the year 2000, we'll go from 4.5 billion to more than 6 billion people, and approximately 75 percent of that growth is in Third World countries," Lee stated, citing Bank projections that in just 20 years, five billion people will live in the developing countries; more than half of them crowded into cities.

"We'll be more concerned with environmental-type projects," he said, such as firewood plantations, shelter belts to stem desert encroachment and declining groundwater resources.

At the same time, he said, "we will continue to be aware of the global dimensions of our environmental problems: the implications of carbon dioxide buildup, the acid rain phenomenon, tropical deforestation, seabed mining, and the pollution of oceans and estuaries."

All this is a tall order for a department with a staff of just 10 people. However, the consensus among the international environment and development community is that under Dr. Lee's leadership, the Bank's environmental office has been extraordinarily effective.

It was set up in 1971 with Dr. Lee as the sole environmental officer. In those days, he said, "I could identify every project by name; I can't now." In his first years, he reviewed about 180 projects a year; now he and his staff look at about 700 annually.

"The Bank in the early days gave a broader definition to environment than was classically ascribed to it," he explained. Not only did it include the naturally occurring environment—air, water, soil, forest, wildlife and marine—but broader issues of the urban environment, development effects on public health, the workplace and how development projects might affect social and cultural values.

By the mid-1970s, the Bank's board of directors decided to finance environmental projects as such. Increasingly, the Bank has made environmental loans, for reforestation, soil conservation and erosion control, flood control, and urban projects: water, sewage collection and treatment, solid waste management, air pollution control, low-cost housing and the like.

The Bank helped rejuvenate Sarajevo, Yugoslavia, and now is working in Sao Paulo, Brazil, and Mexico City.

As a project nears completion, the Bank's new Operations Evaluation Department audits the results. Said Dr. Lee of his department, "On balance, our track record is good. We did identify the magnitude and severity of the problems and provided

the right countervailing measures.”

In addition to project review, his office issues handbooks and guidelines of standards and criteria, originally for use by Bank staff but now translated into several languages and used all over the world. His office has provided in-house training on the environmental components of development and now is working on an environment and development course for the Bank's Economic Development Institute, for Third World country officials and the staff of other development financing institutions.

They provide technical assistance to developing countries, responding to requests ranging all the way up to full-fledged analyses of a nation's environmental situation.

Dr. Lee and his colleagues work closely with other organizations, from UN agencies to non-governmental environmental and health organizations.

His office was instrumental in getting the principal economic development institutions to sign a declaration of environmental policies and practices, designed to harmonize their views and create an exchange of skills and experience. They have also worked with several bilateral aid agencies. Now, Lee says, “We are seeking new ways of getting the private sector involved.

The effectiveness of the World Bank's Office of Environmental Affairs is far greater than the sum of its parts, and much of the credit is due to Dr. Lee's skill as a catalyst for positive change.

LIBBY BASSETT

## Indonesia conservation plan “a model for others”

**NEW YORK**—Indonesia has signed a second five-year Conservation Agreement with the World Wildlife Fund (WWF) and IUCN (International Union for Conservation of Nature and Natural Resources), its officials announced in November.

“Indonesia's conservation initiative is a model for other nations,” remarked Charles de Haes, WWF Secretary General. “The new agreement, which immediately follows our earlier five-year program, is based on the objective of the World Conservation Strategy to ensure that conservation programs will yield distinct benefits to the Indonesian people.”

Since 1977 WWF/IUCN have supported 37 projects in Indonesia—more than in any other country—worth over \$1.5 million. It is expected that an equivalent amount will be spent for the new five-year program, which goes into effect January 1, 1982.

Indonesian conservation officials, led by Emil Salim, Minister of State for Development Supervision and the Environment, hope to increase protected areas 50 percent in the next five years to include 11.5 million hectares of reserves WWF/IUCN said.

The national budget for nature protection was increased 56 percent in 1980 to \$5.4 million, and grass roots support is widespread.

A main objective of the new program is to link WWF/IUCN projects with other development activities, such as the World Bank National Parks Development Project. SPECIAL TO WER

## Environmental management . . .

**THE WORLD HEALTH ORGANIZATION** has urged all states to enact stricter laws covering use of toxic chemicals in consumer products.

A spokesman for WHO said that experts from 12 European nations met in Varna, Bulgaria, to study the increasing use of chemicals in consumer products and the wide range of such products in common use in homes, increasing the possibility of unwitting exposures of humans to toxic chemicals.

The experts recommended that all member states consider legislating in this area and drew up a model act—“Act for Protection Against Chemical Hazards in Consumer Products”—as a guideline for possible legislative action.

### “COMPENSATION FOR POLLUTION DAMAGES”

is a 208-page report published recently by experts from the 24 industrial OECD countries. It includes seven studies: legal and economic obstacles to compensation, new systems of compensation for nuclear incidents and oil spills, the growing role of insurance schemes, compensation for damage to the ecology and tourism, for authorized polluting activities, and for transfrontier pollution. It is available from OECD sales agents in member countries or from 2 rue Andre Pascal, 75775 Cedex 16, France.

**A RECENT MEETING** of the International Union for Conservation of Nature and Natural Resources (IUCN) in New Zealand adopted a plan of action for IUCN over the next three years. The measures include saving tropical forests and conducting environmental impact assessments of major development projects in Third World countries. During the meeting, delegates discussed the role of conservation in development as outlined in the World Conservation Strategy, written by an IUCN specialist.

**THE AUSTRALIAN ENVIRONMENT COUNCIL** and the Council of National Conservation Ministers of Papua New Guinea met recently in Madang, PNG. Observers from New Zealand also attended.

Decisions were reached on ways to handle hazardous chemicals, litter control, marine pollution, the environmental effects of forest clearfelling, trade in endangered wildlife, crocodile policies and enforcement of wildlife protection laws.

PNG's Environment Minister, Ibne Kor, said his country has already benefited from the two council meetings held—the first was in Australia last year—by direct access to sources of information and expertise on environment and conservation problems.

## Wildlife . . .

**PICK A FLOWER.** The computer recently planted at the Royal Botanic Gardens in Kew, England, will let governments, international agencies, students and scientists pick thousands of the most endangered flowering plants around the world. It will also assess coverage of each biogeographical province, on land or sea. This central Protected Areas Data Unit (PADU), as the computer is known, was funded by the World Wildlife Fund, UN Environment Program and the Nature Conservancy. But it can only be as comprehensive and useful as the information fed it, so data on all national parks and protected areas of the world and any other relevant printed information should be sent to Jeremy Harrison, Royal Botanic Gardens, Kew, Sussex, England.

**IN INDONESIA,** there are only about 600 wild Sumatran elephants left, and the government is planning to settle them in a 600-hectare reserve. Alongside that reserve, 400 additional hectares have been set aside as a water catchment area. Environment minister Emil Salim, recently returned from a trip to Kuala Lumpur, said Indonesia is considering adopting Malaysian methods of controlling oil palm waste to protect endangered species. The minister said he had asked his Malaysian counterparts for full costing details of the program, particularly in relation to elephants. The two countries are also considering cooperation in the rehabilitation of old mining land.

**THE FIRST "BENIGN" STUDY** of sperm whale ecology and behavior in the Indian Ocean was to begin in November.

The World Wildlife Fund-sponsored study will last three years and be conducted aboard a 10-meter sloop. "Benign" research is observational only and does not disturb the animal.

WWF said this would be the first of 20 proposed projects to investigate population levels, ecology and behavior of the 43 cetacean species found in the recently created Indian Ocean Sanctuary.

This sanctuary was established as a result of a July 1979 decision by the International Whaling Commission. It prohibits commercial whaling for 10 years in an area stretching from Africa to Australia, from the Red and Arabian Seas and Gulf of Oman south to 55° latitude, well south of Australia.

At the IWC's 1981 meeting, sperm whale hunting was completely banned.

## US hosts international meeting on preserving all species

**WASHINGTON**—The preservation of life is an undisputed good. Less clear is whether the human race realizes that life depends on as diverse a genetic mix of species as possible. So, to shed light on the subject, the Department of State convened an international conference November 16-18 to plot a "strategy on biological diversity."

Scientists at the conference explored the issues and recounted the horror stories reported by the Global 2000 Study, the National Academy of Sciences' report on tropical deforestation, the World Conservation Strategy, and other tomes of like intent. Much has been written on the subject of preserving rather than extinguishing species, it was agreed, but little has been done. In pursuit of solutions, five conference task forces compiled several score recommendations for action.

Given Washington's antipathy toward new international initiatives, the conference committees (on terrestrial plants, terrestrial animals, aquatic species, microbial resources and ecosystem maintenance) eschewed grand new international organizations to preserve species. Should an international effort be attempted, however, they suggested it follow the mold set by the International Board for Plant Genetic Resources, whose far-flung outposts gather plant germplasm endangered by human encroachment at a bargain budget of \$3 million a year.

Rather, recommendations pressed for a lead from U.S. agencies and the private sector, whose bureaucrats and executives were well in evidence at the conference. It was suggested that the federal agencies put together an inter-agency task force to focus the government's lean resources on the most urgent steps toward genetic preservation. A U.S. policy was suggested, as was more work within the United Nations, to open the world's eyes to the growing threat of a genetically impoverished world.

As it happens, the U.S. Council on Environmental Quality, the environmental eyes and ears of the White House, is weighing these issues as part of its review of the Global 2000 Report and the Global Futures Strategy that the Carter administration left behind it. The State Department's conference is yet another stab at giving federal agencies facts and opinions to work with, according to a State Department official. He suggested that the issue of biological diversity could well follow the path cleared by advocates of a tropical forest policy. After a government conference in 1978 on tropical forests, the Carter administration convened an inter-agency task force on the subject which has generated a handful of new initiatives at AID, the Peace Corps, State Department and National Academy of Sciences, among others.

What the new administration wants, however, is its own set of data to digest, particularly in light of the indifference with which the business community greeted the Global 2000 Report and Carter's follow-up.

CHRISTOPHER JOYCE

## Pakistan sets up its own oceanographic institute

**ISLAMABAD**—Pakistan has set up a National Institute of Oceanography in Karachi to collect basic information for marine resource and economic development.

In the past, international experts and agencies had surveyed Pakistan's marine resources, including off-shore oil and gas resources, but this prevented Pakistani scientists from developing their own capabilities, thus increasing the country's reliance on foreign agencies.

Therefore, it was felt that there was an immediate need to establish basic oceanographic research laboratories, to develop data acquisition techniques, and to train research staff.

The requirement for such an institute was further justified as oceanographic research had been neglected in the resource development program of the country. Many developing countries have developed oceanographic research programs and are usefully applying the knowledge for exploration and exploitation of their marine resources, officials said. **MOHAMMAD AFTAB**

## Indian pencil factory workers are dying by the thousands

**BOMBAY**—Silicosis, a generally fatal disease that afflicts workers in slate pencil factories, has claimed the lives of some 2,000 people in Madhya Pradesh state over the last two decades.

According to a medical survey conducted in 1975, between 50 and 150 new silicosis cases were reported in the slate industry every year; it was only in 1979 when such grim reports first figured in the Indian press, that preventive measures were called for. So far, the Madhya Pradesh government has done nothing to alter the situation even though Prime Minister Indira Gandhi earlier this year expressed her concern.

Today, there are about 4,000 persons employed in the small-scale units, and they are fired as soon as they complain of symptoms associated with silicosis. According to N.K. Singh, the Bhopal-based correspondent of the *Indian Express* who broke the story two years ago, there isn't a single old worker in any of the units; no one has survived in the industry for more than a decade. "Multanpura, the village with the largest concentration of slate pencil units, is almost a graveyard," he told *WER*. "Almost every third woman in the village is a widow—a victim of pollution."

The workers inhale silica dust when the soft stone is cut by electric saws. A team of doctors which visited Multanpura reported that the dust causes "fibrous changes in the lungs that cannot be reversed." Since few workers survive beyond 40, a quarter of the total labor force consists of children who are employed to pack and who also are exposed to the deadly dust.

In the last six months alone, 75 silicosis cases were reported at the civil hospital at Mandsaur, where a pneumoconiosis medical board has been formed to tackle the disease. **DARRYL D'MONTE**

## Ocean management...

**AQUACULTURE** produced 760 tons of fish in Hong Kong last year, with a value of about \$6.33 million, according to the British colony's assistant director of agriculture and fisheries, Roy Chilvers. Chilvers told aquaculturists from seven Asian countries, who were in Hong Kong to attend a training course, that demands for quality protein in the South China Sea region have made fish farming a sizeable industry. Because of the colony's success in fish cage culture, officials from the Agriculture and Fisheries Department had visited other countries in the region to help set up similar projects. The course was funded by the UN's South China Sea Fisheries Development and Coordinating Program. The seven countries represented at the course were Bangladesh, Thailand, the Philippines, Sri Lanka, Singapore, Malaysia and Indonesia.

**THE MALAYSIAN GOVERNMENT** is in the process of upgrading its contingency plans to deal with oil spills in the Malacca Straits. With daily traffic estimated at 450 vessels, including 112 tankers, it is one of the busiest waterways in the world. The Government has allocated funds to enable the Division of the Environment (DOE) to obtain boats and equipment necessary for dealing with an oil spill clean up.

DOE Director-General S.T. Sundram said chemical dispersants would be used only "as a last resort" since the authorities do not know their effect on marine life. A team of scientists from the University of Sain Malaysia in Penang, sponsored by Esso Malaysia Bhd, is carrying out a three-year study, the first of its kind in the world, to examine the effects of naturally and chemically dispersed crude oil in the tropical environment.

**A RECENT STUDY OF CORAL REEFS** in the Philippines showed that only 4.3 percent were in perfect condition while 40 percent were in poor condition. The study was conducted by Dr. Angel Alcala of Silliman University, who has launched a campaign to educate Filipino fishermen on the importance of preserving coral reefs. "We try to explain to the fishermen that the more coral reefs there are, the more plankton there will be. The more plankton there is, the more fish there will be," he said.

**AN INTERNATIONAL CONFERENCE** on "New Approaches to Tidal Power" will be held June 1-4, 1982, at the Bedford Institute of Oceanography, Dartmouth, Nova Scotia, Canada. It is sponsored by the institute and the National Research Council of Canada. Sessions will discuss design, environmental impacts, energy storage systems and siting. For information: R.L.G. Gilbert, Manager, Bedford Institute of Oceanography, P.O. Box 1006, Dartmouth, NS, Canada B2Y 4A2.

## International cooperation . . .

**JAPAN HAS GRANTED THE INDONESIAN** government \$12 million for the construction of a biomass energy research and development center and tertiary canal pilot scheme in the Sumatran province of Lampung. According to the Japanese embassy, the biomass energy center, covering 50 hectares, will contain an experimental alcohol plant, a research laboratory and an experimental farm and workshop. If successful, it could be duplicated for use in Indonesia's transmigration projects—a scheme whereby the government is trying to shift thousands of peasants from overcrowded Java to settlements on the outer islands of the archipelago.

**A WORLD BANK** and UN Development Program energy assessment survey of Papua New Guinea will be made later this year.

It will consider geographical and geophysical data, including oil and gas potential, and will determine the country's potential alternative energy sources. PNG is one of the few developing countries seeking alternative and renewable energy sources, according to Julian Bharier of the World Bank.

**A REGIONAL CONFERENCE** on the Human Environment in the South Pacific is scheduled for March 8-12 in Rarotonga, capital of the Cook Islands. The South Pacific Regional Environment Program (SPREP) began in January 1980 and led to a technical conference this past June at which country reports on 18 states and territories of the region were reviewed (there are 23 in all). The reports identified a basic weakness throughout the region: environmental assessment capabilities. Difficulties faced in the area are meeting basic human needs (an energy-related problem), safe water and waste disposal, the misuse of toxic chemicals and the threat of radioactive pollution. A public information campaign has begun and a Directory of Environmental Research Centers will be published before the conference, which is expected to come up with an action plan. The SPREP coordinating group includes the South Pacific Bureau for Economic Cooperation, South Pacific Commission, Economic and Social Commission for Asia and the Pacific, and the UN Environment Program.

## US not candid with Japan on its global commitment

**WASHINGTON**—There was, apparently, some diplomatic double-talk going on at the most recent (fifth) meeting here of the U.S.-Japan Joint Planning and Coordinating Committee on Environmental Protection.

The Director General of Japan's Environment Agency, Hyosuke Kujiraoka, came to the United States to stress his government's environmental commitment, particularly on global issues. During the opening session, he asked Anne Gorsuch, Administrator of the U.S. Environmental Protection Agency, whether there had been any shift in the new administration's point of view. Mrs. Gorsuch said no and emphasized that the U.S. will try to continue its leadership on global issues.

For two days the high-level delegations met, but during that time no one told the Japanese that the U.S. was planning to cut its contribution to the UN Environment Program (UNEP) by 50-80 percent, nor that the U.S. EPA was facing enormous budget cuts.

This came out in an interview following the meeting with Tsutomu Tanaka, Director of the Japanese Environment Agency's International Affairs Division.

Last December, the Japanese government published its own brief, theoretical study, "Basic Directions in Coping with Global Environmental Problems." It evaluated problem areas, basic policy directions both worldwide and in Japan, and outlined issues for further study.

Tanaka said his government had followed the U.S. lead on this and was relying particularly on UNEP and the OECD (Organization for Economic Cooperation and Development) for coordinated action on these problems.

News of the U.S. environmental budget cuts "is certainly not encouraging," Tanaka said, "for it could create a chain reaction. We expect continuation of leadership from the United States."

The two nations' bilateral projects are continuing, though, with the exception of one, which is being held up by the Japanese Diet (parliament). The Environment Agency has given environmental impact assessment priority, but the Diet has not yet passed the legislation, reportedly due to industrial pressure. Once passed, it will be a bilateral project.

The other 13 projects on which the U.S. and Japan share information are: environmental economics and incentives for pollution control, a technical exchange for water conservation and flow reduction, sewage treatment technology, air pollution-related meteorology, auto pollution control, solid waste management, food additives, identification and control of toxic substances, photochemical air pollution, stationary source pollution control technology, management of bottom sediments containing toxic pollutants, and technology for closed systemization of industrial waste water controls.

Taken all together, Japanese environmental measures account for 2.6 percent of the national budget, some 1,200 billion yen (\$5.4 billion). The Environment Agency budget alone is slightly over 46 billion yen (\$208 million). Japan's contribution to the UN Environment Program is \$4 million. If the U.S. government cuts its funding for UNEP from \$10 million to \$2 million as now seems likely, Japan will be the largest free-market contributor.

Director General Kujiraoka said in his closing remarks to the bilateral session that "(our) economic and financial situations are a little different, but we two are confronted with similar situations. . . . I believe the economy is very important. However, I believe economics is a tool and the purpose is the happiness of humanity. Human health cannot be sacrificed for economic advancement."

LIBBY BASSETT

## Mexico may get a tough, new environment protection law

**MEXICO CITY**—Declaring that Mexican "industry is too big and the fines are too small," President Jose Lopez Portillo has proposed a tough new environmental protection law to impose prison sentences and heavy fines on industries found guilty of violating it.

The most comprehensive law of its kind ever devised in Mexico, the new Federal Environment Protection Law is expected to gain easy passage through Congress.

In calling for its approval, the president noted that many industries routinely pay a \$2,000 fine rather than install anti-contamination devices or otherwise halt their pollution. That old maximum fine is too low, considering inflation and the fact that most sources of contamination are in the hands of companies with "great economic potential," he said.

Jail terms from six months to three years may now be imposed on violators, and fines levied of from 50 to 5,000 times the amount of the prevailing minimum daily salary—in Mexico around \$11 a day.

Virtually every known contaminant is specifically covered in the law, which amends a 1971 measure.

Violators are those causing atmospheric contamination, land or water pollution, thermal energy or radiation emissions, noise or vibrations that damage the public health, flora or fauna.

Punishment is decreed for those who "cause risks or danger to the public health by making, storing, using, importing, transporting or dealing in contaminating materials dangerous to the public health, fauna and ecosystems." Attention is given to contaminated foods or beverages, those who make and sell them.

Earlier, at the President's urging, the major state-owned industries—oil, electricity, fertilizer, steel—signed separate anti-contamination agreements.

KATHERINE HATCH

## Environment & industry...

**A CALL FOR RETROACTIVE LEGISLATION** to force disclosure of sites where the deadly chemical dioxin is buried, has been made by residents and county councillors in northeast Derbyshire, England.

Following a 1968 explosion in the Coalite Chemical Products Ltd. factory, which killed one man and infected 79 others, material and equipment contaminated with dioxin was buried in surrounding areas.

The Derbyshire dumping was first publicly disclosed by the company after the 1976 Seveso accident in Italy. Local villagers have become increasingly anxious since 1978 when council permission was given to develop a drift mine near the site. They say the miners are getting close to fields where they believe the dioxin is buried.

There is disagreement on the exact amount of dioxin in the dumped material and also on its toxicity level after 13 years of decomposition.

**THE INTERNATIONAL REGISTER** of Potentially Toxic Chemicals (IRPTC) Bulletin, published by the UN Environment Program, is available to interested *WER* readers. Now in its fourth year of publication, it includes information on IRPTC and UNEP activities, national and international activities in the field, news and general legislation on chemicals in cooperating countries. Write the Director, IRPTC/UNEP, Palais des Nations, 1211 Geneva 10, Switzerland.

**BRAZIL'S FIRST SOLAR-ENERGY-ACTIVATED** irrigation system was officially inaugurated at a *fazenda* (plantation) near the University of Ceara at Fortaleza, using solar panels provided by Atlantic Richfield's Arco Solar Division, the largest solar cell company in the world.

It's part of a research program directed by the university with contributions by SUDENE, Arco Solar and the Brazilian pump and pipe companies, Bombas King and Caisa.

Bob Pettit, vice-president and chief executive officer of Arco Solar, described the "pulsating jet" irrigation system as the first of its kind in the world. He said the system, which waters only the roots of the plant, is "very energy efficient and very water efficient."

The Ceara project is one of three research programs to which Arco Solar is contributing solar panels. The other two are in Paraiba and Pernambuco.

Arco Solar's next move in Brazil will be to establish an assembly (not production) plant for solar cells, which Pettit said would halve the current market price of \$50-\$60 per unit.



## Water wise ...

**THE AUSTRALIAN INSTITUTE OF MARINE SCIENCE** has taken two research initiatives to improve the nation's management of marine resources.

The first is compiling a directory of marine research detailing all current projects; the second is an inventory of all data banks relevant to marine science.

In a speech opening a conference on environmental engineering, the Minister for Science and Technology, David Thomson, said this research would enable detailed management and zoning for different uses of the Great Barrier Reef region. He mentioned that a report prepared by the Senate Standing Committee on Science and Environment makes 45 recommendations on the organization, funding, conduct and priorities for marine science and technologies. One major recommendation is that an Australian Marine Science Council be set up for coordination and funding. Existing research bodies such as the Australian Institute of Marine Science and the CSIRO Divisions of Fisheries Research and Oceanography would be brought under the Council's umbrella.

**EARTH'S LAST GREAT WILDERNESS AREAS**, says World Wildlife Fund-International, are the deep seabed and Antarctica. And so it has launched a program to examine the technical, legal and political aspects involved in creating protected areas within these two international commons.

WWF says this initiative is needed because, for example, the Law of the Sea treaty considers deep-sea mineral resources but pays little attention to the importance of living systems in that realm.

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## Controversy over Australia's biggest river finally settled

**PERTH**—After eight years of disagreement and discussion, an interstate accord was finally reached with the Federal government on managing Australia's largest river, the Murray.

The mighty Murray rises in South Australia and runs 2600 kilometers to the east through New South Wales and Victoria. It drains an area of one million square kilometers—the fourth largest river basin in the world—and \$1 billion worth of irrigation works have created an area that the entire country depends on for food, water and recreation.

According to Prime Minister Malcolm Fraser, this revision of the 60-year-old River Murray Waters Agreement “to meet today's requirements is a milestone in cooperative management of the river's water and in improving the quality of Australia's most important water resource.”

Under the agreement, the River Murray Commission has new responsibilities: to formulate water quality objectives and standards, assess the implications of new developments that would significantly impact water quality, make representations on any proposal that might adversely affect water quality.

The Commission is hiring consultants to develop a computer model that will simulate operation of the entire river system—flow, storage changes and water quality.

The success of the new agreement rests on cooperation between the Australian and state governments. As an investigative reporter for *The Australian* pointed out in a six-part series, political expediency and interstate rivalry may cripple the new agreement for, he says, it did not include:

- power for the Commission to enforce decisions
- majority rule; the four commissioners must reach a unanimous decision despite interests which often conflict
- expansion of Commission staff or budget to cover dam construction, operations, maintenance and administration.

He concludes that the Commission has only a moral imprimatur, the weight and power of which has yet to be measured.

Several pending conflicts must be resolved, including water distribution from the new Dartmouth Dam, which has created the biggest water storage area on the river.

Prime Minister Fraser said of these potential conflicts: “I think we have got to assume that governments would act in good faith and not willingly or knowingly want to undertake any activity that is going to damage water quality.”

ANNE BLOEMEN



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## Clausen outlines strong World Bank eco-policy

**WASHINGTON**—"Environmental spoilation is an international cancer. It respects no boundaries. It erodes hard-won gains and the hopes of the poor."

These are not the words of an alarmist. They are the beliefs of A.W. Clausen, the new President of the World Bank, in one of his first major speeches. He was, he said, the first banker to make the annual Fairfield Osborn Lecture sponsored by the Conservation Foundation, and he did so because, "I want to reach the citizens of the world."

"Many of the world's environmental problems increasingly depend on Third World cooperation for their solution," Clausen stated, adding, "I'm encouraged that environmental concerns have become more widespread in the Third World over the last decade." He cited World Environment Center figures listing 102 developing countries with environmental ministries or similar top-level agencies.

"It isn't that Third World countries are better able to afford environmental protection than they were 10 years ago," he said. "They are hard-pressed by slow growth, high energy prices, and high interest rates. But awareness is spreading that environmental precautions are essential for continued economic development over the long run."

In a briefing before his speech, the World Bank president stated that, "Today, it's not difficult to get agreement on environmental concerns" from the developing country members of the World Bank. They realize that "environment and development are not mutually exclusive," he said, and that it may be necessary to have "short-term (financial) hurt for long-term gain."

In the industrialized countries, Clausen said, there have been "massive expenditures on retrofitting plants, and that is a principal reason why productivity has slowed or retrogressed. On the other hand, a developing country can start with environmental measures, and the additional costs are minimal. It costs only 3 to 5 percent of a project to take care of environmental concerns."

In his speech, Clausen said, "As a matter of policy, we won't finance a project that seriously compromises public health or safety, causes severe or irreversible environmental deterioration, displaces people without adequate provision for resettlement, or has important transnational environmental implications."

The cost of these measures, he said, "has proved not to place an unacceptable burden on our borrowing countries. And we've learned, as have many private corporations, that the cost tends to be lower the earlier that environmental problems are identified and handled."

LIBBY BASSETT

## Environment & development . . .

**A SEPARATE WORLD BANK** energy-lending affiliate may still "fly," according to a top bank official, but in a somewhat different form. He said the subject was on the agenda during Bank President A.W. Clausen's recent trip to the Middle East. The oil-producing Arab nations have consistently advocated searches for alternatives to oil. The Bank official said it would take about two months to formulate this new energy-lending approach so that it could be presented to member countries. Until then, Bank President Clausen said they have increased their regular energy lending 25 percent, to \$3 billion.

**THE WORLD BANK'S** International Development Association is lending Bangladesh \$27 million for a flood control project in three areas covering nearly 80,000 hectares. The Bank says all the investments will be labor-intensive, low cost per hectare and be quick yielding economically.

**DESPITE A DECADE OF POPULATION** growth, Bogota has decreased its density by opening new green spaces. With a population in 1972 of 2.8 million and a density of 178 inhabitants per hectare, the present population has increased to 5 million, but the density has declined to 158 per hectare.

In the shadow of the Andes, the 2,700-meter-high city has expanded to the west by providing increased habitable land due to drainage works and dredging of the Bogota river.

Bogota officials say that much of this reclaimed land will be devoted to green spaces and parks and predict that during the next decade these will increase about tenfold while built-up areas will increase by threefold.

**NIGERIA** has initiated a five-year (1981-1985) Food Production Plan to increase production, ease its increasingly serious food deficit and improve smallholders' standards of living. The plan includes reorganizing the Federal Department of Rural Development and expanding it with trained and experienced staff, initially through international recruitment. Other agricultural support installations will also receive assistance, and a Federal Agricultural Coordinating Unit will be established. The project as a whole will cost \$120.1 million, and the World Bank is lending Nigeria \$47 million for it, over 20 years.

## World Bank's top environment official outlines his program

**WASHINGTON**—As the World Bank's Office of Environmental Affairs enters its second decade, its Director, Dr. James A. Lee, is concerned with problems and projects only vaguely discerned in 1971. And with new Bank leadership, Dr. Lee said, there will be increasing efforts to involve the private sector.

Lee's office will be engaged in energy projects, on the problems of massive Third World cities and will work with countries to sustain development patterns as populations multiply. "Between now and the year 2000, we'll go from 4.5 billion to more than 6 billion people, and approximately 75 percent of that growth is in Third World countries," Lee stated, citing Bank projections that in just 20 years, five billion people will live in the developing countries; more than half of them crowded into cities.

"We'll be more concerned with environmental-type projects," he said, such as firewood plantations, shelter belts to stem desert encroachment and declining groundwater resources.

At the same time, he said, "we will continue to be aware of the global dimensions of our environmental problems: the implications of carbon dioxide buildup, the acid rain phenomenon, tropical deforestation, seabed mining, and the pollution of oceans and estuaries."

All this is a tall order for a department with a staff of just 10 people. However, the consensus among the international environment and development community is that under Dr. Lee's leadership, the Bank's environmental office has been extraordinarily effective.

It was set up in 1971 with Dr. Lee as the sole environmental officer. In those days, he said, "I could identify every project by name; I can't now." In his first years, he reviewed about 180 projects a year; now he and his staff look at about 700 annually.

"The Bank in the early days gave a broader definition to environment than was classically ascribed to it," he explained. Not only did it include the naturally occurring environment—air, water, soil, forest, wildlife and marine—but broader issues of the urban environment, development effects on public health, the workplace and how development projects might affect social and cultural values.

By the mid-1970s, the Bank's board of directors decided to finance environmental projects as such. Increasingly, the Bank has made environmental loans, for reforestation, soil conservation and erosion control, flood control, and urban projects: water, sewage collection and treatment, solid waste management, air pollution control, low-cost housing and the like.

The Bank helped rejuvenate Sarajevo, Yugoslavia, and now is working in Sao Paulo, Brazil, and Mexico City.

As a project nears completion, the Bank's new Operations Evaluation Department audits the results. Said Dr. Lee of his department, "On balance, our track record is good. We did identify the magnitude and severity of the problems and provided

the right countervailing measures.”

In addition to project review, his office issues handbooks and guidelines of standards and criteria, originally for use by Bank staff but now translated into several languages and used all over the world. His office has provided in-house training on the environmental components of development and now is working on an environment and development course for the Bank's Economic Development Institute, for Third World country officials and the staff of other development financing institutions.

They provide technical assistance to developing countries, responding to requests ranging all the way up to full-fledged analyses of a nation's environmental situation.

Dr. Lee and his colleagues work closely with other organizations, from UN agencies to non-governmental environmental and health organizations.

His office was instrumental in getting the principal economic development institutions to sign a declaration of environmental policies and practices, designed to harmonize their views and create an exchange of skills and experience. They have also worked with several bilateral aid agencies. Now, Lee says, “We are seeking new ways of getting the private sector involved.

The effectiveness of the World Bank's Office of Environmental Affairs is far greater than the sum of its parts, and much of the credit is due to Dr. Lee's skill as a catalyst for positive change.

LIBBY BASSETT

## Indonesia conservation plan “a model for others”

**NEW YORK**—Indonesia has signed a second five-year Conservation Agreement with the World Wildlife Fund (WWF) and IUCN (International Union for Conservation of Nature and Natural Resources), its officials announced in November.

“Indonesia's conservation initiative is a model for other nations,” remarked Charles de Haes, WWF Secretary General. “The new agreement, which immediately follows our earlier five-year program, is based on the objective of the World Conservation Strategy to ensure that conservation programs will yield distinct benefits to the Indonesian people.”

Since 1977 WWF/IUCN have supported 37 projects in Indonesia—more than in any other country—worth over \$1.5 million. It is expected that an equivalent amount will be spent for the new five-year program, which goes into effect January 1, 1982.

Indonesian conservation officials, led by Emil Salim, Minister of State for Development Supervision and the Environment, hope to increase protected areas 50 percent in the next five years to include 11.5 million hectares of reserves WWF/IUCN said.

The national budget for nature protection was increased 56 percent in 1980 to \$5.4 million, and grass roots support is widespread.

A main objective of the new program is to link WWF/IUCN projects with other development activities, such as the World Bank National Parks Development Project. SPECIAL TO WER

## Environmental management . . .

**THE WORLD HEALTH ORGANIZATION** has urged all states to enact stricter laws covering use of toxic chemicals in consumer products.

A spokesman for WHO said that experts from 12 European nations met in Varna, Bulgaria, to study the increasing use of chemicals in consumer products and the wide range of such products in common use in homes, increasing the possibility of unwitting exposures of humans to toxic chemicals.

The experts recommended that all member states consider legislating in this area and drew up a model act—“Act for Protection Against Chemical Hazards in Consumer Products”—as a guideline for possible legislative action.

“**COMPENSATION FOR POLLUTION DAMAGES**” is a 208-page report published recently by experts from the 24 industrial OECD countries. It includes seven studies: legal and economic obstacles to compensation, new systems of compensation for nuclear incidents and oil spills, the growing role of insurance schemes, compensation for damage to the ecology and tourism, for authorized polluting activities, and for transfrontier pollution. It is available from OECD sales agents in member countries or from 2 rue Andre Pascal, 75775 Cedex 16, France.

**A RECENT MEETING** of the International Union for Conservation of Nature and Natural Resources (IUCN) in New Zealand adopted a plan of action for IUCN over the next three years. The measures include saving tropical forests and conducting environmental impact assessments of major development projects in Third World countries. During the meeting, delegates discussed the role of conservation in development as outlined in the World Conservation Strategy, written by an IUCN specialist.

**THE AUSTRALIAN ENVIRONMENT COUNCIL** and the Council of National Conservation Ministers of Papua New Guinea met recently in Madang, PNG. Observers from New Zealand also attended.

Decisions were reached on ways to handle hazardous chemicals, litter control, marine pollution, the environmental effects of forest clearfelling, trade in endangered wildlife, crocodile policies and enforcement of wildlife protection laws.

PNG's Environment Minister, Ibne Kor, said his country has already benefited from the two council meetings held—the first was in Australia last year—by direct access to sources of information and expertise on environment and conservation problems.

## Wildlife . . .

**PICK A FLOWER.** The computer recently planted at the Royal Botanic Gardens in Kew, England, will let governments, international agencies, students and scientists pick thousands of the most endangered flowering plants around the world. It will also assess coverage of each biogeographical province, on land or sea. This central Protected Areas Data Unit (PADU), as the computer is known, was funded by the World Wildlife Fund, UN Environment Program and the Nature Conservancy. But it can only be as comprehensive and useful as the information fed it, so data on all national parks and protected areas of the world and any other relevant printed information should be sent to Jeremy Harrison, Royal Botanic Gardens, Kew, Sussex, England.

**IN INDONESIA,** there are only about 600 wild Sumatran elephants left, and the government is planning to settle them in a 600-hectare reserve. Alongside that reserve, 400 additional hectares have been set aside as a water catchment area. Environment minister Emil Salim, recently returned from a trip to Kuala Lumpur, said Indonesia is considering adopting Malaysian methods of controlling oil palm waste to protect endangered species. The minister said he had asked his Malaysian counterparts for full costing details of the program, particularly in relation to elephants. The two countries are also considering cooperation in the rehabilitation of old mining land.

**THE FIRST "BENIGN" STUDY** of sperm whale ecology and behavior in the Indian Ocean was to begin in November.

The World Wildlife Fund-sponsored study will last three years and be conducted aboard a 10-meter sloop. "Benign" research is observation only and does not disturb the animal.

WWF said this would be the first of 20 proposed projects to investigate population levels, ecology and behavior of the 43 cetacean species found in the recently created Indian Ocean Sanctuary.

This sanctuary was established as a result of a July 1979 decision by the International Whaling Commission. It prohibits commercial whaling for 10 years in an area stretching from Africa to Australia, from the Red and Arabian Seas and Gulf of Oman south to 55° latitude, well south of Australia.

At the IWC's 1981 meeting, sperm whale hunting was completely banned.

## US hosts international meeting on preserving all species

**WASHINGTON**—The preservation of life is an undisputed good. Less clear is whether the human race realizes that life depends on as diverse a genetic mix of species as possible. So, to shed light on the subject, the Department of State convened an international conference November 16-18 to plot a "strategy on biological diversity."

Scientists at the conference explored the issues and recounted the horror stories reported by the Global 2000 Study, the National Academy of Sciences' report on tropical deforestation, the World Conservation Strategy, and other tomes of like intent. Much has been written on the subject of preserving rather than extinguishing species, it was agreed, but little has been done. In pursuit of solutions, five conference task forces compiled several score recommendations for action.

Given Washington's antipathy toward new international initiatives, the conference committees (on terrestrial plants, terrestrial animals, aquatic species, microbial resources and ecosystem maintenance) eschewed grand new international organizations to preserve species. Should an international effort be attempted, however, they suggested it follow the mold set by the International Board for Plant Genetic Resources, whose far-flung outposts gather plant germplasm endangered by human encroachment at a bargain budget of \$3 million a year.

Rather, recommendations pressed for a lead from U.S. agencies and the private sector, whose bureaucrats and executives were well in evidence at the conference. It was suggested that the federal agencies put together an inter-agency task force to focus the government's lean resources on the most urgent steps toward genetic preservation. A U.S. policy was suggested, as was more work within the United Nations, to open the world's eyes to the growing threat of a genetically impoverished world.

As it happens, the U.S. Council on Environmental Quality, the environmental eyes and ears of the White House, is weighing these issues as part of its review of the Global 2000 Report and the Global Futures Strategy that the Carter administration left behind it. The State Department's conference is yet another stab at giving federal agencies facts and opinions to work with, according to a State Department official. He suggested that the issue of biological diversity could well follow the path cleared by advocates of a tropical forest policy. After a government conference in 1978 on tropical forests, the Carter administration convened an inter-agency task force on the subject which has generated a handful of new initiatives at AID, the Peace Corps, State Department and National Academy of Sciences, among others.

What the new administration wants, however, is its own set of data to digest, particularly in light of the indifference with which the business community greeted the Global 2000 Report and Carter's follow-up.

CHRISTOPHER JOYCE

## Pakistan sets up its own oceanographic institute

**ISLAMABAD**—Pakistan has set up a National Institute of Oceanography in Karachi to collect basic information for marine resource and economic development.

In the past, international experts and agencies had surveyed Pakistan's marine resources, including off-shore oil and gas resources, but this prevented Pakistani scientists from developing their own capabilities, thus increasing the country's reliance on foreign agencies.

Therefore, it was felt that there was an immediate need to establish basic oceanographic research laboratories, to develop data acquisition techniques, and to train research staff.

The requirement for such an institute was further justified as oceanographic research had been neglected in the resource development program of the country. Many developing countries have developed oceanographic research programs and are usefully applying the knowledge for exploration and exploitation of their marine resources, officials said. **MOHAMMAD AFTAB**

## Indian pencil factory workers are dying by the thousands

**BOMBAY**—Silicosis, a generally fatal disease that afflicts workers in slate pencil factories, has claimed the lives of some 2,000 people in Madhya Pradesh state over the last two decades.

According to a medical survey conducted in 1975, between 50 and 150 new silicosis cases were reported in the slate industry every year; it was only in 1979 when such grim reports first figured in the Indian press, that preventive measures were called for. So far, the Madhya Pradesh government has done nothing to alter the situation even though Prime Minister Indira Gandhi earlier this year expressed her concern.

Today, there are about 4,000 persons employed in the small-scale units, and they are fired as soon as they complain of symptoms associated with silicosis. According to N.K. Singh, the Bhopal-based correspondent of the *Indian Express* who broke the story two years ago, there isn't a single old worker in any of the units; no one has survived in the industry for more than a decade. "Multanpura, the village with the largest concentration of slate pencil units, is almost a graveyard," he told *WER*. "Almost every third woman in the village is a widow—a victim of pollution."

The workers inhale silica dust when the soft stone is cut by electric saws. A team of doctors which visited Multanpura reported that the dust causes "fibrous changes in the lungs that cannot be reversed." Since few workers survive beyond 40, a quarter of the total labor force consists of children who are employed to pack and who also are exposed to the deadly dust.

In the last six months alone, 75 silicosis cases were reported at the civil hospital at Mandsaur, where a pneumoconiosis medical board has been formed to tackle the disease. **DARRYL D'MONTE**

## Ocean management...

**AQUACULTURE** produced 760 tons of fish in Hong Kong last year, with a value of about \$6.33 million, according to the British colony's assistant director of agriculture and fisheries, Roy Chilvers. Chilvers told aquaculturists from seven Asian countries, who were in Hong Kong to attend a training course, that demands for quality protein in the South China Sea region have made fish farming a sizeable industry. Because of the colony's success in fish cage culture, officials from the Agriculture and Fisheries Department had visited other countries in the region to help set up similar projects. The course was funded by the UN's South China Sea Fisheries Development and Coordinating Program. The seven countries represented at the course were Bangladesh, Thailand, the Philippines, Sri Lanka, Singapore, Malaysia and Indonesia.

**THE MALAYSIAN GOVERNMENT** is in the process of upgrading its contingency plans to deal with oil spills in the Malacca Straits. With daily traffic estimated at 450 vessels, including 112 tankers, it is one of the busiest waterways in the world. The Government has allocated funds to enable the Division of the Environment (DOE) to obtain boats and equipment necessary for dealing with an oil spill clean up.

DOE Director-General S.T. Sundram said chemical dispersants would be used only "as a last resort" since the authorities do not know their effect on marine life. A team of scientists from the University of Sain Malaysia in Penang, sponsored by Esso Malaysia Bhd, is carrying out a three-year study, the first of its kind in the world, to examine the effects of naturally and chemically dispersed crude oil in the tropical environment.

**A RECENT STUDY OF CORAL REEFS** in the Philippines showed that only 4.3 percent were in perfect condition while 40 percent were in poor condition. The study was conducted by Dr. Angel Alcalá of Silliman University, who has launched a campaign to educate Filipino fishermen on the importance of preserving coral reefs. "We try to explain to the fishermen that the more coral reefs there are, the more plankton there will be. The more plankton there is, the more fish there will be," he said.

**AN INTERNATIONAL CONFERENCE** on "New Approaches to Tidal Power" will be held June 1-4, 1982, at the Bedford Institute of Oceanography, Dartmouth, Nova Scotia, Canada. It is sponsored by the institute and the National Research Council of Canada. Sessions will discuss design, environmental impacts, energy storage systems and siting. For information: R.L.G. Gilbert, Manager, Bedford Institute of Oceanography, P.O. Box 1006, Dartmouth, NS, Canada B2Y 4A2.

## International cooperation ...

**JAPAN HAS GRANTED THE INDONESIAN** government \$12 million for the construction of a biomass energy research and development center and tertiary canal pilot scheme in the Sumatran province of Lampung. According to the Japanese embassy, the biomass energy center, covering 50 hectares, will contain an experimental alcohol plant, a research laboratory and an experimental farm and workshop. If successful, it could be duplicated for use in Indonesia's transmigration projects—a scheme whereby the government is trying to shift thousands of peasants from overcrowded Java to settlements on the outer islands of the archipelago.

**A WORLD BANK** and UN Development Program energy assessment survey of Papua New Guinea will be made later this year.

It will consider geographical and geophysical data, including oil and gas potential, and will determine the country's potential alternative energy sources. PNG is one of the few developing countries seeking alternative and renewable energy sources, according to Julian Bharier of the World Bank.

**A REGIONAL CONFERENCE** on the Human Environment in the South Pacific is scheduled for March 8-12 in Rarotonga, capital of the Cook Islands. The South Pacific Regional Environment Program (SPREP) began in January 1980 and led to a technical conference this past June at which country reports on 18 states and territories of the region were reviewed (there are 23 in all). The reports identified a basic weakness throughout the region: environmental assessment capabilities. Difficulties faced in the area are meeting basic human needs (an energy-related problem), safe water and waste disposal, the misuse of toxic chemicals and the threat of radioactive pollution. A public information campaign has begun and a Directory of Environmental Research Centers will be published before the conference, which is expected to come up with an action plan. The SPREP coordinating group includes the South Pacific Bureau for Economic Cooperation, South Pacific Commission, Economic and Social Commission for Asia and the Pacific, and the UN Environment Program.

## US not candid with Japan on its global commitment

**WASHINGTON**—There was, apparently, some diplomatic double-talk going on at the most recent (fifth) meeting here of the U.S.-Japan Joint Planning and Coordinating Committee on Environmental Protection.

The Director General of Japan's Environment Agency, Hyosuke Kujiraoka, came to the United States to stress his government's environmental commitment, particularly on global issues. During the opening session, he asked Anne Gorsuch, Administrator of the U.S. Environmental Protection Agency, whether there had been any shift in the new administration's point of view. Mrs. Gorsuch said no and emphasized that the U.S. will try to continue its leadership on global issues.

For two days the high-level delegations met, but during that time no one told the Japanese that the U.S. was planning to cut its contribution to the UN Environment Program (UNEP) by 50-80 percent, nor that the U.S. EPA was facing enormous budget cuts.

This came out in an interview following the meeting with Tsutomu Tanaka, Director of the Japanese Environment Agency's International Affairs Division.

Last December, the Japanese government published its own brief, theoretical study, "Basic Directions in Coping with Global Environmental Problems." It evaluated problem areas, basic policy directions both worldwide and in Japan, and outlined issues for further study.

Tanaka said his government had followed the U.S. lead on this and was relying particularly on UNEP and the OECD (Organization for Economic Cooperation and Development) for coordinated action on these problems.

News of the U.S. environmental budget cuts "is certainly not encouraging," Tanaka said, "for it could create a chain reaction. We expect continuation of leadership from the United States."

The two nations' bilateral projects are continuing, though, with the exception of one, which is being held up by the Japanese Diet (parliament). The Environment Agency has given environmental impact assessment priority, but the Diet has not yet passed the legislation, reportedly due to industrial pressure. Once passed, it will be a bilateral project.

The other 13 projects on which the U.S. and Japan share information are: environmental economics and incentives for pollution control, a technical exchange for water conservation and flow reduction, sewage treatment technology, air pollution-related meteorology, auto pollution control, solid waste management, food additives, identification and control of toxic substances, photochemical air pollution, stationary source pollution control technology, management of bottom sediments containing toxic pollutants, and technology for closed systemization of industrial waste water controls.

Taken all together, Japanese environmental measures account for 2.6 percent of the national budget, some 1,200 billion yen (\$5.4 billion). The Environment Agency budget alone is slightly over 46 billion yen (\$208 million). Japan's contribution to the UN Environment Program is \$4 million. If the U.S. government cuts its funding for UNEP from \$10 million to \$2 million as now seems likely, Japan will be the largest free-market contributor.

Director General Kujiraoka said in his closing remarks to the bilateral session that "(our) economic and financial situations are a little different, but we two are confronted with similar situations. . . . I believe the economy is very important. However, I believe economics is a tool and the purpose is the happiness of humanity. Human health cannot be sacrificed for economic advancement."

LIBBY BASSETT

## Mexico may get a tough, new environment protection law

**MEXICO CITY**—Declaring that Mexican "industry is too big and the fines are too small," President Jose Lopez Portillo has proposed a tough new environmental protection law to impose prison sentences and heavy fines on industries found guilty of violating it.

The most comprehensive law of its kind ever devised in Mexico, the new Federal Environment Protection Law is expected to gain easy passage through Congress.

In calling for its approval, the president noted that many industries routinely pay a \$2,000 fine rather than install anti-contamination devices or otherwise halt their pollution. That old maximum fine is too low, considering inflation and the fact that most sources of contamination are in the hands of companies with "great economic potential," he said.

Jail terms from six months to three years may now be imposed on violators, and fines levied of from 50 to 5,000 times the amount of the prevailing minimum daily salary—in Mexico around \$11 a day.

Virtually every known contaminant is specifically covered in the law, which amends a 1971 measure.

Violators are those causing atmospheric contamination, land or water pollution, thermal energy or radiation emissions, noise or vibrations that damage the public health, flora or fauna.

Punishment is decreed for those who "cause risks or danger to the public health by making, storing, using, importing, transporting or dealing in contaminating materials dangerous to the public health, fauna and ecosystems." Attention is given to contaminated foods or beverages, those who make and sell them.

Earlier, at the President's urging, the major state-owned industries—oil, electricity, fertilizer, steel—signed separate anti-contamination agreements.

KATHERINE HATCH

## Environment & industry...

**A CALL FOR RETROACTIVE LEGISLATION** to force disclosure of sites where the deadly chemical dioxin is buried, has been made by residents and county councillors in northeast Derbyshire, England.

Following a 1968 explosion in the Coalite Chemical Products Ltd. factory, which killed one man and infected 79 others, material and equipment contaminated with dioxin was buried in surrounding areas.

The Derbyshire dumping was first publicly disclosed by the company after the 1976 Seveso accident in Italy. Local villagers have become increasingly anxious since 1978 when council permission was given to develop a drift mine near the site. They say the miners are getting close to fields where they believe the dioxin is buried.

There is disagreement on the exact amount of dioxin in the dumped material and also on its toxicity level after 13 years of decomposition.

**THE INTERNATIONAL REGISTER** of Potentially Toxic Chemicals (IRPTC) Bulletin, published by the UN Environment Program, is available to interested *WER* readers. Now in its fourth year of publication, it includes information on IRPTC and UNEP activities, national and international activities in the field, news and general legislation on chemicals in cooperating countries. Write the Director, IRPTC/UNEP, Palais des Nations, 1211 Geneva 10, Switzerland.

**BRAZIL'S FIRST SOLAR-ENERGY-ACTIVATED** irrigation system was officially inaugurated at a *fazenda* (plantation) near the University of Ceara at Fortaleza, using solar panels provided by Atlantic Richfield's Arco Solar Division, the largest solar cell company in the world.

It's part of a research program directed by the university with contributions by SUDENE, Arco Solar and the Brazilian pump and pipe companies, Bombas King and Caisa.

Bob Pettit, vice-president and chief executive officer of Arco Solar, described the "pulsating jet" irrigation system as the first of its kind in the world. He said the system, which waters only the roots of the plant, is "very energy efficient and very water efficient."

The Ceara project is one of three research programs to which Arco Solar is contributing solar panels. The other two are in Paraiba and Pernambuco.

Arco Solar's next move in Brazil will be to establish an assembly (not production) plant for solar cells, which Pettit said would halve the current market price of \$50-\$60 per unit.



## Water wise ...

**THE AUSTRALIAN INSTITUTE OF MARINE SCIENCE** has taken two research initiatives to improve the nation's management of marine resources.

The first is compiling a directory of marine research detailing all current projects; the second is an inventory of all data banks relevant to marine science.

In a speech opening a conference on environmental engineering, the Minister for Science and Technology, David Thomson, said this research would enable detailed management and zoning for different uses of the Great Barrier Reef region. He mentioned that a report prepared by the Senate Standing Committee on Science and Environment makes 45 recommendations on the organization, funding, conduct and priorities for marine science and technologies. One major recommendation is that an Australian Marine Science Council be set up for coordination and funding. Existing research bodies such as the Australian Institute of Marine Science and the CSIRO Divisions of Fisheries Research and Oceanography would be brought under the Council's umbrella.

**EARTH'S LAST GREAT WILDERNESS AREAS**, says World Wildlife Fund-International, are the deep seabed and Antarctica. And so it has launched a program to examine the technical, legal and political aspects involved in creating protected areas within these two international commons.

WWF says this initiative is needed because, for example, the Law of the Sea treaty considers deep-sea mineral resources but pays little attention to the importance of living systems in that realm.

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## Controversy over Australia's biggest river finally settled

**PERTH**—After eight years of disagreement and discussion, an interstate accord was finally reached with the Federal government on managing Australia's largest river, the Murray.

The mighty Murray rises in South Australia and runs 2600 kilometers to the east through New South Wales and Victoria. It drains an area of one million square kilometers—the fourth largest river basin in the world—and \$1 billion worth of irrigation works have created an area that the entire country depends on for food, water and recreation.

According to Prime Minister Malcolm Fraser, this revision of the 60-year-old River Murray Waters Agreement "to meet today's requirements is a milestone in cooperative management of the river's water and in improving the quality of Australia's most important water resource."

Under the agreement, the River Murray Commission has new responsibilities: to formulate water quality objectives and standards, assess the implications of new developments that would significantly impact water quality, make representations on any proposal that might adversely affect water quality.

The Commission is hiring consultants to develop a computer model that will simulate operation of the entire river system—flow, storage changes and water quality.

The success of the new agreement rests on cooperation between the Australian and state governments. As an investigative reporter for *The Australian* pointed out in a six-part series, political expediency and interstate rivalry may cripple the new agreement for, he says, it did not include:

- power for the Commission to enforce decisions
- majority rule; the four commissioners must reach a unanimous decision despite interests which often conflict
- expansion of Commission staff or budget to cover dam construction, operations, maintenance and administration.

He concludes that the Commission has only a moral imprimatur, the weight and power of which has yet to be measured.

Several pending conflicts must be resolved, including water distribution from the new Dartmouth Dam, which has created the biggest water storage area on the river.

Prime Minister Fraser said of these potential conflicts: "I think we have got to assume that governments would act in good faith and not willingly or knowingly want to undertake any activity that is going to damage water quality."

ANNE BLOEMEN

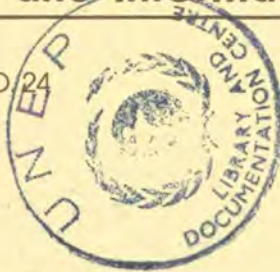


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## Canada is lobbying the U.S. to stop acid rain destruction

**NEW YORK**—Canada is spending more than \$1.5 million lobbying the U.S. administration, Congress, the press and the American people to publicize its very real worry about acid rain.

The Canadian government says that half the sulphur oxides that fall to earth there come from the United States. Acid rain from American sources falls in areas without buffering capacity so it causes 70 percent of the damage to Canadian lakes, streams and forests.

Acid rain, or more properly acid deposition because it can fall as rain, snow, sleet, hail or as dry particles, is caused when sulphur and nitrogen oxides are transformed in the atmosphere into sulphuric acid and nitric acid.

Hundreds of lakes in Ontario are now devoid of fish because of acid rain, and the government says that thousands of lakes and streams are threatened, not only in Ontario but throughout eastern Canada.

"Short of taking off my shoe and banging it on the table, I'm prepared to do anything I can for publicity" about this problem, Canada's Environment Minister John Roberts said here recently. It was his tenth acid rain talk in the United States. "I will go any place that will take me," Roberts asserted, "for our forest and fishing industries are badly affected."

He said the Canadian Department of Environment had a \$1 million 1981-82 budget just for acid rain research and backup information, of which \$350,000 is for publicity and promotion materials.

In addition, the Department of External Affairs has allocated \$50,000 for environmental concerns, such as conferences and tours for interested American journalists and Congressmen.

Last year the province of Ontario spent \$350,000 to promote its concern about acid rain.

And 27 private Canadian organizations have formed the Canadian Coalition on Acid Rain, which opened a lobbying office in Washington, D.C., this May. Lobbyist Adele Hurley said the \$10,000 to \$12,000 she spends every month being an "acid rain broker" comes entirely from private sources in Canada. She may well be the first environmentalist registered as a foreign agent. She not only lobbies Congress as it gears up to debate the Clean Air Act but she provides information to the American press.

"I spend 70 percent of my time giving Americans American information on the subject," she said, like the National Research



## International cooperation ...

**A WORLD CHARTER FOR NATURE** has been drawn up after six years of negotiation and is due to be presented soon to the UN General Assembly for adoption.

The UN Environment Program (UNEP) and the International Union for Conservation of Nature and Natural Resources (IUCN) have worked together on the draft since the idea was launched by President Mobutu Sese Seko of Zaire at the 1975 IUCN General Assembly.

In effect, the charter will offer the world a code of conduct for managing nature and natural resources, UNEP officials say.

The present draft was prepared by IUCN and Zairean experts in 1979, and the UN General Assembly later invited member states to submit their views on it. So far, 50 nations have responded, and the Organization of African Unity (OAU) recorded its support this June at its annual summit meeting.

Recently 16 experts from all over the world met at UNEP headquarters in Nairobi to draw up the final draft; this is now being studied further by UNEP and IUCN, for submission to the General Assembly along with an analysis of the views of governments on its provisions.

**THE UN CONFERENCE ON THE LAW OF THE SEA** has decided that the International Seabed Authority will be sited in Jamaica. The other site under consideration was Malta.

The authority will be located in either Kingston or Montego Bay and is expected to provide substantial new employment.

**A SOUTH-EAST PACIFIC** regional sea action plan was expected to receive approval at an intergovernmental meeting scheduled for November 9-13 in Lima, Peru. The plan deals with the coastal areas and sea off Panama, Colombia, Ecuador, Peru and Chile. It was expected that the Permanent Commission for the South Pacific (CPPS), which played a major role in developing the action plan, will be asked to act as secretariat and to manage the trust fund. This is one of 10 regional seas programs of the UN Environmental Program.

**A LATIN AMERICAN SEMINAR** on Environmental Education will be sponsored in Caracas, Venezuela, November 22-27 by the Environment Ministry and Venezuelan Society of Natural Sciences.

Education via the school systems, informal educational agents and the communications media will be discussed and the experience acquired by different countries will be shared. The Environment Ministry thus hopes to improve its procedures and methods in educating Venezuelans to its aims.

Council's report that acid rain was a serious problem—a view the U.S. administration has been loathe to accept. She also brings leaders of the groups that make up the Coalition—such as hunters and fishermen—to talk to their counterparts in the United States.

In Canada, acid rain has become a multiparty issue and a major point of contention with the United States.

"I fear the (Reagan) administration might want to delay effective consideration of an international agreement (between Canada and the U.S.) until the Clean Air Act is disposed of," Environment Minister Roberts said. The second meeting between the U.S. and Canadian officials to work out an agreement took place November 6.

He added, "We'd like (the U.S.) Congress to maintain and strengthen the Clean Air Act. We'd like a 50 percent reduction in emissions over the next decade to match the Canadian target."

Roberts is particularly concerned about administration proposals that the states take over enforcement of the Clean Air Act: "If the U.S. gives it over to the states, then there is not much use having an agreement with the federal government."

Roberts admitted, "We don't generally undertake campaigns in the United States. It caused some uneasiness in Canada, if it was the proper thing to do." But, he said, "the U.S. administration encouraged us to present our case to Congress. Now some American officials are criticizing this. I find this puzzling."

The puzzle may be explained by the fact that the Canadian lobbying effort—both federal and private—is proving effective. Articles have appeared in major magazines, documentaries are being made, and U.S. polls show the great majority of the American people disagrees with the government's intention of easing clean air regulations.

LIBBY BASSETT

## Groundwork laid for world ozone layer convention

**COPENHAGEN**—An international convention on protecting the ozone layer took a giant step forward here when the multinational Coordinating Committee on the Ozone Layer (CCOL) reached agreement that a real threat of damage continues to exist.

"We were all in agreement," said one participant, who represented the UN Environment Program which has overall charge of the campaign. "And that goes for the manufacturers, too."

The Copenhagen session, attended by representatives of 13 countries, half a dozen international bodies and the U.S. Chemical Manufacturers Association, was mainly devoted to reviewing ozone depletion data and going over measuring techniques. The inch-thick stack of papers that came out of the four-day October session will supply the scientific input for another planning session. On January 29-30, the Ad Hoc Working Group of Legal and Technical Experts meets in Stockholm to start framing an international convention on protection of the ozone layer.

There appears to be general agreement, possibly a unanimous one, that decreases in the ozone layer of the stratosphere lead to increases in both non-malignant and malignant skin cancer. The reason is the greater penetration of ultraviolet rays (UV-B rays). Jet aircraft exhaust appears to increase the ozone content at lower levels, while chlorine compounds, particularly chlorofluorocarbons 11 and 12, knock out ozone molecules at higher levels. The ozone layer is constantly replenishing itself but not at the speed with which it is attacked by rising CFC molecules.

Increasing amounts of ozone at lower levels apparently do not cancel out the losses suffered higher up. A press release issued after the Copenhagen session said that substantial changes in the ozone distribution could produce temperature changes and perhaps resultant climate changes. Temperatures would drop in the stratosphere, increasing the "greenhouse effect" of carbon dioxide formation.

Decrease in use of CFCs 11 and 12 as propellants in aerosol spray cans, especially in major industrialized countries, appears to have a beneficial effect, while greater use of CFCs in other products, such as refrigeration insulating material, appears to be putting greater quantities of the compounds into the air.

Sophisticated computer models, programed with all available information on CFC production, its dispersal rate and known effect on ozone molecules—plus considerable other data—say that a depletion of 5-10 percent will have occurred within "several decades," as one participant put it. The amount of UV-B rays reaching the earth's surface is reported to increase by 1.6 to 3 percent for every 1 percent change in the ozone layer.

Just one day after the Copenhagen meeting, a U.S. satellite began sending data on ozone depletion in the atmosphere. The Solar Mesosphere Explorer is designed to monitor ozone changes between 30 and 80 kilometers above earth over the next three years.

The Copenhagen gathering of ozone specialists produced a number of recommendations for member governments and for the ad hoc group going to Stockholm in January. Chief among these was greater accuracy in monitoring and better reporting to the World Ozone Data Center in Toronto, Canada, which presently fails to get the reports of roughly one-third of the world's ground measuring stations.

While scientific data should now be forthcoming in greater detail, little has been done on the important question of economic and social effects of the various control strategies. For example, what is the cost of the various programs? This information will have to be gathered before much work is done on the framework of an ozone convention.

Manufacturers reported that total world production of CFCs 11 and 12 (estimates from the Chemical Manufacturers Association) had dropped by 18 percent between 1974 and 1980, or from 851,000 to 696,000 metric tons. Most of the decrease came in 1974-77. Only 1 percent took place during the past year. Use of CFCs as aerosol propellants may be decreasing more than that figure, while CFC use in other products may well be increasing.

ALFRED E. PEDERSEN

## Air quality ...

**MEXICO CITY MAYOR** Carlos Hank Gonzalez is keeping a promise he made to the capital's 14 million smog-weary residents: In late September he ordered city officials to seize control of three dozen urban buslines, cancelled their contracts and began steps to clean up the 4,500 smoke-trailing buses and impose order in their service. Arbitrary route changes, over-pricing of tickets, strikes and refusal of owners to eliminate environmental contamination or maintain buses in safe conditions were among the reasons cited by city officials for their takeover of the bus lines. Owners will be paid, the mayor said, and citizens may expect good service within one year.

**RADIO BUDAPEST** reported that an alloy plant in the north Hungarian town of Salgotarjan had been closed because the gas and particles it released polluted the environment.

The report said the plant had been instructed several times to take measures to curb its pollutants but that it had ignored the directives. It said an investigation had shown that there was little hope of having the pollution eliminated in the near future.

**THE PEOPLE OF NEW DELHI** are "breathing poison," said India's National Environmental Engineering Research Institute.

An institute survey found that the recorded dust fall in India's capital averaged 30 metric tons a square kilometer with a maximum of 64 metric tons a square kilometer in the commercial areas.

Fly ash from power stations and dangerous levels of noxious pollutants from half a million vehicles and over 7000 buses have been cited as main reasons for the air pollution.

Although the government has enacted an Air Prevention and Control of Pollution Act, it appears a paper victory.

**AIR POLLUTION IN SEOUL** is 35 times higher than the average pollution level throughout South Korea, according to research done recently at the Environmental Pollution Research Institute of Yonsei University. This is due to the rapid increase in the use of fossil fuels in the capital city. The average index for sulphur dioxide was 0.275 parts per million, five times higher than the 0.05 ppm permissible level.

**AUSTRALIA IS THE ONLY COUNTRY** which can put a trustworthy environmental tag on its coal, a CSIRO scientist told the 7th International Clean Air Conference in Adelaide. The tag gives the buyer important environmental information about the ash produced when the coal is burnt. This information comes from a process developed by CSIRO (Commonwealth Scientific and Industrial Research Organization) scientists working in the Division of Fossil Fuels.

## Eco-politics . . .

**PORTUGAL'S LEADING ECOLOGIST**, a leader of the Popular Monarchist Party, Architect Goncalo Ribeiro Teles, has been appointed Minister of State in charge of the environmental ministry.

Ribeiro Teles hopes that his new position will result in quicker decisions in the environmental area and improved cooperation between ministries. A priority is regionalization, and the new minister intends to work closely with municipalities to find the most adequate solutions for the provinces.

Eco-groups, which sprang up all over the country in the past few years, have become increasingly disillusioned with the government's policies. "All talk and no action," says one leading ecologist. Environmental ideas get bogged down in the country's bureaucracy and nothing concrete gets done, he said.

**A RUMOR BEGAN** in Washington, DC, that the Government Printing Office (GPO) had been ordered to shred the Global 2000 Report to the President. Said the man in charge of G2000 at the GPO, "that's completely false." In fact, he added, this U.S. government study, the basis for long-range planning in population, resources and environment, is selling very well indeed. As of the beginning of November, 53,000 copies of the summary had been sold and 16,000 of the massive technical report, Volume 2. Penguin Books is coming out with a paperback in January combining both volumes. Penguin's catalog says it's "the book that President Reagan has tried to suppress." Said the man at the GPO, "We've not even had one telephone call about it" from the administration. The administration, in fact, was actively working to have an inter-agency followup meeting on G2000 issues, called by the President's Council on Environmental Quality, and scheduled for mid-November.

**GUYANA AND SURINAM** have failed to reach a bilateral agreement to build a multi-million dollar hydroelectric project on the Corentyne River, which is the borderline between the two countries and claimed by both of them.

Mutual agreement on the West Surinam project, estimated to cost \$2.5-3 million, is essential to secure foreign funding.

Talks broke down when Guyana claimed Surinam would have to guarantee its water supply if the need arose. Surinam rejected this because it claims total jurisdiction over the river.

The breakdown has left prospects uncertain for reaching agreement on fishing rights in the Corentyne River, and the discussion of a bridge to span the river was discontinued.

## Norway's new environment minister is a champion

**OSLO**—For the second time, a woman has been installed as Norway's Minister of Environmental Affairs. Wenche Frogm Sellaeg, 44, is a physician and former national handball team goalkeeper.

The first woman to hold the Environment Minister's post here was Gro Harlem Brundtland, who then became Norway's and Scandinavia's first female prime minister. Her Labor Party colleague Rolf Hansen took over as Environment Minister.

After Labor lost the general elections September 14, Norway's first Conservative government in 53 years was installed October 14, and Prime Minister Kaare Willoch selected Mrs. Frogm Sellaeg as Environment Minister.

Like Mrs. Brundtland she was educated at the Medical School of the University of Oslo. Both studied there at the same time and often engaged in political discussion in student organizations.

Later Mrs. Frogm Sellaeg took a diploma in tropical hygiene and medicine at London University. She served at several Norwegian hospitals and as a missionary physician among lepers in Bhutan.

During her medical studies from 1959 to 1969 she was a popular goalkeeper on Norway's national women's handball team. She played 42 international matches for Norway and her club team was a national champion.

SPECIAL TO WER

## Aluminum company fined for killing shepherd's flock

**ATHENS**—An aluminum company was found guilty of killing a Greek shepherd's flock with pollution and was ordered to pay \$30,000 in compensation.

George Gekas, a 56-year-old shepherd from the mountain village of Kyriaki, near ancient Delphi, successfully sued "Alluminium De Grece" for damages to his goat and sheep herds, which grazed near the company's smelting plant. Gekas lost a total of 720 animals from 1967 to 1973 and was forced to give up herding.

The Athens court, which examined the case in September, recognized that the animals' death had been caused by emissions of fluor, a toxic byproduct of the processing of alumina from bauxite.

The ingestion of fluor, according to scientists, caused the goats to grow abnormally large teeth. The deformity prevented the animals from eating, and they died from starvation.

Several other shepherds from Kyriaki and other nearby villages have claimed similar losses.

"Alluminium De Grece," the biggest mining company in Greece, produces 80,000 tons of aluminum bars annually. It is 45 percent owned by Pechiney Eugène Kulman of France and 55 percent by the Greek family of Elias Eliasco.

Greece has the largest reserve of bauxite, the basis of aluminum, in Europe.

KYRIACOS CONDOULIS

## Mexican bank starts fund for industrial pollution control

**MEXICO CITY**—The Bank of Mexico, the nation's central bank, has announced formation of a special Bank and Industrial Equipment Fund that will give preferential credits to industry for anti-contamination equipment and technical assistance. Gustavo Romero Kolbeck, bank director, said the federal government wants to eliminate financial problems as a barrier to industry compliance with environmental protection laws and regulations.

Loans of up to 90 percent of the capital expense with a three-year grace period and a 13-year payback have been designated for the project, with the cooperation of the Secretary of Health and its Sub-secretariat of Environmental Improvement. Target industries for the newly available credits will be steel, cement and automobile manufacturing, the bank director said.

KATHERINE HATCH

## Pollution is destroying Egypt's sphinx and pyramids

**CAIRO**—Cheops' Pyramid—one of the three great pyramids of Giza and the last of the Seven Wonders of the Ancient World to survive—is deteriorating at an alarming rate, and urban pollution has received much of the blame.

Egypt's Department of Antiquities estimates that more than two thousand of the enormous structure's limestone blocks have been affected by a combination of pollutants, which include acid rain and vehicular exhaust fumes. A dual carriageway from Cairo to Giza brings as many as a million tourists a year to the foot of the ancient monuments, all of which are in need of some attention.

Strapped for cash, the Department of Antiquities is attempting to buttress Cheops' pyramid by inserting a few hundred new blocks in the structure.

The limestone is quarried in the Moqattam Hills, 45 kilometers east of Giza, where the Pharaohs' builders obtained their own 2½-ton blocks.

Pollution has also been cited as contributing to erosion of the nearby Sphinx which recently shed 120 stones from its left rear leg to leave a gaping hole. Blame has been placed on water thought to be rising below the 4,500-year-old statue and bringing corrosive salts along with it. Ever since the erection of the Aswan High Dam in southern Egypt during the 1960s, the water table in the Nile Valley has been rising, thus keeping the level of the river more nearly constant. The mounting water table has alarmed some Egyptologists who fear that the head of the Sphinx may be the next to fall unless something can be done to arrest the statue's deterioration.

Solutions proposed include forcing glue into the stone to reinforce the neck, placing the statue under glass and reburying it in the sand.

ROBERT FRAGA

## Environment & industry...

**IN FIVE SOUTHERN INDIAN CITIES**, a study found that a large number of industrial workers are suffering from noise-induced hearing loss, which is incurable.

The study, covering the textile, oil, fertilizer and chemical industries, showed one out of four workers had a loss of hearing.

Dr. S. Kameswaran of Madras Medical College, who conducted the survey, said that 10 percent of the people living in these cities, such as traffic constables and pavement vendors, were also among the victims.

**EFFLUENT CONTAINING CHLORINE** from a chemical factory in Orissa, eastern India, has driven hundreds of farmers off their land. Polluted water enters irrigation channels from the river in Ganjam district and bleaches paddy plants. Fish have also been severely affected.

Fishermen, farmers and students have complained that provisions of the Industries Act and the Orissa River Pollution Act are not being invoked against the factory. A Parliamentary committee had asked the factory to remove the pipe leading to the river and had ordered the Orissa River Board to take preventive measures, but nothing has been done so far.

**THE THAI INDUSTRIAL WORKS** Department will move about 3,000 factories out of Bangkok over the next three years as a part of the department's drive against factories operating in inappropriate places and causing pollution in the capital. These are mainly small wrought- and cast-iron factories, furniture businesses, pharmaceutical and food operations. So far, the department has closed down or relocated about 7,500 factories in Bangkok.

**POLLUTION FROM PALM OIL** effluents in Malaysia has been reduced from 25,000 parts per million (ppm) in 1977 to 500 ppm at present, said S.T. Sundram, Malaysian Director-General of the Environment Division. Sundram said environmental authorities would like to see the level drop to 50 ppm.

**THE PHILIPPINE BOARD OF INVESTMENTS** (BOI) has approved the establishment of a pioneering company, the Gasifier and Equipment Manufacturing Corp. (GEMCOR), to produce equipment that will generate combustible gas from burning charcoal, wood, bagasse or rice hulls. GEMCOR will be 100 percent Filipino—the incorporators are government-owned corporations—and will have an initial capital of \$6.25 million. GEMCOR will produce 1,500 gasifier units a year, designed for stationary engines, driving pumps, rice mills, electric generators and motor vehicles driven either by gasoline or diesel.

## Renewable energy...

**RESEARCHERS** at the Faculty of Agriculture in Tanzania have developed a clay insulated charcoal stove which consumes only half as much fuel as the commonly used scrap metal cookers.

Over 40 percent of Tanzania's urban households cook with charcoal. Charcoal consumption has increased five-fold and the price four-fold in just five years.

The new clay stove, similar to a type used in Asia, combines the durability of steel with the efficiency of clay. It is constructed in three layers: an outer metal skin made from tin cans, the middle layer of ash sealed with cement and an inner layer of burnt clay provide insulation. Its shape is similar to that of a bucket, with tapered sides and a handle on top. It has a small air inlet hole at the bottom and a fire gate halfway down the side.

At a local fair recently the designers challenged Tanzanians to test their traditional stoves against the clay model. After a week, the clay stove stood unbeaten.

Now the researchers, with support from Canada's International Development Research Centre (IDRC), are working to perfect their stove in mass production.

For information: Romanus Ishengoma and Keith Openshaw, University of Dar es Salaam, Faculty of Agriculture, P.O. Box 643, Morogoro, Tanzania.

**IN THE SOMALI REFUGEE CAMPS**, which are becoming dustbowls as perhaps one million people forage for wood and scrub, the sun can be an enemy. However, the enterprising private aid group, Oxfam America, is harnessing Somalia's most abundant resource to provide clean drinking water for some 130,000 refugees.

It has developed an emergency solar water pump, run totally on solar energy, to pump water from underground sources. The water, which filters through the sandy soil, is completely free of bacteria. The pump has only one moving part and to maintain it all that is necessary is to keep debris away from it and to dust the panels.

There are 20 pumps in all and each can produce 19,800 liters a day to supply 6,600 people with the minimum requirement of 3 liters daily. It was manufactured by Solar Electric International of Washington, D.C.

**RENEWABLE ENERGY RESEARCH IN INDIA** is a compendium of progress reports from about 70 public and private institutions on the subcontinent. This 270-page, revised 1981 edition was compiled by the leading Tata Energy Research Institute. To receive a copy send \$50 to: The Documentation Centre, Tata Energy Research Institute, Bombay House, 24, Homi Mody Street, Bombay 400 023, India.

## Tanzania's tree planting campaign called a success

**DAR-ES-SALAAM**—Organizers of Tanzania's six-month afforestation campaign say it is a success and have recommended it be expanded into a permanent, nationwide tree-planting and soil conservation program.

The campaign utilized adult education techniques to teach villagers afforestation methods. "It is unique in Africa," stated Carl Gerden, a Swedish expert working on the program.

A just-ended evaluation seminar proposed the government approve and finance an on-going program. "We feel we have laid a good foundation for a full-scale afforestation program," stated John Lawuo, Acting Director of the Institute of Adult Education.

Because of its efforts in the field, Tanzania hosted an FAO-sponsored international conference on village afforestation in mid-October.

Tanzania's \$4 million pilot project was carried out earlier this year in eight of the country's most seriously deforested regions (*WER*, Jan. 19, p. 6). Jointly sponsored by the Ministry of Natural Resources and the Institute of Adult Education, and partly funded by Swedish aid, the project combined mass communication and adult education and worked through existing structures in 3500 villages. It was aimed at starting village-based nurseries.

Over 11 million seedlings were planted which, according to Mr. Lawuo, was 77 percent of the original target. These "shambas" (farms) were planted on a cooperative basis in villages and at schools, missions and other institutions.

In addition, villagers attended weekly classes taught by instructors from the adult education, cooperative and forestry divisions. They used specially prepared Swahili language study booklets which were complemented by twice-weekly radio programs. Cinema vans also toured the regions showing locally produced films on reforestation. Posters, stamps, match boxes and printed cloth were also used to promote the campaign.

There were shortcomings in the campaign's implementation. The government could not provide enough seedlings, and the seedlings supplied were not always suitable for Tanzania's semi-arid areas. Farmers had to be convinced to set aside good land for village woodlots. In addition, the planting of seedlings was done during the rainy season when villagers were busy planting their food and cash crops. At the same time, the seedlings had to be continuously watered and weeded—and fenced to protect against goats, elephants and other animals.

Because Tanzania and many other Third World countries will continue to be dependent on wood, "It's not realistic to think Tanzania can introduce on a large scale solar or other sources of energy," Gerden said. "Tanzania is stuck with wood fuel. Therefore we must work to assure it does not disappear and to improve cooking stoves so wood is more efficiently used."

MARTHA HONEY

## Indian social forestry study finds the poor are not helped

**BOMBAY**—Is social forestry in India fulfilling its purpose: providing wood, food and fodder to the rural population?

The Indian Institute of Management (IIM) in Bangalore fielded a study team which found that social forestry has often been counter-productive.

Instead of involving the rural community in raising and protecting useful species of trees on community and waste land, it said the government is encouraging farmers to switch from food crop cultivation to commercial tree forestry.

Moreover, by selecting a species like eucalyptus, the rural community has been denied trees which have supplied "life support systems." In any case, the average farmer cannot afford to plant and maintain commercial species, which require large amounts of water, the study said.

According to IIM, this inappropriate choice is at the center of several controversies around World Bank-funded projects in other parts of the country. In the Himalayas, chir-pine monoculture and tropical pine in Bastar, Madhya Pradesh, are viewed by local people as a threat. In Gujarat, large areas have already been planted in eucalyptus.

The team found evidence that there already is a shift from food to forest farming in the Kolar district of Karnataka. Social forestry, as practised in Kolar, has not been "social," the team says, for it has primarily benefited rich farmers. The condition of landless laborers and marginal cultivators has worsened as a result of the switch, both in terms of employment opportunities and the availability of fuel, fodder and food from traditional trees in the region. The study found that although 15 percent of the land in the Kolar district was set aside for growing timber, an additional 22 percent is now being used for "cash trees."

The contribution of the World Bank to this situation, said the team, is "marginal at best and destructive at worst." The Bank's aim is to satisfy people's needs and maintain the ecology through the operation of market forces. "These forces, however, are the very ones that led to the erosion of the rural life-support systems," the team found.

**FROM NEW DELHI** comes a report that on September 30, India and the United States signed a \$4 million agreement for a social forestry project in Madhya Pradesh. This is the first installment in a project expected to cost \$25 million. About 63,000 hectares of mixed plantations will be planted under the project.

The Federal government has earmarked over \$100 million in its sixth five-year plan, which began this year, to promote social forestry throughout India. It plans to distribute 530 million seedlings to create 260,000 hectares of fuelwood plantations in 100 selected districts.

DARRYL D'MONTE (Bombay)

R. MURALI MANOHAR (New Delhi)

## Forestry ...

**INDONESIA'S FIRST HUMID TROPICAL FOREST** rehabilitation center in Samarinda, East Kalimantan, will be operational in 1982, as a part of Mulawarman University. The Japanese-aided project will become a center for study of forest protection, silviculture, charting and stock taking as well as management, according to university rector Prof. Soestrisno Hadi. However the directorate general has yet to approve funds to operate the center. Indonesia's forests suffered serious depletion in the 1960s and '70s when few of the forestry cutting regulations laid down by the government were enforced. Restrictions tightened in the last two years when the government changed its focus from logging (previously the country's number one export earner after oil) to processed timber.

**A TOTAL BAN** on the export of logs is being considered by the Philippine government. A logging ban, aimed at conserving the country's dwindling forest resources, already applies to 14 regions and will soon extend to cover seven more. A National Economic and Development Authority study has recommended the total ban begin in 1983. Edmundo V. Cortez, Director of the Bureau of Forest Development, says that the local wood processing industry should sell more timber as finished products abroad. At present the ban covers a total area of 2 million hectares with a potential yield of 3.4 million cubic meters.

**THE WORLD'S LARGEST STAND** of Parana Pine, or Aracuaris, may be returned to the care of the Brazilian Indian tribes from whom it was appropriated.

Judgment on a case involving falsified documentation used by a lumber company to gain possession of the area is expected to favor the Guaranis and Caigangues tribes, who lost the land in 1949 through a government colonization plan.

The land, valued at \$36 billion, is located near the Paraguay-Brazil border in the municipality of Manguerinha, state of Parana.

A ruling on the constitutionality of the appropriation will be made by the end of the year, aided by Brazil's FUNAI, the National Indian Foundation. The F. Slaviero and Sons Wood Industry and Commerce group is accused of blatant falsification of land titles and bills of sale for the land, registered on a single day by single adult males, naming the lumber company owner.



## Land use . . .

**A TOTAL OF 535,000 HECTARES** of land will be reclaimed in Indonesia during the next two years, the Ministry of Public Works announced. An additional 650,000 hectares of land will be reclaimed between 1984-89. According to a survey conducted in 1977, Indonesia has 39.4 million hectares of reclaimable swamps in Sumatra, Kalimantan, Sulawesi and Irian Jaya. Of this total acreage, 7 million hectares consist of coastal marshes and more than 32.4 million hectares are inland swamps. There was no announcement about the environmental effects of this reclamation plan.

**CHINESE SCIENTISTS** have called for greater protection of wild plants and animals around Beijing to restore the ecological balance, according to the official Xinhua News Agency. The scientists have said that the hills around Beijing have become barren because of soil erosion and that rare animals and plants are on the verge of extinction. They suggested nature reserves be set up in six hilly areas surrounding the city.

**INDIA IS LOSING** 600 million tons of fertile soil annually due to erosion, said Dr. R.L. Singh, Director of National Parks. He estimated that nearly \$9 billion worth of minerals in the soil are lost through erosion.

At a recent seminar Singh said, "...its more frightening consequences would be the choking up of major dams constructed during the last three decades, an investment of over \$12 billion."

By the end of the decade 800 million people and about 500 million cattle will need to be fed from this same soil, he said.

He said the only solution to the problem would be planting trees on the hill slopes. He regretted that people instead of planting trees have been cutting them down for non-forestry uses. He said that since 1952, 42 million hectares of forest lands have been used for colonization industries and agricultural purposes.

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## Unplanned housing has used 25% of Bangladeshi farmland

**DACCA**—Bangladesh has already lost about a quarter of its fertile farmland to unplanned rural housing, experts revealed at a recent conference of urban and regional planners.

Syed Abu Hasnath, a planning expert in the University of Engineering and Technology, said that the haphazard growth of rural dwellings and an increasing population—now approximately 90 million—have reduced the per capita share of land to below a quarter of an acre, or one-tenth of a hectare.

The National Planning Commission—the government agency which draws up long-term development programs—gives a less gloomy picture of the situation claiming that rural dwellings occupy about 15 percent of arable lands. But it also predicts that if the present rate of growth of rural housing continues, more than 30 percent of the farming land will be lost by the year 2000, spelling disaster for agriculture and the environment.

It also forecast that urban expansion will devour another 500,000 acres (202,343 hectares) of agricultural lands, thus displacing 10 million farmers.

To prevent further unplanned growth of rural housing, the National Planning Commission has asked for legislation that will require builders to seek approval from local authorities before construction. The aim is to protect the rural ecology and safeguard the best agricultural lands for crops.

AHMED FAZL

## Man-land ratio in Asia is rapidly declining

**JAKARTA**—The man-land ratio in the five countries of the South East Asian Nations Association (ASEAN) has been declining so rapidly that the number of agricultural workers per hectare has doubled in 50 years, according to Dr. Yugiyo Hayami, Economics Professor at the Tokyo Metropolitan University.

Aside from Singapore (the affected nations are Thailand, Malaysia, Indonesia and the Philippines) real wage rates of farm laborers have not kept pace with overall economic growth rates. In fact, real incomes in these areas have declined, Hayami said in an address to a meeting here on relations between Japan and ASEAN.

Hayami gave what he said was a typical example taken from a West Javanese village: The average farm size is only 0.3 hectare with as many of 40 percent of villagers owning less than 0.1 hectare. At the same time, land rents have increased 40 percent while real wages declined 10 percent.

Citing Japan's past experience, Hayami suggested approaching the massive problem by the development of land-saving and labor-using technologies—intensive cropping, higher yields and accelerated development of irrigation systems, as well as the development of labor-intensive, small-scale industries.

CATHERINE WEBB



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## US considers cutting UNEP fund contribution to zero

**WASHINGTON**—Faced with a Presidential directive to cut 12 percent more from the U.S. budget, the State Department's bureau of international organizations recommended zero funding for the UN Environment Program next year. "This is not something we can survive," said UNEP deputy director Peter Thacher, for the U.S. has provided about a third of UNEP's funding every year.

Thacher, who made a flying trip to Washington to "remonstrate politely" with government officials, said Elliot Abrams, Assistant Secretary of State for International Organizations, "assured me that the administration has not made a final decision to reduce us to zero and that there is flexibility."

A spokesman for Abrams confirmed this, saying it would be several days before a decision is made.

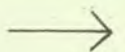
The fact that what Abrams' office calls a "non-decision" reached UNEP, several interested Congressmen and businessmen led another high State Department official to say, "Through a genuine bureaucratic mistake, some early thinking on the part of the international organizations bureau got loose. This does not represent the view of the Department of State."

Nevertheless, Congressman Don Bonker, a Democrat from Washington state, wrote Abrams expressing "grave concern." Bonker, whose subcommittee handles the international organizations and programs account, had not been consulted about the proposed cut, which an aide said he felt was "terribly inequitable."

Alan Hill, chairman of the President's Council on Environmental Quality, told WER he too was sending a note—to Abrams' boss, James Buckley, the Undersecretary for Security Assistance, Science and Technology. "Although I hesitate to get involved with another department's decision-making, I think zeroing UNEP out is a little too much."

Just days after the information was leaked, leading environmental organizations mounted a lobbying effort. The Nairobi-based Environment Liaison Center, coordinator for non-governmental environment groups, sent a memo to all its members as did the U.S.-based Natural Resources Defense Council, suggesting its supporters write, call or cable their Senators and Congressmen.

Originally, the voluntary U.S. contribution to UNEP for fiscal 1982 was budgeted at \$7.2 million, down from last year's \$10 million. House and Senate conferees had increased the amount to \$8.2 million.



## Environment & industry...

**THE CHEMICAL INDUSTRY COMMITTEE** of the UN Economic Commission for Europe (ECE) decided its work program for 1982-1986 should put major emphasis on such basic issues as problems of energy, raw materials and the environment.

Projects in progress considered by the Committee at a recent meeting in Geneva were trade in chemical products, the influence of environmental protection measures on the development of pesticide production and consumption, prospects for the development of carbo-chemistry, and chemical statistics.

Deciding to undertake preliminary work on a definition of the petrochemical industry, it asked the ECE Secretariat to call upon all member countries to inform it of petrochemical industry definitions that they applied.

**A NEW INTERNATIONAL SOLAR CELL** manufacturing firm has been founded in Switzerland to consolidate U.S. and European technological advances that are expected to make production of solar energy more competitive in Europe and Africa.

Intersemix S.A., with headquarters in the Swiss Romande (French-speaking area), is controlled—with 51 percent of shares—by the American firm, Semix, Inc., with 35 percent by the Italian group Ente Nazionale Idrocarburi (ENI). Other shareholders include: the French Leroy Somers motor firm, and Pasan S.A., a Swiss firm at nearby Nyon. Standard Oil of Indiana also holds a sizeable share.

Intersemix has been licensed to produce in Europe the photo cell "wafers" developed by Semix. Production will be largely automatic, thus reducing costs sharply.

**ARE MAN-MADE MINERAL FIBERS SAFE** for insulation, bearing in mind the problems that have arisen with asbestos?

The World Health Organization (WHO) has scheduled a Conference on the Biological Effects of Man-Made Mineral Fibers in Copenhagen, April 20-22, 1982. It will be a joint venture of the WHO Regional Office for Europe and the International Agency for Research on Cancer, in collaboration with the Joint European Medical Research Board and the Health Safety Committee of the Thermal Insulation Manufacturers Association of America.

A spokesman said that the Conference will represent the first joint endeavor of WHO and IARC on the one hand and industry on the other to present the results of six years of research carried out in independent academic departments and institutes in Europe and the U.S.

On September 30, Congress passed a continuing appropriations resolution to provide temporary funding for foreign aid programs. This temporary measure contained the 12 percent administration-requested cut, which was not broken down line by line, so Congress had no way of knowing how much money UNEP would get. This resolution expires November 20 and will be followed either by another temporary resolution with the same terms—no stated appropriation for UNEP—or by a new foreign aid appropriations bill in which Congress could designate funds for UNEP. An aide to Congressman Bonker said she felt a new bill had only a 50-50 chance before the November 20 deadline.

(Last May UNEP's Governing Council set a \$120 million goal for 1982-83 project funding—twice the current biennial level. The U.S. and other Western nations warned that the goal was unrealistic and that UNEP could expect no more than \$77 million for the two-year period.)

Mary Elizabeth Hoinkes, Deputy Assistant Secretary of State for Oceans, International Environment and Scientific Affairs, said, "I firmly believe it is inappropriate for the United States to pay 33 percent of anything. It may have been appropriate in the early days, but now others should pick up the difference."

Ms. Hoinkes, U.S. representative at the G.C., said, "There are some serious problems with UNEP." She cited mismanagement, ineffective programs, disproportionately high overhead, an excess of non-convertible currency, and politicking within the agency (see following story for some positive aspects). However, Ms. Hoinkes said she felt UNEP should continue acting as a catalyst, working with governments and other organizations on environmental problems. This implied a view that UNEP should continue to be funded.

George Rejohn, Environment Counselor at the Canadian Embassy in Washington, noted that "Canada and the United States have been two of the principal actors in UNEP over the years. Our view is that it is a successful organization. We intend to go on supporting it."

"I think the thing that is important is that the U.S. has been a traditional supporter of UNEP, both financially and philosophically. Any reduction in support may be read by many people as lessened interest in world environmental issues."

The ambassador of a Third World country with close ties to UNEP said, "Any cuts which affect UNEP's environmental operations throughout the world would be regrettable. They are doing very useful work on problems that are of major concern to the whole world."

Dr. Joseph T. Ling, Vice President in charge of environmental engineering and pollution control for the 3M Company, told WER that it is "not appropriate for the United States at the present time to withdraw from UNEP. It is not realistic. We in the U.S. are obligated to share our resources and knowhow with developing countries, but we cannot give UNEP a blank check. We should say, 'Be more constructive,' and if they don't meet the goals they set to do a better job, then withdraw some support."

Another industry official, who asked that he not be named, said

the view among many of his peers is that "UNEP has wandered too far from environmental protection into the Group of 77 (the non-aligned nations' grouping) and the New World Economic Order and has steadfastly erected barriers to any kind of useful dialogue with U.S. industry."

Other industry officials disagreed. They had been able to work with UNEP's industry and environment office, but they felt UNEP should be more focused and cost-effective. Said one: "Global problems, such as the buildup of toxic substances in the oceans and deforestation, have to be looked at by more than just individual countries, and UNEP is fulfilling that purpose."

Peter Thacher, UNEP's deputy director, told WER, "We deeply need industry's help. Our job is to work with governments to improve the basis on which they make decisions, and we need the partnership of industry." He said he feels "there is no part of the UN system that works more closely and comfortably with industry than UNEP. We are a force for responsibility, and we deserve industry support."

UNEP also deserves much greater support from its member governments, who have consistently made low pledges and been late in paying them.

At the time WER went to press, no final decision had been made on a U.S. government contribution, but even if U.S. funding is restored, it is likely to be at a much-reduced level. Unless other nations pick up the difference—and so far UNEP has been unable to convince them they should—the UN Environment Program in its 10th anniversary year will be struggling to survive, its programs diminished, its staff demoralized, and its effectiveness greatly reduced at a time of growing environmental instability.

LIBBY BASSETT

## Despite limited funds UNEP has a record of successes

**NEW YORK**—The United Nations Environment Program has played an important role in bringing governments and international agencies together on environmental problems that transcend national boundaries.

Through GEMS, the Global Environmental Monitoring System, UNEP is able to compare data from nations that normally do not share information, such as the USA and USSR. Through its regional seas program, it has brought together Greece and Turkey, the Arab nations and Israel on a Mediterranean protection plan; and in the Caribbean, nations who don't speak politically have together devised an environmental management plan.

Although UNEP has fallen prey to political forces at times, its day-to-day work supersedes nationalistic interests. Its purpose is to act as a focal point for environmental action and coordination within—and beyond—the UN system.

In its coordinating role, UNEP helped bring about two important policy vehicles: the World Conservation Strategy and a Declaration of Environmental Policies and Principles signed by the nine

## International cooperation...

**A 10-NATION SOLAR POWER PROJECT** in Spain has been completed, and the system at Almeria on the Costa del Sol is now open for inspection.

Built under the auspices of the International Energy Agency and the Organization for Economic Cooperation and Development, the Small Solar Power Systems (SSPS) project goal was to examine the feasibility of using available technology for generating electricity in established grids or in remote areas.

The nations participating were: Austria, Belgium, West Germany, Greece, Italy, Spain, Sweden, Switzerland, United Kingdom and the United States.

**HUNDREDS OF SWISS AND FRENCH FIREMEN,** police, military and navy swarmed into the small village of Versoix, Switzerland, recently for their annual training exercises to insure rapid reaction if and when oil or other pollution threatens the rivers flowing into Lake Geneva.

The vast maneuver—CIPEL 4—brought together men and helicopters, trucks, ships, pumps and barriers, all going into action minutes after an alert was sounded. The problem: 100,000 liters of oil had been dumped into the Versoix river following the derailment of a train of oil cars between Lausanne and Geneva.

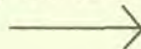
The exercise was set up under a Franco-Swiss accord of 1977.

Officials said afterwards it would have been possible to recover 60 percent of the oil under the weather conditions that existed. This was the fourth annual such exercise along the Swiss and French lake shores.

**AN INTERNATIONAL CONFERENCE** on Environmental Education is scheduled for December 16-20, 1981, in New Delhi, India. It is being organized by the Indian Environmental Society and the Department of Environment, and is supported by several national, regional, international and UN agencies.

Its purpose is to stimulate cooperation in the field of environmental education; to prepare action plans, gain from other nations' experience, to identify materials for training and curricula.

For information write: Dr. Desh Bandhu, Organizing Secretary, ICEE, Department of Landscape Architecture, School of Planning and Architecture, Indraprastha Estate, New Delhi 11002, India.



## Environmental management . . .

**THE REGIONAL SEAS CENTER** of the UN Environment Program (UNEP) on October 5 launched a new program involving eight East African and Indian Ocean countries.

The project covers a vast coastal and marine area stretching from Somalia in the Horn of Africa along Kenya and Tanzania to Mozambique. It also includes the islands of Madagascar, Mauritius, the Seychelles and the Comoros.

October 5 was the date that a fact-finding mission of seven scientists and other experts began a two-month trip to all eight countries to investigate the resources and environmental problems of the region. Their reports will serve as the principal working papers at a workshop of regional experts who probably will meet early next Spring.

The workshop's conclusions and the reports will then be transferred into the first draft of an East African Action Plan, the final version of which is likely to be agreed upon at an inter-governmental conference in 1983.

**AN OIL SPILL CONTINGENCY PLAN** for dealing with emergencies has been prepared by Cetesb, the private-public environmental organization of Sao Paulo.

Cetesb director Carlos Celso do Amaral e Silva says he wants to make Petrobras, the national oil company, more aware of the dangers of a possible, major spill. He said Cetesb receives an emergency call once a month on the average for spills at the petroleum terminal at Sao Sebastian.

The report was presented to Codesp, the Sao Paulo state docks company. Collaborating on the report was Roy Hann, an American specialist in the area trained at University of Texas.

Silva pointed out that oil spills were not the only pollution problems in the area. He mentioned industrial residues and sulphur discharges from naval operations as other areas for consideration.

"We don't have resources for facing larger emergencies if they occur," he said. He indicated that news of spills does not normally reach the public.

**A PLAN TO CLEAN** Venezuela's Lake Maracaibo is being finalized by Zulia state authorities.

The state's governor said he requested and was promised support from the national government for the cleanup. The lake has been polluted by its oil wells, as well as by discharges from cattle farms located on its shores.

Yet the Zulia steel mill project was given a green light by the Central Bank. The steel mill has long been subject of bitter controversy, since conservationists, among others, fear its discharges would further pollute the lake.

biggest international development assistance agencies.

Preparation of the World Conservation Strategy involved 450 government agencies and more than 100 governments, and it has led to several nations developing their own conservation strategies. The Declaration of Principles is an agreement between UNEP and nine multilateral development financing organizations to include environmental considerations in the approximately \$20 billion worth of projects they fund annually.

GEMS not only gathers environmental data worldwide through its network of national monitoring programs but it analyzes and interprets it. It is completing the first global assessment of the world's tropical forest resource, and in the near future this will expand to cover the subtropics and temperate forests to provide a global forest resource picture. It also monitors arid and semi-arid renewable natural resources, such as livestock and wildlife, water holes, grass growth, etc., as part of UNEP's mandate to fight desertification. Working with international wildlife organizations, it has established a conservation monitoring unit to provide information on endangered species and habitats. It monitors also soil degradation, the long-range transport of air pollutants, water quality, biosphere reserves (starting with the Americas) and food and animal feed contamination.

UNEP has had outstanding success with its regional seas program, now covering 10 marine areas. The first program, that in the Mediterranean, has made such strides that rejuvenation of what had been the most polluted sea in the world is now expected within a decade.

Its International Register of Potentially Toxic Chemicals (IRPTC) is now functioning. It has on file information on more than 40,000 different chemicals and is giving priority attention to 400 (including over 160 agro-chemicals) which at present most concern health and environmental protection authorities. IRPTC works closely with GEMS and UNEP's information network INFOTERRA and with several other UN and international agencies as well as with 68 governments and the private sector to provide information to governments, scientists and industry. UNEP is also helping to develop guidelines on the export and disposal of hazardous chemical wastes.

Because of the increasingly tight money situation worldwide, UNEP has initiated a systematic review of existing information and experiments regarding the cost-benefit aspects of environmental protection measures.

UNEP's Industry and Environment Office reviews the environmental status of eight major industrial sectors, such as iron and steel, petroleum, pulp and paper, agro-industry, etc., and deals with environmental impact assessment and industrial siting. It prepares guidelines on these sectors for use by developing countries.

Just 138 professional staff worldwide deal with these and many other programs that UNEP is involved in—tackling problems at the global level. With its limited financial resources—just over \$30 million this past year—it has gone a long way toward improving our environmental well-being.

LIBBY BASSETT

## Erosion affects many European coastlines

**NEW YORK**—Erosion is eating away a significant part of Europe's coastlines, according to the European Community's (EC) publication "Europe 81."

While spreading deserts are now a familiar phenomenon to most people, the related process of erosion of coastlines has received little attention. This lack of information, the EC says, is actually one of the most important aspects of the problem.

It is estimated that 1,100 kilometers of European coastline are being washed away. Much of the North Sea coast is said to be affected, as well as certain parts of the Atlantic. Erosion around the Mediterranean is considered less significant.

However, since there has been little study of the situation, there is no indication of the amount of land lost to erosion each year or of the economic loss to agriculture, industry, private property, energy resources or tourism.

The EC says that the causes of coastal deterioration are not completely understood. Probably, it is a combination of natural and human actions: water and waves, wind, ice, tides, destruction of vegetation, urban development, industrialization and so forth.

The lack of information may be attributed to fragmented responsibility among national and regional organizations.

John Hume, a European Parliamentarian (the European Parliament has a rather bad track record for effectiveness) suggests the Community should serve as a catalyst and clearing house for action and information about the problem. More than half the affected coastline, he notes, is in regions eligible for financial aid from the EC's Regional Fund: in Scotland, England, Wales, Ireland, Germany, Jutland and France.

His report to the Community indicates the problem is being looked at by regional and environmental authorities, but it stresses much more research must be done and that more funds are needed.

SPECIAL TO WER

## Spain's Costa del Sol gets \$33 million effluent cleanup

**MADRID**—The Spanish government will spend over 3 billion pesetas (\$33 million) during the next four years to clean up the Costa del Sol—a tourist-covered stretch of Mediterranean coastline that includes such resorts as Malaga, Marbella and Torremolinos.

A government spokesman said that the project focused on the biological treatment of effluent for a population of about a million. He said the effluent might be diverted to irrigate large areas of Andalusia, a chronically poor, dry province.

In a first phase of the clean-up plan, the government will build a large number of waste disposal plants along the Costa del Sol—an area that has experienced rapid, often ill-planned growth over the past two decades.

JULIE FLINT

## Water quality...

**A GREEK SHIP CAPTAIN WAS FINED** 25 million drachmas (about \$400,000) when his tanker was spotted polluting the sea near Athens.

This fine is the largest ever levied by the Greek government for sea pollution.

Nikos Sideromenos, the 36-year-old captain of the 80,000 DWT Greek-flag tanker "Kriti Star" was convicted of environmental destruction for cleaning his ship's tanks with sea water near the populated coastline just east of Athens.

While the volume of the spill has not been determined, a coast guard clean-up fleet has found deposits stretching for miles off the capital's eastern coast.

In accordance with the 1977 law protecting the marine environment, the "Kriti Star" cannot sail until the fine is paid. The ship is owned by the Varnikos Primero Corporation of Panama, which is under the direction of the Greek Vardinoyanis shipping group.

**MORE THAN THREE QUINTALS** (300 kilograms) of fish were killed by an oil slick off the industrial area of Priolo, in Sicily.

Port authorities said the slick probably leaked from a tanker, which washed its tanks after unloading operations.

Unlawful dumping of oil residuals from tankers has long been a major problem for Italy. Although heavy fines are mandated, police helicopters have not been very successful in spotting polluting tankers.

**226 SCUBA DIVERS** recently cleaned the waterbed of South Korea's Nam Han River. The campaign was jointly sponsored by the Central Council for Nature Conservation and the Korea Diving Association.

**EXPERTS SAY THAT JAKARTA BAY**, the source of 85 percent of the Indonesian capital's fish supply, may be dangerously polluted by heavy metals. Last year 13 children died in a fishing village in North Jakarta. Their deaths were blamed on food contaminated by the bay's waters.

Water samples from a river running into the bay showed a reading 62 times higher than the international safety level for mercury content. Samples from fresh water wells and fishponds in the fishing village where the children died also showed high mercury pollution. Industrial waste from chemical factories located along the rivers leading into the bay produce most of the pollutants, including mercury, cadmium and zinc.

Legislation is now being drafted to force the factories to clean their discharged waste materials of dangerous pollutants.

## Nuclear power...

**THE FRENCH PARLIAMENT** by a vote of 331 to 67 approved the Socialist government's plans to cut back on nuclear power production.

Six nuclear power plants will be started in the next two years instead of nine as planned by the previous government. The government will subsidize increased coal production to make up the energy difference, although Prime Minister Pierre Mauroy conceded it would be difficult to reach the government's goal of 30 million tons a year. Last year's production was 20 million tons.

**THOUGH LARGE QUANTITIES OF PLUTONIUM** have been dispersed in the environment, very little has been transferred into the human system, says a report of the OECD's Nuclear Energy Agency.

Its Committee on Radiation Protection and Public Health recently completed a report on "The Environmental and Biological Behavior of Plutonium."

Among its findings: The amount of plutonium in the environment attributable to the nuclear fuel cycle is small compared to that remaining in the environment from testing nuclear weapons in the atmosphere during the 1950s and 1960s.

The report summarizes existing data on human exposure to estimate the effects of ionizing radiation on man so as to develop protection standards.

Finally, the 116-page report discusses case histories of major accidental releases of plutonium. The report costs \$10 and is available from OECD sales agents. In the US: Suite 1207, 1750 Pennsylvania Ave., N.W., Washington DC 20006.

**YUGOSLAVIA'S** official Tanjug news agency announced in Belgrade that that country is ready to open its first nuclear power plant.

Yugoslav officials said the Krsko nuclear power plant was to begin trial operations during the first week of September. The article said this meant that seven years after work began on the Krsko plant, Yugoslavia would be entering the nuclear age.

It said that the power station would generate electricity in October and that commercial production next year would be more than 3 billion kilowatts.

Only last April Tanjug had reported that operational trials at Krsko had to be postponed because not all the necessary safety measures had been taken. It cited a government report which said the problems related mainly to storage of radioactive wastes and the cleaning of cooling water.

The new plant was constructed with the help of the U.S. Westinghouse company. Yugoslav authorities plan to build five more nuclear power plants by the end of the century.

## European eco-groups protest dumping nuclear waste at sea

**MADRID**—Ecological groups and regional officials in northern Galicia are mounting an increasingly vociferous campaign against nuclear dumping in the Atlantic Ocean some 556 kilometers off Cape Finisterre, the westernmost part of Spain.

The protests were fueled by two large dumpings over the summer—2,600 tons of nuclear waste in July and 6,800 tons in September.

In a stiff note, Friends of the Earth accused the Madrid government of "scandalous inhibition" in the face of concern and added that Spain ran the risk of becoming the nuclear dump of Europe.

(The Japanese government recently bowed to protesters and indefinitely postponed further dumping of nuclear wastes at sea.)

The organization said deep-sea dumps were totally unsatisfactory because of the impossibility of recovering radioactive wastes, the high pressure and tides to which the drums were subjected, and the potential dangers to fish and marine fauna.

Galician authorities asked the government to stop any further dumping as it might harm Galicia's vital fishing industry.

In England, approximately 2,500 tons of waste were dumped this summer by the United Kingdom Atomic Energy Authority (UKAEA) 926 kilometers off Land's End, the furthest point of the Cornish peninsula. Some was from medical centers, but it also included waste from nuclear power stations, radio-chemical centers and from experiments with nuclear weapons, the environmental pressure group Greenpeace alleged.

They claimed that the plutonium involved could have a half-life of 24,000 years, and that the computer-controlled test models used to assess its effect are inadequate since knowledge of what happens on the seabed is sparse, and this method of disposal is irretrievable. They also alleged that evidence from American coastal dumping sites shows that radioactivity does enter the marine food chain.

If they are successful in their campaign to transfer the dumping to land, they will further add to the UKAEA problem of what to do with intermediate-level waste, at present surface-stored at Windscale and nuclear power stations, where space is running out.

The UKAEA answer is a program of underground disposal, which they announced at a September press conference to launch their annual report. They will be looking for two or three sites in which waste could be buried, probably in clay deposits. If they are permitted to investigate and research in time, they said they are confident they could ensure safety.

Friends of the Earth in Britain are opposed to the whole system of irretrievable waste disposal and of waste reprocessing, which they think can never be proved to be completely reliable. They

have argued for dry storage of unprocessed waste at surface or sub-surface level. In spite of the security problems involved they think this retrievable method is in the long-run simpler and safer.

JULIE FLINT (Spain)  
BARBARA MASSAM (England)

## International convention on hazardous substances foreseen

**WASHINGTON**—Environment officials of NATO countries predict that there will be an international convention on the cross-border transport of hazardous substances within five to 10 years.

The officials met here to present the results of eight years of research covering a broad range of problems relating to hazardous waste management.

The beginnings of such a convention are already being developed within the European Community where the European Commission—the governing body—is preparing a directive for a common, harmonized system of trans-frontier transportation of hazardous goods. According to Benno K. Risch, of the Community's Department of Environment and Consumer Services, the new directive—which has the force of law—will require a common trip ticket for hazardous goods and compulsory notification between sending and receiving authorities.

An international convention beyond the confines of Europe was recommended by Dr. Bernd Wollbeck, head of the West German Interior Ministry's waste management division and director of the NATO studies. "We need common procedures. The problem of hazardous waste would be solved quickly if countries provide disposal facilities."

The NATO symposium presented a 12-volume study of hazardous waste management produced by European countries and the United States. The studies—some of which already have been published—described the most advanced and successful technologies for dealing with waste. Among the subjects: chromium recycling, transportation, landfill, procedures for hazardous substances in special wastes.

Among the 84 recommendations and 55 conclusions are: a cradle-to-grave waste management program, strict regulations on disposal arrangements and siting of treatment facilities, and a trip-ticket procedure.

NATO members—including the United States—are not obliged to carry out the recommendations, but are expected to give them serious considerations in formulating national policy.

Some 300 participants representing government agencies, industry, universities and consulting firms attended the symposium which was arranged by the U.S. Environmental Protection Agency.

Copies of reports from the NATO/CCMS Pilot Study on Hazardous Waste Disposal are available from the U.S. Department of Commerce, National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161, USA.

WHITMAN BASSOW

## Toxics ...

**FOLLOWING THE ENACTMENT OF ENVIRONMENTAL LAWS** and standards in China two years ago, the Chinese Ministry of Chemical Industry said nine major chemical works in the country have vastly reduced the pollutants they produce. Twenty percent of the industrial effluent, 40 percent of the waste gas and 50 percent of the solid waste produced have been brought under control; while leakage from seals and welds has been reduced from a national average of five leaks per thousand seals to only two. Some plants have reduced leakage to the international standard of 0.5 per thousand. The Jilin Chemical Works opened the first stage of the largest wastewater treatment plant in China last March. It will be able to treat 200,000 tons of effluents daily. The Jilin Chemical Works now processes 82 percent of its wastewater, 57 percent of its waste gas and 93 percent of its solid waste.

**FISH CONTAINING HIGH METHYL MERCURY** levels were recently discovered on sale in Minamata, Japan, where years ago several people died and others were crippled for life after eating fish with high levels of mercury. Two fish samples of 36 collected from fish shops in Minamata were heavily contaminated, the Japanese government said. One contained 0.579 parts per million (ppm) of methyl mercury, and the other 0.578 ppm. These figures exceed the tolerable level of 0.3 ppm set by the Health and Welfare Ministry of Japan. Government officials believe that these two polluted fish were poached in Minamata Bay where bottom sediment contains a high amount of methyl mercury.

**THE PHILIPPINE GOVERNMENT WILL ALLOW** the use of asbestos pipes in water systems nationwide despite claims that they can cause cancer. Several government and private agencies say that there is no evidence to support the claims.

**A PROCESS TO RECOVER CHEMICALS** from waste water at a thermal power station has been developed by engineers in Nagpur, central India.

The waste water is treated with lime and soda ash to recover magnesia, which is required in large quantities to produce steel and in other industries. Calcium carbonate is also obtained and is widely used in pharmaceutical and paper units.

Experiments were carried out at the Koradi thermal power station, and the scientists claim that the treatment and re-use of waste water will reduce water consumption in any thermal station by 8 percent and also control ground and surface water pollution.



## Environmental Legislation . . .

**THE SINGAPORE FACTORIES ACT** may be amended early next year so that factory workers exposed to loud noise over a long period will have to undergo hearing tests at least once a year. The factories they work for will be required to arrange and pay for the tests for the workers. Dr. Phoon Wai Hoong, director of the Singapore Labor Ministry's industrial health division, said the new legislation will provide a wider coverage of the more than 6,000 factories in Singapore.

**THE GENEVA (SWITZERLAND) GRAND COUNCIL** has before it a draft bill that would provide a 31 million franc (\$16 million) credit to decrease noise pollution and increase security at the Geneva-Cointrin Airport.

Federal subventions would reduce the real cost to the Canton of Geneva to 20 million francs. Most of the money would go for installations and infrastructures, such as barriers to absorb noise at ground level, mainly produced by jet engines before takeoff and during testing.

**THE AUSTRALIAN GOVERNMENT** will introduce legislation to strengthen controls on trade in wildlife, particularly endangered plant and animal species.

The Ministers of Business and Consumer Affairs and for Home Affairs and Environment made the announcement in September. They said that the legislation was intended to tighten controls on exports of Australian native species and on the import of certain plants and animals listed by the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), which Australia ratified in 1976.

The Minister for Home Affairs and the Environment will have absolute power to bar imports and exports.

## ANALYSIS Pakistani pollution control: big plans and little progress

**ISLAMBAD**—Pollution control in Pakistan is disorganized and muddled, and though there have been good intentions there has been very little progress.

Despite the fact that environmental control is included in the Concurrent Legislative List of the 1973 Constitution, no Federal or Provincial law has been promulgated so far.

At that time the government had asked a national committee of experts to study Pakistan's environmental problems and to suggest solutions. Their comprehensive report was submitted to the government in 1974. They recommended a central Division of Environment, a National Council of Environment, cells in the provincial governments and in each municipality.

Except for the creation of a separate Environment and Urban Affairs Division at the federal level, no other recommendations have been given concrete shape.

The final draft of the Fifth Plan (1978-83) states: "To arrest the pollution of air and water, and to preserve and protect the environment from degradation, necessary legislation will be enacted in the country during the plan period. The institutions dealing with the environmental problems will also be strengthened during the Fifth Plan." No legislation, federal or provincial, has been enacted since then, nor have institutions been strengthened during the first four years of the plan.

On the provincial level, the Punjab government in 1974 drafted pollution control legislation, which was approved by the provincial cabinet and described then a landmark "in progressive administration." It has never become part of the statute book.

Local governments were given the option of framing bylaws on anti-pollution measures, but no local authority has done so for lack of technical knowledge. No guidance was provided to the local councils by the government.

In Karachi, although there is a full-time Environmental Control Department, which makes numerous studies, there has been no institutional impact. Newspapers welcomed the establishment of the Institute of Environmental Studies in Karachi's Master Plan Department because it was to organize environmental training courses, but it has made no headway.

The draft federal law has now been drawn up and could be enacted without further delay—amended if necessary as developments warrant. This would then provide a framework for provincial and local governments to formulate their own laws.

So far there has been no evidence of cooperative efforts. Meanwhile, more than 50 percent of the housing in larger cities is substandard, slums are multiplying, air pollution is getting worse, drinking water is often a health hazard, and urban drainage systems are unsafe. Rural areas are afflicted with waterlogging, salinity and erosion, and the misuse of fertilizers and pesticides.

MOHAMMAD AFTAB

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# World Environment Report

News and Information on International Resource Management

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## Costa Rica cancels its fledgling gasohol program

SAN JOSE--Costa Rica's ambitious alcohol fuel program, launched only a year and a half ago, has been dropped.

It began in May, 1981, and soon thereafter 20 filling stations in the central plateau region, where about 70 percent of the population lives, were equipped to sell gasohol, a mixture with 20 percent methanol. It was advertised as less contaminating, higher in octane, more efficient and lower in cost. Great emphasis was also placed on the foreign exchange savings to the nation. As a result, many car owners switched to gasohol, which was priced only fractionally lower than conventional gasoline.

But recently the government announced it was dropping the gasohol program because it was costing more to produce than gasoline, which is imported from Venezuela and Mexico under favorable terms and refined locally.

A week after the government's announcement, an unidentified RECOPE refinery spokesman told the press there was only an 18-month supply of gasohol on hand. He said production was being stopped because the sugar cane used for methanol was required for animal feed which, he said, "was much more important to the economy of the country."

Another, unpublicized possible reason for eliminating the program was consumer dissatisfaction. Many car owners alleged that the gasohol was damaging or ruining their motors. Also, demand dropped substantially as time went by. There was no real price incentive to the consumer since the cost of producing alcohol apparently was much higher than originally planned.

The government's plan to eventually produce pure alcohol for automobiles is now unlikely to be realized, for these and another reason. It is rumored that a first, exploratory well drilled on the eastern slopes of the Southern Talamanca Mountains has struck oil.

But in the meantime, local conservationists are not mourning the passing of the alcohol-fuel program. It would have converted many hectares of agriculturally productive land to producing energy in a country with an enormous hydroelectric potential.

They argue that arable land in Costa Rica would be better used for food products, some of which are being imported from other countries. On the other hand, Costa Rica will soon be exporting hydroelectricity to Nicaragua on the north and to Panama to its south.

MURRAY SILBERMAN

## Malaysians sign up to stop dam flooding

PENANG--A nationwide signature campaign is going on in Malaysia to oppose the government's proposal to build a 110 megawatt hydroelectric power project in the country's only national park, Taman Negara.

The campaign, managed by Sahabat Alam Malaysia (Friends of the Earth, Malaysia), has the support of numerous citizens' groups. By the end of September, more than 30,000 signatures had been collected.

Taman Negara covers an area of 4,343 square kilometers in the central part of Peninsular Malaysia. It is representative of the tropical rain forests of Asia and is reported to be about 130 million years old.

The campaign in Malaysia took off after the government announced its intention to revive a 1971 plan to build a dam across the Tembeling River, which flows through the park, in order to harness its water power for electricity. This plan, for which feasibility studies were made by the Russians, was scrapped in 1978 for reasons not made public.

With rapid deforestation going on in Malaysia as a result of timber exports, conservationists are opposed to a dam in the national park because it represents one of the few remaining tracts of undisturbed lowland forest in the country.

The dam would flood the core area of the park, which supports one of the highest concentrations of animal and bird life in the world. The region is known to tourists around the world for its scenic beauty and historical and archaeological value, yet the US\$5 million park headquarters will also go underwater. And 38 villages housing Malay and aboriginal communities will be displaced.

The government has not made any direct reference to the signature campaign nor responded to the argument of conservationists that US\$150 million for a dam that will provide only 2.9 percent of the coun-

try's total power requirements at the time of its commissioning in 1988 is too high a price to pay.

The only clear response to environmentalists came a few months ago from the Minister for Energy Leo Moggie, who said, "There is a possibility of the government scrapping the project should results of studies being carried out now be unfavorable."

No preliminary findings of at least one study--"to minimize environmental effects of a dam construction," as the Minister put it--have been announced, but more attention is being given by the government to a feasibility study now going on with the assistance of Japanese experts.

SAM RAJEANDRAN

## Opposition delays Indian dam 4 years

BANGALORE--A major hydroelectric project in India has been delayed since 1978, in part for environmental reasons.

The opposition is led by the owners of orchards who stand to lose their precious land if a dam is built across the Bedti River in Karnataka State, inundating 27,000 acres (nearly 11,000 hectares). They have been backed by eminent environmentalists in Bangalore, the capital of Karnataka, like Prof. Madhav Gadgil and Dr. D.K. Subramaniam, both from the India Institute of Science; the latter has now been appointed additional secretary in the newly created Department of Environment of the Karnataka state government.

Early last year, the cultivators organized a seminar to discuss the implications of building the \$135 million project. Several participants from all over India questioned the advisability of going in for big dams. Since independence, it was pointed out, over \$10,000 million had been spent on dams and canals, as much as one-third of planned public outlay, without examining their benefits more closely.

Vijay Paranjape, from the Gakhale Institute of Politics & Economics in Pune, submitted that the benefits of the Bedti scheme have been overestimated and its costs underplayed. The Bedti controversy raises the fundamental issue: Who will the power project benefit? Paranjape's analysis showed that the average person in rural

Karnataka spent just 25 US cents a month on all forms of fuel and 70 percent of his needs were met by firewood. As Dr. D.K. Subramaniam told WER, as much as one-sixth of the total power produced by Karnataka was consumed by a single aluminum manufacturer, and if the two iron and steel units were added, these accounted for a third.

Moreover, the loss of yield from the area that will be submerged as a result of the dam has not been calculated by the Karnataka Power Corporation, they said. This includes both forest timber and cash crops like pepper, areca and cardamom. The authorities also haven't taken into account the soil erosion and siltation that will occur if the project goes ahead. Paranjape calculated that the actual benefit per rupee spent in Bedti will be Rs 0.57, whereas the Planning Commission lays down a minimum return of Rs 1.50 to justify a big development scheme of this kind.

Opponents of the scheme have suggested alternatives: Both Paranjape and Subramaniam cite the possibility of building mini and micro hydroelectric plants, as well as a thermal station a little distance away. But officials of the Karnataka Power Corporation dismiss these as impractical and accuse those who are thwarting the project of being "anti-national." Insiders believe that only the shortage of funds has prevented the Karnataka government from proceeding with Bedti, and it is only a matter of time before it starts work. So far, there has been no national or international concern over the project. DARRYL D'MONTE

## More on hydro-power...

EIGHT PRIVATE FIRMS are forming a consortium to provide hydroelectric power for the first time in Karnataka state, south India. They believe that even if they have to supply electricity to the government's power grid, they will still do it more efficiently than the state does.

Significantly, the eight all represent major industries in the state. One bonus is that to the extent the consortium supplies power to the grid, the members won't have their power cut in periods of acute shortage. The lack of power is one of the biggest factors for the slow progress of industrialization in India.

Meanwhile, the Federal government has asked states to submit plans for "micro and mini" hydro schemes which will be sanctioned

as quickly as possible in a bid to beat the looming power famine caused by the failure of the monsoon.

A 275-METER HIGH DAM proposed for the Inchampalli multi-purpose project in Maharashtra state, western India, will submerge 23,000 hectares of prime teak forests. The quality of this wood is next only to Burma teak, the best in the world.

Conservationists believe that enough power is being generated by thermal stations around the area not to warrant the building of the dam for hydroelectricity.

SUIT HAS BEEN FILED in civil court on behalf of the Colombian town of Santa Maria (WER, Sept. 15, p.5) in Boyaca for \$2.5 million in damages from Interconexion Electrica S.A. (ISA). The suit seeks to establish ISA's responsibility for a series of landslides which for six months cut off all municipal communication with the rest of the region. ISA's alleged delinquency is its insistence on continuing construction of nearby 500-megawatt Chivor II hydroelectric project despite geological faults in the Boyaca mountains that caused serious leaks in one of its tunnels. In the recent past ISA has been indemnified for smaller sums by Boyaca civil courts in connection with its construction activities.

LAWYERS IN THAILAND are ready to sue high-ranking officials if the Thai government allows the Electricity Generating Authority of Thailand to go ahead with construction of the Nam Choan Dam project.

Boonsong Lekakul, secretary-general of the Association of Wildlife Conservation in Thailand, said construction of the dam will destroy one of Thailand's most fertile forested areas. He said lawyers had already prepared a case against EGAT officers and officials of the Agriculture and Cooperatives Ministry and Forestry Department.

EGAT wants to construct the Nam Choan Dam just outside the national park which encompasses the Thung Yai and Huai Kha Khaeng sanctuaries. The construction site itself is not illegal, said Boonsong, but he claimed that the dam would disrupt the park's ecology so much that its construction would be against the law. He said an article in the Thai conservation law, which he helped draft, prohibits any act that disturbs natural water resources, that will affect the ecology of the national forest and endanger animals in wildlife conservation areas.

## Homelands are near ecological collapse

JOHANNESBURG--Unless South Africa adopts a rural land-use strategy, its homeland policy could become an environmental time-bomb. Many conservationist believe the wick has almost burnt out.

Many parts of the quasi-independent black homelands have been turned into rural ghettos where overpopulation and overstocking have caused severe vegetation loss, soil erosion, poverty, malnutrition and disease. This destruction is hardly surprising as 33 percent of South Africa's population is concentrated on 12 percent of the land.

According to a recent pamphlet published by the Natal-based Institute of Natural Resources (INR), KwaZulu, the most densely populated homeland in South Africa where human numbers will double in 20 years, is in a state of ecological collapse.

"Cultivation of hilly areas with their fragile soil, plus too many people and domestic stock in too small an area are the main contributors to the appalling erosion. Millions of tons of soil are washed annually into the sea.

"A further twist in the downward spiral of degradation is the use of animal dung (as fuel) once all the firewood has gone, leaving the soil further impoverished," comments the pamphlet.

Last year in an attempt to bolster industrial development Prime Minister P.W. Botha announced a program that provided incentives for industrial growth outside metropolitan areas. But, criticized Professor John Hanks, director of the INR, this would worsen the drift to the cities, exacerbate environmental destruction and lead to the collapse of the country's rural economy.

His reasoning: "The urban migration will leave agriculture in the rural areas in the hands of the old, the weak, and the sick--those least capable of handling it. As many areas are already ecologically threatened this trend is going to accelerate their collapse."

He sees a recent outbreak of cholera as a warning that water supplies in the rural areas are far from adequate: Diseases such as bilharzia, typhoid, dysentery, gastroenteritis and hepatitis are now rife. A direct cause of this has been deforestation which has destroyed water cycles, leading to an increase in contaminated

water, insufficient water and inadequate sanitation.

In an attempt to counter the migration of blacks to urban areas, the government is now planning legislation--dubbed by some the "Genocide Bill"--which will mean the forceable resettlement of hundreds of thousands of urban blacks in the rural areas. Editorialized a leading newspaper: "It will condemn all but a privileged minority of blacks to poverty and possible starvation in the rural areas."

Without a rural land-use policy conservationists see this further influx of people as disastrous since the homelands--due to environmental mismanagement--are already unable to support their growing numbers.

Historically this problem has been apparent since 1932 when the Native Economic Commission reported that it was a "race against time to prevent the destruction (in the reserves) of large grazing areas, the erosion and denudation of the soil and the drying up of springs."

In 1954 the government appointed the Tomlinson Commission to make recommendations for upgrading the homelands. The commission's proposals were never implemented due to lack of funds.

Joan Yarwich of the Institute of Race Relations commented: "Tomlinson was making a genuine although misguided attempt to set out a scheme which would make the reserves self-sufficient; the government was seeking the most convenient way in which to organize the reserves so that they could ultimately feed themselves, govern themselves and still provide the labor to keep the South African economy working.

"In terms of the needs of that (white) economy the reserves could not become thriving centers of agriculture and industry, since that would threaten the existence of the migrant labor force as well as the existence of the unemployed mass who could be drawn on when necessary."

Now, 26 years later, Dr. Frederik Tomlinson has been reinstated. He still believes: "Large scale development of the homelands remains the basic way out of the dilemma. Had the development program (of 1954) been started, then we could have shifted the pressure, and a much larger proportion of the black people would have been able to exist economically from activities within the homelands."

Hanks concluded: "Adopting a rural land-use strategy is a matter of survival for South Africa. But it must have the backing of government, the private sector, and the

active participation of the people involved."

MIKE NICOL

## Two new parks planned for West Africa

NEW YORK--Two West African countries--Sierra Leone and Liberia--are in the process of setting up their first national parks.

One, the Outamba-Kilimi National Park, which covers some 980 square kilometers of northwestern Sierra Leone, has a state-of-the-art solar energy system designed and provided for the park headquarters (at a 50 percent subsidization of its purchase price) by the Solarex Corporation of Rockville, Maryland. It has generated so much interest and curiosity among government and Tambakha Chiefdom leaders (who donated the parkland) that the project has gained substantially in fame and notoriety. The park's interim director, Dr. Geza Teleki, wrote in a report for World Wildlife Fund, that the silent-running system and its complete power independence "are vital factors in a remote area where fuel costs are high.... It is evident that solar power generation and nature conservation are highly compatible enterprises, with many mutually beneficial yields."

The Outamba-Kilimi National Park is considered by far the finest, most intact wilderness area in Sierra Leone. It holds numerous threatened species and serves as the watershed for two important river basins, which irrigate some 20 percent of the country's best agricultural lands. It will be managed by the Ministry of Agriculture and Forestry.

The present five-year program to establish this park originated from work done during a 1980 wildlife survey sponsored by several international wildlife groups and private donors. The need for a park is underscored, Dr. Teleki wrote, "by heavy depletion of land resources throughout the country and by heavy commercial exploitation of certain fauna taken for export and food."

In 1981 President Siaka Stevens announced the government's intention to establish the park and had preliminary legislation passed by Parliament and the Cabinet. He also imposed a complete ban on exports of wildlife specimens and products for a minimum period of five years, which coincides with the five-year program to establish the park.

The government is providing salaried staff and some logistical assistance and will also arrange resettlement of villages in the park area.

Plans are already underway to establish a rural forest resources program: small-scale wood-using industries, native tree plantations and orchards. Similar projects are also needed in agriculture and fisheries, Dr. Teleki adds. He believes there is a strong potential for tourism when the park officially opens--all of which will help not only to benefit the local people but should provide a return on the land investment of the Tambakha Chiefdom.

### A FIRST FOR LIBERIA

"No other forest area in West Africa exceeds the wildlife diversity of the rolling forests and swamps of Sapo" forest in southeastern Liberia, wrote Phillip T. Robinson of the Zoological Society of San Diego (U.S.) after a four-month survey of the area earlier this year.

In his report to the World Wildlife Fund, he said that "the biological uniqueness of Sapo and its largely unaltered character and zero human population combine to single out this forest as an ideal prospect for a biosphere reserve."

Robinson recommended that Sapo be proclaimed a national park immediately. The Division of Wildlife and National Parks within Liberia's Forest Development Authority has now drafted wildlife regulations and proposed the establishment of Sapo National Park. Approval now rests with the government's highest authority, the People's Redemption Council.

However, Robinson conceded in his report: "One of the major difficulties in Liberia is that wildlife conservation is viewed as an alien concept." Some steps have been taken to remedy this situation--but from outside the country: the Peace Corps and African Wildlife Leadership Foundation have begun wildlife education programs and the Zoological Society of San Diego devoted an entire issue of its magazine to conservation problems in Liberia and Sierra Leone and delivered 5,000 copies of it to each country.

Liberia's Division of Wildlife and National Parks has assigned a third of its available staff to the development of Sapo National Park. Its success or failure there could determine the prospects for establishing parks and nature reserves in other areas of the country, Robinson concluded.

LIBBY BASSETT

## Italians campaign to reduce lead in gas

MILAN--Italian environment and consumers associations have launched a European campaign aimed at reducing lead in gasoline by 1985 and completely banning it within the following 10 years.

The environmental associations, Italia Nostra and Lega Ambiente, along with the Committee for Defense of Consumers and the League of Consumers have taken the issue up to the European Commission because of the growing hazards, especially to the human nervous system, caused by lead pollution.

Present rules, which differ among European countries, allow a lead content of 0.40 grams per liter in gasoline sold in Italy.

The Italian associations aim at having a common European law providing a peak lead content of 0.15 g/l by 1985 and ban on lead in all kinds of gasoline by 1995.

Oil companies, which use lead additives to increase gasoline octane, claim that a clean gasoline would sharply increase refining costs and retail prices.

Automobile exhaust is considered the major source of lead pollution on earth--up to 98 percent, according to environmental experts here.

Lead pollutes air and water and, as a result, a wide range of foodstuffs from meat to vegetables. A recent survey showed that pears and apples grown in Bolzano province, along the busy Brenner highway, had a significant content of lead.

In a news conference held in Milan to illustrate their efforts, officials of the associations underlined that the high-octane gas used in Italy, which is unnecessary for many automobiles, requires an additional burden of 2.4 million kilograms of lead per year.

PIERO VALSECCHI

## More on lead...

PRELIMINARY SECOND-ROUND RESULTS OF BLOOD-LEAD levels in U.K. citizens, researched in summer 1981 under an EEC directive, show a slight reduction compared with those collected in the first round of investigations in 1979-80, says Britain's Department of the Environment (DOE).

Thirty-five groups, which emerged as having higher than normal levels in the earlier investigation, were studied; 32 of these now are within the "reference levels"

of the directive. The groups are randomly selected adults in major urban areas, people exposed to significant sources of lead pollution, and "critical groups," i.e., those thought to be at particular exposure risk.

## Brazil acts on coal pollution equipment

SAO PAULO--Next year Brazil will have new legislation requiring Federal approval of pollution control equipment for producers and distributors of coal. Municipal licenses will be required for consumers.

The new measures require that industry involved in the mining, transportation and stocking of coal submit plans for existing and/or projected pollution control to a special government technical commission composed of representatives of the Ministries of Mines and Energy, Transportation and Planning. These plans, once approved, will be spot checked for operational compliance. In addition to approval of the equipment used, the industries will be required to submit a description of water use to the local municipal secretary of the environment to assure pure drinking water supplies.

Consumers of coal will be required to obtain licenses for specific burn conditions in specific locations in order to assure coal supply, with fines imposed for failure to comply with the stipulations of the licensing.

The measures are designed to insure that new installations and consumers take proper precautions to preserve the environment.

Rio Grande do Sul state, which contains some 90 percent of Brazil's coal reserves, recently inaugurated its first coal gasifier and plans to amplify the use of gasifiers throughout the state as an alternative energy source. Future development of techniques of reinjecting coal gas into the mines is expected to both limit future pollution of the air and water and improve the energy efficiency of coal production.

CHARLES THURSTON

## More on coal...

THE UN ECONOMIC COMMISSION FOR EUROPE (ECE) will sponsor a symposium in Hungary in October 1983 to explore ways of using waste from coal mining and improving envi-

ronmental conditions.

This waste, aside from any considerations of environmental impact, contains substances which could be extremely valuable as raw materials in other industrial applications.

Therefore, the Coal Committee of the ECE decided to organize a Symposium on the Utilization of Waste from Coal Mining and Preparation to be held at Tatabanya, Hungary, October 17-22, 1983.

## New Saudi industrial pollution standards

JEDDAH--The recent coming into effect of a set of industrial pollution standards marks Saudi Arabia's latest effort to evolve--cautiously--a national environmental protection code.

Promulgated by the kingdom's Meteorology and Environmental Protection Agency (MEPA), the standards have been based on those of the world's industrialized nations; they depend, as well, on available data and the level of control technology considered suitable for present urban and industrial conditions in the kingdom. Where data are insufficient, e.g., the concentration of certain pollutants in receiving waters, guidelines have been laid down to serve as "design considerations."

The country's battle to control industrial pollution has been waged in concert with the principal industries involved; consultation dates back to February 1976. What has now emerged is a collection comprising: (1) ambient air standards for sulphur and nitrogen dioxide, inhalable particulates, ozone, carbon monoxide, hydrogen sulphide, and fluorides; (2) air pollution source standards for inter alia combustion, petroleum, and petrochemical facilities; (3) receiving water guidelines for organic as well as non-organic pollutants; and (4) standards for direct discharge of waste water and pre-treatment guidelines for discharge of the same to central treatment facilities.

One of the salient features of the new standards which apply to all facilities in the country, both public and private, existing or planned, is their relative mildness: Petromin representative Jamil Khayyat characterized them as "practical, reasonable, and flexible." Even so, some environmentalists here question the capacity of major industrial concerns to comply with

some of MEPA's standards, particularly those related to nitrogen and sulphur dioxide concentrations in the ambient air. These are not to exceed hourly averages of 660 and 400 micrograms per cubic meter, respectively, more than twice in any 30-day period.

Variances from the standards can be granted by MEPA on a case-by-case basis, in the event that the correction of exceedance requires controls which are impractical to implement and where the risk to the environment is minimal. Economic hardship, delays in facility start-up, a limited remaining lifetime for an existing facility, and negligible environmental impact are all factors to be considered in MEPA's accepting variances from source control standards.

The Agency reserves the right, however, to revise its own standards as industrialization in the kingdom develops. "Source standards considered adequate for present conditions may be entirely inadequate for the level of activity anticipated in the principal urban and industrial areas five or 10 years hence," according to the first of a series of documents prepared for MEPA by the U.S.-based Environmental Research and Technology (ERT), which has been actively involved in monitoring pollution in the country and developing its environmental protection policy for the past five years.

What the MEPA standards omit are perhaps as significant as the inclusions: Nothing is said about vehicular exhaust, for example. "This is not an appropriate time for setting up standards for car emissions," MEPA Vice President Dr. Abdulbar al-Gain told the local press in explaining that any clamp-down on unleaded gasoline would have to follow refinery processing changes for which no timetable yet exists.

The MEPA standards with regard to the direct discharge of oil and grease were made more stringent than those proposed 18 months ago in the first of the ERT documents: From an effluent concentration at end of outfall of 40 milligrams per liter (mg/l), MEPA has tightened the concentration to 8 mg/l. The receiving water guidelines for the same pollutants, however, state only that "suitable measures will apply," which a footnote explicates as a recommendation to "facilities utilizing, transporting, or storing oil and oily hydrocarbons to prepare, develop and maintain a technique to prevent and control the discharge of these substances and to remove them in case of leakage." SPECIAL TO WER



## How fast are tropical forests being lost?

NEW YORK--There seem to be two widely disparate figures as to the rate of loss of tropical forests, that of the United Nations, which says it is 73,000 square kilometers a year, and that of the U.S. National Academy of Sciences' National Research Council: about 200,000 square kilometers annually.

WER analyst Norman Myers, an environmental consultant who wrote the National Research Council report, explains:

"The apparent discrepancy between the two reports lies with the two sets of criteria utilized. The U.S. National Academy of Sciences required that I look at rates at which primary forests are being converted from their original states into some other state.... The Academy was interested in biological values at issue, especially in the capacity of primary forests to maintain exceptionally complex ecosystems and unusually rich biological communities...rather than other factors such as forestry (timber) values and exploitation potential of forestlands through, e.g., agriculture--these latter values being the main focus of attention for the (Food and Agriculture Organization-UN Environment Program) review."

Myers wrote that the FAO project "considered that a disturbed forest remains a forest, even if it has been subjected to heavy exploitation through timber harvesting, for example.... While incapable of returning to a primary state, with its exceptional biotic richness, for decades or even centuries, the forest still constitutes forest," according to the FAO-UNEP view.

"The FAO/UNEP project also postulated, reasonably enough within the context of its objectives, that a man-established plantation of mono-culture such as eucalyptus amounts to a forest--albeit with very different biological characteristics from those of an undisturbed natural forest."

Myers concludes: "In short, my study looked at significant modification of primary forests. The FAO/UNEP study focused instead on outright elimination of forests."

Since completing his work for the Academy, Myers has come up with a figure for outright elimination of forests: 115,000 square kilometers a year which, although more than 50 percent higher than the FAO-UNEP figure, is still, he believes, "in the same ball park."

SPECIAL TO WER

## More on forests...

CHINESE OFFICIALS said that because of deforestation wood imports doubled this year, to 3.4 million cubic meters, and will rise further to 4 million next year to meet increasing domestic demand.

Meanwhile, all citizens over the age of 12 must plant three trees annually. "We don't think timber production will be quadrupled by the end of the century. But afforested area can be expanded to 20 percent of China's land from the present 12.7 percent," according to a Chinese official.

THE WATERSHED surrounding the springs of the Bogota River has been declared a legally-protected forest reserve by Colombia's Corporation Regional de la Sabana (CAR). The resolution requires proprietors within the limits of the protected zone to conserve and plant forests and forbids farming. The lands of owners who fail to obey reforestation plans will be subject to expropriation.

THE INDIAN RAILWAYS, which has probably the longest mileage of tracks in the world, has launched a massive afforestation program along railway lines and at stations and railway colonies. Five million trees have been planted this year and the target is to double this figure next year.

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## OECD reports on the state of environmental economics

NEW YORK--Where do we stand today on the economics of environment? The 24 free-market nations' group, the Organization for Economic Cooperation and Development, is just completing a review and assessment of the major studies on environmental economics done over the past decade, and the head of the OECD Environment Directorate, Jim MacNeill, was in New York to talk about it.

He spoke at the International Convocation for World Environmental Regeneration and at the World Environment Center's International Environment Forum.

Taken as a whole, MacNeill said, the field of environmental cost-benefit analysis "remains greatly neglected; neglected, I would add, to the detriment of, often the peril of, environmental programs--especially today when governments are increasingly determined to test public expenditures against the criteria of economic efficiency and cost effectiveness."

Only a few member governments have developed any depth of capacity for collecting and analyzing data on the economics of environment, including the benefits of measures to protect health, he asserted. MacNeill said much of what is known comes from the efforts of individuals in universities and institutes. In the developing countries, he stated, very little work has been done, "yet for them many of the issues are primordial."

He said OECD figures show that member countries with vigorous environmental programs realized them at moderate cost. By the late 1970s, national resources allocated to pollution abatement averaged around 1 percent of gross domestic product, and in no member country was the cost higher than 2 percent--a fifth the amount spent on health or education.

The impact of environmental measures on employment appears to have been positive, at least in the short term, he said: "In other words, on balance, more jobs have been created by environmental measures than have been lost."

The impact on prices has been quite small: "The contribution of environmental expenditures to the inflation rate appears to have ranged around 0.2 to 0.3 percent a year. And in no OECD member country has it ranged higher than 0.8 percent."

He said fears that differing environmental standards and policies would seriously distort international trade have proved groundless. The same is true of the effects on balance of payments.

But on the micro-economic level, the impact of environment policies on specific industries or communities can vary greatly, he said, and be positive and negative.

Certain industries which are major polluters have borne "a significant proportion of total pollution control investment in industry." He cited the U.S. as an example: In 1977 in the steel industry pollution control investment represented over 16 percent of total plant and equipment investment; it was 17 percent for non-ferrous metals; over 10 percent for the electric utilities. Similar figures were reported from Japan, Germany and other member countries, he said.

But, MacNeill noted, "Those industries that 10 years ago established research teams to innovate technologies, rather than legal departments to go to court or parliament to fight them, are today in the forefront of innovation. They have benefited in terms of plant that is more resource efficient, more energy efficient and hence, today, often more economic and competitive. Many have also found new opportunities for investment, sales and export."

He said that by 1978 world trade in environmental technology had grown to about \$11 billion a year. As a comparison he noted that the chemical trade between OECD countries was \$46 billion in 1977.

Most benefits of environmental measures are not recorded in member countries' gross national products, MacNeill said. "In only two countries, France and the United States, have attempts been made to estimate and compare the overall value of the benefits from, with the costs of, environmental pollution measures." He reported that, measured in terms of GNP, the benefits seem to have exceeded the costs and by a significant margin. "This implies, of course, that further action to curb environmental pollution could be justified on economic grounds."

Given the immense economic importance of these cost-benefit studies, MacNeill said, "it is surprising that much more work hasn't been done on it in other OECD countries. It is also unfortunate because it could provide a basis for cross-comparisons and verifications and thus reduce, at least somewhat, the area of controversy" on certain issues like acid rain, chemicals and

the export of toxic substances.

The final results of this OECD review and assessment will be presented at an international conference of member countries, industry and the media to be held at the end of this year or in the spring of 1984, MacNeill told WER. Its purpose is to find ways and means of making environmental regulation more efficient, to look at economic prospects through 1990 and how they translate into prospective pressure on the environment, environmental costs and environmental policy.

LIBBY BASSETT

## European Community eco-budget declines

BRUSSELS--There are less funds than hoped for in the European Community for environmental protection in 1983.

The final environment budget of the European Economic Community for 1983 is 20 percent below the \$15 million aimed at by both the European Commission and the European Parliament.

The \$12 million agreed upon was the outcome of months of tough consultation between the Council of Ministers, the European Commission (which makes the original draft proposals each year) and the European Parliament. The European Parliament, which has had a number of its proposals chopped, maintains that the \$2 million increase on last year's allocations does not even allow for the drop in the real value of money.

The yearly budget of the Community is one of the many bones of contention between the consultative (European Parliament) and decision-making (Council of Ministers) institutions of the EEC. The battle is always particularly bitter where the environment is concerned.

The so-called Environment Fund (four items or areas which the Environment Committee of the European Parliament succeeded in introducing in 1982 in the face of strong opposition from the Council of Ministers) is to receive \$3.5 million compared to \$4 million last year when it was considered a token entry. The Fund covers the development of "clean" technologies (\$1.36 million), protection of sensitive areas (\$1.36 million) and the promotion of environmental measures which would create new jobs. The amount allocated to this last area is down by three-quarters (to \$277,000) from last

year. The fourth item aims at ensuring the proper implementation of EEC environmental legislation.

However, more money has been allocated towards ecology in the developing countries: almost \$6.25 million for research into the protection of tropical agriculture and ecology as well as research in the fields of tropical medicine and health. Over \$1 million is to be made available for research in biomolecular engineering. A meager concession has been made to the enlargement of the Community, according to Member of the European Parliament Mr. Ghergo, rapporteur on the Environment Budget, by a slight increase in funds to combat the Mediterranean pollution problem. One of the rare new items in the budget includes \$1 million towards the development of new maritime navigation aid systems.

ANNA LUBINSKA

## Toxic waste in the EC...

THE EUROPEAN COMMUNITY'S Commission has proposed a draft directive to monitor the shipment of toxic waste across the borders of its 10 member states.

The New Scientist reports that under the new directive shippers will be obliged to notify the shipment in the countries of origin, transit and destination. They must also confirm that a suitable waste disposal facility will accept the waste. Member states will also have to report annually to the commission on the amount and type of waste shipped.

Currently, three million metric tons of toxic waste is transported for treatment or disposal across European borders every year, the magazine reports.

The draft directive is expected to be adopted by the Council of Ministers by the end of the year.

## EEC adopts new aid & environment policy

BRUSSELS--Environmental considerations are, for the first time, to be specifically included in the next Lome Convention (Lome III), through which the European Economic Community provides technical and financial aid to developing countries.

The EEC and ACP (African, Caribbean and Pacific countries) Consultative Assembly

adopted a resolution to this effect during its recent biannual session in Kingston, Jamaica.

The first Lome Convention (so-called because it was held in Lome, Togo) was signed in 1975 and renewed in 1980 as Lome II. It is to be renegotiated for the third time this coming September, possibly on an unlimited basis rather than for the usual five-year period.

The resolution was presented by Hemmo Muntingh, a Dutch Socialist member of the European Parliament. It draws attention to the problems of deforestation, desertification, diminishing fish stocks, the increasing threat to the survival of animals and plants, and the effects of these on food and other supplies.

ANNA LUBINSKA

## Czechs say Germans are major polluters

PRAGUE--Czechoslovakia's official press agency CTK strongly countered West German charges that Czech industrial emissions are endangering Bavarian forests, calling them political demagoguery.

In the weeks just prior to the West German elections (held March 6), several officials called on East Germany and Czechoslovakia to cooperate with West Germany to lower their emissions. Czech officials said they would cooperate (WER, Feb. 28, p.7).

But just before the elections, the official Czech news agency delivered a stinging attack on West German efforts to clean up the air. It claimed that the UN Economic Commission for Europe and the World Meteorological Organization had found that twice as much sulphur-laden pollution falls on Czechoslovak territory from West Germany than the other way round. The ratio of winds blowing from west to east is 8 to 2, CTK said, and claimed that in 1980 some 10,800 tons of West German sulphur fell on Czech territory every month while only 4,800 tons a month fell on the Federal Republic from Czechoslovakia.

CTK said that Czechoslovakia is prepared to actively cooperate on the problem of industrial emissions on both the international and bilateral levels but that it objected to the exploitation of the problem in the West German electoral fight.

IVA DRAPALOVA

## Nordic acid rain proposal goes to ECE

OSLO--The governments of Norway, Finland and Sweden have submitted a proposal to all 35 countries that signed the Convention on Long-range Transboundary Air Pollution to join a 10-year plan aimed at reducing their total discharges of sulphur oxides by 30 percent from 1980 levels.

The proposal, prepared jointly by experts from the three countries and Denmark, states that this reduction should be effected between 1983 and 1993.

In a memorandum to the concerned parties it is assumed that further reductions can be carried out later.

Erik Lykke, Norway's deputy secretary of environmental affairs, said Denmark will help put the proposal before the European Community (EC) in Brussels. Through their embassies abroad non-EC members Norway, Sweden and Finland have sent the proposal to the other signatory countries.

The Convention was originally signed within the framework of the U.N. Economic Commission for Europe (ECE) on Nov. 13, 1979.

The Convention was to take effect March 16 after having been ratified by 24 of the 35 signatory nations, Lykke said.

The Nordic countries, particularly Norway and Sweden, have suffered severe environmental damage from "acid rain" primarily caused, their studies found, by wind-borne sulphur emissions. They have worked actively for some time to reduce such discharges in all European countries.

The Nordic governments stress that from a technical viewpoint it is fully feasible to reduce discharges of sulphur oxides at reasonable cost within the 10-year span.

The Convention's Executive Body is scheduled to hold its first meeting in Geneva June 7-10, and the Nordic proposal will be on the agenda then, Lykke said.

SPECIAL TO WER

## Bureaucratic action on acid rain program

GENEVA--The UN Economic Commission for Europe (ECE) has stripped off some bureaucratic fetters to speed its assault on the urgent problem of "acid rain."

The unprecedented action took place during the eleventh annual closed-door session here of Senior Advisers to ECE Governments on Environmental Problems. During the meeting, the Senior Advisers adopted a work program for 1983-87 and agreed on a tentative schedule for future meetings.

But when the Advisers began to review progress on the provisional implementation of the Convention on Long-range Transboundary Air Pollution, which entered into force on March 16th, Nordic countries (Sweden, Finland and Norway) moved that the Executive Body, set up to oversee operations under the Convention, be made independent of the Advisers. Their move was supported by most Western countries, including the United States. Delegates at the private session said that of Western countries only Britain failed to support the move to permit the Executive Body to make decisions without going through the lengthy process of passing them through the Senior Advisers for approval. Eastern countries argued for the status quo.

Western delegates criticized the bureaucratic delays involved in waiting for meetings of Senior Advisers to obtain approval for actions needed immediately to stem the growing destructions of forests.

ECE matters are never settled by a vote. Consensus is necessary and when it is not forthcoming, decisions are usually deferred. In this case, consensus was finally reached by fudging the wording of the declaration of independence that will permit the Executive Body to take immediate actions. It now reads: "In order to facilitate implementation of the Convention and to avoid overlap and duplication of efforts, close cooperation between the Executive Body and the Senior Advisers should be established. Decisions taken by the Executive Body will enter into force as soon as they have been adopted. However the Senior Advisers should be informed at their regular sessions on the activities being carried out by the Executive Body...."

The Executive Body will hold its first meeting June 7-10 at Geneva, three months after the entry into force of the Convention. Once the Convention enters into force, the Cooperative Program for Monitoring and Evaluation of Long-Range Transboundary Air Pollution in Europe (EMEP) will be carried out under the auspices of the Executive Body, the Advisers decided. It will therefore be up to the Executive Body, at its first session, to decide upon long-term financing. Since all ECE members

have been invited to assume a seat on the Executive Body, most observers expect to see the East-West political split continuing within the independent body.

The following 24 signatories to the Convention, adopted in 1979, have deposited their instruments of ratification: Austria, Belgium, Bulgaria, Byelorussia, Canada, Denmark, European Economic Community, Finland, France, East Germany, West Germany, Hungary, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Ukraine, Soviet Union, United Kingdom and the United States.

WILLIAM G. MAHONEY

## European water meetings...

EXPERTS FROM EAST AND WEST GERMANY met for the first time in Bonn recently to discuss pollution of the Elbe River, the German news agency, DPA, reported.

The 1,150-kilometer-long river picks up a heavy load of toxic substances during its flow through Czechoslovakia, East and West Germany. Among the polluting substances traced to industries in the three countries are heavy metals such as mercury and cadmium.

A SEMINAR ON GROUNDWATER PROTECTION strategies and practices will be held Oct. 10-14 in Athens, Greece, by the UN Economic Commission for Europe (ECE).

It will provide guidelines and recommendations to European governments and will focus on three topics: groundwater management in relation to land-use planning, groundwater policies and legislation, and strategies for sustainable management and related organizational structure.

The seminar will contribute to the implementation, at the regional level, of the UN International Drinking Water Supply and Sanitation Decade, 1981-90.

## WER interview: state of Antarctic Treaty

WELLINGTON--Environmentalists in New Zealand were disappointed that Antarctic Treaty countries ended a conference here with high hopes of soon establishing an Antarctic Commission but without any reference to the possibility of achieving world park status for the region.

The 14 nations, which had begun the special consultative meeting in June, 1982, adjourned and completed it this January. They set a July date in Bonn for their next meeting and indicated that a commission, if it were established, would have subordinate environmental, scientific and technical bodies as chief decision makers in a planned regime for any mineral resource exploitation of the continent.

The conference was closed to media, apart from its opening and a closing briefing from the chairman, Dr. Chris D. Beeby, a New Zealand diplomat. In an interview with WER, he continually stressed the environmental protection aspects of the discussions they had held:

"The whole question of environment protection for Antarctica is difficult because we don't know enough about the sensitivities of the environment and about the techniques by which minerals will be taken out --if they are taken out-- in say five, 10, 20 years. One has to envisage an arrangement that is dynamic. What I think is widely envisaged is a regime to include some broad statements of principle or standards, and then the Commission, in the light of the work of technical advisers, will endeavor to make them more precise.

"Critical in everyone's perception is that the Commission, on the advice of the scientific and technical body, will take a trigger decision at some point. This will be to accept, on environmental grounds, or not to accept, that a particular area of Antarctica is opened up for mineral exploitation. That will be an absolute, basic decision. It may be that in many areas, perhaps in the end in all, the answer will be no. That will be fundamental."

On environmentalists' continuing pressure for declaration of Antarctica as a world park: "That is a notion that the New Zealand delegation to a consultative meeting in 1975 put forward. New Zealand was an originator and main proponent then. The fact is it got little support from any other quarter. It was after the first oil shock. All sides saw resources as finite. No one was prepared to endorse the idea of a World Park. It would have prohibited exploration. Our attitude is now that it will never get off the ground. The alternative most or all delegations are looking for now is to leave open the possibility of mineral resource activity in Antarctica but under very strict conditions."

JACK KELLEHER

## Another Ethiopian famine has begun

NAIROBI--Parts of Ethiopia are facing a disastrous drought, which aid workers say could be as serious as that in 1973 and 1974, when tens--perhaps hundreds--of thousands of people, many of them children, died. The great drought of the early '70s affected a much wider area, however, and the latest threat is mainly confined to regions north of Addis Ababa.

Experts say deforestation over wide areas of Ethiopia has contributed to the failure of the rains in recent years. Population pressure, coupled with the drought, has led to the cultivation of marginal, high-altitude land which in the past carried large forest areas.

Save the Children Fund regional organizer Mark Bowden, interviewed here after a tour of the worst-affected areas, estimated that around 3 million people in these regions will suffer from the failure of the rains in late 1982. The fund is working with Ethiopia's Relief and Rehabilitation Commission to move emergency food and drug supplies to the drought victims.

Bowden found tens of thousands of people streaming from the areas worst hit by the drought, heading towards relief centers which have now been set up in several towns. But those towns are not equipped to cope with such a large influx of people, and the aid workers want to send relief supplies to the villages to stop any further influx into already overcrowded towns.

In Addis Ababa, the Ethiopia Herald newspaper reports that lack of rain for four consecutive years has forced 1.3 million people from their home areas. In one week, 44 people, including three children, died of diseases connected with the famine in Wollo and Gondar. In the same areas, 50,000 cattle and donkeys had died, the newspaper reported. CHARLES HARRISON

## Tanzanian technology to replace asbestos

MOROGORO, Tanzania--Concern about the health effects of using asbestos-cement roofing for housing has led authorities here to plan a number of factories throughout Tanzania to produce cheap, alternative

roofing materials.

Hazardous conditions at Tanzania's relatively new (1981) asbestos-cement plant (WER, Nov. 15, 1982, p.1) led officials to speed the search for local alternatives.

The Building Research Unit in the Ministry of Lands and Urban Development is using sisal fibers and other locally available raw materials with cement in the manufacture of roofing sheets.

The roofing material most commonly used in the construction of modern housing is corrugated sheets of aluminum or cement reinforced with asbestos fibers. Aluminum sheeting has become scarce of late as a result of the difficult economic situation prevailing in the country.

The new material, known as "Sisal Reinforced Concrete Roofing Sheets," is the result of five years of research and experimentation. In trial use on buildings in various parts of the country it has proved to be a match for the tropical rainy season and fierce African sun.

The Small Industries Development Organization of Tanzania, together with the Swedish firm, Natural Fiber Co., will start building a factory in August to produce the sisal-based roofing material in Tanga--the main sisal-growing region in Tanzania--situated along the northern coast.

Other factories may soon be set up by the National Development Corporation, using locally manufactured rather than imported machinery. The material can also be produced at village level using manually operated equipment.

A village primary school recently made national news by independently developing and producing its own roofing materials for the school buildings using natural fibers.

ANNE SEFU

## South African ecology is a dismal picture

JOHANNESBURG--A dismal picture of South Africa's ecological resources has been presented to the planning committee of the President's Council, which is currently examining environmental degradation in the country.

In his report to the committee, Professor Jan Giliomee, president of the Association for the Protection of the Environment, warned that unless a coordinated strategy was adopted to balance development with

conservation, many of the country's plant, animal and other natural resources would be lost forever.

Professor Giliomee said:

- \* About 2,000 of South Africa's 17,500 plant species were endangered.
- \* In agricultural areas, especially in the black homelands, soil erosion and overgrazing was reaching "serious proportions."
- \* Many of South Africa's 196 river mouths were in a "weak condition" and in Natal, 20 of 73 were irreparable.
- \* The entire coastline was degenerating under human pressure, while marine life on the coast was subject to an onslaught by shellfish and bait collectors and by oil pollution.
- \* The delicate ecological system on the sanddunes, which have "thin but essential plant cover," was being devastated by off-road vehicles and motorcycles.

He called for a coordinated strategy involving volunteer organizations, individual conservationists, the private sector and the state.

He said the private sector should develop a more sensitive approach to the environment and called for a central computerized data bank that would carry details of the ecological state of the whole country so that when new developments were planned, details on the ecology of the area under consideration could be scanned at the push of a button. MIKE NICOL

## Pollution in Kruger Park kills a river

JOHANNESBURG--Nearly all the fish in the Olifants River--a major watercourse in South Africa's Kruger National Park--have been killed by pollution, according to park authorities.

Hippopotamus are also threatened, and the river's ecology has been so severely damaged that it could take decades to return to normal.

One of the causes is "hundreds of tons of sludge" allegedly released into the river when the sluice gates of a dam outside the park were opened. The sludge clogged the river, making it impossible for fish to live.

Another reason is an acid-like effluent park officials discovered in the water.

The people responsible for the acid pollution have not been located, but the Department of Water Affairs has launched a

thorough investigation into what has been described as the park's worst fish disaster in 63 years.

Said the Chief Warden, Dr. U. de V. Pienaar: "We are netting the river to determine our losses, but it appears that the pollution may have wiped out every one of the 20 species of fish in the Olifants River."

"On a hot afternoon tens of thousands of fish rotting could be smelt 75 kilometers. Eighty years of conservation were lost within hours and every form of river life has been affected," he said. MIKE NICOL

## UNEP reports good news on oil spills

NAIROBI--Growing international acceptance of the need to protect the environment has already led to a welcome reduction in oil spills worldwide; however, this process must be taken a lot further, the UN Environment Program warned.

The U.S. National Academy of Sciences recently reported that oil spills during marine transportation came down from 2.1 million tons in 1973 to 1.5 million tons in 1981. If there had been no regulatory controls, the total could be as much as 6 million tons a year, the Academy estimated.

UNEP says the immediate aim is to cut oil spills from tankers to .2 million tons a year, and the International Maritime Organization (IMO) is pressing for the enforcement of measures such as a requirement for two radar systems on ships above 10,000 tons gross tonnage and for dual steering gear systems in new and existing tankers as a guard against accidents.

At the same time, all ports should provide facilities for receiving crude washings from tankers, to ensure that these are not dumped at sea.

The latest issue (Vol. 5, No.3) of the UNEP publication, Industry and Environment, says substantial improvements have been made in the United States to ensure the safety of oil tank wagons. Taken all round, efforts to reduce oil spills and their impact has undoubtedly paid off, and it is important that the industry and governments keep up the momentum of the last 10 years towards better control. High oil prices provide an economic incentive to prevent oil losses, UNEP commented before the recent cuts in prices. CHARLES HARRISON



## UK won't comply with nuclear dumping ban

LONDON--As the major ocean-dumper of radioactive waste, Britain is most affected by the recent passing of a two-year, non-binding moratorium on this method of disposal by the London Dumping Convention.

Britain supported a two-year scientific study to investigate effects on the seabed but wanted dumping to continue in the meantime. The moratorium was passed by 19 votes to 6 and was suggested by Spain, whose coast is nearest to the current dumping site in the north-east Atlantic.

Britain dumps between 90,000 and 100,000 curies of radioactivity annually in low and intermediate level waste from the nuclear power and weapons industries, hospital X-ray departments and research establishments. According to the leading British scientific journal, *New Scientist*, Britain will dump 50 percent more radioactive waste this year than last, with a correspondingly higher rate of alpha radioactivity and three times as much beta/gamma activity.

The dumping is to continue as the government argues that the moratorium is not binding and that the waste dumped is scientifically acceptable by existing standards. Environmental protestors such as the organization Greenpeace argue that these standards are inappropriate as they derive from simulated conditions rather than on-site investigation. They also accuse the government of seeking to alter standards to re-classify some higher level waste as intermediate level.

The *New Scientist* draws attention to government research into new underground dumping sites for a 25-year backlog of intermediate waste currently stored in ponds at Sellafield (formerly Windscale), Britain's nuclear recycling complex. The sites would expect to take waste up to the year 2000.

Since the public outcry against test drilling in selected geological sites, the research program has had to rely on desk studies which are admitted to present more problems in estimating geological stability.

Peter Curd, a spokesman for NIREX, Britain's new nuclear waste authority, emphasized to WER that the dumping site study is part of a wide-ranging research program, which includes vitrification for high-level waste, and is a purely technical assignment.

BARBARA MASSAM

## More on nuclear...

A NEW BOOK on "The Treatment and Handling of Radioactive Wastes" is a compilation of the writings of more than 100 international experts. The authors explore the current status of technology, and compare Great Britain, Germany, France, Japan and the European Economic Community regarding the treatment and handling of radioactive wastes.

The 656-page book costs \$65, from Battelle Press, Department NB, 505 King Avenue, Columbus, OH 43201, U.S.A.

THE UN'S INTERNATIONAL ATOMIC ENERGY AGENCY and World Health Organization have jointly published a booklet on "Nuclear Power, the Environment and Man."

The booklet offers an up-to-date review of this complex subject, expanding upon an earlier IAEA/WHO publication "Nuclear Power and the Environment," issued in 1973. It also identifies problems present and projected and the solutions proposed through work at national and international levels.

The booklet explains the principles of reactor safety design and describes past experience and present status of the management of radioactive waste. In particular it surveys countries' activities and intentions in the handling of highly radioactive wastes.

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## U.S. action on Global 2000 from grassroots to government

**NEW YORK**—After a nine-month gestation period, the Reagan administration has taken a first step toward dealing with the massive problems of population, resources and environment outlined in last year's Global 2000 Report to the President (then Jimmy Carter).

The Report concluded that "unless the nations of the world act decisively (and cooperatively) to alter current trends," serious and destabilizing stresses "are clearly visible ahead" by the year 2000.

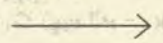
President Reagan's chief environmental officer, Alan Hill, chairman of the Council on Environmental Quality, on September 22 issued an invitation in the name of the President to key Reagan aides and the heads of all government agencies that participated in the Global 2000 Study. He asked them to respond within two weeks, naming their representatives to a policy meeting scheduled for the end of October.

He wrote: "The President has asked the Council on Environmental Quality to coordinate administration efforts to develop a U.S. government response to some of the most pressing global problems of environment, population and resources raised in the Global 2000 Report to the President and in other recent studies and reports."

Said one CEQ official, "We are really looking forward to seeing something come out of this meeting."

The Global 2000 Report was prepared by CEQ (now down to 16 professionals) and the Department of State, which was asked by Hill to take a major role in the October meeting. Other departments and agencies invited were Interior, Agriculture, Commerce, Energy, Agency for International Development, Central Intelligence Agency, National Oceanic and Atmospheric Administration, Environmental Protection Agency, National Aeronautics and Space Administration, National Science Foundation and the Federal Emergency Management Agency.

Executive office directors involved are: Richard Allen of the National Security Council, David Stockman of the Office of Management and Budget, Martin Anderson of the Office of Policy Development and George A. Keyworth of the Office of Science and Technology Planning.



## Environmental management ...

**CARIBBEAN NGO'S** discussed environmental projects, problems and plans at a four-day meeting held recently in Santo Domingo, capital of the Dominican Republic.

The meeting, which included about 50 non-governmental organizations and representatives of some 20 governments, came out of two major regional and international efforts—the World Conservation Strategy and the Caribbean Action Plan, adopted by Caribbean governments last April.

A major objective of the Santo Domingo meeting was to give NGOs a chance to explain activities in their own countries so conference sponsors could identify priorities for future activities in the region. The sponsors were: World Wildlife Fund, International Union for Conservation of Nature and Natural Resources (IUCN), Canadian International Development Agency (CIDA), and the UN Environment Program (UNEP).

**THE UN ENVIRONMENT PROGRAM'S** Executive Director Mostafa K. Tolba has written to all governments asking for information within a month on their climate impact studies.

The purpose is to identify ongoing and planned studies throughout the world so UNEP can analyze the world program for needs, duplication and areas deserving special attention. UNEP is working with the World Meteorological Organization on this World Climate Impact Study Program.

**ENERGY MANAGERS**, ranging from architects to sociologists, consumers to urban planners, are expected to attend the Third International Conference on Energy Use Management, to be held October 26-30 in Berlin, West Germany.

Among the nine topical areas to be discussed are ecology and environment, and some of the issues to be covered are: world research into plant oils as fuel, can the poor countries afford biomass energies, and energy recovery from low grade fuels and wastes.

For further information, North Americans can contact: ICEUM-III, P.O. Box 64369, Los Angeles, CA 90064. Those in other parts of the world can write: DER-CONGRESS, German Convention Service, CONGRESS-ORGANIZATION, Joachimstaler Strasse 19, D-1000 Berlin 15, Federal Republic of Germany.

### High-powered, private-sector lobbyists

The CEQ's high-level meeting is being mirrored in the private sector. On November 10, the Year 2000 Committee will meet to devise its program for the next two years. This committee is a group of 17 national leaders from business, public service and communications, who because of their concern about the issues raised by Global 2000 have agreed to act as a policy advisory group. They will, in effect, be high-powered, low-profile policy lobbyists.

The group's formation was announced late last year but it got organized only this summer, with an office (1601 Connecticut Ave., NW, Washington D.C. 20009, phone (202) 328-8425) and an executive director, Joel Horn.

The Committee is co-chaired by Robert Anderson, Chairman of ARCO, and Russell Train, President of World Wildlife Fund-U.S. Other members include America's "most trusted man," broadcaster Walter Cronkite; Robert McNamara, recently retired President of the World Bank; former ambassador (to England and the Law of the Sea) Elliot Richardson; and ex-Secretary of State Cyrus Vance. Additional members are: Marian Heiskell, New York Times; Robert Blake, International Institute for Environment and Development; Lester Brown, Worldwatch Institute; Adrian DeWind, Natural Resources Defense Council; Hans Landsberg, Resources for the Future; Dr. Roger Revelle, University of California; S. Dillon Ripley, Smithsonian Institution; William Ruckelshaus, ex-EPA chief, now with Weyerhaeuser; Henry Schacht, Cummins Engine; John Sewell, Overseas Development Council; and George Zeidenstein, Population Council.

### Grass-roots mobilization

The Global Tomorrow Coalition, now 51 members strong, is a union of organizations ranging from A, the Audubon Society, to Z, Zero Population Growth, representing many millions of Americans. It was formed this year to push for action on Global 2000 issues at the grass-roots level within their constituencies and within the Congress. The Coalition has an office (at 1525 New Hampshire Ave., N.W., Washington, D.C. 20036, phone (202) 328-8222), an executive director, Don Lesh, and the group is chaired by Russell W. Peterson, head of the Audubon Society.

Several task forces deal with such issues as biological diversity, information and education, long-range planning, pollution, population, tropical forests and marine resources.

Although the Coalition is still awaiting formal approval as a non-profit entity, it has organized itself remarkably well in a comparatively short time and is constantly testing the waters within government—and trying to create some waves of action.

At a recent meeting an officer of a regional bank suggested the Coalition take advantage of other nations' interest in Global 2000 issues and coordinate with them as well. But, so far, most of the Coalition's work has been focused on what the U.S. government can accomplish.

LIBBY BASSETT

## Multinational agreement on chemical testing is held up

**NEW YORK**—It was billed as an "international breakthrough" seventeen months ago. Said Douglas Costle, then-administrator of the U.S. Environmental Protection Agency: "This is the first time an international consensus has been achieved on the proposition that new chemicals must be tested for health and environmental effects before going on the market."

But, in fact, the OECD nations' agreement to harmonize test data prior to marketing chemicals has not yet broken through.

When West Germany's environment chief, Peter Menke-Gluckert, visited New York recently he told *WER* that he felt the Reagan administration had "changed policy and opened legal problems about testing within the OECD context."

He said, "The whole thing will collapse if the two biggest chemical manufacturing nations (the U.S. and West Germany) don't agree to OECD harmonization." The harmonization process has taken three and a half years and involved thousands of scientists and experts but, said Menke-Gluckert, "if it all collapses, we can never do our work—inventorying, good lab practices, standardization tests."

"We want the same conditions in our (chemical) industry as the U.S. has. If not," he said, "the United States has an unfair advantage and the European Economic Community countries suffer."

Mary Elizabeth Hoinkes, Deputy Assistant Secretary of State responded that, "the U.S. concern for clarification may have been falsely interpreted as less of a commitment than we originally had." But, she insisted, "This is not one of the issues where the change of administration makes a difference. We want to move fast on this."

The crux of the matter, she said, is that the language of the draft decision could be interpreted as requiring the testing of all new chemicals. This, she said, was not the intention of the OECD. Each nation will decide which chemicals should be tested before putting them on the international marketplace. Ms. Hoinkes emphasized that, "We wish to assure the OECD nations that wherever testing is required by U.S. law, the United States will apply the OECD decision."

Rather than amending the OECD draft language, she explained that the United States had "floated a draft interpretive statement" and invited the OECD states to comment upon it. She said the U.S. government would like to clarify this language "in the simplest way we can." U.S. Mission people in Paris, where the OECD is based, are working on this with other national delegates and, she said, the U.S. hopes that the issue will not have to go back to the Environment Committee (which meets this December) but that the draft decision will be forwarded straight to the OECD Council which can approve the common test rules compact by consensus.

LIBBY BASSETT

## Toxics

**UP TO 50 NEW CHEMICALS** may be introduced to the Australian market annually and in many cases no information is available on their environmental effects, preliminary studies reveal. The Australian Environment Council announced a notification scheme for new chemicals to begin October 1. The scheme is based on the voluntary cooperation of the industry, and information presented on new chemicals imported or manufactured in Australia will be considered by the AEC's National Advisory Committee on Chemicals.

**FIVE DIRECTORS OF A DUTCH** hazardous waste management firm were arrested recently by Netherlands' authorities and charged with illegally dumping and exporting an estimated 72,000 tons of hazardous waste between January 1979 and October 1980.

According to Hazardous Materials Intelligence Report, only about half the 150,000 tons of hazardous waste accepted by Uniser Holding were disposed of legally.

The firm's officials were charged with exporting contaminated wastes to Belgium, West Germany and England, and Dutch press reports allege that some of the wastes may have been dumped from tankers into the North Sea and into various Dutch waterways.

If convicted, the arrested executives face prison sentences of up to 15 years.

**DENMARK HAS BEEN STUDYING CADMIUM** pollution problems and has just published the results of its wide-ranging investigation, which began in the fall of 1979.

The working group, which did the study under the auspices of the National Agency of Environmental Protection, has recommended restricting both the use and the further spread of cadmium in Denmark's environment, according to a report in *Ambio*. It believes a 57 percent drop in consumption from current levels is feasible over the next few years.

Cadmium, a poisonous chemical, is harmful to the lungs, bone tissue, and most of all to the kidneys.

The Danish government will try to reach a voluntary agreement with industry to reduce domestic consumption. Sweden has legislation against the use of cadmium in plastics.

**NORWAY IS ONE OF THE FIRST COUNTRIES** in the world to label the cancer hazard of products offered for sale to the public, and Norwegian health warnings are now more stringent than those of the European Communities, *Ambio* reports.

Producers or importers of any product are held responsible for informing the public of all possible health risks arising from the use of a material, even if it is not classified as toxic.

## In Europe ...

**THE EUROPEAN COMMUNITY'S** nine member nations last year cut their total energy consumption by 4.5 percent yet still increased their joint gross domestic product (GNP) by 1.3 percent. Industrial production fell just 0.5 percent.

In previous years, since the oil crisis led to determined energy savings programs, a drop in consumption had created a drop in GDP.

Eurostat, the Community's statistical publication, said the fall in energy use last year was attributed to more rational use of energy, the deterrent of rising energy prices, warmer weather and structural changes caused by the steel crisis.

The biggest energy savings were in the United Kingdom (9.2 percent) and the smallest in France (1.3 percent) and Italy (1.2 percent). There was a drop in the use of all energy sources except coal (up 0.5 percent) and nuclear (up 14.5 percent). The cost of oil to the EC quintupled between 1973 and 1980.

**IRISH MOTORISTS NOW PAY** one of the world's highest prices for a gallon of gasoline—£2.15 (\$3.12, or nearly 70 cents a liter).

The bewildered Irish public, seeing staggering fuel cost increases—up over 100 percent in 12 months—can only wonder why since they reacted positively to a government call for a reduction in oil consumption. The more they reduced energy consumption the higher prices have gone, including other forms of energy—electricity and gas—as well.

Government party members have admitted that Ireland is now, in many respects, heavily over-taxed because of huge public spending deficits which have led to 20 percent inflation.

**VIVISECTION MAY BE STOPPED** entirely in Switzerland in a national referendum—even though pharmaceutical companies maintain it is a necessity.

Under the Swiss system of direct democracy, an issue can be put up for a national referendum if sufficient supporting signatures are obtained within a specified deadline.

Franz Weber, perhaps Switzerland's best known environmentalist, launched a signature drive against vivisection in June 1980, supported by various animal protection groups throughout the country. By early September this year they had about 155,000 signatures—three months before the deadline. Now the Federal Council will establish the validity of the signatures and set up the referendum, within a three-year period.

The wording of the initiative is straightforward: "Vivisection of vertebrate animals as well as all cruel experiments on animals are forbidden throughout Switzerland."

## Germany won't follow American lead in relaxing eco-controls

**NEW YORK**—West Germany will not follow America's lead in relaxing environmental controls, says the head of its federal environment department, Dr. Peter Menke-Gluckert. "We will not go slow on environmental policy. Our clean air act will hold."

Menke-Gluckert was in New York recently for an International Environment Forum meeting, sponsored by the World Environment Center.

In the U.S., the Reagan administration cut \$2.6 billion from the Environmental Protection Agency (EPA) between fiscal 1981 and fiscal 1982 (mostly construction grants, which may be reinstated if the Clean Water Act is changed). Initial efforts to produce a less regulated Clean Air Act have drawn the wrath of environmental critics both here and in Canada, where acid rain from U.S. sources is a major government concern.

Menke-Gluckert said West Germany faces many of the same problems that the United States does, such as inflation and unemployment. Nevertheless, "economic difficulties have no bearing whatsoever on carrying out our environmental programs. And," he said, "there has been no statement that we should change the course of environmental protection." All political parties are agreed on this, he said.

West Germany's environment department budget was cut this year but, the environment chief asserted, "We are better off than other ministries."

Even though his department lost about one-third of its research money, leading to cancellation of some programs, Menke-Gluckert said that his budget was now 1.5 percent of GNP, whereas last year it was 1.3 percent of GNP. He estimated his department spends about \$3.50 for each West German; even with the budget cuts, the U.S. EPA will spend about \$6.25 per person this year.

Menke-Gluckert said that at the end of July an agreement was reached with auto makers to voluntarily decrease carbon dioxide and monoxide emissions by 20 percent and to bring cars on the market that would use 15 percent less energy.

"These are signals we will continue our environmental policy," he said. "I see no reason why it will change."

His optimism is based in part on the "cooperation principle" with industry. "We respect industry as a partner. We give them the broad outline for technical solutions by, let's say, 1985, and industry must find a solution. However they do it, we don't mind." This, he noted, is a rather different approach from that used in the United States.

Menke-Gluckert said he tells industry: "You'll be out of future markets unless you go below present emissions standards." He said he tries to convince industry that by complying with stringent environmental quality standards, it will end up with more modern plants.

However, if a manufacturer does not comply, the government

can fire the company president. For breaking West Germany's clean air act, a manufacturer can get up to 10 years in prison; for flouting regulations on radioactive and hazardous wastes and water pollution, the penalty is five years in prison.

The Center's International Environment Forum, whose membership includes 31 major U.S. and Canadian corporations, meets quarterly with senior environmental officials from around the world to discuss international environment issues as they affect the private sector.

LIBBY BASSETT

## Switzerland will adopt strict auto emission standards in 82

**BERN**—Despite intense pressure from the European auto industry, Switzerland's Federal Council has decided to switch from the milder curbs on car emissions established by the Economic Commission for Europe to the more severe standards imposed by the United States and Japan.

The new curbs will begin to go into effect October 1, 1982. They will be tightened even further as of October 1, 1986. Predictions are that this will drive up car prices from 200 to 500 francs (\$100 to 250) depending upon make.

Switzerland had adhered to Rule No. 15 of the Economic Commission for Europe (ECE). Conforming to regulations calling for one-year advance notice, the Swiss Foreign Ministry has been instructed to notify the United Nations that it intends to withdraw from the ECO commitment.

Swiss leaders say that dilly-dallying by other European nations has thwarted any effective tightening of curbs. Specifically they cite the East European states, that have opposed any tightening of curbs on car exhaust, as well as Britain, which has stalled in an attempt to protect its staggering automobile industry. France and Italy also have shown little enthusiasm for tighter curbs.

Swiss officials say there will be no foot-dragging in imposing the new standards.

Peter Hess, Director of the Federal Police Office, told the press recently, "I can guarantee you this with 100 percent certainty." He added that, "today, already, as concerns control of motor noise, Switzerland has the most severe limits in the world."

For auto models entering the market as of 1987, the quantities of carbon monoxide and hydrocarbons will be diminished by 90 percent compared with the 1968-69 norms. Nitrogen oxides must be cut by 70 percent from average levels authorized in 1974-75.

In 1979 the Council gave in to industry pressure to postpone action on new curbs for five years. But since then counter-pressure built up—led by environment groups—and in September, 59 Parliament delegates addressed a letter to the Federal Council insisting that it not cave in again under pressure from the automobile industry.

WILLIAM G. MAHONEY

## Air quality...

**THE SINGAPORE ENVIRONMENT MINISTRY** has ordered tests on all private cars sold in Singapore. Tests carried out by the Registry of Vehicles and the Anti-Pollution Unit showed that imported Japanese cars are more polluting than similar models sold in Japan. "This difference may well mean that they are not as stringent with the pollution control design of their exported cars as other countries," a spokesman from the Registry said. The Registry and the Singapore Motor Traders' Association have already started talks on legislating pollution laws. He said legislation would "not be well accepted by car manufacturers because costs involved will be extremely high." In addition, a small market like Singapore "does not justify a change in engine design," he said.

**CONTINUED EMISSIONS** of sulphur and nitrogen oxides at current or accelerated rates will be "extremely risky from a long-term economic standpoint as well as from the standpoint of biosphere protection," according to a report just published by the National Research Council, the investigative agency of the U.S. National Academy of Sciences.

The study committee stated: "The picture is disturbing enough to merit prompt tightening of restrictions on atmospheric emissions from fossil fuels and other large sources such as metal smelters and cement manufacture."

Complex, long-range studies are needed for better assessing the ecological consequences of fossil fuel combustion, the committee said, and it suggested that a national research center for ecology and environmental science be established—an unlikely event given the U.S. administration's extensive budget cutting.

**SATELLITE DATA** have provided the first direct evidence that ozone is being removed from the stratosphere.

The journal *Science* reports that Donald Heath, a scientist at the U.S. Goddard Space Flight Center, found that depletion at about 40 kilometers above earth's surface is about 0.5 percent a year.

The evidence linking this decrease to the use of chlorofluorocarbons (CFCs) is far from absolute, says *Science*, but the ozone layer is most vulnerable to breakdown by CFCs at the 40-kilometer level.

In the troposphere, which is 11 to 16 kilometers from earth, the ozone layer is increasing, satellite data found. The source is believed to be pollution.

It is not known whether this will counteract the loss of ozone higher up, but *Science* believes it could alter temperature distribution.

## Environment & Development . . .

**ABSTRACTS** of U.S. Agency for International Development publications on environment and natural resources were recently published as a soft-cover book. A.I.D. Research & Development Abstracts includes nearly 20 jam-packed pages outlining draft environmental reports on 26 countries in Africa, Asia and the Middle East. Also included are lengthy descriptions of several AID reports on tropical forests, deforestation and fuelwood.

It is, in effect, an extremely informative catalog of AID publications, not only in this field but also in agriculture, development assistance, economics, health, nutrition, population, science and technology, and transportation.

Order from: A.I.D. R&D Report Distribution Center, P.O. Box 353, Norfolk, VA 23501, USA.

**GUIDELINES FOR PLANNING** Environmentally Sound Small-Scale Water Projects is a handbook just published by two of the best-respected private grassroots development groups in the United States.

The 142-page guidebook is published by CODEL—Coordination in Development—a consortium of 38 development agencies working in Third World countries, and by VITA—Volunteers in Technical Assistance—a major information source for appropriate small-scale technologies.

This booklet was written for community development workers in developing countries who are not technicians. It covers water and: users and uses, environment, health, development and protection, sanitation and waste treatment, agriculture, aquatic products, energy, and planning.

It is available for \$5.50 from VITA, 3706 Rhode Island Avenue, Mt. Rainier, MD 20822, USA.

**A MAJOR PROBLEM** caused by the expansion of Jakarta, Indonesia's capital city, is the lack of sewage and waste disposal facilities, particularly where expanding city limits have bypassed kampongs (villages) that were once considered rural.

To cope with this problem, the World Bank is helping finance construction of a waste disposal project that will cost about \$20 million, according to the Minister for Development supervision and Environment, Emil Salim.

A pilot plant was completed last year.

## Norwegian aid may be tied to environmental soundness

**OSLO**—Prime Minister Gro Harlem Brundtland's outgoing Labor Party government, which stepped down October 12, recommended that Norway not grant economic aid to development projects that might harm the environment and natural resources in less developed countries. These recommendations, however, are not binding on the new government.

Inger Pederson, Ministry of Environment state secretary, said the Labor government felt that Norway, within principles and guidelines drawn up by the Storting (Parliament), should put more emphasis on environmental and natural resource policies in developing countries.

The countries seeking aid will set their own priorities, Miss Pedersen said, "but Norway should during the 1980s contribute actively to see that these important environmental questions get the required attention and priority, both within our own bilateral aid projects, within joint Nordic aid projects and within larger international projects.

"Norway should therefore in the future not participate in projects which could cause comprehensive or long-lasting damage and should also see to it that state-supported private establishments or investments in developing countries also do not cause damage," she said.

A new Norwegian minority government headed by Kaare Willoch, the Conservative Party's parliamentary leader for the last 11 years, took office in Oslo October 13. It is not yet known how Willoch's government will view the proposed changes in the foreign aid policy.

However, a high-placed Environment Ministry spokesman said, "There has been general agreement in the parliament about these problems, and I feel confident that the recommendations will be followed up by the new administration."

Last year, Norway's total bilateral and multilateral development aid, as well as international humanitarian aid, amounted to approximately 2.9 billion kroner (\$500 million), or slightly less than one percent of the gross national product (GNP).

SPECIAL TO WER

## Taiwan's boom threatens wildlife

**TAIPEI**—The combination of a booming economy and a booming population is making life difficult for wildlife in this small and over-crowded island—Taiwan.

For such a small land area (only 35,000 square kilometers, about the same as Holland) the variety of animals and plants found here is remarkable. As a result of long separation from the mainland of China, several unique species have evolved. Many are now believed facing extinction, but since they tend to live in the inaccessible central mountain range which covers two-thirds of

the island, their exact status is unknown. Competition for living space from man is becoming intense as mountain areas are opened to economic exploitation. The situation is made worse because many animals have long been regarded as a source of economic wealth themselves and are hunted ruthlessly.

Faced with this predicament, the government has been slow to act since economic expansion is given the greatest emphasis in official policies. But there are signs that this attitude might be slowly changing. A few conservation projects have been started, and the first of several national parks is due to open by the end of the year at Kenting at the extreme southern tip of the island.

"Perhaps the best hope lies in trying to make people realize that wildlife is an important economic resource and that with proper care it can be renewable. As things are at the moment, however, the resource is being used up at such a rapid pace that soon it will no longer be there," said Sheldon Severinghaus, a scientist who has studied the situation over a number of years.

The growing list of threatened species includes deer, hunted for their flesh and antlers, the latter considered to have medicinal properties. The Formosan clouded leopard was last seen more than 10 years ago and is thought to be extinct. The paws and testicles of black bears are considered delicacies. Skeletons of macaque monkeys are boiled into soup. Civets are a favorite dietary item, and even the shy pangolin is hunted in lowland areas.

Among birds, several of some 16 species found only in Taiwan are believed to be endangered. Brown shrikes are caught by the thousands during their migrations each year and strung up live before being fried.

Snakes are caught by the thousands and sold for their flesh, blood and even venom, which are believed to be tonics. The night markets where they are sold have become something of a tourist attraction, but no one so far has paid much attention to the increase in the rodent population which followed the depletion of snakes. The butterfly industry alone must be worth millions of dollars a year. The government estimates that some 20,000 people earn their living from butterfly specimens and decorations. Some 40 species of butterflies are unique in Taiwan.

And the list goes on. Demand is so strong that a law passed in 1972 forbidding the hunting and export of birds and mammals goes largely ignored. Lack of enforcement further encourages the trend, since local police who are entrusted with the task have little time or inclination to carry it out. Live and stuffed specimens are sold openly in Taiwan.

Despite the depredations of hunting, it is likely that destruction of habitat is the biggest long-term threat to wildlife in Taiwan. The authorities constantly talk about opening up wilderness areas to meet the economic and recreational needs of an increasingly large and affluent population. With 18 million people, Taiwan has the second highest population density in the world after Bangladesh. Cross-island highways have been built to allow timber felling and the establishment of fruit farms, even though widespread erosion has been the result. And all this threatens Taiwan's several unique plant species. Currently, environmental-

## Wildlife...

**INTERNATIONAL WILDLIFE SPECIALISTS** met recently and estimated that fewer than 700 northern white rhinos survive in the wild, with almost all in Sudan and northern Zaire. They have been hunted near extinction for their horns.

The group suggested that small breeding herds in Czechoslovakia and in the United States be built up to guard against extinction. At the same time, protection of the wild survivors should also be stepped up, they said.

The meeting, sponsored by World Wildlife Fund and IUCN, also reviewed the status of the African elephant and agreed that the population in surveyed areas is approximately 600,000. The number remaining in unsurveyed areas could be from 500,000 to more than a million, they said. That population also is declining at a rapid rate, and they called for enhanced protection in 34 countries south of the Sahara.

Several countries involved in the ivory trade, including major exporters like Congo, Sudan and Ivory Coast, have yet to endorse the Convention on International Trade in Endangered Species (CITES).

**THE WORLD'S BIGGEST FLOWER**, the *Rafflesia*, could be threatened with extinction unless preventive measures are taken, said Dr. Willem Meijer, a former lecturer at Indonesia's University of Padang in West Sumatra. Meijer, now with the University of Kentucky, feared damage done to Indonesian forest lands by loggers and population encroachment has already greatly reduced the number of the flowers. Fifteen varieties of the *Rafflesia* grow in Indonesia, the largest and most famous of which—the *Rafflesia Arnoldi* measuring some 90 centimeters in diameter, or 35 inches—was first discovered by Sir Stamford Raffles in Bengkulu in 1818.

**A NEW NATIONAL PARK** project in the West African nation of Sierra Leone got off to a promising start in October, for just a few months earlier President Siaka Stevens announced a four-year moratorium on the export of all wildlife and wildlife products.

The World Wildlife Fund-U.S. project—a 985-square-kilometer park—is designed to protect an important national watershed and to safeguard much of the country's remaining wildlife.

The \$213,000 project will include constructing buildings, roads and bridges, training personnel and inventorying wildlife. Also planned is a maintenance-free solar power station to supply the park's needs.



## Forestry...

**THE ASSOCIATION OF SOUTHEAST ASIAN** nations (ASEAN) Working Group on Food, Agriculture and Forestry has agreed to establish "intra-ASEAN tree plantation projects" as part of a plan to ease the serious loss of forest resources in the region. The group also agreed to extend the tenure in the lease of public lands for tree plantation projects up to 50 years, to rationalize the use of forest products and to establish an ASEAN forestry research center.

**JAPAN HAS AGREED** to provide Indonesia with financial and technical assistance in carrying out research on tropical forests at the Mulawarman University of Samarinda.

**THE PHILIPPINES** will launch a 30-day nationwide inventory of the country's forest cover. This will enable the government to determine additional areas in which logging should be banned. It will also allow the government to tap available forest resources.

**SRI LANKA IS LOSING** 60,000 to 70,000 hectares of woodland annually, and the average planting rate has only been 7,290 hectares yearly for the last five years. The Sri Lanka government hopes the rate of destruction will slow down to permit a successful regeneration of the forest cover in the coming years. If not, the island nation could be treeless by the year 2010.

**PLANT NURSERIES** have been opened in Maharashtra state in western India to teach tribals to grow vegetables and fruits. Traditionally, the nomadic tribals live off forest produce, in addition to what little other food they can grow or buy.

A chemical company has launched a mobile training squad to demonstrate how to plant orchards in collaboration with the agro-industries and tribal welfare foundation in the state.

This supplement to the tribals' diet should help to reduce the severe incidence of malnutrition, especially among nursing mothers and infants.

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ists both inside and outside the government are trying to delay plans to build three more cross-island highways, in particular one which will pass through an untouched wilderness area close to the island's highest mountain of Yushan (3997 meters). "The attitude seems to be that everyone, regardless of his physical condition, should be able to reach even the remotest areas. But perhaps a few areas should be set aside for those who are prepared to reach them on foot," said Severinghaus.

Such areas may indeed be established under government plans to set up a network of national parks to cover the whole of the island. Since these parks will come under a separate administration, one of the biggest obstacles to progress in wildlife conservation may be overcome. At present, responsibilities are split between several government departments which makes coordinated action impossible. It is only fair to point out that the requirement that visitors obtain a mountain permit has been instrumental in preserving pristine conditions in some remote areas, but pressure for more recreational space may erode the system in future.

A more hopeful trend for the future is that personnel in environmental agencies have recently been increased. The national parks will be policed by trained park wardens who will make sure that all wildlife is strictly protected.

"The root cause of the problem is the age-old competition between man and wildlife for scarce resources," said Hunter Eu, head of a newly created environmental department under the government's Council for Economic Planning and Development. "We still have to get our priorities sorted out, but working out a clear definition of who is responsible for what represents a good start in this most urgent task."

MICHAEL BOYDELL

## Himalayan foothill state nationalizes forests

**NEW DELHI**—The government of the sub-Himalayan state of Himachal Pradesh has decided to nationalize its forests within the next three years.

War has been declared against illegal tree felling and smuggling, and the police are actively participating. Because of the nationalization plan, the state forest corporation is being reorganized and strengthened. Once the forests are nationalized, only the government or its corporation could buy wood and forest produce, including export timber.

Next year Himachal Pradesh is planning to plant 60 million trees. This is the beginning of a 20-year afforestation program which aims to cover 50 percent of the land surface with trees. The estimated cost is \$125 million. And negotiations are underway with the World Bank on a \$37.5 million catchment area program.

The central government has allocated about \$46,000 to Himachal Pradesh for soil, water and tree conservation, and \$259,000 for afforestation. A further \$20,000 for tree plantation is being given under the new centrally sponsored social forestry scheme.

R. MURALI MANOHAR



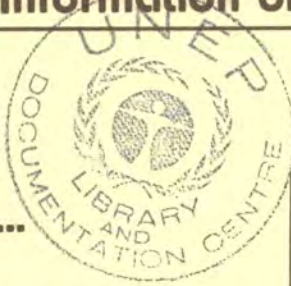
# World Environment Report

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## SPECIAL REPORT: China's ecosystems are deteriorating rapidly

WASHINGTON--"China's environment, natural and man-made, is in poor shape now and deteriorating rapidly."

These words begin a fascinating study, now in draft form, made for the World Bank by Professor Vaclav Smil of Canada's University of Manitoba. It was written by him and the Bank's Office of Environmental Affairs.

The report is based almost exclusively on Chinese domestic writing, in newspapers and new scientific journals, and on broadcasts. It says that during the past four to five years, there have been "countless descriptions of environmental neglect, malice, failure and abandon. This contrasts strongly with the environmental success tone of much information until recently."

WER has been given permission to present the highlights of this study.

China, with its 4,000 years of written history, is a unique country. It spans tropical reefs and the world's tallest mountains, densely settled river lands and hilly forests, and it houses nearly one quarter of the world's people. A reverence of nature has run throughout the long span of China's history yet, concurrently, the Chinese have subjugated nature --often of necessity.

Environmental pressures caused by large-scale deforestation, losses of cropland, reclamation of lakes, erosion and desertification have intensified since 1949. Sometimes, they have been the result of state policies, such as the "grain first" policy which led to the conversion of grassland and lakeland to fields. But these pressures also have come about as a result of resource exploitation and desperate actions by poor peasants. Deforestation is such a case.

### DEFORESTATION

Chinese writers over the past three years have portrayed deforestation as one of the gravest environmental crises. Although China now has a larger area of forests than in 1949, in effect, the opposite is nearer reality. There is tree cover of some sort over nearly 13 percent of the country, yet much of it cannot qualify as true forest. The 1979 National

Symposium on Forestry Economics estimated that "only one-third" of China's forests is suitable for commercial logging. In many areas, more is logged than is planted and thus China's forests are rapidly receding. Even though new forestry laws went into effect in 1979 and afforestation continues, the situation is still deteriorating, for the laws are not enforced.

Millions of trees have been planted in China since 1949, but the survival rate has been low--often below 10 percent. A folk saying explains why afforestation doesn't lead to forests: "Trees everywhere in spring; just half left by summer; no care taken in the fall; all trees gone by winter."

Today, more wood is burned in Fujian to fuel the pulp mill than is cut for the pulp itself. More than a million sewing machines reportedly are unfinished in Shanghai for lack of wooden boxes. Urban newyleweds wait a year to buy simple wooden furniture.

Deforestation has also contributed greatly to droughts, desertification, erosion and air pollution, and it has upset the ecological balance over large areas to such a degree that marked increases in the frequency and extent of natural disasters and adverse regional climatic changes have been documented.

#### CROPLAND LOSSES

Although much of the former forestland was converted into grainfields, China's total arable land has declined dramatically. In April 1980, the Communist Party daily said that between 1957 and 1977 China lost, to construction projects and natural disasters such as drought, erosion and flooding, 33 million hectares, or nearly 30 percent of the 1957 total of 111.8 million hectares of arable land. The world's most populous country lost nearly a third of its prime farmland in just one generation.

At the same time current cropping practices (double or triple-cropping, improper application of fertilizers, failure to rotate wet and dry crops) are seriously degrading previously good or excellent soils. This degradation has been a principal factor in the spread of erosion and desertification.

The world's largest "Loess," or yellow soil, Plateau is in China. Mostly, it's a harsh environment--dry and hot in summer, cold and windy in winter. For two millenia it has been deforested, but during the past three decades as its pastures were converted into cropland, stripping the protec-

tive vegetation, it has had extremely serious soil erosion problems.

Tiny soil particles, loosened by winds or summer downpours end up in the region's waters which eventually flow into the Yellow River, the siltiest in the world. Before the river enters the loessland it carries an average of two kilograms of silt per cubic meter of water; when it leaves it carries 35 kilograms per cubic meter, or about 1.6 billion tonnes of soil a year. This is 17 times the pre-dam Nile's silt load.

Because the Loess Plateau wasn't suitable for its extensive conversion into cropland, living standards today in many places are lower than in 1949.

Serious erosion is not limited to the Loess Plateau. It now blankets 1.5 million square kilometers, or about 15 percent of all China.

Reservoir silting has caused some larger hydroelectric stations to be taken partially out of operation, and many small reservoirs were abandoned just two to three years after completion.

#### LAKE RECLAMATION

As the north and northwest suffered from conversion of grasslands, large areas in the south were affected by conversion of lakes.

Freshwater fishing and the breeding of fish, crustaceans and water plants are an ancient Chinese tradition. In the late 1950s two-fifths of China's aquatic harvest came from inland waters.

Since the "grain first" reclamation policy, about eight percent of the country's inland water surface has been lost. The catch in 1978 was half that of 1954.

Harvest of reeds for manufacture, water plants for food, and waterweeds for fertilizer or feed have declined as has floodwater retention. Today, a large part of the "reclaimed" land surrounding lakes lies wasted and empty.

LIBBY BASSETT

This is the first of two articles on China's environmental situation.

## More on China...

TO CONTROL AGRICULTURAL PESTS, farmers in China last year used ladybirds (ladybugs), wasps and spiders as well as birds and bacteria to keep down pests on more than 8.6 million hectares of land. The official Xinhua News agency said this biological control of agricultural pests helped maintain the ecological balance, increase farm output and reduce production costs.

## One-third of world's arable land at risk

NEW YORK--More than a third of the world's arable land could be lost, destroyed or severely damaged within just one generation, the OECD Observer reports.

This will happen, the Observer predicts, if OECD countries continue to convert agricultural land to non-farm uses at current rates, and if the present pace of land degradation worldwide persists or intensifies.

The bi-monthly magazine of the Organization for Economic Cooperation and Development says that even if the earth's cropland could be doubled from its present 14 million square kilometers, most of the best and most easily developed land already is being farmed. Developing new land would cost so much (up to \$10,000 a hectare) that it would not be economic to use it for basic food production.

In the 24 OECD nations, at least 5,000 sq. km. of cropland is lost each year to urban sprawl--more than half in the U.S. alone. Some countries, like Australia and New Zealand, have suffered no losses over the past 20 years. But in small countries like Japan and the Netherlands, the loss is 10 and 5 percent respectively in just 15 years.

These losses have been made up by intensifying agricultural production, by converting pastures, forests and wetlands to farmland or by increasing imports. But these measures have had undesirable environmental consequences, since intensified farming often requires more fertilizer, leads to erosion and the loss of nutrients and pesticides and thus contaminates surface and groundwaters.

For example, when the United States rapidly expanded grain production in the mid-1970s to compensate for shortages in Africa, Asia and the USSR, topsoil loss increased substantially. In some areas of Iowa the loss increased from about two tons of soil for each ton of corn to seven-eight tons of soil lost.

Topsoil is virtually a non-renewable resource, the OECD Observer points out. It takes nature up to 400 years or more to generate 10 millimeters (not quite half an inch) of topsoil.

Soil loss has accelerated sharply in most developing countries, in part because the land has been converted to other uses but mostly because of degradation. More than half of India suffers from some form of soil degradation, with a loss of billions of tons

of topsoil every year.

The growing global interdependence for basic food, energy and other resources will increase the pressure on agricultural lands in all countries, the OECD says. The potential inflationary consequences of international food deficits were noted in the Brandt Commission report, which predicted: "if additional assistance is not forthcoming, there will also be far more calls for emergency food supplies, which are in the long view an expensive and irrational way of coping with food problems. Food relief programs often cost more in one year than would the five-year local investment programs which might have made them unnecessary."

So far, the loss of arable land has not been recognized as a priority global concern, although the OECD in its recent study "Economic and Ecological Interdependence" flags it as a critical issue.

But because the problem is so huge and complex--farmers, no matter where, are not easily organized--it will take extraordinary will, education and financial resources to turn the situation around, particularly in the poorest countries where the majority of people often have little option but to sacrifice long-term security for the sake of immediate economic and physical survival.

SPECIAL TO WER

## Kenya to transform swamps into farmland

NAIROBI--After two years of trials, Kenya is launching a scheme to transform a number of swampy valleys into productive farmland. The European Community is providing \$4 million to finance the project, and the Dutch Government, which supplied land reclamation experts for the trials, is providing skilled personnel to work with Kenyans now that the scheme is going into action.

The Kisii district of western Kenya is heavily populated, with great pressure on available farm land. The plan is to transform nine swampy valleys, which now provide only marginal grazing for cattle, into productive land to be farmed by about 2,500 families.

At the heart of the scheme is a carefully regulated drainage plan, which will avoid upsetting the ecological balance. The water table will be lowered, and a combination of

drainage ditches and water channels will retain water for growing vegetables, bananas and corn. Some parts of the valleys will continue to provide cattle grazing.

The farmers, from nearby areas, will be taught the techniques needed to use the peaty and loamy soils for controlled cultivation once waterlogging has been reduced.

If the four-year project proves as successful as the experts hope, a total area of around 9,000 hectares can be converted into productive land. CHARLES HARRISON

## Thailand uses troops to stop tree cutting

BANGKOK--Concern over Thailand's rapidly vanishing forests has grown to such an extent that the government has decided to use troops to counter the activities of illegal tree-fellers. The damage being caused by these wood poachers is now so great that the Forestry Department is unable to cope with the problem.

In April, a meeting on the subject was held at the Ministry of Agriculture and Cooperatives, to which representatives of the country's four Army regions were invited. The Ministry of Interior will also be involved in the new plan. The military representatives will be included on the provincial-level forest conservation sub-committees, while the Army will take direct control of anti-poaching operations in Communist-infested areas.

Meanwhile, the Ministry of Agriculture and Cooperatives has unveiled a plan for setting up a seedling bank capable of producing 300,000 tree seedlings every day. Various official organizations will be involved and each will use its own budget. The organizations will put together details of the plan, which will be presented to the Cabinet for approval. According to the Ministry's announcement, the plan was suggested by Deputy Agriculture Minister, Dr. Prida Pattanabutr, following a recent visit to the Philippines, where the government has set up a foundation to gather information and samples of the various trees that can be used for afforestation.

The announcement said the seedling bank would play an important role in the government's afforestation plan as more than 50 percent of Thailand's forests had been destroyed or severely damaged. TONY OLIVER

## More on soil & trees...

KENYAN PRESIDENT Daniel Arap Moi ordered all Ministers and Members of Parliament to join him in a demonstration of their concern for the environment--by spending a day working to control soil erosion at Machakos, 97 kilometers from Nairobi.

The entire Kenyan Parliament, led by President Moi, spent hours under a hot sun building gabions--large steel "baskets" filled with heavy stones--in eroded river beds in preparation for the floods which occur in the annual rainy season.

President Moi chaired a special open-air meeting of the Parliament, which passed a resolution calling on all Kenyans to join the fight to conserve their nation's soil.

INDIA'S AGRICULTURE AND RURAL DEVELOPMENT Minister R.V. Swaminathan told Parliament that about 150 million hectares were subject to water and wind erosion while another 25 million hectares were affected by problems of shifting cultivation.

He said, "About 6,000 million (6 billion) tons of soil, containing approximately 8.4 million tons of nutrients are lost annually through erosion."

MORE THAN TWO BILLION tree seedlings will be planted in India this year, it was announced recently in Parliament. The total area to be planted under India's social forestry program is 338,899 hectares. For afforestation, the Federal and state governments will spend more than \$500 million over five years, according to Parliamentary papers.

THE HEAD OF INDONESIA'S DIRECTORATE for ports and dredging has blamed erosion caused by forest denudation as the main factor in the silting of many of the country's ports.

Director Sudjono said that last year (fiscal '81-82) some \$11 million had to be set aside for dredging the most critical ports in Kalimantan and Sumatra, with the port at Trisakti on the Barito River among the worst. Sudjono said two more dredges were on order and nearing completion in West Germany and Japan.

MINDANAO PROVINCE in the Southern Philippines has been devastated by floods for the second year in a row, destroying human lives, crops, roads, bridges and buildings. A study of Philippine forests by the UN Food and Agriculture Organization concluded that the cause is uncontrolled logging.

## World's largest mangrove forest dying

DACCA--The largest mangrove forest in the world is dying, Bangladeshi forest experts said, and they lay the blame on a man-made structure in India that controls the flow of fresh water.

The forest is fed by the Ganges, which flows from India to Bangladesh, emptying into the Bay of Bengal amidst a 600,000-hectare mangrove forest known as the Sunderbans.

In May, the driest month of the year, the river is at its lowest level and so, to have water for human and agricultural use, it is retained by the Farakka barrage across the border in India. At a recent national forestry conference here, officials claimed that in the seven years since the barrage was built, the river level has dropped so low during the dry season that it is killing the mangrove forest's main species, *Heritiera minor*, or Sundri, as it is known locally.

Mohammad Shafi, a senior conservator of forests, said the tree's high mortality rate was due to the increased salt content of the soil, which scientists ascribe to a backwash of sea water into the forest caused by the low level of fresh water in the Ganges distributaries.

A five-year study also revealed that other species of trees are not reproducing fast enough to counter the season's logging.

Official statistics show that in some parts of the forest salinity increased from 1,000 micromhos per centimeter (a unit of conductance) to 13,600 micromhos/cm during the last seven years--an increase of more than 13 times. Traces of salinity have been found more than 150 kilometers inland.

Government economists estimated the economic cost of these forest losses as \$100 million over the past five years.

Shafi sees even greater dangers ahead: "With the forest substantially reduced, the coast will be exposed to tidal waves during a cyclone. There will be no natural shield for the coastal farmlands and villages."

AHMED FAZL

## More river exploitation...

THE INDIAN GOVERNMENT WILL SET UP a National Water Resources Commission to exploit the country's rivers. At present, several states squabble with each other over rights

to draw water from the rivers that flow through them. The precise powers of this body have not been spelled out and observers wonder if it will lack teeth. Recently, the Union Irrigation Minister Kedar Pandey announced that all major national rivers will be linked by the end of the century at a cost of \$6.2 billion.

## Lethal chemical used for fishing in Burma

RANGOON--The extensive and intensive use of the hazardous pesticide Endrin to catch river fish was revealed during the Burmese Government-F.A.O. wildlife surveys here (WER, April 30, p.6).

Endrin is easily available in Burma, imported from Shell International in the U.K. by the Ministry of Agriculture and Forestry, and publicized by radio in the most remote corners of the country.

Fish poisoning with natural products such as derris root is as common as cast-netting in this part of the world and makes as little environmental impression; only one small part of a river is affected at a time and the effects on both river and fish are strictly temporary. Not so, of course, with Endrin, and its continued use poses a serious hazard.

According to the U.S. Environmental Protection Agency's booklet, "Suspended and Cancelled Pesticides," American use of Endrin is extremely restricted. In the case of fishkills, it says the fish must be disposed of by burial and that the area must be posted "no fishing" for six months to a year depending on the severity of the kill.

In Burma, otters, kingfishers and herons are disappearing also as a result of its widespread use. The Buddhist monk resident in the Patolon Forest Reserve confirmed that this year there are neither otters nor fish in the river flowing past his pagoda and shrine; timber corporation elephant handlers and forest department guards cite diminished fish supplies in other areas; and the lifeless condition of many streams and rivers has been seen first hand by the Burmese Government-F.A.O. nature conservation team members. The F.A.O. Representative in Burma has written the Minister of Agriculture about this, and it is hoped the government may ban further importation of Endrin.

WENDY VEEVERS-CAFF

## Australians produce a "living pesticide"

PERTH--Australian scientists have produced a "living pesticide" made from nematodes, or round worms, about 1 millimeter long. The pesticide, a water-based spray, took 10 years to develop and may replace the chemicals used by some farmers.

So far, it has been successfully used to control insects attacking Tasmania's black currant farms. It could be developed, the scientists say, to combat white grubs, which eat sugar cane; weevils, which attack strawberries; and an insect that has plagued grasslands in southwest Victoria over the past few years.

Dr. Robin Bedding, the Commonwealth Scientific and Industrial Research Organization scientist who headed the pesticide research group, said it takes about two billion nematodes to protect one acre (.4 hectare) of black currants. In the past it cost \$1 to produce a million nematodes, but now the cost is only a few cents, or \$125 a hectare.

ANNE BLOEMEN

## PCBs found in urban areas of Australia

PERTH--PCBs, the only toxic substances regulated by name in the U.S. Toxic Substances Control Act, have become a global threat now reaching all the way to Australia. Used in electrical equipment, in plastics manufacturing and as dye carriers, polychlorinated biphenyls were found to be both indestructible and ubiquitous in the environment--and they were found to cause liver damage in humans, cancer in lab animals and to affect major fisheries, making the fish dangerous to eat.

"Little attention has been paid to this problem in Australia," a recent article in the journal *Search* stated. It is published by ANZAAS, the Australian and New Zealand Association for the Advancement of Science.

The authors, B.J. Richardson and J.S. Waid of LaTrobe University, found: "Current evidence suggests that PCBs pollute terrestrial and aquatic environments near our major cities, but further research is needed to establish the true extent and the implications of such contamination...."

"We have investigated PCB pollution in suburban and coastal waters of Melbourne and

found...a pattern of PCB contamination similar to that of the Northern Hemisphere...."

"The greatest potential threat lies in delay in tackling the problem of finding efficient ways to destroy PCBs. A large quantity awaits disposal in the next two decades. Because of inadequate storage methods, lack of labeling of old equipment, and a lack of knowledge on the part of those handling the waste, potentially harmful quantities may unwittingly be released into the environment.... It is therefore essential that an environmentally acceptable solution to the problem be sought in the very near future. The installation of a high-temperature incinerator in a central locality, capable of handling waste from several areas within Australia, would seem a reasonable suggestion and probably less costly than shipment overseas."

ANNE BLOEMEN

## More on toxics...

IN THE NETHERLANDS, five directors of Uniser Holding, one of the nation's two hazardous waste management firms, were sentenced to jail for the illegal dumping and export of up to 75,000 metric tons of hazardous waste and for selling heating oil with high contaminant levels.

An official of the Ministry of Health and Environmental Protection was quoted in Hazardous Materials Intelligence Report as saying that one commission is studying design and operating procedures for hazardous waste storage facilities and another is preparing a national plan for hazardous waste disposal. He said cleanups at some of the country's 400 abandoned sites had begun.

DANES HAVE LONG COMPLIMENTED THEMSELVES on having Europe's most effective disposal system for chemical wastes and oil sludge, gathered at regional and county sites for transportation to the Kommunekemi plant at Nyborg for disposal. Denmark was the first European country to set up a single national chemical wastes disposal system back in the mid-70s, with a countrywide network to make sure the waste materials really are picked up and disposed of.

Now it appears there are holes in the network. A report prepared for the Environmental Protection Agency showed that small- and medium-sized industry is either unaware that the law requires that it dispose of wastes via the national collection system or simply ignores the law. The EPA plans a new countrywide campaign to bring the message home to offenders.

## POINT OF VIEW: Industry ignoring environmental issues

STOCKHOLM--Ten years ago, the International Chamber of Commerce and the Swedish Federation of Industries sponsored a conference in Goteborg to formulate industry's position for the 1972 United Nations Conference on the Human Environment.

Industry was on the defensive then, the focus of increasing public environmental awareness. At the UN Conference industry stressed its commitment to environmental responsibility. And over the past decade, sometimes under duress, the private sector in the industrialized countries has invested billions to mitigate the adverse impacts of its processes on the human and natural environment. As a result, industry has many environmental success stories, some ending with "pollution prevention pays."

Recently, a follow-up conference to Goteborg was convened here, again by the ICC and the Swedish Federation. Its purpose was to provide industry with a platform to review its environmental achievements and to look to the future. To a non-industry observer, the results were disappointing.

For one thing, it was disheartening that of the 100 ICC countries, only 24 were present. Furthermore, only about 100 industry leaders attended--30 of them Swedish. The big names, the CEOs and Presidents, were conspicuously absent. Why? International environment issues--which were relatively high on the private sector's international agenda in 1972--have been downgraded. Except for a handful of committee executives who try hard to keep the flame glowing, apathy and indifference can best describe industry's attitude today.

The 1982 conference also was disappointing because it was supposed to transmit to the special tenth anniversary session of the UN Environment Program (UNEP) a statement representing the view of world industry. The meager attendance probably signifies that industry leaders do not regard UNEP as a significant factor in their future planning.

Participants from the developed world repeated what industry has been saying for the past 10 years: It wants a pragmatic, flexible regulatory approach by governments; cost-benefit analysis should be a principal factor in evaluating pollution abatement programs; and the cost of compliance is excessively high related to the results.

The new thinking and ideas came from rep-

resentatives of developing countries. They described the sometimes terrifying environmental problems they must deal with, and all made the same plea to industrialized countries: We need your help.

These Third World industry executives emphasized that their countries do not have the technical capability to manage their environmental problems, which are dramatically different from those encountered in industrialized countries, nor do they have the know-how, trained personnel or funding resources.

For example, an Indian executive stated that 200 million out of 266 million hectares of his country's land--75 percent--"need urgent attention if they are to continue to contribute to agriculture and industry." The degradation is due to erosion, floods, waterlogging, deforestation and salinity. He said that leaders in the industrialized countries fail to understand how critical land management is in developing countries where most people still derive their livelihood from the land.

The most encouraging and innovative initiative of the conference came in response to these developing country concerns. The final conference statement to UNEP declared that industrialized countries should provide the Third World with technical assistance and expertise in managing their environmental problems. This laudable proposal was not spelled out, but if the resources and influence of the world's private sector are thrown behind it, this could be one of the more significant environmental developments in recent years.

How the ICC carries out its commitment will be watched closely by its Third World members who want more than words. As one participant put it: "What I've heard here sounds good. We look to industry in the developed countries for help. We want to know what the ICC will actually do to encourage transfer of technology that we need to deal with our awesome environmental problems."

But can the few who attended this conference make policy for the many who did not?

WHITMAN BASSOW

President

World Environment Center

THE PRIVATE SECTOR'S ROLE in the transition to sustainable societies was the subject of this year's \$100,000 Mitchell Prize essay competition. More than 300 entrants competed, and 14, the authors of 10 essay summaries, were chosen.



## Third World cities' population to double

NAIROBI--The population of cities and towns in the world's developing countries will increase by more than 100 percent in the next 20 years, putting city services of all kinds under increasing pressure--and hitting the poor hardest of all.

This was the warning of this year's conference of the UN Center for Human Settlements (HABITAT) here. Founded in 1976 when the first Habitat Conference was held in Vancouver, the organization is still handicapped by the reluctance of national and local governments to face the realities of their housing and settlement problems.

Habitat executive director Arcot Ramachandran warned again that a more urgent effort is needed to tackle problems of overcrowding, high building costs, and health and environment questions in the fast-growing cities, particularly in the Third World.

Habitat itself is limited in what it can do. Apart from being a young organization, which means it still has to acquire much of the experience it needs, it lacks the cash to expand its services. Ramachandran called for another \$10 million in extra-budgetary contributions for the coming year to finance Habitat services.

The conference received detailed reports from Habitat headquarters on urban and rural transportation, on planning needs for housing and shelter in case of natural disasters, and on a proposal to make 1987 the International Year of Shelter for the Homeless.

The transport report pointed out that inadequate or over-costly transport systems limit the ability of millions of poor people to make a decent living. Poor farmers with no access to cheap transport cannot supply food to hungry towns, and a worker who walks 15 kilometers every day to his job has little energy to increase productivity.

It is more economical to structure large cities so that employment opportunities are dispersed in medium-sized modules.

The message of the Nairobi Habitat conference is that, despite national and international effort since the 1976 Vancouver conference, standards and availability of shelter, infrastructure and services have failed to improve in line with increasing population pressure, particularly in the world's poor countries.

CHARLES HARRISON

## Budget cuts curtail British air research

NEW YORK--British research into air pollution will be severely curtailed now that the Department of the Environment has made drastic cuts in funding, the New Scientist reported.

The cuts are seen as a threat to effective participation in international negotiating on such controversial issues as acid rain and the effect of chemicals on the ozone layer.

Four areas of research are affected, says the New Scientist: chloroflourocarbons (CFCs) and the ozone layer, the effects of sulphur dioxide on crops and forests, the health effects of sulphur dioxide, and air pollution monitoring.

The UK Atomic Energy Authority's Harwell Laboratory, which got a 50 percent cut, has been working on CFCs in the atmosphere. Because of recent research by NASA and the World Meteorological Organization predicting a lesser rate of ozone depletion, Harwell apparently believes some uncertainties as to the effects have been largely eliminated, the British publication says.

Scientists are worried that the Scandinavians could interpret the cuts as confirmation of British reluctance to agree to reduce emissions further when European environment ministers meet at an acid rain conference in Sweden this June. SPECIAL TO WER

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## International pesticide control campaign launched

NEW YORK--A worldwide campaign to halt the indiscriminate sale and misuse of hazardous chemical pesticides was launched recently when a coalition of pressure groups from 16 nations met in Penang, Malaysia, to form the Pesticide Action Network (PAN).

The four-day meeting, which drew activists from Asia, Africa, Latin America, Europe, Japan, Australia and the U.S., did not advocate the abolition of chemical pesticides. It did, however, recommend the expansion of integrated pest management to replace "the unnecessary sale and use of chemical pesticides."

The conference was hosted by Sahabat Alam Malaysia (The Malaysian Friends of the Earth group) and by the International Organization of Consumers Unions, whose president, Malaysian Anwar Fazal, is the first Third Worlder to head IOCU. Fazal and IOCU have also been prime movers in the International Baby Food Action Network and Health Action International, which have had some success monitoring and lobbying the World Health Organization and manufacturers of infant formula and pharmaceuticals.

PAN estimates that a minimum of 375,000 people are poisoned by pesticides every year in the Third World--10,000 of them fatally. Accurate figures are hard to come by in developing countries, but PAN says that in Sri Lanka alone, hospital records indicate 15,000 poisonings and 1,000 deaths annually.

In their final document, PAN organizers called for:

- \* full information by all governments on exports and imports of pesticides and the imposition of controls on their movement,
- \* immediate notification by any government when it bans or restricts the use of a pesticide.

(So far, only the U.S. has such a system, but it is weak, PAN said. Recently, the U.S. Departments of State and Commerce submitted a proposal to President Reagan that would eliminate the requirements that U.S. exporters of hazardous substances, including those banned in the U.S., give foreign governments advance notification of their shipment. A Washington source told WER that the proposal would not be presented for legislative action until after

the November elections and that Congress would be unlikely to weaken the laws. Even so, the IOCU states that at least 25 percent of U.S. pesticide exports in 1980 were products that were banned, heavily restricted or never registered for use in the United States.)

PAN also called for:

- \* the development, whenever practical, of non-use or minimal use of chemical pesticides,
- \* reversal of the practice of "Green Revolution" seeds heavily dependent on chemical pesticides and fertilizers,
- \* an end to the "Circle of Poison" whereby countries that export hazardous pesticides get them back on or in the products they import.

The new pesticide action group asked the World Bank, regional banks and the UN Food and Agriculture Organization not to fund projects using pesticides that cannot safely be used under local conditions.

Dr. James A. Lee, Director of the World Bank's Environmental Affairs Office, said that "Bank policy is that all pesticides used have to be approved by us." They have to be appropriate to the crops and local conditions, he said, and it has to be proven that there is not a safer or more acceptable pesticide for the job. The Bank also builds occupational health requirements into its projects, for the farmer, ground or aerial sprayer.

However, this has greater application when the Bank is funding procurement of the pesticides; otherwise, it has little say over which pesticides should be bought and how they are used.

Clive Collins, an agricultural specialist with the World Bank, told WER he is trying to promote integrated pest management as a research program for Bank funding. He said it needs more trials for adaptation to a variety of local conditions. Research and development of biological control is not of commercial interest, he stated; therefore, he hopes to get the Bank and other organizations--such as the Ford and Rockefeller Foundations--involved in integrated pest management R&D.

Kirk P. Rodgers, who heads the Organization of American States' Program of Regional Development, said that although the OAS was not a direct lender for development projects it is "careful when formulating agricultural projects with our member governments to pay attention to the long-term environmental effects of pesticides."

He commented that the cycle of ever-

increasing applications of pesticides on cotton in Nicaragua, followed by new generations of very adaptable pests, has led that government to think about cutting out all pesticide use on cotton. Nicaragua, the largest grower of cotton in Central America, "has reached the point of diminishing economic return with the application of pesticides," he said.

Just how successful can the new Pesticides Action Network be? If past history with the baby food network is any indicator, then it may have significant impact. As PAN organizer Anwar Fazal told WER: "It's been like launching a space ship. From here on, it has to be self sufficient."

LIBBY BASSETT

## UN sponsors meeting on chemical safety

NEW YORK--Practical ways to insure chemical safety in developing countries was the topic of an international meeting scheduled for the end of June in Kiev, capital of the Ukrainian Soviet Socialist Republic.

This was the third session of the International Program on Chemical Safety (IPCS), and its primary purpose was to stress the importance of IPCS for developing countries.

Participants were expected from 19 nations--industrialized and developing--and from the World Health Organization, International Labor Organization, UN Environment Program, Food and Agriculture Organization, Organization for Economic Cooperation and Development, Council of the European Communities and others.

A WHO statement said that chemical exposure risks in developing nations, where 70 percent of the world's population lives, may be higher than in industrialized countries due to a number of factors: international trade in chemicals that may be banned or restricted in the producing country; the decision makers' unawareness of the problems of chemicals in the environment, and the consequent lack of national laws and regulations; and intentional or unintentional disregard of the problem by local industries.

WHO states that dissemination of accurate information is urgently needed. There is a need for manpower training and epidemiological studies in the developing countries, it continues, and a need also

for more active national involvement in IPCS activities.

Initially a WHO activity, IPCS now is a cooperative venture of UNEP, ILO and WHO. This session hoped to make recommendations to avoid costly duplication of national efforts in testing and assessing chemicals.

Administrative and legislative approaches to chemical safety also were to be discussed. At present, only a limited number of countries have the necessary rules and regulations to deal with the problem, as most Third World countries do not have the necessary expertise, WHO stated.

SPECIAL TO WER

## Herbicides linked to vets' brain damage

PERTH--A six-month study by a group of Australian neurologists has found a pattern of brain damage in Vietnam veterans which links their psychological problems with exposure to toxic herbicides. The study could be considered a breakthrough for veterans who have consistently argued that their high problem rate was a physical problem, not just psychological.

The study was coordinated by Dr. Malcolm Barr, a neurological researcher in private practice. The researchers, specialists from three leading Melbourne hospitals, say they are the first medical team to conduct a standard methodical, clinical and neuro-physical investigation of the problem of veterans.

They claim their breakthrough is a refinement of the monitoring process which enables abnormalities to be detected.

Fifty percent of the 150 veterans with psychological disorders assessed in the study showed brain patterns with abnormalities similar to those caused by mercury, lead or carbon monoxide poisoning.

According to Dr. Barr, the veterans' patterns were very complicated and are probably the result of interactions between different chemicals used in Vietnam.

The neurologists, who are not aligned with any organization, concluded:

\*The chemical effects are confined to the part of the brain concerned with emotion, memory, fatigue and vision.

\*The behavioral and emotional disorders -- asthenic fatigue, irritability and forms of depression including suicide -- are the same pattern as problems caused by the

well-known toxins mercury, arsenic and carbon monoxide.

The results and recommendations of the research team were submitted to the Australian Senate enquiry into pesticides and herbicides.

Dr. Barr is now asking the Victoria government's cooperation to conduct a survey of farmers and workmen who have handled 2,4,5-T over a number of years to establish whether the chemical has caused them neurological damage.

In a separate study, Dr. John Poliak of the University of Sydney reported that an overlooked danger of 2,4,5-T was a significant drop in mental effectiveness. He says that there is persuasive argument for this from laboratory work on chickens and rats. Dr. Poliak is a biochemist who is specializing in the long-term health risks of herbicide sprays. He says that there is solid evidence that the development of brain cells is specifically affected.

ANNE BLOEMEN

## More on chemicals...

AN INTERNATIONAL SYMPOSIUM on operating centralized chemical waste management facilities will be held September 20-23 in Odense, Denmark.

It is being arranged by Chemcontrol A/S and co-sponsored by Battelle's Columbus (Ohio, U.S.A.) Division, Kommunekemi A/S, the Danish Environmental Protection Agency, Kampsax International A/S, and I. Kruger A/S.

The symposium will focus on the Danish national system as a model for Europeans and Americans. All sessions will be in English, and the fee is \$750, which includes housing, meals and tours. For information: Denise Cooley, Battelle, 505 King Avenue, Columbus, Ohio 43201, U.S.A.

A REGULATION PROHIBITING more than trace amounts of benzene in consumer products has been signed by the Brazilian Ministers of Health and Work. The regulation prohibits more than 1 percent benzene content by volume, citing dangers presented by the toxic effects of the chemical derived from petroleum.

Benzene is widely used in Brazilian sprays, oils, waxes, paints and glues, which will be subject to confiscation after the 30-day period in which manufacturers have to liquidate stocks.

## Development loans to safeguard environment

PARIS--The most recent meeting of the Development Assistance Committee of the 24-member Organization for Economic Cooperation and Development issued a report calling on all members governments to make sure their loans support projects that effectively safeguard the environment.

"Some members have adopted procedures designed to assure that environmental protection is systematically considered in their development assistance activities; others have not," the minutes of the meeting in Paris said.

"The committee concluded that all members should undertake sustained efforts to assure that the operating policies and practices of their development aid programs will effectively support their commitment to safeguard the environment."

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The acid test of DAC's effectiveness will be seen next year. The Environment Committee says it will update its study on the lending habits of members to determine how they have incorporated environmental guidelines and practices into their assistance programs.

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By next April 1, member nations will be required to explain the procedures they follow in considering loans to developing nations, including technical guidelines.

The committee says it will incorporate environmental considerations into its meetings on sectoral development as well, beginning with a review of agricultural water management in September.

That takes care of government-to-government aid, but private investors will be under closer scrutiny too.

The committee said that while it would not propose governmental intervention in the development programs of private firms, it did chide some members that "make no effort to promote responsible environmental practices by private investors whose projects in developing countries are associated

with such members."

Developing nations are giving increasing attention to the threat of environmental deterioration, the committee concluded. In the future, it foresees possibilities for cooperation on a much wider range of environmental protection efforts, not only with Third World governments but with multilateral organizations, such as the UN Environment Program.

JOHN MOODY

## Environment & development...

WITH INDIA, SRI LANKA AND THE MALDIVES ratifying the environment plan for South Asia prepared by United Nations Environment Program, the organizational structure is now ready to integrate environmental management with development planning. It aims at establishing appropriate environmental quality standards and related legislation, and it emphasizes the development of renewable energy resources.

AN INSTITUTE OF HIMALAYAN ECOLOGY AND DEVELOPMENT is to be set up in India.

An inventory of ecological resources is to be undertaken in phases using existing institutions such as the Survey of India, the National Remote Sensing Agency, the Botanical and Zoological Survey of India and other ministries and agencies of the central and state governments.

Data gathered from satellites, aerial photography and field surveys will be processed and collated in selected institutions throughout the country.

In a related development, a task force set up by India's Planning Commission in June 1981 has recommended setting up a Himalayan Eco-Development Commission with the Prime Minister as chairman.

It recommended the committee set strategies, initiate surveys and studies to ensure that the plans and programs are effectively implemented.

A PLAN OF ACTION for a conservation and development program for the UK, applying principles from the World Conservation Strategy, was published recently by a coalition of British eco-groups. It covers seven priority areas, and working groups are producing studies on each for public debate prior to drawing up an integrated action program early next year. For information: Ivan Hattingh, World Wildlife Fund, 11-13 Ockford Road, Godalming, Surrey GU7 1QU, England.

## Indonesia has a new environment law

JAKARTA--Indonesia's first basic environment law, signed by President Suharto March 11, follows the basic concept that industrial development and preservation of the environment can go hand in hand, according to the Minister for Development Supervision and the Environment Emil Salim.

Salim told WER that the new law, entitled "Basic Provisions for the Management of the Living Environment" was based on a "management" concept rather than a "don't touch" concept "because we believe that we can go ahead into the industrialization phase of our development without destroying the environment."

Salim, whose ministry was established four years ago, said 60 pieces of sub-legislation were now under consideration that are intended to bring the country closer to a set of national standards on pollution, and to provide an implementation mechanism for the broad principles outlined in the 10-page law.

The new law provides for jail terms and fines for accidental and deliberate acts of pollution, and requires environmental impact studies on all major industrial projects.

Salim said the law would also mean the introduction of environment classes in schools and universities, and that existing environmental regulations promulgated over the years by various ministries would remain in effect unless contrary to the new provisions.

Though criticized by some fledgling environmental groups here as inadequate, particularly in relation to forestry, most officials involved with environmental considerations consider Act 4/82 (as it is known here) as a major step in Indonesia's efforts to protect the environment. For the first time, it provides a unified base for the country's environmental protection laws.

Officials are quick to point out that those looking for legal deterrents in the law will not find them. The name of the act reflects the government approach as one more of environmental management than legal pressure.

The state oil company (Pertamina) Environment Protection Coordinator P.L. Coutrier explained: "In some areas, ministerial guidelines and standards are laid out whereas in others, such as air pollu-

tion, national standards are not yet defined. The old regulations still stand."

He said stipulations in the new act for damage compensation and rehabilitation, for example, will be incorporated into the existing regulations of various ministries, and implementation procedures worked out. But now, Coutrier pointed out, there is a common authority--the Ministry of Environment--to weigh conflicting considerations.

Though the act could be regarded as vague by foreigners--and is indeed in some areas vague--the new awareness of environmental problems in Indonesia can perhaps best be seen not through the new law but through the fact that major new industrial project implementers (for example, the country's three new refinery projects) have all had to submit detailed and costly environmental impact analyses before construction start-up.

CATHERINE WEBB

## More on Indonesia...

THE IMPLEMENTATION OF A NEW LAW on environmental protection in Indonesia is being hampered by a shortage of experts on environmental law, according to the State Minister for Development Supervision and Environment Emil Salim.

The law was passed by the House of Representatives earlier this year, but the government has not been able to put it into effect because of the shortage of qualified people to draft related regulations. Salim said there were only four experts on environmental law in the entire country of more than 147 million people.

To help alleviate this severe shortage, he said the rectors of 28 state universities had been asked to establish environmental study centers at their schools. Salim said he had assured President Suharto that the delay in implementing the new law would not affect the country's development programs.

INDONESIA will hold an agricultural census in 1983, designed to provide comprehensive data on land use, crop patterns, irrigation conditions, manpower and farming techniques. The census, the third of its kind (the others were carried out in 1963 and 1973) will be conducted by the Central Statistics Bureau (CSB). It will provide statistical data for macro-economic planning, rural community development, problems involved with minority groups and development of natural and human resources, according to CSB director M. Abdul Majid.

## Nuke waste controls inadequate in the UK

LONDON--Britain is responsible for dumping 90 percent of all man-made radioactivity known to enter the world's oceans. It also dumps large quantities of industrial and sewage waste, 11.3 million tons in 1979. All this is being inadequately monitored and may be breaching international conventions as well as Britain's Dumping at Sea Act of 1974.

These are the findings of an investigation conducted by the Ministry of Agriculture, Fisheries and Food into its fisheries research operations at the request of Sir Derek Rayner, Prime Minister Margaret Thatcher's special advisor in Whitehall.

The Ministry has been subject to budget cuts authorized by the government as part of its campaign against public spending.

During the 1977 public inquiry leading to the expansion of nuclear reprocessing facilities at Windscale, Cumbria, the Ministry was criticized for its lack of comprehensive data on the plant's sea discharge of nuclear waste. Five extra Ministry posts were then authorized, but these have not been filled, the present investigation disclosed.

Three reasons were given for increased monitoring needs in the current situation: the scheduled expansion of the nuclear industry with one new power station every two years, the increased nuclear reprocessing capacity for British and foreign waste, and domestic and international pressure for tighter controls on the monitoring and expansion of dumping.

Because of staff shortages, the investigation estimated that Ministry inspectors sample only one percent of industrial waste discharge loads, and it proposes extra staff to increase this to a minimum of 7 percent.

### BUT NOT UNDERGROUND

In a related development, the third annual report of the Radioactive Waste Management Advisory Committee stated that disposal of radioactive wastes could get seriously out of hand unless the government acts quickly.

This warning came as the British government prepared to publish a White Paper on the future of radioactive waste disposal prior to its nuclear power plant expansion plan.

The committee's report attacked the gov-

ernment's December decision to abandon its program to find sites deep underground for the ultimate disposal of highly radioactive waste. The decision was made because of public opposition to exploration sites in various regions.

But Sir Denys Wilkinson, chairman of the committee, said abandoning the site-exploration program "inevitably puts off the day when a definite decision can be taken about a specific and permanent solution..."

Meanwhile, the New Specialist notes that storing radioactive wastes--high, medium and low-grade--at sites like the Windscale reprocessing plant in Cumbria will lead to greater exposure for workers.

BARBARA MASSAM

## North Sea & Atlantic pollution progress

COPENHAGEN--Officials for the Oslo and Paris Commissions, who oversee the twin administrations on pollution of the North Sea and Northeast Atlantic, say they are making progress in dealing with environmental problems in the area.

At the two commissions' June gathering in Copenhagen, the Oslo group reached final agreement that incineration at sea definitely comes under that body's jurisdiction, just as is the case with dumping of wastes at sea. The Oslo Commission also decided that it will meet no later than Jan. 1, 1990, to set a definite cutoff date for incineration in waters under its jurisdiction.

The Oslo Commission also announced it was tightening up the procedure granting dumping permits for small amounts of forbidden wastes that occur in combination with permitted waste materials, or where extraction could be difficult.

The Paris Commission has called for more information on input of chemical wastes originating ashore, particularly titanium oxides used in the paint industry. Titanium oxide was also on the Oslo body's agenda, and here it was announced that West Germany would begin cleaning up its titanium wastes through removal of iron salts after 1984.

There appears to be a growing opinion within the Paris Convention, led by Portugal, to take a look at the question of dumping nuclear waste at sea. Britain and

France maintain that this problem is already covered within the European Community and through other agencies, but, according to Denmark, they didn't come up with the promised evidence of this at the Copenhagen gathering. The two commissions' joint Technical Working Group has called for further study of the matter at its meeting in Oslo next February. If Britain and France can't convince the other members at that meeting that there's no regulatory hole in the matter of nuclear wastes, it's likely that a number of countries will insist that the Paris Commission start looking into nuclear waste disposal at next year's joint session of the two commissions.

(The Oslo and Paris Commissions, which have joint offices in London, function as a highly integrated body, supplementing each other's work.) ALFRED E. PEDERSON

## Germany's eco-party wins a big victory

MUNICH--West Germany's environmental party, the "Greens," joined forces with a mostly leftist "Alternative List" (GAL) to score a major victory in the recent state election in Hamburg, replacing the Free Democrats as the third force "swing" party.

They shot up from the 1978 percentage of 4.5 to obtain 7.7 percent of votes cast. In Germany, as in many other European states, a party must gain at least five percent of the vote to earn Parliamentary seats. The Free Democrats, who had ruled in Hamburg as in Bonn at the Federal level in coalition with the Social Democratic Party (SPD), obtained only 4.8 percent, creating a difficult problem for the Socialists.

Hamburg is the political base of three of West Germany's most important Social Democrats: Chancellor Helmut Schmidt, Parliamentary leader Herbert Wehner and Defense Minister Hans Apel.

The "Greens" have offered to support the SPD but have set extreme conditions--like withdrawal from all nuclear power plants--that the Socialists cannot accept.

The "Green" movement is now in five state legislatures and is likely to make it an even half-a-dozen in September's election in Hesse. Most political pundits believe the "Greens" and their allies are here to stay as a political factor.

WILLIAM G. MAHONEY

## More on Europe...

"ECLIPSE OF THE SUN? The future of renewable energy research in Britain," was recently published by Friends of the Earth in London. It points out that the government recently announced a budget reduction for renewable energy research from £14 to £11 million (\$24.8 million to \$19.5 million) at a time when the nuclear R&D budget was being increased to £221 million (\$391 million).

The report argues that renewable energy sources could eventually meet all U.K. needs and that its current 5 percent share of the total energy research budget is inadequate and compares unfavorably with other European countries. On solar energy, as an instance, some countries spend more in a year than Britain has spent on its total research program.

THE DANISH FEDERATION OF INDUSTRIES claims that Denmark ranks among the foremost exporters of environmental techniques and equipment, with a yearly export worth \$200 million. The federation lists 75 exporting firms in its environmental files, including advanced equipment for cleaning waste gases and water treatment plants. Address: Federation of Danish Industries, Environmental Section, H.C. Andersens Boulevard 18, DK-1596 Copenhagen K, Denmark.

AN AUSTRIAN FIRM is now offering a fence that extracts heat from the environment.

The European Free Trade Area (EFTA) "Bulletin" reported the fence was designed by Hutter & Schranz, a long-established producer of fences in Austria.

It said that heat is collected from the air, even at night, by a liquid--a mixture of tap water and an anti-freezing agent--that circulates in a fence made of linked, vertical steel pipes. Generally, the heat extracted from the air or soil is too low in temperature to be used directly for heating purposes so a heat pump is necessary to bring it to the correct temperature. The fence is linked by pipes 30 centimeters underground to a heat pump which can be connected with space-heating or water-heating installations in the house.

It is claimed that this system can provide all the space heating and hot water requirements of a one- or two-family house while the outdoor temperature is above zero centigrade, and at an annual energy cost that can be no more than 30 percent of that of conventional systems.



## Briefly noted...

AN ADVERTISEMENT ASKING FOR CITIZEN ACTION to save the world's endangered species was sent to publications throughout the U.S. by a group of 29 non-profit organizations. It was timed to appear as the U.S. Congress debated reauthorizing the Endangered Species Act. The campaign apparently worked, for the act passed easily.

THE FIRST U.S.-CHINA CONFERENCE on Energy, Resources and the Environment will be held in Beijing, November 7-12. It will provide scientists and engineers an opportunity to exchange views and information on future energy supplies and their demands on the environment. Sponsored by the China Society for Energy Research, the China Association for Science and Technology, U.S. Society of Engineering Science and the U.S. National Academy of Engineering, several major U.S. corporations have also been enlisted as patrons and co-sponsors. Only 200 participants will be admitted from outside China. For information: Dr. S.W. Yuan, Chairman, First U.S.-China Conference on E.R.&E., George Washington University, Washington, DC 20052, U.S.A.

AN INTERNATIONAL ENERGY CONFERENCE is being organized by the Solar Energy Society of Canada Inc. (SESCI) and the University of Regina, to be held in Regina, Saskatchewan, Canada, August 23-29. It is SESCO's 8th annual conference, and the theme is Energy Self-Reliance: Conservation, Production and Consumption. It will be followed by an international energy exposition, workshops and energy tours. For information: Chairman, ENERGEX '82, SESCO '82 Conference, University of Regina, Regina, Saskatchewan, Canada S4S 0A2.

DESPITE A SMALL DROP IN PRIMARY ENERGY DEMAND last year (under one percent), oil consumption fell 3.3 percent--on top of a decline of 4 percent in 1980, according to the BP Statistical Review of World Energy. Natural gas and nuclear energy consumption each went up 26 million tons of oil equivalent (MTOE), while water power was up 3.1 MTOE and coal up a modest 0.7 MTOE. World oil production fell even more sharply than consumption: non-Communist world production down 8 percent; total world production down 6.2 percent. All in all worldwide consumption of oil was down by almost 100 million tons.

FOOD, FUEL AND FERTILIZER from Organic Wastes is the title of a 153-page booklet produced by the U.S. National Research Council. It begins with an overview and then goes on to discuss aquaculture and food, feed, and fuels from wastes, suggests ways of returning wastes to the land, integrated systems and finally focuses on nontechnical considerations such as public health, economics, institutional needs and socioeconomic aspects. It is available from the National Academy of Sciences, Publications, 2101 Constitution Avenue, N.W., Washington, DC 20418, U.S.A.

THE FOURTH INTERNATIONAL WASTE MANAGEMENT trade fair for the recycling industry, public utilities, environmental authorities and other interested participants will be held September 20-24 in Sweden. The fair, "Elmia Avfall 82" (Elmia Waste 82), includes a conference program as well as industrial exhibitions. Program topics include handling of hazardous wastes, recovery and recycling, transport and sorting of wastes, use of waste materials for energy production and reports on the current state of research in waste utilization fields.

Deadline for booking stand areas is July 15, while conference delegates should register by September 1. Address: Elmia AB, Box 6066, S-55066 Jonkoping, Sweden. Phone: (46)-36-119060, telex 70164.

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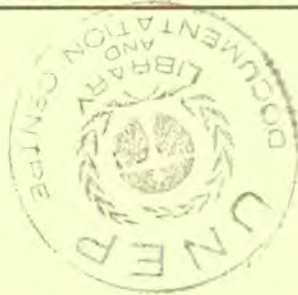


# World Environment Report

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## International pesticide control campaign launched

NEW YORK--A worldwide campaign to halt the indiscriminate sale and misuse of hazardous chemical pesticides was launched recently when a coalition of pressure groups from 16 nations met in Penang, Malaysia, to form the Pesticide Action Network (PAN).

The four-day meeting, which drew activists from Asia, Africa, Latin America, Europe, Japan, Australia and the U.S., did not advocate the abolition of chemical pesticides. It did, however, recommend the expansion of integrated pest management to replace "the unnecessary sale and use of chemical pesticides."

The conference was hosted by Sahabat Alam Malaysia (The Malaysian Friends of the Earth group) and by the International Organization of Consumers Unions, whose president, Malaysian Anwar Fazal, is the first Third Worlder to head IOCU. Fazal and IOCU have also been prime movers in the International Baby Food Action Network and Health Action International, which have had some success monitoring and lobbying the World Health Organization and manufacturers of infant formula and pharmaceuticals.

PAN estimates that a minimum of 375,000 people are poisoned by pesticides every year in the Third World--10,000 of them fatally. Accurate figures are hard to come by in developing countries, but PAN says that in Sri Lanka alone, hospital records indicate 15,000 poisonings and 1,000 deaths annually.

In their final document, PAN organizers called for:

- \* full information by all governments on exports and imports of pesticides and the imposition of controls on their movement,

- \* immediate notification by any government when it bans or restricts the use of a pesticide.

(So far, only the U.S. has such a system, but it is weak, PAN said. Recently, the U.S. Departments of State and Commerce submitted a proposal to President Reagan that would eliminate the requirements that U.S. exporters of hazardous substances, including those banned in the U.S., give foreign governments advance notification of their shipment. A Washington source told WER that the proposal would not be presented for legislative action until after

the November elections and that Congress would be unlikely to weaken the laws. Even so, the IOCU states that at least 25 percent of U.S. pesticide exports in 1980 were products that were banned, heavily restricted or never registered for use in the United States.)

PAN also called for:

- \* the development, whenever practical, of non-use or minimal use of chemical pesticides,
- \* reversal of the practice of "Green Revolution" seeds heavily dependent on chemical pesticides and fertilizers,
- \* an end to the "Circle of Poison" whereby countries that export hazardous pesticides get them back on or in the products they import.

The new pesticide action group asked the World Bank, regional banks and the UN Food and Agriculture Organization not to fund projects using pesticides that cannot safely be used under local conditions.

Dr. James A. Lee, Director of the World Bank's Environmental Affairs Office, said that "Bank policy is that all pesticides used have to be approved by us." They have to be appropriate to the crops and local conditions, he said, and it has to be proven that there is not a safer or more acceptable pesticide for the job. The Bank also builds occupational health requirements into its projects, for the farmer, ground or aerial sprayer.

However, this has greater application when the Bank is funding procurement of the pesticides; otherwise, it has little say over which pesticides should be bought and how they are used.

Clive Collins, an agricultural specialist with the World Bank, told WER he is trying to promote integrated pest management as a research program for Bank funding. He said it needs more trials for adaptation to a variety of local conditions. Research and development of biological control is not of commercial interest, he stated; therefore, he hopes to get the Bank and other organizations--such as the Ford and Rockefeller Foundations--involved in integrated pest management R&D.

Kirk P. Rodgers, who heads the Organization of American States' Program of Regional Development, said that although the OAS was not a direct lender for development projects it is "careful when formulating agricultural projects with our member governments to pay attention to the long-term environmental effects of pesticides."

He commented that the cycle of ever-

increasing applications of pesticides on cotton in Nicaragua, followed by new generations of very adaptable pests, has led that government to think about cutting out all pesticide use on cotton. Nicaragua, the largest grower of cotton in Central America, "has reached the point of diminishing economic return with the application of pesticides," he said.

Just how successful can the new Pesticides Action Network be? If past history with the baby food network is any indicator, then it may have significant impact. As PAN organizer Anwar Fazal told WER: "It's been like launching a space ship. From here on, it has to be self sufficient."

LIBBY BASSETT

## UN sponsors meeting on chemical safety

NEW YORK--Practical ways to insure chemical safety in developing countries was the topic of an international meeting scheduled for the end of June in Kiev, capital of the Ukrainian Soviet Socialist Republic.

This was the third session of the International Program on Chemical Safety (IPCS), and its primary purpose was to stress the importance of IPCS for developing countries.

Participants were expected from 19 nations--industrialized and developing--and from the World Health Organization, International Labor Organization, UN Environment Program, Food and Agriculture Organization, Organization for Economic Cooperation and Development, Council of the European Communities and others.

A WHO statement said that chemical exposure risks in developing nations, where 70 percent of the world's population lives, may be higher than in industrialized countries due to a number of factors: international trade in chemicals that may be banned or restricted in the producing country; the decision makers' unawareness of the problems of chemicals in the environment, and the consequent lack of national laws and regulations; and intentional or unintentional disregard of the problem by local industries.

WHO states that dissemination of accurate information is urgently needed. There is a need for manpower training and epidemiological studies in the developing countries, it continues, and a need also

for more active national involvement in IPCS activities.

Initially a WHO activity, IPCS now is a cooperative venture of UNEP, ILO and WHO. This session hoped to make recommendations to avoid costly duplication of national efforts in testing and assessing chemicals.

Administrative and legislative approaches to chemical safety also were to be discussed. At present, only a limited number of countries have the necessary rules and regulations to deal with the problem, as most Third World countries do not have the necessary expertise, WHO stated.

SPECIAL TO WER

## Herbicides linked to vets' brain damage

PERTH--A six-month study by a group of Australian neurologists has found a pattern of brain damage in Vietnam veterans which links their psychological problems with exposure to toxic herbicides. The study could be considered a breakthrough for veterans who have consistently argued that their high problem rate was a physical problem, not just psychological.

The study was coordinated by Dr. Malcolm Barr, a neurological researcher in private practice. The researchers, specialists from three leading Melbourne hospitals, say they are the first medical team to conduct a standard methodical, clinical and neuro-physical investigation of the problem of veterans.

They claim their breakthrough is a refinement of the monitoring process which enables abnormalities to be detected.

Fifty percent of the 150 veterans with psychological disorders assessed in the study showed brain patterns with abnormalities similar to those caused by mercury, lead or carbon monoxide poisoning.

According to Dr. Barr, the veterans' patterns were very complicated and are probably the result of interactions between different chemicals used in Vietnam.

The neurologists, who are not aligned with any organization, concluded:

\*The chemical effects are confined to the part of the brain concerned with emotion, memory, fatigue and vision.

\*The behavioral and emotional disorders -- asthenic fatigue, irritability and forms of depression including suicide -- are the same pattern as problems caused by the

well-known toxins mercury, arsenic and carbon monoxide.

The results and recommendations of the research team were submitted to the Australian Senate enquiry into pesticides and herbicides.

Dr. Barr is now asking the Victoria government's cooperation to conduct a survey of farmers and workmen who have handled 2,4,5-T over a number of years to establish whether the chemical has caused them neurological damage.

In a separate study, Dr. John Poliak of the University of Sydney reported that an overlooked danger of 2,4,5-T was a significant drop in mental effectiveness. He says that there is persuasive argument for this from laboratory work on chickens and rats. Dr. Poliak is a biochemist who is specializing in the long-term health risks of herbicide sprays. He says that there is solid evidence that the development of brain cells is specifically affected.

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In a related development, a task force set up by India's Planning Commission in June 1981 has recommended setting up a Himalayan Eco-Development Commission with the Prime Minister as chairman.

It recommended the committee set strategies, initiate surveys and studies to ensure that the plans and programs are effectively implemented.

A PLAN OF ACTION for a conservation and development program for the UK, applying principles from the World Conservation Strategy, was published recently by a coalition of British eco-groups. It covers seven priority areas, and working groups are producing studies on each for public debate prior to drawing up an integrated action program early next year. For information: Ivan Hattingh, World Wildlife Fund, 11-13 Ockford Road, Godalming, Surrey GU7 1QU, England.

## Indonesia has a new environment law

JAKARTA--Indonesia's first basic environment law, signed by President Suharto March 11, follows the basic concept that industrial development and preservation of the environment can go hand in hand, according to the Minister for Development Supervision and the Environment Emil Salim.

Salim told WER that the new law, entitled "Basic Provisions for the Management of the Living Environment" was based on a "management" concept rather than a "don't touch" concept "because we believe that we can go ahead into the industrialization phase of our development without destroying the environment."

Salim, whose ministry was established four years ago, said 60 pieces of sub-legislation were now under consideration that are intended to bring the country closer to a set of national standards on pollution, and to provide an implementation mechanism for the broad principles outlined in the 10-page law.

The new law provides for jail terms and fines for accidental and deliberate acts of pollution, and requires environmental impact studies on all major industrial projects.

Salim said the law would also mean the introduction of environment classes in schools and universities, and that existing environmental regulations promulgated over the years by various ministries would remain in effect unless contrary to the new provisions.

Though criticized by some fledgling environmental groups here as inadequate, particularly in relation to forestry, most officials involved with environmental considerations consider Act 4/82 (as it is known here) as a major step in Indonesia's efforts to protect the environment. For the first time, it provides a unified base for the country's environmental protection laws.

Officials are quick to point out that those looking for legal deterrents in the law will not find them. The name of the act reflects the government approach as one more of environmental management than legal pressure.

The state oil company (Pertamina) Environment Protection Coordinator P.L. Coutrier explained: "In some areas, ministerial guidelines and standards are laid out whereas in others, such as air pollu-

tion, national standards are not yet defined. The old regulations still stand."

He said stipulations in the new act for damage compensation and rehabilitation, for example, will be incorporated into the existing regulations of various ministries, and implementation procedures worked out. But now, Coutrier pointed out, there is a common authority--the Ministry of Environment--to weigh conflicting considerations.

Though the act could be regarded as vague by foreigners--and is indeed in some areas vague--the new awareness of environmental problems in Indonesia can perhaps best be seen not through the new law but through the fact that major new industrial project implementers (for example, the country's three new refinery projects) have all had to submit detailed and costly environmental impact analyses before construction start-up.

CATHERINE WEBB

### More on Indonesia...

THE IMPLEMENTATION OF A NEW LAW on environmental protection in Indonesia is being hampered by a shortage of experts on environmental law, according to the State Minister for Development Supervision and Environment Emil Salim.

The law was passed by the House of Representatives earlier this year, but the government has not been able to put it into effect because of the shortage of qualified people to draft related regulations. Salim said there were only four experts on environmental law in the entire country of more than 147 million people.

To help alleviate this severe shortage, he said the rectors of 28 state universities had been asked to establish environmental study centers at their schools. Salim said he had assured President Suharto that the delay in implementing the new law would not affect the country's development programs.

INDONESIA will hold an agricultural census in 1983, designed to provide comprehensive data on land use, crop patterns, irrigation conditions, manpower and farming techniques. The census, the third of its kind (the others were carried out in 1963 and 1973) will be conducted by the Central Statistics Bureau (CSB). It will provide statistical data for macro-economic planning, rural community development, problems involved with minority groups and development of natural and human resources, according to CSB director M. Abdul Majid.

## Nuke waste controls inadequate in the UK

LONDON--Britain is responsible for dumping 90 percent of all man-made radioactivity known to enter the world's oceans. It also dumps large quantities of industrial and sewage waste, 11.3 million tons in 1979. All this is being inadequately monitored and may be breaching international conventions as well as Britain's Dumping at Sea Act of 1974.

These are the findings of an investigation conducted by the Ministry of Agriculture, Fisheries and Food into its fisheries research operations at the request of Sir Derek Rayner, Prime Minister Margaret Thatcher's special advisor in Whitehall.

The Ministry has been subject to budget cuts authorized by the government as part of its campaign against public spending.

During the 1977 public inquiry leading to the expansion of nuclear reprocessing facilities at Windscale, Cumbria, the Ministry was criticized for its lack of comprehensive data on the plant's sea discharge of nuclear waste. Five extra Ministry posts were then authorized, but these have not been filled, the present investigation disclosed.

Three reasons were given for increased monitoring needs in the current situation: the scheduled expansion of the nuclear industry with one new power station every two years, the increased nuclear reprocessing capacity for British and foreign waste, and domestic and international pressure for tighter controls on the monitoring and expansion of dumping.

Because of staff shortages, the investigation estimated that Ministry inspectors sample only one percent of industrial waste discharge loads, and it proposes extra staff to increase this to a minimum of 7 percent.

### BUT NOT UNDERGROUND

In a related development, the third annual report of the Radioactive Waste Management Advisory Committee stated that disposal of radioactive wastes could get seriously out of hand unless the government acts quickly.

This warning came as the British government prepared to publish a White Paper on the future of radioactive waste disposal--prior to its nuclear power plant expansion plan.

The committee's report attacked the gov-

ernment's December decision to abandon its program to find sites deep underground for the ultimate disposal of highly radioactive waste. The decision was made because of public opposition to exploration sites in various regions.

But Sir Denys Wilkinson, chairman of the committee, said abandoning the site-exploration program "inevitably puts off the day when a definite decision can be taken about a specific and permanent solution...."

Meanwhile, the New Specialist notes that storing radioactive wastes--high, medium and low-grade--at sites like the Windscale reprocessing plant in Cumbria will lead to greater exposure for workers.

BARBARA MASSAM

## North Sea & Atlantic pollution progress

COPENHAGEN--Officials for the Oslo and Paris Commissions, who oversee the twin administrations on pollution of the North Sea and Northeast Atlantic, say they are making progress in dealing with environmental problems in the area.

At the two commissions' June gathering in Copenhagen, the Oslo group reached final agreement that incineration at sea definitely comes under that body's jurisdiction, just as is the case with dumping of wastes at sea. The Oslo Commission also decided that it will meet no later than Jan. 1, 1990, to set a definite cutoff date for incineration in waters under its jurisdiction.

The Oslo Commission also announced it was tightening up the procedure granting dumping permits for small amounts of forbidden wastes that occur in combination with permitted waste materials, or where extraction could be difficult.

The Paris Commission has called for more information on input of chemical wastes originating ashore, particularly titanium oxides used in the paint industry. Titanium oxide was also on the Oslo body's agenda, and here it was announced that West Germany would begin cleaning up its titanium wastes through removal of iron salts after 1984.

There appears to be a growing opinion within the Paris Convention, led by Portugal, to take a look at the question of dumping nuclear waste at sea. Britain and

France maintain that this problem is already covered within the European Community and through other agencies, but, according to Denmark, they didn't come up with the promised evidence of this at the Copenhagen gathering. The two commissions' joint Technical Working Group has called for further study of the matter at its meeting in Oslo next February. If Britain and France can't convince the other members at that meeting that there's no regulatory hole in the matter of nuclear wastes, it's likely that a number of countries will insist that the Paris Commission start looking into nuclear waste disposal at next year's joint session of the two commissions.

(The Oslo and Paris Commissions, which have joint offices in London, function as a highly integrated body, supplementing each other's work.)

ALFRED E. PEDERSON

## Germany's eco-party wins a big victory

MUNICH--West Germany's environmental party, the "Greens," joined forces with a mostly leftist "Alternative List" (GAL) to score a major victory in the recent state election in Hamburg, replacing the Free Democrats as the third force "swing" party.

They shot up from the 1978 percentage of 4.5 to obtain 7.7 percent of votes cast. In Germany, as in many other European states, a party must gain at least five percent of the vote to earn Parliamentary seats. The Free Democrats, who had ruled in Hamburg as in Bonn at the Federal level in coalition with the Social Democratic Party (SPD), obtained only 4.8 percent, creating a difficult problem for the Socialists.

Hamburg is the political base of three of West Germany's most important Social Democrats: Chancellor Helmut Schmidt, Parliamentary leader Herbert Wehner and Defense Minister Hans Apel.

The "Greens" have offered to support the SPD but have set extreme conditions--like withdrawal from all nuclear power plants--that the Socialists cannot accept.

The "Green" movement is now in five state legislatures and is likely to make it an even half-a-dozen in September's election in Hesse. Most political pundits believe the "Greens" and their allies are here to stay as a political factor.

WILLIAM G. MAHONEY

## More on Europe...

"ECLIPSE OF THE SUN? The future of renewable energy research in Britain," was recently published by Friends of the Earth in London. It points out that the government recently announced a budget reduction for renewable energy research from £14 to £11 million (\$24.8 million to \$19.5 million) at a time when the nuclear R&D budget was being increased to £221 million (\$391 million).

The report argues that renewable energy sources could eventually meet all U.K. needs and that its current 5 percent share of the total energy research budget is inadequate and compares unfavorably with other European countries. On solar energy, as an instance, some countries spend more in a year than Britain has spent on its total research program.

THE DANISH FEDERATION OF INDUSTRIES claims that Denmark ranks among the foremost exporters of environmental techniques and equipment, with a yearly export worth \$200 million. The federation lists 75 exporting firms in its environmental files, including advanced equipment for cleaning waste gases and water treatment plants. Address: Federation of Danish Industries, Environmental Section, H.C. Andersens Boulevard 18, DK-1596 Copenhagen K, Denmark.

AN AUSTRIAN FIRM is now offering a fence that extracts heat from the environment.

The European Free Trade Area (EFTA) "Bulletin" reported the fence was designed by Hutter & Schranz, a long-established producer of fences in Austria.

It said that heat is collected from the air, even at night, by a liquid--a mixture of tap water and an anti-freezing agent--that circulates in a fence made of linked, vertical steel pipes. Generally, the heat extracted from the air or soil is too low in temperature to be used directly for heating purposes so a heat pump is necessary to bring it to the correct temperature. The fence is linked by pipes 30 centimeters underground to a heat pump which can be connected with space-heating or water-heating installations in the house.

It is claimed that this system can provide all the space heating and hot water requirements of a one- or two-family house while the outdoor temperature is above zero centigrade, and at an annual energy cost that can be no more than 30 percent of that of conventional systems.



## Briefly noted...

AN ADVERTISEMENT ASKING FOR CITIZEN ACTION to save the world's endangered species was sent to publications throughout the U.S. by a group of 29 non-profit organizations. It was timed to appear as the U.S. Congress debated reauthorizing the Endangered Species Act. The campaign apparently worked, for the act passed easily.

THE FIRST U.S.-CHINA CONFERENCE on Energy, Resources and the Environment will be held in Beijing, November 7-12. It will provide scientists and engineers an opportunity to exchange views and information on future energy supplies and their demands on the environment. Sponsored by the China Society for Energy Research, the China Association for Science and Technology, U.S. Society of Engineering Science and the U.S. National Academy of Engineering, several major U.S. corporations have also been enlisted as patrons and co-sponsors. Only 200 participants will be admitted from outside China. For information: Dr. S.W. Yuan, Chairman, First U.S.-China Conference on E.R.&E., George Washington University, Washington, DC 20052, U.S.A.

AN INTERNATIONAL ENERGY CONFERENCE is being organized by the Solar Energy Society of Canada Inc. (SESCI) and the University of Regina, to be held in Regina, Saskatchewan, Canada, August 23-29. It is SESCO's 8th annual conference, and the theme is Energy Self-Reliance: Conservation, Production and Consumption. It will be followed by an international energy exposition, workshops and energy tours. For information: Chairman, ENERGEX '82, SESCO '82 Conference, University of Regina, Regina, Saskatchewan, Canada S4S 0A2.

DESPITE A SMALL DROP IN PRIMARY ENERGY DEMAND last year (under one percent), oil consumption fell 3.3 percent--on top of a decline of 4 percent in 1980, according to the BP Statistical Review of World Energy. Natural gas and nuclear energy consumption each went up 26 million tons of oil equivalent (MTOE), while water power was up 3.1 MTOE and coal up a modest 0.7 MTOE. World oil production fell even more sharply than consumption: non-Communist world production down 8 percent; total world production down 6.2 percent. All in all worldwide consumption of oil was down by almost 100 million tons.

FOOD, FUEL AND FERTILIZER from Organic Wastes is the title of a 153-page booklet produced by the U.S. National Research Council. It begins with an overview and then goes on to discuss aquaculture and food, feed, and fuels from wastes, suggests ways of returning wastes to the land, integrated systems and finally focuses on nontechnical considerations such as public health, economics, institutional needs and socioeconomic aspects. It is available from the National Academy of Sciences, Publications, 2101 Constitution Avenue, N.W., Washington, DC 20418, U.S.A.

THE FOURTH INTERNATIONAL WASTE MANAGEMENT trade fair for the recycling industry, public utilities, environmental authorities and other interested participants will be held September 20-24 in Sweden. The fair, "Elmia Avfall 82" (Elmia Waste 82), includes a conference program as well as industrial exhibitions. Program topics include handling of hazardous wastes, recovery and recycling, transport and sorting of wastes, use of waste materials for energy production and reports on the current state of research in waste utilization fields.

Deadline for booking stand areas is July 15, while conference delegates should register by September 1. Address: Elmia AB, Box 6066, S-55066 Jonkoping, Sweden. Phone: (46)-36-119060, telex 70164.

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## New US policy may ease laws on hazardous product exports

**WASHINGTON**—There will be virtually unfettered trade in potentially hazardous American products like pesticides, drugs and medical devices if the Reagan Administration's draft export policy becomes reality.

The document shows that the administration favors dumping the controversial export directive that former President Jimmy Carter slipped into law during his last week at the White House. It also recommends changing several laws so that exports won't draw unnecessarily widespread publicity.

Carter's plan drew the ire of the chemical and pharmaceutical industries, who said no other country advertises the potential drawbacks of its products so openly. Nor were public interest groups in the U.S. and abroad pleased with the Carter plan—for very different reasons; many felt it merely restated the status quo.

In fact, Carter simply lent consistency to existing statutes governing toxic substances, insecticides, drugs, medical devices, and radiation-emitting electronic products. Carter planned to add a new "commodity control list" of particularly nasty products to be licensed by the U.S. government before every shipment overseas.

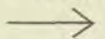
Carter also requested that the State Department keep foreign governments and importers better informed of domestic actions by the U.S. to restrict or ban products.

The Reagan administration plan, which a State Department spokesman stressed is only a preliminary working document, not only drops Carter's approach but rolls back provisions in four laws (TOSCA, the Toxic Substances Control Act; the Food, Drug and Cosmetic Act; the Federal Insecticide, Fungicide and Rodenticide Act; and the Radiation Control for Health and Safety Act).

Exporters would no longer be required to notify importers with each shipment of any restrictions placed on their product. Specific notices with each shipment, the administration claims, put U.S. exporters at a "competitive disadvantage." Instead, a one-time notice should suffice, the administration argues.

For the U.S. government's part, there is still some disagreement over what its obligations should be. Drafters at the Commerce Department argue for notification of an international body like the UN of each domestic ban or restriction as it occurs, and supplementing this one-time notice with an annual compendium of such actions.

The State Department would prefer notifying individual countries. State also wants administration help for developing



## Environment & industry

**BRAZIL'S NATIONAL CONFEDERATION OF INDUSTRY—CNI**—has registered its discontent with President Figueiredo over the new environmental law, labeling it as "unjust intervention."

The new law, which gives state governors the power to fine and close down warned polluters (*WER*, Aug. 3, p. 7) has been called unconstitutional in part by CNI which further charges that industry is now submitted to a multiplicity of federal, state and municipal laws.

As has been the fate of environmental laws in the U.S., industry charges that the law is not germane to environmental protection but invades unrelated activities of private business.

**SOUTH KOREA WAS TO BEGIN** enforcing strict controls on pollution-causing industries and automobiles starting September 25, according to the Korean Prosecutor-General's office. Representatives of polluting plants will be arrested and their business establishments suspended or closed down under provisions providing punishment of both individual operators and companies. Emphasis will be put on checking the discharge of waste water and heavy metals into tap water sources.

**THE THAI NATIONAL ENVIRONMENT BOARD** and three other agencies held a seminar this September to discuss guidelines for industrial development and the maintenance of environmental quality, industrial development and tourist promotion, the role of industrial development in developing environmental quality, and guidelines for the prevention of environmental pollution by fixing the sizes and types of industrial firms.

**RESIDENTS OF MIDTOWN BOMBAY** recently staged a "rasta-roko" or road closure to focus attention on air pollution caused by over 55 textile mills (Bombay is the center of India's cloth industry) and a privately-owned gas company which burns coal in the area.

The belt is known as a "gas chamber" and is probably the worst polluted in the country. Children in particular have been afflicted with severe chest ailments like bronchial asthma.

Textile mills were encouraged, before the oil price hikes beginning from 1973, to switch over from coal to oil as fuel, but this may soon be reversed. The single biggest polluter is the Bombay Gas Company. The carcinogenic benzopyrene level is 400 micrograms per cubic meter in Lalbaug and as much as 1,500 micrograms around the gas plant. The safe limit is just 4 mgms.

countries so they can judge what is and is not dangerous and therefore balance the dangers against the benefits.

Administration officials sound a continuing note of concern about foreign exporters who operate with a relatively free hand: "...notifications linked to specific exports may prejudicially direct attention to U.S. exports as opposed to those from other countries," the draft document states. It suggests that Reagan encourage other exporting nations to be more open about their own product restrictions. In addition, it suggests, international organizations could serve as a forum to offer developing countries training in the use of hazardous products, perhaps leading eventually to an international convention on trade in hazardous substances.

The justification that specific notices of hazards hurt U.S. exports has drawn criticism. "There is not one shred of evidence" that the U.S. is losing trade due to hazard notices, says Jacob Scherr of the Natural Resources Defense Council, which worked to get the Carter administration policy in print. The Reagan administration presents "an incomplete version of the facts...to eliminate concern about health and safety," says Scherr. Ralph Nader's Health Research Group calls the draft policy "disastrous."

A State Department spokesman said there is still much disagreement over which approach to take, or even whether the policy should revert to the way it was before Carter got involved. Agencies that oversee these laws are reluctant to have them laid bare for unlimited amendment in Congress. The spokesman said the deadline for a final policy passed on August 17th, and there is still no sign of impending agreement. CHRISTOPHER JOYCE

## Brazilian alcohol swill spill called "ecological disaster"

**RIO DE JANEIRO**—The first major spill of alcohol swill in Brazil killed an unknown number of fish and animals in the Pantanal of Mato Grosso where 7 million liters of swill were accidentally released by the R.S. S/A distillery.

Local ecologists said the spill coincided with the upstream spawning period of the Piracema species of fish. A Defense Committee of the Pantanal spokesman called the spill an "ecological disaster," and estimated that the danger period could last several months.

Cattle, otters and capybara have been found dead in the area. Conservationist Nelson Martins Costa Filho said that swill bacteria multiply rapidly in the presence of oxygen, quickly reaching a toxic stage.

Every liter of alcohol distilled produces roughly 13 liters of swill, which usually is kept in huge holding ponds to produce fertilizer.

The R.S. Distillery Ltd., at Sidrolandia, M.G., is within the lake and river region of the Aquidauana River, not far from Campo Grande. The facility is authorized to produce 120,000 liters of alcohol per day, or 16 million liters a year, which results in 234 million liters of toxic swill to be stored and recycled.

CHARLES THURSTON



## Nearly 3 million trees cut for big Brazilian dam project

**SAO PAULO**—Commercial tropical-forest stripping on a vast scale—perhaps the largest single, concentrated effort in history—is now underway in Brazil's Amazon River basin.

An international consortium is clearing 65,000 hectares of jungle to make way for a lake to be formed by the fourth-largest hydroelectric dam in the world, already under construction. Some 800 men, 150 pieces of heavy machinery and 250 motorized chainsaws are at work clearing 2.8 million trees from the jungle.

When completed, the 4-million-kva (kilovolt-ampere) Tucuruí dam on the Tocantins River, a southern tributary of the Amazon, will create a lake covering 2,160 square kilometers. The trees are being cleared to avoid reservoir water pollution and turbine congestion—as well as the loss of millions of dollars worth of tropical hardwoods. Techniques developed in stripping such a vast area and marketing the lumber internationally will prepare the Brazilians for the coming decade. In the 1990's, five more hydroelectric dams are scheduled for Amazon River tributaries.

The lumber is being cleared and marketed by a consortium of the Brazilian company Caixa de Peculio dos Militares (Capemi), a military savings and investment association, and the French bank Lazard Freres. Lazard Freres is investing \$100 million in the project and expects to earn about \$580 million by 1984 with the export of charcoal and lumber. To process the wood on site, whole lumber mills and charcoal kilns are being shipped or flown into the isolated region, expected to yield 9.5 million cubic meters of quality tropical hardwoods. Technicians of the Instituto Brasileiro de Defesa Florestal (Brazilian Institute for Forest Defense—IBDF) have identified 177 different species in the area, of which 44 have high international market value. The logging operation will help raise Brazil to the world's fourth leading exporter of lumber and wood products.

Ironically, felling the vast tropical forest is justified here on the basis of ecological as well as economic reasons. Paulo Nogueira Neto, Brazil's special secretary for environmental protection, explained that rapid decomposition of submerged leaves and branches would suck oxygen from the water, threatening the 182 species of fish from the Tocantins which will inhabit Tucuruí lake. Methane and sulphuric gases generated by the decomposition would foster the same two types of bacteria that blocked the turbine cooling systems of similar dams at Curua-Una, in Para state, and Porkopondo, in Guiana.

## In Latin America ...

**THIS YEAR BRAZIL WILL PUMP** as much as \$150 million—on a crash development basis—into irrigation projects in its interior *cerrados* (tropical savannah plains). The purpose: to boost agricultural production and export earnings so as to ease balance of payments pressures. Even more will be invested next year, said Planning Minister Antonio Delfim Neto.

The *cerrados* were chosen to benefit from the irrigation investment rather than Brazil's impoverished northeast because of readily available river water for irrigation, lime deposits to balance *cerrado* soil acidity, and relatively fertile soil easily adapted to mechanical tilling. There are more than one million hectares of *cerrados*, and less than 20 percent are developed.

One-third of the \$150 million is expected to come from the Brazilian treasury, one-third from the Interamerican Development Bank (IDB), and one-third from Japanese banks as part of an already established Brazil-Japan agreement to develop several hundred thousand hectares of *cerrados* for agriculture.

**ZOOLOGICAL RESCUE TEAMS** are working to save Brazilian wildlife endangered as the Emborcação hydroelectric facility's reservoir fills. It is on the Paranaíba River between the states of Minas and Goiás.

Cemig, which is constructing the facility, and local military police joined efforts in forming the 28-man group which is using 12 boats and a helicopter.

Water behind the dam is inundating an area of 440 square kilometers. The facility, which cost \$1 billion to build, will generate one million kilowatts of electricity.

Local ecologists claim that the company failed to prepare the reservoir site by cutting trees for fuel, which would have slowly driven out all the wildlife now being rescued. The estimated value of the wood being flooded is worth \$15 million.

**TO STUDY SPECIES AND SYSTEMS** yet unknown. 13 well-known U.S. scientists have each pledged \$1,000 to help buy a 600-hectare tract adjacent to Costa Rica's lowland rainforest preserve, Finca La Selva.

The scientists, who include such public figures as Carl Sagan and Paul Ehrlich, noted that La Selva had been designated by a U.S. scientific committee as one of four primary sites in the world for detailed studies of tropical ecosystems. The land they are urging people to help buy would serve as a "much-needed buffer" and as a site for large-scale ecosystem research.

To buy the property \$200,000 must be raised by the end of 1982.

## Forestry...

**GUJARAT MUST STOP WORK** on the Datardi dam project, just 20 kilometers from the Gir wildlife sanctuary, according to an Indian government order.

According to official sources in the forest department, about 250 hectares of virgin forest—the last natural abode of the Asiatic lion—will be submerged if the dam is built.

**A HUGE TRACT** of North Queensland (Australia) rainforest has been declared a national park.

The area has been compared with the rainforest jungles in Brazil. In all more than 14,000 hectares of rainforest north of Cairns has been set aside. The area, which is between the Daintree and Bloomfield Rivers, has been amalgamated with existing parks to form the Cape Tribulation National park. The park includes some of the few remaining areas of undisturbed coastal rainforest in the world. In terms of plant species the park is considered by biologists to be one of the richest areas in the world.

**ECOLOGICAL DISRUPTION IN CHINA'S SICHUAN** province resulting from indiscriminate tree felling on the upper reaches of the Yangtse River was one of the main causes of this year's floods, Sichuan's top party leader, Tan Qilong, said. The province has had two major floods this summer. Of 193 counties in Sichuan province, there are only 12 where the afforested area exceeds 30 percent. The afforested area for half the 53 counties in Central Sichuan is less than 3 percent. A total of 250 million tons of earth or 5 inches (13 centimeters) of topsoil from 106,000 hectares of farmland are washed into the Yangtse every year.

**THE PHILIPPINE PROGRAM** for Ecosystem Management (PROFEM) has failed to meet its objectives for the past five years, according to an evaluation report made by the Natural Resources Management Council (NRM) on PROFEM's performance. From 1976-80, the program achieved only 40.6 percent of its target, reforesting 302,577 hectares out of the targeted 745,483 hectares. Of the participating agencies, only the Bureau of Forest Development (BFD) has had an acceptable reforestation rate—79.3 percent. Other government agencies have averaged a 36.8 percent performance. The report noted that even the areas identified for priority reforestation have not been adequately planted. Of 80,400 hectares identified as top priority, only 65,546 hectares were reforested during 1976-79.

However, these problems may still arise since 150,000 hectares of forests will be flooded that are not included in the Capemi/Lazard Freres contract. The consortium will be racing against time to handle its own commitment. Time is short for other companies to enter, and the remaining trees and lumber may have to be abandoned to the rising water.

Brazilian authorities consider clearing the forest and constructing the dam essential to the economic development of the sparsely populated northern part of the country. Four million kva of power from Tucuruí will become available in 1983, to be doubled in a later phase of development. The energy will be used to electrify the 900-kilometer railway that will carry iron ore and other minerals to seaports from the huge Carajas minerals development project, just getting under way in Para state, and to power the Albras and Alcoa alumina and aluminum smelters being built near Belem. Without the Tucuruí electricity, the other projects are not viable.

### Colonization along the railway

Brazil's largest construction company, Constructora Andrade Gutierrez, will invest \$55 million over the next six years to develop an agricultural colonization project in the eastern Amazon River basin area in conjunction with the Carajas iron ore and minerals project.

This is only the first of several commercial colonization projects planned along the railway that will link Carajas with the new seaport being built at Sao Luis, Maranhao.

With its Tucuma project, Andrade Gutierrez plans to establish 3,000 colonist families on 400,000 hectares of federal land made available to it in the *município* (county) of Sao Felix do Xingu, 300 kilometers south of Belem. The company already owns a cattle *fazenda*, or plantation, nearby and has been involved in construction projects in the Amazon for nearly two decades.

For the current project, it will build a state highway, clear roads and townsites, build towns and urban residential areas, finance the sale of land to colonists and provide other infrastructure and services.

Project proposals for the first township, Carapana, were approved in May by the Grupo Executivo de Terras do Araguaia-Tocantins (Executive Group for Araguaia-Tocantins Area Land—GETAT). GETAT is supervising development surrounding the big 4-million-kva Tucuruí dam on the Tocantins River, the Carajas minerals projects and the railway right-of-way.

Carapana will be 181,300 hectares of fruit orchards, 48.7 percent of the area; cacao, rubber, guarana, black pepper, rice, corn and coffee, 42 percent; and range for livestock, 9.3 percent. Similar land with infrastructure already developed in Mato Grosso and Para states currently sells for about \$200 to \$300 per hectare.

Most of the colonists are expected to come from the ranks of small farmers in the south and southeast, squeezed out by the expansion of commercial soybean crops and now sugarcane for the Proalcool fuel alcohol distilleries. Newspapers and magazine advertisements already have appeared offering the sale of lots, and Andrade Gutierrez officials report the initial response has

been good.

The construction company—and others expected to follow—are banking on the attraction generated by huge government and private investment projects scheduled or already underway in the eastern Amazon River basin: the Tucuruí dam, Carajas, the railway and port, and the Albras and Alcoa alumina and aluminum smelters near Belem. The town of Tucuruí until 1975 had less than 2,000 inhabitants and one car, belonging to the mayor. Today, without the supervision of a colonizing operation, it has exploded to 100,000 inhabitants and is the scene of constant truck and auto traffic generated by the dam construction and forest clearcutting.

JAMES BRUCE

## Australia's '82 eco-budget runs about a dollar a person

**PERTH**—Australia's environment budget for fiscal 1982 will be held at 1981 levels—\$14.2 million (US \$16.3 million), according to a paper prepared by Ian Wilson, the Minister for Home Affairs and Environment. This is just under a dollar per person per year.

The government has allocated \$60,000 for developing a National Conservation Strategy, along the lines of the World Conservation Strategy launched in March 1979. The first stage will be a review of the situation in Australia followed by preparation of a draft for consideration at a national seminar of government and non-government organizations, to be held in Canberra at the end of the year.

A further \$40,000 will be used to start a program for notification and assessment of new and environmentally hazardous chemicals in use in Australia.

Uranium mining effects will be monitored by the Supervising Scientist for the Alligators Region, who has been given a whopping \$4.27 million budget, up \$3.6 million from last year.

The Australian National Parks and Wildlife Service gets slightly over \$6 million, and the Great Barrier Reef Marine Park Authority just over \$2 million. In line with stepped-up activities to protect the nation's coastal areas, \$97,000 will go to specific marine quality assessment projects.

Voluntary conservation organizations will receive \$350,000 in grants, and there will be additional grants of \$50,000 to World Wildlife Fund Australia and \$22,000 for membership in IUCN, the International Union for Conservation of Nature and Natural Resources. The latter two organizations, along with the UN Environment Program, prepared the World Conservation Strategy.

The Australian Biological Resources Study, which collects and computerizes information on the nation's flora and fauna, got a 32 percent increase in funds, up to \$800,000.

And finally, the Australian Environment Council Trust Fund, the forum for Ministers with environmental responsibilities, will get \$27,050. This will be used to support new research projects and to make the results of AEC-funded projects more available.

ANNE BLOEMEN

## Environmental investments . . .

**THE MEXICAN JOJOBA PLANT** is being actively introduced to Brazil.

Minas North Agroindustrial Company is planning to spend \$15 million on a project to grow jojoba near Montalvania in Minas. The company expects a \$310 million yearly return on the crop after the sixth year at today's \$25-\$30 per liter prices.

Jojoba, which grows naturally in low rainfall deserts in California and Mexico, produces a colorless and odorless waxy substance that closely resembles whale oil. Used in automatic transmissions, detergents, emulsifiers, disinfectants, synthetic resins and corrosion inhibitors, a world market for the substance has rapidly developed.

The plant yields 2,500 liters per hectare. The Minas North Agroindustrial project will cover 15,000 hectares. One costly factor in the development of the project is the \$60 per kilo seed cost for importing the species into Brazil.

**AS MUCH AS \$11 MILLION** has been spent on environmental controls at the Indian Oil Corporation (IOC) refinery at Mathura. The decision to site it just 40 kilometers from the Taj Mahal raised a major outcry a few years ago—and since then, for experts believe that its sulphur dioxide emissions may corrode the marble structure.

Another threat is the harm the refinery may cause to the Bharatpur bird sanctuary in the region, known nationwide for the thousands of species which migrate there in winter.

IOC managing director C.R. Dasgupta, who recently escorted newsmen around the refinery, said: "Special care has been taken to ensure that the pollution of the refinery is kept within acceptable limits."

**IN NIGERIA**, the World Bank is lending \$67 million for a project to improve water supply and sanitation in one of the country's fastest growing urban centers, Onitsha in south-central Anambra State. In an effort to educate the public to the danger of waterborne diseases, a pilot public health education program will be developed which includes a media campaign, school curriculum and training of health officers. The project as a whole will cost \$120.6 million, with the balance coming from Anambra State.

**CLEAN WATER** and waste disposal systems will finally reach southeastern Paraguay, where 40 percent of the country's people live, more than half below the poverty level. The World Bank, which is providing nearly \$12 million of the \$20.8 million needed, says that educational and promotional programs will be part of the package, both at the village level and for the National Service of Environmental Sanitation.

## Environmental legislation . . .

**BOTH HOUSES OF THE INDIAN PARLIAMENT** have passed the Air (Prevention and Control of Pollution) Act, 1981, which has just come into effect retrospectively from May of this year. It covers all states, unlike the water pollution law which is applicable only to states which adopt it.

The air law covers a wide range of industries—India has the tenth biggest GNP in the world but is notoriously slack about environmental protection. State governments have been empowered to declare areas subject to air pollution control and to lay down standards for emissions by industries, appliances and automobiles. Penalties extend to three months' imprisonment and a \$1,100 fine.

**TOKYO'S GOVERNMENT WILL ENFORCE** its environmental impact assessment ordinance starting October 1. The ordinance is designed to introduce a system which industrial development and construction projects must follow after their effects on the environment have been assessed. Under the Tokyo ordinance, 26 types of development and construction projects will be covered by its provisions, including the construction of roads, power plants, oil storage facilities, factories, railways, and public waterworks and sewerage systems.

**THE SULTANATE OF OMAN**, which runs along Arabia's eastern shore, is formulating environmental protection regulations because the oil-exporting nation is embarking on rapid industrial development.

The nation's Council for Conservation of the Environment and Prevention of Pollution is developing criteria—with the help of scientists from Lockheed Missiles & Space Company, Inc., of the U.S.—to protect its air, water and marine resources.

Oman is currently building a refinery, a variety of industrial plants and industrial parks, new sanitation facilities and desalination plants.

**THE INDONESIA GOVERNMENT** plans to follow Singapore's example and levy a pollution fee on every ship entering Tanjung Priok port in Jakarta. The pollution fees are expected not only to curb the worsening pollution situation in Jakarta Bay but also to add income to the city.

## India's environment agency to administer pollution laws

**BOMBAY**—India's Department of Environment—set up last November—is to take direct responsibility for monitoring and regulating pollution. It will administer the Water Pollution Control Act and legislation likely to be enacted on air pollution.

It will also assume direct charge of critical biosystems, which would be designed as biosphere reserves, and marine ecosystems to be protected against human intrusion. "This is typified by the strong and persistent demand for conserving the ecological heritage of the Silent Valley," it has announced (*WER*, Sept. 10 & Dec. 3, 1979).

Many environmental problems, the department believes, are caused by poverty, ignorance and the "side effects" of rapid economic development. It wants to set up environmental management training institutes "for research, training and case studies."

It has already prepared guidelines for the power and mining industries and intends to provide methodologies for assessing the impact of development projects.

The Indian government has also decided to set up a national eco-development board to identify critical ecosystems and prepare blueprints for ecological preservation and restoration, especially in hilly areas. Apart from the Department of Environment, whose secretary will head the new board, it will consist of representatives of various ministries, the Planning Commission and directors of several research institutes. **DARRYL D'MONTE**

## Indian nuclear accidents lead to growing safety concerns

**BOMBAY**—There is growing concern here that safeguards in India's nuclear reactors are not adequate.

On August 5, between two and three metric tons of heavy water leaked from a heavy water plant in Rajasthan in northwestern India, according to M.S.R. Sharma, officer in charge of the plant. The leak occurred during heavy fluctuations in power supply.

Sharma said there was no cause for panic since all the heavy water leaked within the reactor and had not flowed into the nearby river or contaminated the atmosphere. He denied that employees at the plant suffered radiation.

However, in March three boys and a woman—all apparently collecting scrap nearby—were killed in an explosion at the Nuclear Fuel Complex (NFC) at Hyderabad, Andhra Pradesh State. Ten other tribals were injured.

Press reports have accused NFC authorities of negligence in ensuring the safety and security of hazardous operations like dumping and treating radioactive wastes. Unskilled tribals are engaged, at \$1 a day, to load waste.

Other allegations of negligence have been levelled against the Atomic Power Station at Tarapur, north of Bombay, where the

plant "trips" frequently, exposing workers to grave risks. Questions are being raised about the death of two Tarapur personnel in recent months; one named Sengupta, who was working in the health physics department, is believed to have died of leukemia last year.

Some believe that Tarapur's troubles are largely due to allegedly defective General Electric equipment installed there.

Possibly because of these charges, India's Atomic Energy Commission recently announced it is building a waste immobilization plant at Tarapur to treat high-level radioactive waste. It will, the Commission said, contain as much radioactivity as possible and release to the environment radioactive effluents at "as low a concentration as (is) practicable." DARRYL D'MONTE

## Britain will go nuclear despite widespread criticism

**LONDON**—The British Government has reaffirmed its commitment to nuclear energy and to a program of one new nuclear power station a year for the 10 years beginning 1982.

In a White Paper replying to the report of the Select Committee on Energy (*WER*, April 27, p. 6), it says it "rejects criticism (from that report) that a potential nuclear commitment of this order is excessive."

This criticism was echoed in May by a Monopolies Commission investigation of the Central Electricity Generating Board (CEGB), which it accused of acting against the public interest in advocating an expanded nuclear capacity without having proved the need.

That there is no need for an expanded nuclear program, particularly when public safety factors and waste disposal problems remain unsolved, has been one of the main arguments of conservationists and scientists opposing the Government's plans. Like the Monopolies Commission, they challenge both the figures of future energy need and the methods of assessing them used by the CEGB, on which the Government program is based.

Since the White Paper says the Government does not intend to reopen discussion on the Canadian Candu nuclear reactor, the choice for the program now lies between the British Advanced Gas Cooled Reactor and the American Pressurized Water Reactor (PWR). A public inquiry into the safety of the PWR has been promised and its Inspector, Sir Frank Layfield QC, just appointed. The Government expressed its confidence in the PWR in the White Paper, and construction of the first British one is scheduled to begin at Sizewell in Suffolk in 1983.

In the meantime there is growing public concern and protests about the transport of nuclear waste by train and attempts to seek sites to bury it on land. Greenpeace, the environmental activist group in its new campaign ship, *Syrius*, confronted the nuclear waste carrier, *Gem*, this July on its way to dump waste some 900 kilometers off the British coast, and were hosed off. Greenpeace claims there is American evidence to show that radioactivity from coastal dumping can enter the marine food chain.

BARBARA MASSAM

## Nuclear power...

**JAPAN HAS DELAYED INDEFINITELY** its planned dumping of canisters containing low-level nuclear waste into the Pacific Ocean because of mounting resistance from Japanese fishermen, anti-nuclear groups and South Pacific islanders. The plan called for dumping an initial 300,000 canisters of Japan's mounting solidified low-level radioactive waste from 21 functional nuclear reactors at depths of 5,000 to 6,000 meters between Japan's main islands and the northern Marianas islands, Guam and Micronesia. Much of the dispute centers on whether the waste will stay in the containers, especially at those depths, whether any leaks will contaminate the food chain, whether Japan has any right to expose others to its hazardous waste and whether the waste in the next batch of canisters would be equally low in radioactivity.

**SIR ALAN COTTRELL**, a former Chief Scientific Adviser to the British Government, has questioned the effectiveness of existing safety inspection techniques for pressurized water reactors (PWR).

In his book, "How Safe is Nuclear Energy?" (published by Heinemann Educational), Sir Alan discussed an important study made last year on crack detection in the thick steel pressure vessel at the core of the PWR.

This disclosed that when cracks were 1 inch deep or less, detection was only 50 percent probable. Such cracks are exceptional, says Sir Alan, but they must be detected. Only if steps are taken to improve inspection techniques can the PWR be considered safe, he concluded.

**EAST GERMAN GUIDELINES** for the 1981-85 five-year plan reveal that original projections to double the production of its nuclear energy plants by 1985 has been quietly scaled down.

The guidelines, published in the party daily *Neues Deutschland*, project that nuclear plants would only provide from 12 to 14 percent of the country's electricity needs by 1985. Last year the communist regime had announced that its nuclear capacity would more than double by 1985. Nuclear power already provides 11 percent of electricity production.

The new guidelines indicate that the East German authorities hope to pick up the energy production slack with increased use of coal. Production of lignite coal is projected to rise from the present 160 million tons annually to more than 285 million tons by mid-decade. The guidelines also call for existing lignite-burning power stations to be expanded and made more efficient.



## Books & booklets . . .

### NEW PUBLICATIONS

The World Environment Center has produced two new publications of interest to *WER* readers. The first, **Environment: Latin America**, was written by Dick Riley with Chris Kerrebrock and is a highly readable compilation of *WER* reporting from the area. The 75-page soft-cover book includes an extensive list of environment institutions and agencies working in the region.

**Clean Air for North Americans: Acid Rain in Canadian-American Relations** is a 98-page bound report of a conference sponsored by the Canadian Studies Program of Columbia University, New York. Every facet of the U.S.-Canadian acid rain problem is analyzed and commented upon by experts from both countries. This timely book provides balanced coverage of an increasingly important policy issue for North Americans and Europeans alike.

Each book is \$10 (plus \$1.25 for overseas postage) and is available from the World Environment Center, 300 East 42nd Street, New York, NY 10017, USA.

**HOW MUCH DOES AN OIL SPILL COST?** Much more than the compensation usually paid, according to experts brought together by the OECD to review the overall costs of oil spills in recent maritime incidents.

The Organization for Economic Cooperation and Development meeting found that the costs of compensation procedures and the lack of available scientific information often prevent victims of oil pollution from seeking or obtaining compensation.

*WER* readers can obtain a report to the seminar on an Amoco Cadiz study by Professor T.A. Grigalunas from the OECD Press Division, 2 rue Andre Pascal, 75775 Paris Cedex 16, France.

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## Seabed mining still could shipwreck Law of Sea accord

**GENEVA**—The United Nations Law of the Sea Conference ended an eight-week session here August 28 with a vow to complete agreement on a global charter governing man's use of the sea at the next session in New York next March and April.

But the optimism of most delegates from the 146 participating nations was hedged, linked to the outcome of an ongoing review by the Reagan Administration of the draft treaty in its present form. Target date for completing the review is this fall.

The Conference, which had been expected to close with an agreement on a draft treaty at this session, was adjourned after the United States announced that a policy review was underway, with special emphasis on the section of the 180-page draft that deals with provisions about seabed mineral mining.

As the Conference adjourned here, chief U.S. delegate James L. Malone said that he has now detected "some flexibility" among other delegations about making "important changes" in the seabed mining provisions—an area in which American firms have been leaders in developing the necessary technology.

The present wording on the issue attempts to devise a system under which the untapped riches would be divided among the private companies and the developing nations. A new U.N. Authority would be established to regulate and participate in the potentially rewarding undersea mining.

Malone commented that a treaty with such provisions could not win U.S. Senate ratification. West Germany and some other West European nations have indicated privately that they would not agree to the present draft, unless the U.S. did so. But the developing nations, joined by the Communist states, insisted up to adjournment here that they would accept no changes in the draft.

WILLIAM G. MAHONEY

## German aid official says environment a major factor

**BONN**—All aid to developing countries must take environmental factors into consideration with the same weight as economic and industrial ones. This, said West Germany's Minister for Economic Cooperation Rainer Offergeld, was a matter of fundamental policy in his ministry.

Both the countries assisted and those providing assistance now recognize that serious damage has been caused by not including the environmental component in development projects, he said in a public statement this August.

He said the cost of environmental considerations must not be an isolated item; rather it should be an integral factor in all financial estimates and analyses. Equally important, representatives of the developing countries must be brought into consultation on environmental questions in the evaluation of any development project.

J.M. BRADLEY



# World Environment Report

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## Washington DC sewage sludge may green Haitian plantation

**PORT-AU-PRINCE**—A plan to ship Washington D.C. sewage sludge to Haiti for agricultural use on a 16,000-hectare sisal plantation is still very much alive, said a spokesman for Capital Environmental Systems of the United States.

A recent communique from Haiti's Ministry of Information and Public Relations said that Stewart Environmental Systems, Inc., of New York wanted to dump radioactive wastes on the plantation, and that the government had rejected this plan. Stewart Environmental Systems, a partner in Capital Environmental Systems, stated, "It is totally false that we wanted to bring in radioactive waste."

The plan, said the spokesman, is to ship high-quality, odorless and pathogen-free "digested" sludge originating in the U.S. capital from Virginia on Steuart Investment Company ships. Steuart Investment (a separate company from Stewart Environmental Systems) is also part of Capital Environmental Systems.

Three years ago the Blue Plains treatment facility in Washington D.C. was told to find an alternative solution to disposing of its sludge—by December of 1981.

The Capital Environmental Systems spokesman said it was far cheaper to ship Washington's treated sludge to Haiti (about \$6.50 a ton) than it was to truck it to farms in nearby states (about \$30 a ton).

The Dauphin Plantation on Haiti's northeastern coast was founded in 1927 by a group of Americans and at one time provided Haiti with 10 percent of its tax returns. In 1976 it was bought by Haitians and, said the Capital spokesman, the plantation was closed down recently because it was about \$3 million in debt. It has, he says, the capacity to be the largest sisal producer in the world.

Capital has offered to pay the owners \$7 million for the 16,000-hectare plantation and to invest a further \$8 million to rejuvenate the land, provide irrigation, schools, a hospital and clinics and to provide smallholdings for the workers. In the past, 2,500 people worked on the plantation, and there is housing on the land for them. Capital's 125-page proposal outlining its plans will be presented to Haiti's Ministers of Planning, Education, Health and Agriculture, he said.

A difficulty is that a New Jersey firm three years ago tried to convince Haiti to accept highly toxic wastes from that state.



## Waste treatment...

**ANDREA ROSSI**, the Italian industrialist who developed a plant to produce oil out of waste, has threatened to move abroad and sell his formula to foreign groups because Italian taxes are making output too costly.

"It is strange that authorities oppose, rather than encourage, someone who is trying to develop alternative and less costly energy sources," said Rossi, who claimed the government had imposed a 141 lira (11 cent) tax on each kilogram of Refluoil, the same amount paid for refined gasoline.

Rossi's plant at Caponago, near Milan, makes Refluoil out of urban and industrial waste, organic synthetics and oil by-products. The highest yield is from tires.

Experts say that Refluoil has a higher heating value than gasoline. The Caponago plant produces 10 metric tons of Refluoil from 50 tons of waste.

**WELSH TECHNICIANS** have a proposal for recycling Portugal's water, forest and industrial wastes. All wastes would be separated in small treatment stations throughout the country. Toxic wastes would be transported via rail to large stations located in the country's two major cities (Lisbon and Oporto). The Welsh experts, from Encore-Energy Conservation and Recycling Ltd., estimate that after three years of waste recycling, Portugal could stop importing scrap iron, and other wastes could be used to produce synthetic fuel. If accepted by the Portuguese government, the project would cost 10 billion escudos (\$160 million).

**SEVEN HUNDRED DELHI RESIDENTS** are now getting cooking gas piped into their homes from sullage (or household waste) water.

Until recently, 18,000 cubic meters of gas generated at one of the biggest sewage processing plants in the Indian capital was being flared to avoid air pollution. The idea of converting the sullage into gas for domestic use materialized only in the past few months. Now some villagers on the outskirts of Delhi have invested \$90 for the pipeline, gas burner and security deposit, and the gas supply is available continuously at a monthly fee of \$2 for a family of five. The flame is smokeless.

At present, the Delhi plants treat only 60 percent of the sewage generated. Expansion programs are planned and when they are operative, more gas will be available and pollution hazards diminished.

Experts estimate that if all the sullage from millions of homes were processed, 20 percent of the domestic fuel demand in the city could be met.

Because of worldwide condemnation of the scheme, which allegedly involved a million dollar "sweetener" as well as a \$100 a barrel fee for each drum dumped, approval was hastily withdrawn and Haiti passed a law banning the import of all foreign wastes.

However, Capital officials believe that their treated wastes (similar wastes are being used to grow crops on reclaimed stripmined land in Illinois) should present no problem. The Washington wastes will have to pass muster by three U.S. government agencies, the Environment Protection Agency, Food and Drug Administration and the Department of Agriculture. Maryland Environmental Services will monitor and test each shipload, the spokesman said.

Capital hopes to use the sludge on cropland and the decanted wastewater for irrigation to grow sisal and to raise cattle, chicken and turkeys.

ART CANDELL  
LIBBY BASSETT

## Europe to use sewage sludge for fertilizer on its fields

**ROME**—Sewage sludge, the mucky byproduct of waste treatment, may end up feeding millions of Europeans.

The European Community's Commission is preparing a directive to its 10 member countries to encourage the use of sludge in agriculture. An EEC directive is a framework of obligations to be respected by member states in legislation and promotional activities.

This information came out of a recent conference held here on Monitoring, Technology and Management of Solid Wastes, Sludges and Residual Materials.

Dr. Leon Klein, of the European Economic Community Commission, said the new directive will encourage using sludges in agriculture by stressing their economic value. At the same time, he said, the directive will specify precautions to ensure proper use.

West Europeans produce about 800 kilograms of sludge per person every year. Of the total amount, about 230 million cubic meters a year, only 29 percent is presently used in agriculture, he said. The balance is taken to official dumps (45 percent), discharged into the sea (19 percent) or incinerated (7 percent), which contributes to water and air pollution, said Dr. Klein.

To avoid unsafe accumulations of trace elements in the soil, EEC member countries will determine the amount of sludge that may be deposited annually per hectare, according to soil type and other local conditions.

The conference brought together experts from the European Community, the U.S. Department of Energy and Environmental Protection Agency plus several private and public American organizations, and included officials from the World Health Organization, the Organization for Economic Cooperation and Development and from the host country, Italy.

VITTORIO PESCIALLO

## Irish "national scandal"— a growing litter problem

**DUBLIN**—The old image of Ireland, green and unspoiled, has a new look, a dirty face.

There is, says the government, an "urgent and acute" problem—litter that has spread from cities, towns and villages to the open countryside. "The problem has now reached the proportions of a national scandal," Ireland's Environment Council stated.

The nation's Department of the Environment is trying to stem the tide with a color booklet, filled with pictures reminiscent of U.S. slum areas: sidewalks awash with papers and bags of trash dumped by the side of the road. The booklet has been circulated throughout the country, slipped into newspapers and posted to arrive with the morning mail, all with the intention of jolting people into cleaning up after themselves.

"As the tide of litter spreads so a precious heritage must suffer and the quality of Irish life diminish," the booklet says. The damage to the environment has more far-reaching repercussions.

Tourism is a major industry; its success depends greatly on the beauty of the countryside. "If the beauty is destroyed by litter," the Department of the Environment notes, "the foundation of a vital industry is attacked. Here in Ireland the sorry process is already well underway.

"Other forms of industrial development have suffered too. The blunt fact is that dirty surroundings do not attract the factories and projects so urgently needed to provide employment.

"In short," the government stated, "litter is bad for business. And that means bad for everyone."



There is an even more serious side to the litter problem in Ireland. Jagged tins and broken bottles, particularly on beaches, have caused increasing numbers of serious injuries. Abandoned cars, broken machinery and old household appliances, garbage dumped illegally, have all been breeding grounds for vermin.

"It's all because people cannot be bothered to dispose of litter properly," the DoE said, "so we're going after it in a major way." The Department points out that a high percentage of all litter is composed of materials like paper, glass or metal which might be recycled to aid the national economy.

The process of cleaning up after litterbugs is costing millions of pounds annually—money which is coming from taxes. The Department of the Environment hopes that its clean-up message will make financial sense to people even if the aesthetic, environmental and health arguments don't. **TOM MacSWEENEY**

## In Europe ...

**SPAIN HAS FINALLY RATIFIED** a Portuguese-Spanish border nuclear safety agreement. It was negotiated nearly two years ago and ratified immediately by the Portuguese. Safety of the border reactors during construction and operation will be in the hands of a permanent committee with Spanish and Portuguese representatives. The treaty ratification should partially satisfy Portugal's eco-groups, which have been protesting for some time about the dangers of Spain's planned centers close to the borders since there have been no impact studies on threats to the country's main rivers.

Portugal's minister of industry and energy suggested the Portuguese participate in building the nuclear power stations so as to receive some of the energy. Portugal has not yet opted for nuclear energy.

**A LAKE IN THE ITALIAN DOLOMITE MOUNTAINS** has been losing its peculiar tourist attraction—its waters turn red in September because of a unique flowering of algae.

Regional authorities claim that acid rain, trout eating the algae or some sort of pollution could have triggered the gradual disappearance of the red efflorescence.

Many residents and farmers maintain instead that lack of "pollution," of natural fertilizers, was the only cause.

"Once cows were taken to pasture near the lake and their excrement nourished the algae. Pasturing animals in the mountains is now seldom done, and the algae are no longer blooming because they miss fertilizing waste," one old cowman said. Other residents of the area supported the same thesis.

**IRELAND'S** National Board for Science and Technology is conducting a survey of all existing wind power installations in the country on behalf of the Department of Energy.

The survey will cover all owners, manufacturers, agents and other interested people who use wind power installations.

**IT'S ENGLAND'S LARGEST SPIDER** vs. a refuse dump, and the case has gone to the country's High Court. The Raft spider and other rare species of flora and fauna live in a bog outside Swansea. The city council there wants to buy less than 10 percent of the bog for a dump. But Friends of the Earth have appealed to the High Court, asking that the government-sponsored Nature Conservancy Council (NCC) fulfill its statutory duty and declare the bog a site of special scientific interest. As the High Court is in recess, the NCC will not have to reply to the writ until October 1. Meanwhile conservationists fear the Swansea City Council will try to go ahead with the purchase of the land.

## Environmental management . . .

**CHINA HAS BEGUN A NATIONWIDE** environmental protection publicity drive, the Xinhua news agency reported recently. The Chinese State Council said protection from chemical pollution must be a priority and said that new, rebuilt or expanded factories must install anti-pollution must be a priority and said that new, outdated pollution control technologies should either close down or shift to less polluting production, they said. And industrial pollution must be minimized in tourist areas, nature preserves and protected waterways.

**THAILAND IS IMPOSING** heavier penalties to tighten pollution control measures. Deputy Industry Minister Chalermbhand Srivikorn said the 1979 Factory Act specifies a maximum fine of 10,000 baht (\$488) and a one-month jail term. Amended penalties will hold officials responsible for negligence in controlling factories which contaminate the sea and rivers. The laws will also make it compulsory for all factories to appoint environmental engineers. Strict checking systems are now being mapped out on the Mekong River to make sure that factories, particularly sugar mills, do not contaminate rivers and waterways.

**THE STATE OF THE MALAYSIAN ENVIRONMENT 1980/1981** has just been produced by Sahabat Alam Malaysia (Friends of the Earth), an extremely active nongovernmental group. It covers the depletion of Malaysia's resources, pollution problems, environmental safety and health, and comes to the conclusion that greater political will is needed to evolve a comprehensive environmental approach to development. For copies write: Sahabat Alam Malaysia, 7 Jalan Cantonment, Penang, Malaysia.

**A SECRETARIAT FOR MALARIA STUDIES**, set up by the World Health Organization, will be functioning by the end of the year in Kuala Lumpur, Malaysia. The secretariat will provide training and research support for a proposed network of national malaria training centers in Asia, the Malaysian Ministry for Health said.

"When the secretariat is set up with the help of both local and foreign expertise, it is hoped that health links in the region will be strengthened," the ministry said. A spokesman said that Malaysia, like many other Asian countries, is facing a new crisis: the emergence of drug-resistant malarial parasites.

## Exclusive WER interview on Turkey's environmental status

**ISTANBUL**—Environmental problems are not taken seriously in Turkey, says Engin Ural, secretary-general of the Environment Problems Foundation of Turkey.

The reason, he says, is a general lack of awareness, even among officials responsible for dealing with these problems. However, he stated in a wide-ranging interview with *WER*, the year-old military government has begun to take an active interest in the situation, and there are hopes for a nation-wide environmental protection law.

Ural's comments on the environmental situation in Turkey follow:

**Q:** What are Turkey's major environmental problems today?

**A:** In order of importance they are air pollution, water pollution, misuse of soil, solid waste, noise, dangers of insecticides, forest fires, the destruction of green areas and erosion.

**Q:** What are the reasons for these problems?

**A:** There are three main reasons. First, rapid population growth (now 2.5 percent); second, urbanization; third, industrialization. Regarding the second and third reasons, of course no one would contest the need for industrialization and the process of urbanization in a developing country like Turkey. What is lacking is the concept of environmental protection. Unfortunately, because this concept is nonexistent in planning and development, the necessary measures are not taken in time for environmental protection.

**Q:** How do you explain this lack of environmental concept? Why is so little done in this field in Turkey?

**A:** The main reason is the lack of public awareness of environmental issues. Even officials in responsible positions do not take these problems seriously—until they see the devastating effects.

In addition to the lack of awareness at the level of government officials, policy-makers, planners and other high authorities, there is a lack of trained technical personnel. Turkey has very few specialists on environmental problems, particularly in government departments. Turkey also lacks an environmental organization. A step was taken in 1978 with the creation of a post of under-secretariat for environmental affairs in the government. But so far this office has achieved little in coping with the problems.

**Q:** What is the environmental policy of the present military government? Do you think that there are better chances for progress in this field under the present regime?

**A:** The ruling National Security Council has shown interest in environmental problems since it took power last September. It has made studies on various problems and dealt urgently with the pressing problems of air pollution in Ankara. There are other signs that the present military regime is engaged in a more dynamic policy on environment. For the first time, the present government has taken the problem of population growth seriously. The head of state, General Kenan Evren, has repeatedly called for a family of

two children.

**Q:** What is Turkey's performance in the field of environmental legislation?

**A:** Very poor. This is the greatest weakness. There is no environment protection law in Turkey. There are of course many laws generally referring to some environmental issues, such as the municipal laws, health laws, etc. But the lack of a specific environment protection law is a major cause of the problem. Although the existing laws contain some provisions to ban dumping solid waste into the sea, the sanctions and penalties are very light and the law enforcement is very weak.

**Q:** Is an environment protection law in sight?

**A:** Not at the government level yet. But our foundation is about to complete a Comparative Environment Law Survey, which will be published in September. This survey (in Turkish) will be sent to all the authorities, and we hope that it will serve as a basis for drafting a new law. The survey examines environmental legislation in several countries and contains a legislative proposal fitting Turkey's conditions. The foundation, which tries to promote public awareness through the news media, is also for the first time publishing (in September) an Environmental Quality Report on Turkey giving a complete inventory of the country's environmental problems. An English summary of that report will be available for international agencies and foreign experts.

SAM COHEN

## Sardinia cleans up one toxic mess only to face another

**OLBIA, Sardinia**—Italian authorities this summer finally closed the book on the "Klearchos case" (*WER*, March 16, p. 5), which had triggered fears of toxic chemicals polluting the fashionable coasts of this resort island.

Tons of chemicals that sank with the "Klearchos" were taken ashore by an Italian company specializing in underwater works. The firm, SSOS, was given \$9 million by the government to complete full recovery of the highly poisonous chemicals that for two years rested 73 meters under Tyrrhenian Sea level.

It took SSOS frogmen several weeks to bring up several metric tons of formic acid, hydrocarbons, sulphuric and arsenic acids and methyl bromide from the hold of the 1,354-ton Greek merchant ship. It sank 13 kilometers off the port of Olbia, following a huge fire in 1979.

Sardinian authorities now have a new worry: oil slicks leaking from a sunken Green tanker.

The "Cavo Cambanos" sank 148 kilometers off the western coast of Sardinia in April. Recently port authorities were forced to send tugboats to spread chemical solvents in the area to prevent a large slick from reaching Sardinian beaches, already covered by rich tourists.

Port officials in Cagliari warned, however, that a large amount of oil still was stored in the "Cavo Cambanos" and that serious pollution was possible at any moment.

PIERO VALSECCHI

## Toxics

**PREGNANT WOMEN IN INDIA** have been exposed to high doses of pesticides like DDT, aldrin and dieldrin, according to a study conducted by the Industrial Toxicology Research Center in Lucknow, Uttar Pradesh state.

Traces of these chemicals were found in the placentas of women who had delivered babies and in the breast milk of nursing mothers. As a consequence, newly born children suffer from a much higher intake of DDT and other pesticides than prescribed safe by the World Health Organization.

The study also reveals that plants are affected by over-exposure to these chemicals; seed germination is inhibited and seedling growth stunted.

**THE HERBICIDES**, 2,4-D and 2,4,5-T, which are suspected of causing cancer and deformities in babies, are widely used in Malaysia even though they are banned or restricted in many other countries, according to a survey made by the Consumers' Authority of Penang (CAP). CAP found out that these two weedkillers are being used by farmers in rubber and oil palm plantations, smallholdings and even rice fields. According to the Farmers Organization Authority, such products are easily available and pose a health hazard when they are sprayed on food crops. Pollution of water in irrigation canals also occurs as a result of run-off from the fields. The use of agrochemicals in Malaysia is increasing, yet very little is known about the effects of improper use of these chemicals on the countryside.

**THAI FARMERS** and many farmers in the Third World are using banned agrochemicals, said Dr. Prayoon Deemar of the office of toxic substances research in the Thai Ministry of Agriculture. Dr. Prayoon said Thailand has never banned a single toxic chemical despite its Toxic Substance Control Act. Such deadly and banned pesticides as 2,4,5-T, Paraquat or Gramaxone are still widely used in Thailand's sugarcane and rubber plantations and in other Third World countries, he said. Dr. Prayoon said a person who ingests more than 0.1 parts per million (ppm) of Paraquat will die within six hours. "At present, 2,4,5-T is banned in such developed countries as the U.S., Britain, Sweden, the Netherlands and Italy, but manufacturers continue to dump these deadly chemicals on developing countries," Dr. Prayoon said.

## Energy sources...

**WORLD PRIMARY ENERGY CONSUMPTION** (oil, natural gas, coal, water power and nuclear energy) fell last year for the first time in two decades, the British Petroleum Company said in its 1980 statistical review. It dropped from 6,933.5 million tonnes of oil equivalent to 6,882.6 mtoe. The BP Statistical Review of the World Oil Industry is available from BP North America Inc., 620 Fifth Avenue, New York, NY 10020, USA, or by calling 212/399-0600

**MALAYSIA HAS DECIDED TO DELAY** the use of nuclear power for generating electricity, at least until the year 2000. Energy, Telecommunications and Posts Minister Datuk Leo Moggie said the government had made the decision for environmental and security reasons. The minister noted the country already has alternative energy sources, such as coal and gas to supplement oil. And some officials feel that nuclear power, which requires importing massive amounts of foreign materials and technology, would put the country in a position similar to that which it has with oil producers.

**WIND POWER** could supply up to 30 percent of the electricity needed in many countries early in the next century, the Worldwatch Institute predicts in a new study, *Wind Power: A Turning Point*.

The report says that 100 manufacturers worldwide are already producing wind machines commercially, and more than a dozen countries have national wind energy development programs. However, the report comments, the catalyst for optimum development will be government commitment to a wind energy policy and the attitudes and policies of the world's electric utilities. The areas with the best potential, the report says, are Australia, the northwest coast of Africa, the American Great Plains, most of northern Europe and the Soviet Union, and the dozens of islands and coastal areas in the tropics with persistent trade winds. The report costs \$2 from Worldwatch Institute, 1776 Massachusetts Ave., Washington, DC 20036, U.S.A.

**CHINA'S COAL MINISTER**, Gao Yangwen, recently admitted that the coal mining industry in China is unsafe, and that casualties and damage over the past 32 years have been astonishing.



## UN energy conference neglects environment in action program

**NAIROBI**—The UN energy conference secretariat “virtually ignored” environmental considerations in drafting its energy action program, said a UN Environment Program official, although UNEP had strongly urged that these issues be included.

For two weeks this August over 5,000 delegates, observers, officials and journalists gathered in this city—which houses UNEP—for the first UN Conference in New and Renewable Sources of Energy.

The action program which emerged, running to 15,000 words, makes little mention of environmental matters. The conference was heavily weighted on the political side (the Prime Ministers of India, Canada, Sweden and Jamaica were there), and intensive maneuvering finally produced a compromise on finance and the machinery to implement the program of action.

Everyone agreed that the challenge facing the international community is to achieve an orderly and peaceful energy transition, to an economy based increasingly on new and renewable sources (ranging from solar, wind and wave power to biogas, fuelwood and animal power). But the new technology needed is costly, and the developing countries want the right to take over the results of research and development carried out in the more advanced countries. They also hoped for (but did not get) a new aid fund to support new energy technology.

The Nairobi program of action aims to promote concerted action in using new and renewable energy, in order to help developing countries meet their total energy needs. The World Bank estimates that an investment of \$54 billion every year is needed for energy investment in the developing countries—much of this for new and renewable sources of energy.

A parallel conference of non-government organizations (NGOs), coordinated by the Nairobi-based Environment Liaison Center and other NGO groups, tried to fill the gap by focusing on environmental issues. As David Kinyanjui of the Kenya Environment Secretariat explained, environmental aspects had been “overlooked” in most of the main conference discussions.

Norman Myers, a forestry expert and frequent contributor to WER, warned that the conference would be a failure if it did not

achieve a breakthrough on fuelwood; to establish enough forest plantations to meet present and future needs will cost \$1 billion a year from now to the end of the century. That is 65 times more than is now being spent.

But Myers suggested this would be a bargain, considering that monsoon floods in India and Pakistan last year (largely due to destruction of forests in the Himalayas) caused \$2 billion in damage in a single month.

The UN conference did discuss fuelwood, as more of the world's people rely on fuelwood for power than on anything else. But its action program referred only obliquely to the need for maintaining the ecological balance. It suggested that forest management practices be improved—or established. However, it did call for new programs to increase planting five-fold by the end of the century—a recommendation closely linked to the anti-desertification issue.

Hardly any conference papers, Myers pointed out, noted the danger of increased carbon dioxide in the atmosphere from burning fossil fuels. The resulting "greenhouse effect" could cause massive climatic dislocations by the end of the next century. More fuelwood plantations, Myers noted, would help soak up the carbon dioxide now going into the atmosphere.

The urgency of the fuelwood crisis was highlighted by a colorful demonstration organized by NGOs in Nairobi—a procession through the streets, carrying bundles of firewood and tree saplings. Among the demonstrators was Chandi Prasad Bhatt, originator of the Chipko (tree huggers) movement in northern India (WER, Aug. 17, p. 4).

UNEP Executive Director Mostafa K. Tolba, in a conference presentation, warned that energy policies must encourage conservation, must aim for a sound energy "mix," and must stimulate the development of new and renewable energy sources. Some of the more serious environmental problems now being faced result from present forms of energy production and use, he said.

Letitia Obeng, Ghanaian director of the African regional office of the UN Environmental Program (UNEP) said the pressure for more hydroelectric power was obscuring the environmental dangers. New dams mean that people are displaced from their homes, productive land is lost, water-borne diseases such as bilharzia increase, and the balance of flora and fauna can be upset. More attention must be directed to these dangers, she warned.

UNEP presented two detailed reports to the conference—The Environmental Dimension of New and Renewable Energy, and Energy for Rural Development. Land and water use, and emissions and their impact on ecosystems and human life are examples of the problems to be faced, UNEP warned—and a comprehensive assessment of environmental impacts must be part of energy planning.

CHARLES HARRISON

## Renewable energy...

**ONE OF THE WORLD'S LARGEST SOLAR** power plants recently started operation on an experimental basis at Nio in western Japan. The output of one of the two generators at the plant reached its maximum capacity of 1,000 kilowatts 15 minutes after it was set in motion. The other generator was to be operational in September with the same capacity. This is part of the Japanese government's "sunshine project" to utilize solar energy as an alternative to oil.

**CHINESE ENERGY EXPERTS** are exploiting two geothermal belts, the Tibet-Yunnan and Pacific shore belts, to provide cheap, clean energy. The idea is to replace coal in some industries, the official Xinhua News Agency said. Efforts have been made to tap hot water at depths of up to 2,000 meters in both belts. The Tibet-Yunnan belt has nearly 500 hot springs and 100 active geothermal water zones. Nearly 600 hot springs have been found in the Pacific shore belt, which stretches from the south up to the northeast along the coastal provinces. This accounts for one-fourth of China's total hot springs. Xinhua said natural hot water was already being exploited in a number of places in China, such as Beijing and Tianjin, saving coal and oil for other industries.

**THE TAMIL NADU GOVERNMENT** in south India proposes to set up a plant to generate electricity from sea water. The Ocean Thermal Energy Conversion (OTEC) off-shore plant will exploit the difference between the hot temperature of the ocean surface and the cool water at the bottom to generate steam to drive generators.

A 25-megawatt pilot plant may be set up off a port in Tirunelveli district, with collaboration of General Electric of the U.S. In India, the cost factor will be most important; it is estimated that OTEC power will cost slightly less than that generated by coal-fired thermal stations. Diesel is the most expensive and hydroelectric the cheapest.

**COLOMBIA'S STATE UTILITY**, Electrical Interconnection (ISA) has been fined \$2,000 by the wildlife service INDERENA for ecological damages caused by construction of the second stage of the San Carlos hydroelectrical complex in Antioquia. INDERENA claims that ISA destroyed the shores and course of the San Blas river, bottling sections of the waterway in swamps hazardous to the health of the local populace.



## New fuels...

**THE PHILIPPINE MINISTRY OF ENERGY** is considering a nationwide coconut-diesel oil program in its revised energy program for 1982-86. The program, similar to the government's alcogas program, is intended to displace 20 percent of the country's diesel oil consumption with refined coconut oil in various sectors. Initial testings of the coco-diesel oil on vehicles have been satisfactory, the Ministry said. The government heavily taxes gasoline use and subsidizes diesel oil prices.

**THAI SCIENTISTS HAVE BEEN EXPERIMENTING**, producing ethyl alcohol from sweet sorghum, for use as a fuel. They found it has the same quality and yield as sugarcane but a shorter growing period. Sorghum also has the advantage of lower production costs. Seeds of sweet sorghum were originally brought to Thailand from the United States under a cooperation program between the two countries. The researchers also discovered that the crop can tolerate Thai drought conditions better than sugarcane. However, the team has said that further research and studies are required by both the Agriculture and Industry Ministries before sweet sorghum can be used in alcohol production.

**THE CHINESE PETROLEUM CORP.** of Taiwan and the Taiwan Sugar Co. (TaiSugar) have discussed the feasibility of producing gasohol. Under the proposed plan, the Taiwan Machinery Manufacturing Corp. and the China Shipbuilding Corp. will set up the manufacturing plant. A TaiSugar expert says that if all the sugarcane and sweet potatoes in Taiwan were converted into gasohol it would produce the equivalent of 700,000 kiloliters of petroleum a year. Taiwan presently consumes 2 million kiloliters a year.

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## India plans to build millions of village biogas plants

**BOMBAY**—The Indian government plans to install 20,000 biogas plants this year, using "gobar," or dung, as a fuel source. At present there are 80,000 such plants in the country, 11,000 in Maharashtra alone.

H.R. Srinivasen, director of the gobar gas scheme run by the Khadi (Handloom) Village Industries Commission (KVIC), said the existing plants produce around 130 million cubic meters of gas a year—equivalent to 80 million liters of kerosene, the poor consumer's cooking fuel, valued at \$10 million.

Ultimately, the KVIC hopes to build as many as five million gas plants in India's 555,000 villages, replacing kerosene worth \$700 million. A bonus will be the conservation of organic manure—otherwise used as fuel after it is dried—worth over \$500 million.

The KVIC provides subsidies to villagers to encourage them to install the units. Tribals, who are among the poorest of India's poor since they have no land to cultivate and live off forests, receive half the total cost of a plant which sells for a little over \$200. This uses 80 kilos of dung a day, producing 105 cubic feet of gas.

There are also larger community plants which cost \$25,000 and meet the fuel needs of 100 families. A typical example is Vilalpada village, just 60 kilometers from Bombay, where 16 of the 20 households use gobar gas.

The individual who wants a plant must have a minimum number of cattle to provide dung. The KVIC has found that unless 40 kilograms of fresh dung is available daily, it will not be economical to run the smallest plant.

In Dhainiv village, close to Vilalpada, the KVIC experimental plant uses, in addition to gobar, human excreta and biowaste. But, given the prevailing notions of what is "unclean," it is unlikely that these will prove popular in the country for some years to come.

The problem in introducing more gobar gas plants is simply that the ownership of cattle is concentrated in the hands of the richer farmers, and thus those who really need a cheap form of fuel (firewood is inefficient) do not have access to it.

For instance, in the Gujarat village Pij—the heart of "Operation Flood," the world's most ambitious dairy cooperative scheme, where living standards are supposed to have increased dramatically—only one family can afford a gas plant. Also, many marginal farmers cannot buy fertilizer and therefore use whatever dung they can collect for manure.

The Indian government has decided to set up a National Biogas Development Board to coordinate, among other things, the financing of projects in the current sixth five-year national plan. It has allocated \$6 million for this purpose.

The target, by the end of the sixth plan in 1984-5, is an ambitious 400,000 biogas plants whereas the most ever put up in a year so far is 15,000. The idea is to combine this with the extension of Operation Flood, which seeks to modernize India's dairy industry by forming producers' cooperatives

DARRYL D'MONTE



# World Environment Report

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## Italy's past glories fade in 20th century pollution

**MILAN**—Two ancient Italian cities, battered by environmental problems, are struggling to save their artistic heritage for future generations.

The worst problem is in Venice, a city built on 118 little islands on a soft and spongy base. In just over 40 years it sank 20 centimeters (about eight inches) and now sits just 70 centimeters above the water line.

Venetian monuments are crumbling. Sea water has flooded St. Mark's basilica 300 times in the past two years, and acid rain is eating away the marble, turning stone into dust.

"The walls (of St. Mark's) are falling apart as if they were made of sugar. There is no time for the basilica to dry out before it is wet again," said Alberto Cosulich, who oversees preservation of the 11th century cathedral.

For years experts have been studying and proposing various plans to save what many agree is one of the most beautiful cities on earth. At the same time, economists have been computing costs of the suggested salvage operation. So far, funds made available by UNESCO and \$100,000 a year from the Italian government have lain idle.

The latest plan to save Venice was unveiled by Public Works Minister Franco Nicolazzi, who suggested building movable dikes and pumps to keep the sea water at bay. This plan, proposed previously by Italian and foreign scientists and the Pirelli rubber group, includes creating dikes made from rows of cylinders that would block entering water when tides are high, but would also rotate down into the sea allowing water to flow in and out when tides are low. The dams would, however, cause problems for motorboat and merchant ship traffic—a major difficulty since much of Venice uses water transport. An even greater difficulty is the cost of 475 billion lire (\$400 million), which is unlikely to be found during a time of severe economic crisis for the country.

In recent years, Venice's slide into the sea has been slowed by various methods, including capping artesian wells. However, the tides from the Adriatic still sweep into St. Mark's Square.



## In Europe ...

**THE WORLD CONSERVATION STRATEGY** is the subject of a high-level seminar to be held in Brussels September 24-25. Senior representatives of European Economic Community institutions will compare their environmental, developmental and common agricultural policies to recommendations of the Strategy and then formulate suggestions for Community action.

Hubert David, General Secretary of the European Environment Bureau which is sponsoring the meeting, stressed the Community concept because, he said, that is the level at which Europe's environmental policies will be formulated during the 1980s.

The World Conservation Strategy, a joint project of three international environment organizations, was launched March 1980. It was the culmination of many governments' views.

**THE EUROPEAN COMMUNITY** expects to increase its funding for the Mediterranean clean-up from token to more substantial, says *Europe 81*, the publication of the Commission of the European Communities. It says that because the UN is forced to limit its funding, the EC will step up its contribution for the \$12 million, three-year program from what it admitted was a nominal 30,000 ECU (about \$30,000) to a yet-undetermined amount for 1982.

**THE WORLD HEALTH ORGANIZATION'S** European committee will meet in East Berlin September 15-19 to review drug policies, drinking water supply and sanitation, health education and lifestyles on the Continent.

Representatives from 33 European member states will participate, along with delegates from other bodies and intergovernmental and non-governmental organizations.

A WHO spokesman said pollution from toxic chemicals is starting to threaten the quality of drinking water in the highly industrialized countries.

**CONCAWE**, the oil companies' international study group for clean air and water in Europe, has published an annual report that outlines not only its progress but quickly reviews relevant European environmental legislation during 1980. The 28 companies participating in CONCAWE represent nearly 80 percent of the oil refining capacity of Western Europe. Report No. 6/81, "1980 Annual Report," is available from CONCAWE, van Hogenhoucklaan 60, 2596 TE The Hague, Netherlands.

Milan, Italy's industrial center, has also been confronted with that sinking feeling. The city's architectural centerpiece, the gothic "Duomo" cathedral has been sinking due to excessive pumping of underground water for city use. This lowered the water-bearing stratum beneath the heavy marble structure, and the Duomo itself sank lower every year.

Recent regulations, however, have slowed the rate of pumping and, as a result, the rate of Duomo depression has slowed as well.

Other causes of concern to admirers of the 600-year-old "wedding cake" cathedral have been traffic vibrations that caused structural damage and air pollution that had gotten so bad that whole sections of the facade and its statues crumbled and fell. But, since January, the entire structure has been undergoing massive restoration and strengthening.

In the past few months, workers have removed streetcar tracks near the Duomo, and buses were ordered to use alternative routes, as city authorities completed plans for a final ban on all traffic around the monument. Private cars have been banned since last year.

Authorities also plan a traffic ban around Santa Maria delle Grazie church, which houses Leonardo da Vinci's most famous fresco, The Last Supper. Colors in the fresco have been dimmed by emissions from tourist buses, which keep their engines running, art superintendents claim. Now with the ban, the work of restoring the fresco can continue. Recently, authorities invested 500 million lire (\$400,000) to obtain sensitive equipment to monitor the state and stability of the wall, which withstood a World War II bombing raid.

In banning traffic from Duomo square and other downtown areas of artistic and historical value, Milanese authorities ignored the protests of shop owners who claimed their business would be severely affected by the no-car policy. PIERO VALSECCHI

## In Germany's Ruhr, industry grows as eco-quality improves

**BONN**—The postwar development of West Germany's Ruhr District has made it clear that heavy industry can be expanded, even in areas already highly industrialized, at the same time that environmental quality is being improved.

Starting more than a century ago, government and industry devoted every effort to getting as much coal as possible out of the ground, setting records in steel and chemical production and expanding other, related industries. No one cared about side effects. Even the most chauvinistic Germans habitually referred to the area as the "coal bucket" and to its streams as open sewers. This was accepted as the inevitable price of industrial production, essential to the existence of a modern world power.

Recent developments have shown that assumption to be wrong, even though much remains to be done in correcting the mistakes

of the past. The Ruhr District is now more important than ever to West Germany's industrial life. With a population of 5.4 million packed into an area of 4,400 square kilometers, it has a population density six times that of West Germany as a whole. From that small area comes 80 percent of the country's coal, 60 percent of its steel and more than half of its heavy machinery. In terms of dollar value, its chemical production compares favorably with the other big industry branches. Its vast coal resources make it a natural base for electric power generation; 30 large plants in the area generate one-sixth of the country's electric power.

For all this concentration of industry, over 69 percent of the District's land area is classified as "green": forests, farms, parks and pasture land. However, since 1952 the share of agricultural land has fallen from 59 to 47 percent, but the value of agricultural products has increased, thanks to improved farming practices. Most of the land lost went to new settlements or to provide more agreeable living conditions. Another big segment was required for roads and highways, and even more was taken for industrial expansion, which fed a 10-fold increase in gross domestic product.

The old designation of the District's waterways as open sewers is today as out of date as are the mining practices of Bismarck's time. The Ruhr River, the largest in the area, is now acknowledged the cleanest in Germany, even though it flows through major industrial cities and thickly settled areas between them.

Farther north the Emscher River flows through other industrial centers and along the border of major coal fields. Between the two world wars much of the Emscher valley had been turned into swampland through the collapse of old coal mines, which destroyed the entire drainage system. The stream itself was black with coal dust and poisoned by acid leachings from the mines. Today artificial banks confine the river to an orderly channel, and a series of treatment plants cleanse the water as it makes its way to the Rhine. The treatment plant at the river's mouth, the largest in Europe, discharges water clean enough to support a colony of trout, maintained at the site to both test and demonstrate the effectiveness of the treatment system.

None of these improvements has come cheap or easy, nor have all environmental abuses been corrected. Laws governing air and water pollution are among the strictest in Europe, and compliance with them has cost communities and industries billions of dollars, which both now recognize has been money well spent.

In the past 10 years 2300 hectares of waste land, mine dumps, refuse heaps and abandoned road and railway rights of way have been reclaimed and planted with more than 23 million trees. Every city in the District has at least one public park. In all, the Ruhr has over 2900 public parks, covering some 5,000 hectares.

The District's rehabilitation may not provide a pattern that is applicable to other industrialized areas around the world, for each has its own problems that must be solved according to local conditions. But at least the experience of the Ruhr District demonstrates that industry and a wholesome environment can not only develop together, but that with proper planning and direction, abuses of the past can be corrected. J.M. BRADLEY

## Environment & industry ...

**ENVIRONMENTALISTS FACE A NEVER-ENDING FIGHT** against development advocates and cannot let up in their efforts to maintain anti-pollution measures, according to Hyosuke Kujiraoka, Director General of Japan's Environmental Agency.

Kujiraoka complained that politicians, looking to industrial groups for political support, too often ignore environment issues and problems in pushing industrial development projects. Many politicians, he said, not only seek to eliminate anti-pollution measures from legislation relating to industrial projects but also have tried to get the environmental agency itself abolished.

This is particularly true during times of economic troubles, he said, citing examples of environmental standards being lowered or removed because of such pressures.

**WORLD PRODUCTION AND SALES** of two chlorofluorocarbons, CFC 11 and CFC 12, decreased again in 1980, according to the U.S. Chemical Manufacturers Association. It said world production of the two CFCs was 1,533 million pounds last year, a decrease of 18.3 percent from 1974, the peak production year. Nineteen non-Communist world producers of CFCs, believed to represent more than 95 percent of total world production, form the basis for the CMA study.

The CMA is also administering a fluorocarbon research program designed to help determine the effects CFCs have on ozone depletion in the stratosphere.

**THE BRAZILIAN STATE OIL COMPANY, Petrobras,** has devised a pioneering solar oil heating system which, it says, is used nowhere else in the world on an industrial scale. As reported in the company's July 1981 News, experimental solar heating panels on top of a 755-barrel tank are working well and adjustments have been "few and small." Usually, fuel oil arriving at the storage tanks is kept heated by steam produced by burning oil products. The solar alternative, Petrobras said, should result in "huge" economies, since the current system uses an average of 3 percent of the volume stored in each tank to keep the contents heated. The solar system experiment, at the Fortaleza asphalt plant in Ceara state, will take three months, after which it will become a permanent system.

## Ocean management...

**THAILAND'S PROCLAMATION** of a 200-mile exclusive economic zone (EEZ) has brought problems, commented the Bangkok Bank Monthly Review. Thailand will lose some 777 square kilometers of fishing area and will suffer a reduction of between 600,000 and 800,000 tons of marine catch. Since the fishing industry contributes about 3 percent of the nation's gross domestic product and is a major foreign exchange earner, measures should be taken to save the industry, the bank urged. The bank proposed that:

- The number of trawlers be reduced to secure full working capacity of each boat.
- Thai fishermen be helped to resume their operations in other countries' fishing zones through negotiations with coastal states on a fee-paying basis.
- Mariculture or coastal aquaculture be employed to raise marine fish output.
- Fresh water fishery be encouraged.

**THE EEC AND ICELAND** are at odds over fishing quotas in the North Atlantic, particularly for capelin, a fish abundant in the 1970s and much less so now. The threat of European fishermen taking excessive catches of a fish that helps sustain a vital Icelandic industry is a grave worry to officials in this near-Arctic island nation. Apart from the economic realities, the waters near Iceland are spawning grounds for capelin. There have been periodic meetings of Icelandic fisheries officials and their European Economic Community counterparts. Although the talks have clarified the issues, no real progress is evident.

**DRASTIC GOVERNMENT CUTBACKS** and meager funding for fishery research have been blamed for the failure to find a solution to the fish-killing epidemic of red tide which has swept the Irish south coast.

Ireland's chief marine science vessel, the Lough Beltra, has been out of action for 18 months because of a series of breakdowns and a shortage of funds to re-equip it.

Some fisheries scientists have said they have so little money to spend that they are unable to buy even basic equipment. Particularly, no solution has been found to protect commercial fish farms during the outbreak of red tide, which has occurred a number of times in recent years on the south coast.

## No Law of Sea accord in sight due to US review

**GENEVA**—The United Nations Conference on the Law of the Sea re-opened here at the beginning of August for a five-week run with none of the 163 national delegations optimistic about an agreement on the major obstacle: how to authorize, supervise and distribute the profits from deep seabed mining of minerals such as copper, nickel and manganese.

Most of the 2,000 delegation members blame the delay on Washington, where the Reagan Administration is still reviewing 440 draft treaty articles written so far. The conference began in late 1973 and thus far has met for 81 weeks in 10 sessions.

The basic concept of the Law of the Sea Conference is that the oceans are "the common heritage of mankind." This has aroused the suspicion of American and other Western mining corporations that currently possess the know-how and the money to conduct deep seabed mining.

Last year the Conference adopted an agenda saying that the 1981 round of talks should be the last, with a final signing session to take place in Caracas in 1982. But a realistic assessment of most delegations here was that the timetable is no longer valid and, barring a surprise compromise, no agreement is in sight.

Opposition to the existing treaty text comes from concerned groups in the United States which object to one or another of the provisions on mining of the deep seabed, limitations on national jurisdiction, fishing rights, navigation rights, marine research and environmental standards. In most areas—with the exception of deepsea mining—compromise is in sight.

As the conference opened, there were four substantive issues yet unresolved: rules for delimiting overlapping maritime boundaries for the "exclusive economic zone" and the continental shelf; participation in the agreement by national liberation movements (such as the PLO); arrangement for the machinery to monitor and administer seabed activities; and the protection of investments that the countries with seabed mining technology want before the convention becomes law.

WILLIAM G. MAHONEY

## India drafting master plan to protect its coast and seas

**NEW DELHI**—The Indian government, with help from UN and bilateral agencies, is preparing a master plan to curb pollution and protect the seas surrounding this subcontinent.

The national plan, which will cover related eco-systems as well, will be the basis for drafting legislation for the control of marine pollution. This legislation is considered necessary since India, which has a 6,100-kilometer-long coastline, is also making plans for exploitation of its exclusive economic zone.

The four-year master plan project, which began this August, is being undertaken by the Environmental Coordinating Unit of ESCAP

(the UN's Economic and Social Commission for Asia and the Pacific), with possible assistance from the Swedish International Development Authority and other donor agencies/governments, including the United Nations Environment Program (UNEP), Japan, Netherlands and Australia.

There is in India, as elsewhere, a conflict between preservation of the environment and its exploitation to serve developmental needs. There are large mineral resources along the coast both around the Bay of Bengal and the Arabian Sea awaiting exploration.

Experimental work is being done here on the application of remote sensing techniques to determine the depths of coastal waters, the effects of river flood waters on tidal inlet channels and the problems caused by coastal erosion and accretion. Aircraft in the National Remote Sensing Agency near Hyderabad are fitted with multi-spectral scanners and other sensors. These facilities make detailed studies of the marine environment possible.

R. MURALI MANOHAR

## Thai doctors fear refugees may start bilharzia epidemic

**BANGKOK**—The discovery of an outbreak of schistosomiasis among Kampuchean refugees has led to fears of an epidemic among Thais, particularly in the northeastern region of the country where the refugee camps are located. Schistosomiasis, or bilharzia, is a debilitating parasitic water-borne disease that affects 200 million people worldwide, the UN has estimated.

Doctors and other officials of the Thai Community Based Emergency Relief Services and the Population and Community Development Association fear the disease may spread to Thailand. However, the UN High Commission for Refugees health coordinator in Thailand, Dr. A.G. Rangaraj, has played down the epidemic fear, claiming that refugee officials were exaggerating the danger. He said cases of the disease could be easily and quickly isolated and treated at the refugee centers and that there was no great danger to Thais living in the area. These two opposing views on the situation were voiced recently at a conference at Mahidol (medical) University in Bangkok, chaired by Dr. Rangaraj.

So far, 17 Kampuchean refugees, out of a sample of 5,085, have been found suffering from this potentially fatal disease which is carried by a species of river snail, *Lithoglyphopsis aperta*. The first three cases were discovered late last year. Although there have been no reports of any Thais suffering from schistosomiasis, local officials warned that UNHCR was taking their concern too lightly and that insufficient research had been done in the area to rule out the possibility of contagion among Thais living near the camps. They urged that a detailed investigation be carried out, especially in view of the government's plans to expand the construction of dams and irrigation systems in the northeast. If these waterways become hosts to the schistosomiasis-carrying snail, they warned, the disease could be transmitted rapidly among the local population, with grave health and economic consequences.

TONY OLIVER

## In Asia ...

**PESTS WILL DESTROY** an estimated 200 million tons of foodgrain during the 1981-82 crop year, the UN Economic and Social Commission for Asia and the Pacific (ESCAP) said recently. Such an amount could feed Southeast Asia for seven years, ESCAP said. The commission thinks the primary cause of the problem is misuse of pesticides by farmers. Therefore, ESCAP will hold two workshops, in Indonesia and Pakistan, later this year to educate farmers.

**SOUTH KOREA'S ANNUAL CONSUMPTION** of agricultural chemicals has increased about 40 percent in the last five years, according to a recent survey. The nationwide findings also show that there are over 400 different kinds of agro-chemicals—at least in brand names—on sale there. The heavy reliance on agro-chemicals and easy access to these potentially poisonous agents have caused not only grossly acidified farmland and consequently decreased soil fertility but resulted in a sharp rise in poisoning incidents as well. These accounts require immediate remedies, said the report.

**TESTS CONDUCTED IN TAIWAN** have found that pesticides break down much faster in the tropics and subtropics than in temperate zones. The tests were conducted on five pesticides—DDT, dieldrin, fonofos, phorate and cabofuran—over a four-year period by the Asian Vegetable Research and Development Center in Taiwan. Each compound was applied in the field twice a year at rates approximately double those used by vegetable farmers in Taiwan, and four were found to break down rapidly during the hot, humid summer months. The exception was dieldrin. They found the half-life of DDT was less than six months whereas it is years in more temperate zones. They conclude in a paper prepared for the American Chemical Society meeting held in New York this August that: "The environmental health hazard standards established for pesticides in the United States and Europe do not seem to be relevant to the tropics."

**PHILIPPINE COCONUT PLANTERS** are finding ways to use coconut byproducts to increase their income. In a proposal submitted to the Development Bank of the Philippines, coconut farmers have asked financial assistance to manufacture wood glue and hard plastic from powdered coconut shell.

It can also be transformed into a fire-resistant board like Formica, they claimed, while the husk may be processed into coco filter to desalinate sea water.

## Environmental management...

IUCN, the International Union for Conservation of Nature and Natural Resources, has formed a new division to provide developing nations with conservation guidance. Called Conservation for Development, the new project is being funded by a special grant from the Ford Foundation. Mike Cockerell, an engineer and specialist in environmental impact studies, heads the division.

**\$100,000 IN PRIZES** will be awarded in the Mitchell Prize competition to people demonstrating "exceptional creativity in the design and description of workable strategies to achieve sustainable societies." The prize was established by George and Cynthia Mitchell of Houston, Texas, to encourage the development of such strategies. The 1982 essay competition will focus exclusively on the roles of the private business sector, and deadline for the initial summary is December 1. For information, write: The Woodlands Conference, Box 9663, Arlington, VA 22209, U.S.A.

**UTTAR PRADESH** has come up with an utterly new idea. The Chief Minister of the Indian mountain state plans to raise an ecological army of men retired from service in the Indian defense forces.

He told the State Soldiers Board that he wanted to use the retirees for afforestation and water management.

**THE INDIAN GOVERNMENT** will soon set up a national eco-development board to identify critical eco-systems and prepare blueprints for ecological preservation and restoration, especially in hilly areas. According to an official announcement made August 6 after a meeting of the federal cabinet, the board will be headed by the Secretary of the Department of Environment, S. Z. Qasim.

**THE STATE GOVERNMENT** of West Bengal in India has begun a \$40-million social forestry project with World Bank assistance.

In adjoining Punjab, the state government has set up the Punjab Commercial Afforestation Corporation to grow trees for commercial purposes, primarily for paper mills. And in the Himalayan state of Kashmir, the state government has set up a committee to protect forests and wildlife.

**THE PHILIPPINE MINISTRY OF EDUCATION** and Culture (MEC) is sending two million students and teachers out in a nationwide tree-planting and beautification program. Seedlings, branches, saplings and seeds are being provided, and MEC officials said students would be given academic credit for participating.



## 12 million Amazon hectares saved in the past four years

**NEW YORK**—In the past four years, 12 million hectares of national parks and protected areas have been established in Amazonia. This is an area bigger than Austria or about the same size as the state of Mississippi.

Much has been written about the threats confronting tropical forests and the likely results of deforestation, says a report in the current issue of *Parks*, a journal published by the International Union for Conservation of Nature & Natural Resources (IUCN). But, its authors point out, the incremental advances made by individual countries in preserving forest segments have gone virtually unnoticed.

"While we do not wish to encourage unfounded optimism about the status of these tropical forests, we believe that due recognition for recent achievements may go further towards influencing continuation of such positive efforts than persistent denunciations," they said. Authors of the report, "Conservation Progress in Amazonia: A Structural Review," are Gary B. Wetterberg, Ghillian T. Prance and Thomas E. Lovejoy.

As *WER* environmental analyst Norman Myers stated in his U.S. National Academy of Sciences study on tropical forests, Amazonia is, biologically, the richest place on earth. And it is the largest continuous block of tropical forest in the world.

However, as Ghillian Prance found, the rain forest is not a uniform mass of vegetation. He says there are seven different phytogeographic regions, meaning that the geographical distribution of plants varies greatly over these seven areas. His 1975 study served as the basis for a 1976 Amazon Analysis, produced cooperatively by Brazilian agencies and the UN Food and Agriculture Organization. At that time the analysis recommended 48 conservation units (parks and protected areas) in the Amazon, with at least six in each phytogeographic region. In 1976 there were only 18 such units; today there are 41, although the authors admit many gaps still exist.

As to the future, the authors, all Amazon experts, believe that future analyses should go beyond those of the tropical forests to include grassland savannas, aquatic grasslands, mangroves and so forth. They say that radar surveys in both Brazil and Colombia, and studies of other Amazon countries, are reaching the point where a more accurate assessment will soon be possible so that this "other 10 percent of the Amazon" can be included in protected areas.

LIBBY BASSETT

## Costa Ricans angrily debate massive loss of new parkland

**SAN JOSE**—Just two months after the official inauguration of Costa Rica's newest national park, Palo Verde, the government issued a decree eliminating most of the park's area. This action set off violent debates among government officials and scientists, in the press, in communities near the park and led to at least one official resignation.

Unusually heavy artillery in this public outcry was the appearance of Daniel Oduber, President Rodrigo Carazo's predecessor, on television and in the press. A bitter political opponent of the present government, he flayed the administration for its decision.

The crux of the problem is the difficulty the National Parks Service has with expropriating private lands situated within national parks. Protected areas in Costa Rica have been created either by a law voted by the Legislative Assembly or by Presidential decree. The former method has greater weight and takes precedence over the latter. However, the parks service apparently never requested that decreed parks be confirmed by the Legislative Assembly. Thus, there are a good number of older parks and park expansions which exist under the now-questionable aegis of a Presidential decree.

The present crisis was precipitated by a declaration from the Attorney General's office (in response to an official request by the parks service lawyer) that the government must reimburse land owners within decreed parks or else the property restrictions would have no legal effect. When there weren't sufficient funds available to pay for the entire 9,466 hectares of the new Palo Verde National Park, the President and Minister of Agriculture had to eliminate 7,000 hectares from condemnation proceedings.

Later, the President, reacting to public hue and cry, instructed the Minister of Agriculture to budget for fiscal 1982 the necessary funds to purchase the 7,000 hectares. This will leave the headache to his successor, for Carazo's term of office ends May 8, 1982.

All this furor led to calls for help from the international organizations that have been involved in conservation efforts here over the years. This move, some felt, unfairly tarnished the country's international image as a conservation leader in Central America.

The Costa Rican public generally is unaware that the Carazo administration, even while plagued by major economic crises, has created more protected areas than all previous administrations combined.

Although the issues have been clouded by presidential campaign politicking, the legal issues probably will be resolved quickly in the courts of this small, democratic nation.

Conservationists worry that unfavorable publicity on the international level will harm Costa Rica's image. However, on the positive side, never has so much attention been given by the public and news media to a conservation issue. Future governments here are sure to be sensitive to potentially explosive conservation issues in coming years.

MURRAY SILBERMAN

## Books & booklets . . .

**THE WORLD ENVIRONMENTAL DIRECTORY** is a weighty tome of 1,000-plus pages with a hefty price tag, \$67.50, but it is probably an essential tool for anyone in an environment-related business. There are listings of more than 40,000 companies, agencies, institutions, organizations and people in this field. Part 1, which is slightly more than half the book, covers the United States: product manufacturers, professional services, government and independent agencies, eco-attorneys, universities, libraries, corporate environmental officials, periodicals, and various organizations. Part 2 covers international organizations and public and private institutions and agencies around the world. It is available from Business Publishers, Inc., P.O. BOX 1067, Blair Station, Silver Spring, MD 20910, U.S.A.

**THE COMPETITION FOR GROUNDWATER** supplies is increasing at a rapid rate, say the authors of a new book, *International Groundwater Law*. With increasing populations making greater demands on a non-expanding base, international and transboundary groundwater issues become increasingly important. Albert E. Utton and Ludwik A. Teclaff have compiled a book that deals with the international legal issues. They contend it comprises most of the thinking available in the English language on the subject. *International Groundwater Law*, 490 pp., is available from Oceana Publications, Dobbs Ferry, NY 10522, USA, for \$50.

**"TRANSFRONTIER POLLUTION and the Role of States"** has been published by the Organization for Economic Cooperation and Development (OECD). It analyzes principles adopted by member countries for solving transboundary pollution problems. Action taken by nations in river basin management is briefly described and possible improvements suggested. It is available from OECD Press Division, 2 rue Andre Pascal, 75775 Paris Cedex 16, France, or from sales agents in member states.

**ACID RAIN and International Law** is the title of a new book by Irene H. van Lier and published by Sijthoff & Noordhoff of the Netherlands. The 220-page interdisciplinary study deals with the scientific, economic and legal aspects of acid rain. It costs \$20 and can be ordered from Bunsel Environmental Consultants, P.O. Box 160, Station M, Toronto, Ontario, Canada M6S 4T3.



## Water wise . . .

**BRITISH PETROLEUM** scientists say they have developed a new way to mop up oil spills. They turn the oil into rubber by pouring on artificial liquid rubber, waiting until it hardens and then scooping it up.

The oilslick is transformed into a hard, dry mat thus lessening chances of contaminating the marine environment. This treatment, they say, will mostly be used on oil that is about to pollute a shoreline.

Lab work is being carried out at BP's Sunbury Research Centre near London. Small-scale experiments have proved that all kinds of oilslicks can be rubber matted, and outdoor trials will be held over the next year. However, BP says this system will not replace existing methods of tackling oil pollution.

**SINGAPORE HAS TIGHTENED** its oil pollution penalties. Ships which pollute Singapore waters will no longer be able to protect themselves by limiting their liability to a mere S\$203 (US\$94.50) a ton of ship tonnage. Under the shipping (oil pollution) bill adopted recently, oil tankers will have to provide compensation to persons suffering from oil pollution damage as a result of an accident to the ship. The bill also requires all ships carrying more than 2,000 tons of oil as cargo to have insurance or other financial security equal to the total of the owner's liability for one incident. The enforcement of the law will be part of the Port of Singapore Authority's daily activities.

**A NEW PROGRAM IS UNDERWAY** to curb and control oil pollution in Malaysian waters. Two workboats have been bought, specially equipped for clearing oil spills, and the marine police are buying 12 fast patrol boats to police the heavily used Straits of Malacca. New regulations are being drawn up for the control of discharges from ocean vessels and land-based sources.

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## Strict marine pollution laws are successful in Israel

**JERUSALEM**—Israel's southernmost city, Eilat, leads a difficult double life. It is an industrial and crude oil port, and Israel's major recreation resort—for skin divers. Eilat's reef, which harbors more than 100 different species of coral, 800 varieties of fish and scores of other sea creatures, is constantly threatened by oil spills and industrial wastes.

The country's campaign against marine pollution has so far focused mainly on oil. Israel's Environmental Protection Service (IEPS) is responsible for enforcing marine laws and regulations covering not only the Gulf at Eilat—the northernmost point of the Red Sea—but also the entire Mediterranean coastline. The Prevention of Seawater Pollution by Oil Ordinance forbids the discharge of oil or oily waters into Israeli territorial and inland waters, and makes any spill a criminal offense. Israel has oil pollution inspectors with police authority, maximum fines and, if there's a violation, can collect clean-up expenses over and beyond fines imposed by the courts. A Marine Pollution Prevention Fund was established to provide the money necessary for prevention, clean-up and equipment. The money comes from polluters, the Treasury, donations and a new antipollution tax imposed on all vessels calling at Israeli ports and on shore installations handling oil.

Because the coral reefs of Eilat are so sensitive, the use of chemical dispersants is forbidden. For protection, planners have designed a permanent boom for the area that will cost \$1 million.

A related problem is tarballs on Israeli beaches. The IEPS recently began an experimental clean-up on four beaches to find out the best methods of tar collection and its costs. The goal is to find efficient cleaning methods along the Mediterranean coast that runs 200 kilometers from Lebanon to the southern coastal plains, and in the Eilat area.

Although instances of oil pollution have significantly decreased as a result of these stringent laws and vigilance on the part of inspectors, new marine protection legislation is still needed to cover hazardous materials other than oil, such as land-based runoff. Israel has signed the Mediterranean Regional Plan's protocol against pollution from land-based sources, and it has taken steps on its own: stream quality inspection, monitoring and enforcement, control of bathing beaches, closing polluting sea outfalls, establishing sewage and industrial wastewater treatment facilities, and restricting the setup of potentially polluting installations.

But these improvements still require the backing of stringent national legislation before Israel's program for marine pollution protection becomes truly effective. SHOSHANA GABBAY



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31 AUG 1981

## Whaling Commission faces ethics vs. profits problems

**LONDON**—Conservationists were jubilant at a ban on sperm whaling passed during the last hours of the 1981 meeting of the International Whaling Commission (IWC) held in Brighton, England, from 20-25 July. "The biggest breakthrough in saving whales I have known," said Sir Peter Scott, chairman of the World Wildlife Fund.

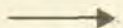
Although it was considered a step in the right direction, it may not end up a victory. The ban does not yet apply to the north Pacific where this year Japan will take an approved catch of 890 sperm whales. The IWC's scientific committee will decide next March whether stocks in the north Pacific are too low to continue hunting the sperm whale. If this is proved, the Japanese will probably accept the ban. But if stocks are plentiful, Japan may pull out of the IWC if it votes a ban—which it may since most of its 34 members now are non-whaling, pro-conservation nations. If Japan, the major whaling nation, withdraws, the whole system could collapse. The IWC can also do little to enforce regulations broken by whaling nations.

The thirty-third annual meeting of the IWC opened to the now-traditional anti-whaling rallies, demonstrations and marches. This year Giant Flo, the 34-meter inflatable whale, was floated down the River Thames in full view of the House of Parliament, attempted a channel crossing, and her smaller sister billowed through the streets of London and Brighton.

Friends of the Earth, Greenpeace and other groups collaborated once again to produce ECO, a daily newsheet on the Brighton proceedings. ECO makes a list of the somewhat shifting membership of the IWC, giving each a plus or minus conservationist rating according to their voting pattern. Topping the plus side are France and The Netherlands, closely followed by New Zealand, Seychelles, Australia, U.S.A. and the United Kingdom. On the other side Japan, U.S.S.R., Chile, Spain, Korea and Iceland lead the field.



The other victory celebrated by conservationists was a decision to phase out, starting next year, use of the "cold harpoon," which



## Ocean management . . .

**THE SEYCHELLES**, the island republic whose territorial waters cover a big area of the Indian Ocean, has passed one of the world's toughest laws against marine pollution.

Anyone discharging oil in Seychelles territorial waters can be jailed for five years and fined up to \$34,000. The law makes it an offense to discharge oil elsewhere in the Indian Ocean if the discharge pollutes Seychelles waters.

President Albert Rene has also signed a law making the Seychelles territorial waters a sanctuary for marine mammals—whales, dolphins, porpoises and dugongs. The law makes it an offense to kill or harass any marine mammal, with penalties of five years in jail and a fine of up to \$34,000 for guilty offenders. Seychelles courts can also confiscate the boats and equipment of anyone killing or harassing marine mammals.

**THE MARINE ENVIRONMENT** in Asia is facing increasingly serious problems so, in August, the UN Economic and Social Commission for Asia and the Pacific (ESCAP) is launching a four-year project to tackle them.

It is the outcome of national seminars organized by ESCAP in 13 developing countries during 1979-80, and it coincides with the recent start-up of a regional seas action plan around ASEAN-member coastlines. ASEAN, the Association of Southeast Asian Nations, is comprised of Indonesia, Malaysia, the Philippines, Singapore and Thailand.

**CDCP MINING CORPORATION** (a subsidiary of the Construction and Development Corporation of the Philippines) plans to dump thousands of tons of copper mining waste into the Sulu Sea. The mine, on the Pagatban River in Negros Oriental, produces 15,000 tons of ore a day. Up to now, the waste tailings have been dumped into impounding ponds, which overflow during the rainy season. The ponds' capacity will be reached in seven or eight years so the company plans to build a pipeline to carry wastes one kilometer out to sea.

Chemist Stephen Lowrie, head of Silliman University's research team, said findings show toxic levels in the Sulu Sea already high enough to kill plankton and fish. He said a similar pipeline, operated by the Atlas Consolidated Mining and Development Corporation on Cebu Island, had destroyed all life in a wide area around its outflow. The Sulu Sea is one of the most important tuna fishing and spawning grounds in the Philippines.

kills much more slowly than the explosive one. This may affect future quotas of minke whales, caught by Russia and Japan in the Antarctic. This year the quota was increased from 7,072 to 8,102, as their numbers are increasing. However, as they are killed by cold harpoon because of their small size, future quotas should be drastically reduced.

There were hopes that fin whale quotas would be reduced more than they were. With all the political fencing that is part of IWC meetings, this may have been some compensation for Iceland, who will suffer from the sperm whale ban.

A hopeful note for the future was the Technical Committee's agreement to study a proposal for the establishment of a whale sanctuary in the western north Atlantic, stretching from the equator to southern Greenland.

In the meantime, delegates have revealed their increasing sensitivity to public pressure across the world from anti-whalers. Australia, for example, has banned whaling on ethical grounds, while other nations, such as the U.S.A., ban the import of all whale products. Next year the European Economic Community (EEC) will also have an import ban.

BARBARA MASSAM

## Resorts are being developed in proposed reef park area

**PERTH**—Six years after the Australian government passed the Great Barrier Reef Marine Park Act, only 2.4 percent of the reef has been declared a marine park (*WER*, May 25, p. 5)

The reason is that the federal government and the state of Queensland continue to differ about jurisdiction and responsibilities for the next section of reef park, off Cairns. Queensland insists the federal government pay compensation demanded by holders of mining leases in the reef area. It also refuses to accept the outer Barrier Reef as the western boundary of marine park zones, as specified under the 1975 Act.

While the two governments try to thrash out their differences, tourist resort promoters are spending millions of dollars to develop the area, untouched by any of the restrictions envisaged in the legislation to prevent destruction of the reef.

The Lands Administration Commission can demand an environmental impact study before a resort lease is granted, but it is unusual for it to do so. The Queensland Conservation Council claims that an adequate study has never been completed for any resort lease, nor has one been made available for public comment.

Meanwhile, seven resort developments for the marine park area are in the works. Decisions on selling the reef to various developers, including overseas interests, may be made by the state's Tourism and Travel Corp. long before the state and Australian governments agree on bureaucratic controls.

ANNE BLOEMEN

## Twin threats to the genetic reservoirs of our foodstocks

**NAIROBI**—Many observers see two threats to the genetic materials that underpin all our major food crops: "development wipe-out" of gene stocks and germplasm, and a move by giant seed corporations to control new varieties of modern crops.

For at least 10 years, experts have warned that the genetic resources that maintain crop productivity and disease resistance are being lost through man's destruction of wildland environments. Simultaneously, the decline of these gene pools has accelerated, under the impact of growing populations and the spread of the Green Revolution with its uniform genotypes.

This recent trend is critical for temperate-zone nations as most of the genetic reservoirs in question are located in the tropics, with all that implies for North-South relations. The United States, for example, is heavily dependent on foreign supplies of genetic material, especially for its booming new agro-industry of bio-engineering. So critical is this U.S. dependence on Third World sources of germplasm that it has been described by ex-Secretary of State Edmund Muskie as a "new dimension of national security."

At the same time, the giant seed corporations are pushing legislative measures to establish "patent rights" to "improved varieties" of plants. If the seed corporations succeed in obtaining patent rights, they will be able to dominate modern crop agriculture.

In the United States, for example, three-quarters of all hybrid corn seeds are supplied by less than 10 companies. A similar story applies to wheat, rice, oats and other major crops. If the present pattern of patenting persists, a handful of corporations will gain control of the world's remaining gene material for all major crops, giving them exceptional economic and political power.

Legislation to this end is underway in the United States, Canada, Australia and the European Common Market. While the new legislation is resisted (at least in principle) by the UN Food and Agriculture Organization, it is being promoted by a new agency linked with the UN system, the Union for Protection of New Varieties of Plants, based in Geneva.

In the last few years, hundreds of seed companies have been taken over by major multinationals, primarily pharmaceutical and oil corporations. The parent corporation requires its subsidiaries to breed crop varieties that will flourish using the pesticides and synthetic fertilizers it manufactures. Hence the incentive for large corporations to press for patenting legislation.

As an indication of the way things are turning out, Kenya is now having to buy tropical legume seeds developed in Australia from materials derived from indigenous Kenyan varieties. Since there is no record of payment by Australia for the original material, and the seed corporations in Australia have patented rights to their new varieties, Kenya is having to pay heavily for the seeds. Similarly Libya, having exported forage seeds to Australia in the early 1970s, is now having to re-import improved seeds, in form only slightly altered from the original, at commercial prices.

NORMAN MYERS

## Conservation . . .

**CREATING ALLIES IN DIVERSITY** is what the U.S. State Department is trying to do. It is planning a U.S. Strategy Conference on Biological Diversity, to be held Nov. 16-18 in Washington, D.C. The goal is to have business, government and conservationists come up with a common agenda for U.S. policy in five areas: plant genetic resources, terrestrial, aquatic and microbial resources, and to develop an overall view on the management of eco-systems for diversity. "The objective," said organizer Anne Wickham, "is to consider steps the U.S. might pursue domestically and through international channels over the next three to five years to maintain earth's biological diversity in a manner that serves a range of economic, social and ecological interests over the long term." For further information, call Anne Wickham, U.S. State Department, (202) 632-6527.

**MORE TIGER RESERVES** will be set up in India, and existing ones developed, at a cost of \$12.5 million.

Prime Minister Indira Gandhi suggested that "Project Tiger" become the focal point of all wildlife conservation measures. She observed that poaching had become an international menace from which India is no exception. She suggested that strict vigilance should be maintained to protect wildlife.

The committee has approved a comprehensive research scheme for "Project Tiger" involving regular monitoring of changes in habitat condition, prey populations, habitat utilization patterns, sociology and ecology of tigers and other major wildlife species in the reserves.

**HALF A MILLION HECTARES**, or 5 percent of peninsular Malaysia, are to be set aside as reserves, sanctuaries and national parks under the nation's most recent master plan. One protected area will be the Batu Caves, for which the Malaysian Friends of the Earth group lobbied long and hard. The proposals must be approved by the state governments.

**IN HUNGARY**, protected areas cover 4.5 percent of the nation; 430,000 hectares of parks, preserves and nature conservation areas.

Preparations are underway for extending protection to 342 plant species. Animals are in a better position: all bird species except 19 are under protection and so are 96 additional vertebrates, including bats, frogs, lizards and Hungary's largest beast of prey, the wild cat.

## Forestry...

**FIRES, MOSTLY ARSON**, destroyed or badly damaged 46,219 hectares of wood and brushwood last year in Italy, a 10.2 percent increase from a year earlier, the Italian statistics bureau reported.

Authorities conceded that only a minor share of the damage was due to natural causes. Fires are often triggered by careless tourists and by arsonists acting on order of building speculators.

**PRESERVATION OF THE MARIKINA** watershed has been the concern of the Philippine government since the beginning of this century. The watershed is important in that it supplies water to residents of Manila, and for flood control of the capital. Since only about 20 percent of the 5,600-hectare watershed is under forest cover, three projects to reforest the area are currently underway—a dam project and two seedling bank projects. Pollution is another problem, caused by farmers dumping garbage into the Boso-Boso river. In its report on the watershed situation, the Bureau of Forest Development said if the problems are not immediately remedied, the area will become “useless as a source of water for the city of Manila and its suburbs.”

**NOT LONG AFTER HER HUSBAND** took over as President of the Philippines, Mrs. Imelda Marcos launched a campaign to establish a “Green Belt” in Manila to improve the environment and beautify the city.

Now, the First Lady, who is also Governor of Metro Manila, has a new campaign, to establish what she calls an “Oxygen Belt” around the city of about eight million people. She introduced a program to plant 64 million trees, surrounding the city with “forest farms.” She said the program would be carried out jointly by the government and private sector, with civic and social clubs playing a significant role.

“With Metro Manila leading the way, the program will become national in scope once the barangays (villages) get involved too,” she predicted.

**SUNDERLAL BAHUGUNA**, the 54-year-old bearded leader of the tree-saving “Chipko movement,” in July completed a walk of 374 kilometers along the Himalayan heights to warn the hill people of the danger of cutting trees.

He then submitted a report to Prime Minister Gandhi suggesting a ban on felling green trees for commercial purposes, making soil and water conservation the basis of forestry management, and declaring all hill forests as protected places.



## No love lost between leaders of India's tree huggers

**NEW DELHI**—The Chipko movement—a novel way of protecting trees from being felled by hugging them—has come a long way since 1973, when it started in a tiny Himalayan village in Uttar Pradesh, India's most populous state. Today, the movement is known internationally as a remarkable example of “self-help” at the grassroots level and is personified by the charismatic leadership of Sunderlal Bahuguna.

However, it was not Bahuguna but another Gandhian activist named Chandi Prasad Bhatt who initiated the Chipko (literally “embrace”) movement. When agents of a sporting goods manufacturer from the plains below came to fell about 2,450 trees in Uttarkand, Bhatt hit on the idea of getting local residents, who depended on the trees for fuel and fodder, to hug them and thus save them from the contractor's axes. “We dare the contractors to let their axes fall on our backs,” Bhatt told the assembled villagers.

The tactic worked and the news spread like wildfire. From village to village, activists led by Bhatt successfully boycotted every attempt to fell trees which the Uttar Pradesh government had licensed for cutting. Sunderlal Bahuguna, a revered 55-year-old leader, joined the movement and termed it an extension of the Gandhian way of non-violence and peaceful resistance. Even women and children clasped tree trunks when contractors arrived while the menfolk were away at work.

Eventually, the state government had to bow to the villagers' demands. In 1976, it banned all tree-cutting in the catchment area of the Alaknanda river for 10 years. The reason was not only to protect the villagers' livelihood but to preserve the fragile ecology of this Himalayan tract. As Bahuguna has written in several articles, the hills have been threatened by senseless deforestation, leading to severe landslides and widespread erosion. The entire Indo-Gangetic plain, which is India's granary, needs a steady supply of water from the Himalayan ranges; now there is a recurring pattern of droughts in summer and floods during the monsoon.

However, Bhatt and Bahuguna parted company, and the Chipko movement split. Bahuguna and his followers, based in Tehri district, believe that the state forest department is the number one enemy. Bhatt, in Chamoli district, takes the view that a certain amount of felling is inevitable and that it is important to have a say in deciding which forests are to be felled, and how much.

What is more, Bhatt has been encouraging the growth of forest-

based industries in the remote hill areas because this is one way of enabling locals to exploit their own natural resources, rather than handing them over to plainsmen.

Bahuguna criticizes these activities and, being a purist, prefers to devote his energy to lobbying the government—even appealing to international agencies—to save the Himalayas from ruin. He recently completed, in true Gandhian style, a march from Kashmir, in the northwestern tip of the country, to Kohima, in the east, to draw attention to his campaign.

As Krishnamurthy Gupta, of the Himalaya Seva Sangh (Service Union) in Delhi, told *WER*: "It's a pity that the Chipko movement has been divided on these lines. Today, despite the difference in strategies, more trees are being felled in areas under Bahuguna's followers than under Bhatt's." DARRYL D'MONTE

## Thailand's environment faces a grim future, experts say

**BANGKOK**—A leading group of Thai and foreign environmentalists warn that Thailand's once rich environment faces a grim future, and that its unique tropical rain forests are already beyond redemption in some areas.

These views, given during a recent panel discussion at the Foreign Correspondents Club of Thailand, were based on observations of "wholesale denuding of the country's forests, the continuing massacre of wildlife" and "alarming marine pollution and destruction in the upper Gulf of Thailand" which, if continued, would leave it a "dead sea" in the not-too-distant future.

The United Nations advisor to the Thai Government, Jeffrey Sayer, stated that it was already too late to conserve the rain forests of Thailand's southern peninsula—an area once considered the world's richest terrestrial habitat. A hectare of forest land in Europe or North America might typically contain 10 tree species, he said, whereas a hectare of southern Thailand's forests included 200 or more species. Sayer noted that in 1953, 57 percent of the country was covered by forest, compared with just 25 percent in 1978—and much of that was already degraded.

The upper Gulf of Thailand is the most polluted body of water in Southeast Asia, said Dr. A.H. Viswanatha Sarma, senior advisor to the National Environment Board. This, he said, was due to the dumping of untreated waste from central Thailand, especially Bangkok, and off-flows from eroded areas. He also deplored the eradication of many mangrove swamp areas, which are vital to the breeding cycle of numerous forms of marine and shore life, and the wholesale killing of marine life, from dolphins and turtles to coral, along the Thai coasts.

A faint note of hope was sounded by Dr. Kasem Snidvongs, director-general of the National Environment Board, when he explained that the concept of "development without destruction" was being imbedded in Thailand's long-range economic plans. And, Dr. Kasem said, environmental education, which was introduced three years ago in schools and colleges around the country, was receiving continuous support. TONY OLIVER

## Environmental management...

**INDIA'S PLANNING COMMISSION** set up a 15-member task force under the chairmanship of Dr. M.S. Swaminathan, to study the eco-development of the Himalayan region. The task force has to decide on a proposal to set up a center for Himalayan Regional Studies with the participation of the universities of the region and make suitable recommendations by August this year.

According to the terms of reference, the task force also has to identify ecological and environmental problems requiring study on a priority basis and then draw up guidelines for universities engaged in such studies. It will recommend national and state arrangements necessary for plan formulation, funding, legislative enforcement and the administrative machinery needed to overcome the ecological and environmental problems of the region.

**AUSTRALIA'S CSIRO** (Commonwealth Scientific and Industrial Research Organization) will intensify its research into energy conservation, industrial microbiology, water purification, wood based industry and manufacturing technology.

In announcing this, the Minister for Science and Technology, David Thomson, said that CSIRO had taken into account views expressed by the International Energy Agency following its examination of Australia's energy research.

The principal changes, in addition to energy research, are to provide for a concentration of effort related to ecological studies, including water, soils and plants, and the details are to be announced in the next few months.

**AN INTERNATIONAL CONFERENCE** on Coal-Fired Power Plants and the Aquatic Environment will be held in Copenhagen, Denmark, August 16-18 of next year. P. Schjodtz Hansen, Chairman of the Danish Organizing Committee, has announced a call for papers. The Secretariat address is: Dis Congress Service, Linde Alle 48, DK-2720 Vanlose, Copenhagen, Denmark.

**AN INTERNATIONAL SYMPOSIUM** on Hazardous Waste will be held in Washington, D.C., October 5-9, 1981. Organized by the U.S. Environmental Protection Agency for the NATO Committee on the Challenges of Modern Society, registration is limited to 450. The results of an eight-year international study on the status and technology of hazardous waste disposal will be presented at the five-day meeting. For information contact: Pamela Nash, EPA Symposium, 1025 Vermont Ave., N.W., Suite 608, Washington, D.C. 20005, U.S.A., or call (202) 783-5400.

## Renewable energy...

**NORTH AMERICA'S FIRST** operating tidal-power project is being built in Nova Scotia's Bay of Fundy, which has the highest tides in the world—upwards of 17 meters every 12 hours. The first turbine should turn by June 15, 1983, in a pilot project that could lead to a six-kilometer dam built across Cobequid Bay, near Truro. Eventually it may contain 100 turbines. Just the pilot turbine alone, which will cost \$46 million, will replace 80,000 barrels of imported oil a year. If the pilot works, the full-scale tidal project could start as early as 1985. It will take about 10 years to build and cost up to \$10 billion.

**IBALOI TRIBESMEN** have been resisting construction of a large geothermal plant in the Barrio Daclan region of the Philippines. The project was started last year by the Ministry of Energy at the hot sulphur springs in the area. It aims to generate at least 10 megawatts of electricity. Three exploratory wells have already been drilled and a giant drilling rig has been installed at one site to deepen the well to 8,000 feet. The reaction by the Ibaloi is due, at least in part, to the fact that Ibaloi families displaced from Ambuklao some 25 years ago still have not been relocated, nor were they ever paid for their land or destroyed property. Some are still fighting court battles. Documented agreements with the government in the past were frequently broken, making the Ibaloi reluctant to enter into agreements again. Talks, and drilling continue.

**IN INDIA**, draft animals provide as much power as the entire electricity system, says Dr. N.S. Ramaswamy, Director of the Indian Institute of Management in Bangalore, an expert in appropriate technology.

However, he said, it has cost the country three times as much to generate the equivalent amount of electricity. The total investment in 80 million work animals—70 million bullocks, eight million buffalos, and two million horses and camels—is around \$10 billion as against \$30 billion spent on producing electricity.

He argues that it is a mistake to believe that agriculture can be modernized by replacing animal power and has devoted much research to fitting bullock cart wheels with discarded truck tires and other improvements.

As many as 20 million people are employed, directly or otherwise, in what Dr. Ramaswamy calls the "bullock cart business." There are some 13 million carts in the country, on which \$4 billion has been invested—exactly the same as on the railways.



## Britain's tide-power Severn barrage is feasible

**LONDON**—A big British tide-power project looks "technically feasible," a government committee reports.

It would use the movement of the tides in the Severn Estuary, which runs 100 kilometers between Somerset and Wales, to produce electricity.

The Severn Barrage Committee, set up three years ago, says in its report that a proposed £5.6 billion (\$10.4 billion) scheme could be economically viable and would compete even more favorably as fossil fuel prices rise.

The preferred scheme, of three studied, consists of a 17-kilometer barrage, with one basin filling at high tide twice a day. The controlled release of water to drive turbines would provide about 6 percent of Britain's current electricity demand and could save up to eight million tons of coal equivalent.

The barrage would be made of large prefabricated concrete units to house the turbines and sluices, together with embankments and ship locks. It would take nine years to build and create about 21,000 jobs over the period.

While this scheme was chosen as having the least engineering risks and least effect on man and the environment, the Committee is still concerned that further study be made of its total impact. It recommends a four-year, £20 million (\$37.2 million) combined Acceptability and Preliminary Design Study. This would fully investigate the effect of the barrage on water quality, land drainage, wildlife (particularly birds), water sedimentation and navigation.

BARBARA MASSAM

## Japan & Australia test a new plastic lens for solar energy

**PERTH**—A joint Australian-Japanese venture in Western Australia is obtaining promising results in the search for cheap solar energy generators.

The research is being carried out by the University of Western Australia's Department of Electrical and Electronic Engineering and is strongly supported by the state's Solar Energy Research Institute.

Giant plastic lenses are used as concentrators, delivering power densities equivalent to more than 300 suns. Specially fabricated solar cells will directly convert this sunlight into electricity—with potentially huge gains in output power.

The Kokujo Moulding Company (part of the giant Mitsubishi Corporation) designed the acrylic Fresnel lenses and asked the university team to study and evaluate them. The Fresnel lenses are very thin, lightweight units which focus the light via a series of grooves cut into the face. A circular Fresnel lens looks like a transparent phonograph record and has a very short focal length. They are superior to regular convex lenses in terms of weight, cost and configuration geometry.

Produced in cylindrical or circular forms, they are typically more than one square meter in area. The cylindrical lens focuses down to a small spot about two centimeters in diameter, giving an enormous power density of thousands of suns.

Preliminary tests done at Meiji University in Japan used the circular lens to operate a heat engine at 600° Centigrade at a speed of nearly 400 revolutions per minute. This system tracks the sun, and the group there is working towards a 10 percent efficiency level.

ANNE BLOEMEN

## New Zealand has produced its own conservation strategy

**WELLINGTON**—New Zealand has responded to the World Conservation Strategy, launched in March 1980, with a national strategy of its own, prepared by the government-appointed Nature Conservation Council. It will be presented as a public document—after public reactions have been incorporated—to the IUCN general assembly which meets here in October.

IUCN is the International Union for the Conservation of Nature and Natural Resources. It prepared the World Conservation Strategy in cooperation with the UN Environment Program, World Wildlife Fund, UN Food and Agriculture Organization, and the UN Educational, Scientific and Cultural Organization (UNESCO).

The findings of the Conservation Council's technical subcommittee often cut across government understanding of the effectiveness of its environmental protection. It advocates the wise use rather than the locking up of natural assets. Subcommittee members, many leading public servants in fields like fisheries, forests and lands, argue in their proposed strategy for consultation at the outset between conservationists and developers.

In its survey, the subcommittee found mistakes in managing fisheries, unsatisfactory efforts to control logging of indigenous forest, and cited "political pressure from vested interests" in both fishery and forestry sectors as a danger to the sustainability of the resources.

Their 64-page survey also observed that the conversion of natural wetlands into farmland has left more than 75 percent of the total land area showing signs of erosion. It said introduced species—both plants and animals—have done enormous damage to ecosystems. And it said the landscape has changed dramatically, sometimes violently, during the brief period of human occupation. Many New Zealanders feel unease at the rapid man-made changes and fear their country is in danger of losing its distinctive national character. This strategy is designed to help retain a national natural identity.

JOHN KELLEHER

## Down Under...

**THE LAWSUIT** against Alcoa and Reynolds Metals, brought before a U.S. District Court in Pittsburgh by the West Australian Conservation Council and the Australian Conservation Foundation (*WER*, April 13, p. 8), was dismissed by Judge Maurice B. Cohill for lack of jurisdiction. The two Australian conservation groups were trying to restrict the American companies' mining in Western Australia because, they claimed, it was damaging the indigenous jarrah forest and threatening water supplies for the capital city, Perth. Judge Cohill said the suit was an "unprecedented attempt" to regulate mining practices in another country and that the plaintiffs failed to allege any effects on U.S. Commerce. The environmental standards imposed on the two companies by the West Australian government were "very stringent," and he said, that government was satisfied with the way Alcoa and Reynolds carried out their mining and refining activities.

**CONSERVATION GROUPS** in Western Australia are concerned that uranium processing wastes near Kalgoorlie could poison wildlife in the area. An uncovered tailings pond containing chemicals and radioactive wastes posed a serious danger to birds.

Both the Agricultural and Wildlife Association and the Campaign Against Nuclear Energy (CANE) have resolved to investigate the full extent of the problem.

The radiation safety officer for the Yellowcake production plant said that the complex is fenced and animals have not been seen drinking from the pond. However, he said "birds can fly over and could possibly be affected if they drank the water."

**AUSTRALIA WILL PLAY HOST** to the fifth session of the World Heritage Committee in October 1981, soon after the Commonwealth Heads of Government Regional Meeting in Melbourne.

Kakedu National Park in the Northern Territory and the Great Barrier Reef have been submitted as nominations for inclusion on the World Heritage List being compiled by that committee.

A month later, six Australian universities will begin a \$200,000 study of the reef. The first expedition will be in November 1981; other expeditions will be timed over three years.

A map of the seabed is to be made and water flow, sedimentation, and the development of the continental shelf over a period of time will be studied. The gigantic natural coral reef lies off the coast of Queensland.



## Environment & Industry...

**ISRAEL'S INDUSTRIAL AREAS** are slated for a general clean-up now that a special rehabilitation fund for industrial zones has been set up. The fund, established by Israel's Minister of Tourism, Commerce and Industry, will be administered by the Industrial Building Corporation Limited which has been active in similar renovation and rehabilitation work in the past. With a budget of \$2 million, the fund is expected to bring an end to the general neglect characterizing the appearance of a large percentage of Israel's industrial areas.

**EGYPT'S POLLUTANT-SPEWING** iron and steel mill at Helwan, just south of Cairo, will be getting a \$106 million infusion for rehabilitation to improve its efficiency, to offer incentives to assure a qualified staff, provide measures to improve the plant's occupational safety and health practices, and upgrade its environmental protection policies. The World Bank is lending the Egyptian Iron and Steel Company \$64 million over 15 years for the project.

**THERE'S A GROWING INCIDENCE OF CANCER** among asbestos workers in India. Recently, the *New Scientist* in Britain condemned two Indian firms for flouting safety regulations.

Seven years ago workers in a Bombay-based asbestos firm were examined and a number were discharged from service because they had contracted asbestosis. Once lodged in the chest, asbestos fibers cannot be removed. One-third of the remaining workers are said to be affected.

The Asbestos International Association has laid down rules for its members to follow, but their observance is lax in most Third World countries. Some multinationals have been attracted to such countries precisely for this reason.

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## Colombian guerrillas say they will blow up polluting plants

**BOGOTA**—Colombia's M-19 guerrilla movement has threatened to blow up the installations of U.S. and European chemical and oil firms in the Caribbean port city of Barranquilla if they do not establish pollution controls within three months.

The most active guerrilla organization in the country, the M-19 has been responsible for a variety of audacious attacks, including the seizure of the Dominican Republic embassy with two dozen diplomats, among them the U.S. ambassador, and the murder of a U.S. Protestant missionary. Earlier this month it launched an artillery attack on the presidential palace in Bogota.

Among the firms singled out in Barranquilla for the M-19 ultimatum are Celanese, Esso, Quintal, Bayer and duPont. The guerrillas are demanding the installation of filters and other equipment to prevent water pollution. PENNY LERNOUX

## Occupational illness is a problem in India's capital

**NEW DELHI**—At the Hindustan Insecticide Factory in Delhi—a DDT plant—cases of workers being gassed by chlorine are common. Due to inadequate maintenance of the plant, chlorine leakages are frequent.

A journalist who recently visited the plant found that reports of workers suffering from nausea, coughing fits and stomach ailments occurred regularly in the medical register.

As long ago as 1967, a four-man inquiry committee at the plant reported: "Almost every worker examined had a gassing incident which necessitated treatment and in most cases, had to inhale oxygen to recover."

According to Dr. N.L. Ramanathan, Director of the Indian Government's Department of Environment, who was earlier in the National Institute of Occupational Health at Ahmedabad, facilities exist for carrying out a proper study of environmental conditions at the plant, but the management has not bothered to undertake one.

Chemical manufacturing is among the five out of 13 industries listed by the Delhi administration where workers are supposed to undergo medical tests regularly.

Conditions at textile mills around Delhi—the bigger units in the country are in Bombay and Ahmedabad—also cause concern.

A study conducted by the All India Institute of Medical Sciences has confirmed that textile workers suffer from the highest incidence of lung disease.

The textile industry is India's biggest, employing 1.23 million workers, of whom 830,000 are in cotton mills. The surest indication that environmental conditions aren't what they should be is the age-old practice of employers dispensing molasses to workers, in the erroneous belief that this will coat the cotton fiber and evacuate it from the body. DARRYL D'MONTE



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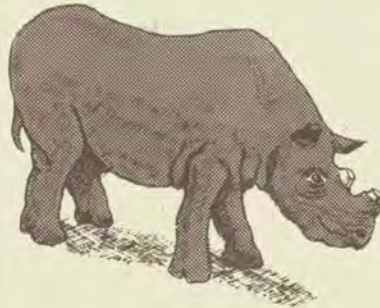
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## To save the rhino, drug it and saw off its horn

**NAIROBI**—Rhinos are in bad trouble. To save them, conservationists may have to saw off their horns.

The three Asian species may now be down to a mere couple of thousand. Of the two species in Africa, there are 3,500 white rhinos, and the black rhino has lost 90 percent of its numbers in the past decade and now is down to only a few thousand.

Dr. Kes Hillman, Chairman of the Rhino Specialist Group (a World Wildlife Fund-sponsored organization) said Kenya probably harbored 20,000 rhinos in 1970; now there are fewer than 1000.

The problem lies with the soaring price of rhino horn. In 1970, a horn leaving Africa for illicit markets in Asia was worth around \$10 per pound (\$22 a kilo), whereas now it is worth around \$100 per pound (\$220 a kilo). A game ranger in Africa earns \$60-100 per month, and his work exposes him to considerable danger from poachers. A single rhino horn, averaging eight pounds or so in weight, can bring him the equivalent of many moons' salary.

Market demand in Asia is so strong that many dealers pay \$350 per pound (\$770 a kilo), sometimes twice as much. Occasionally rhino horn can bring \$1000 per pound. During the centuries, Indians, Chinese and others have utilized powdered horn as a medicine—not necessarily as an aphrodisiac, despite conventional wisdom to that effect.

By far the main buyer these days is North Yemen. This small country is taking in at least 1000 rhino horns each year. The annual per-capita income of Yemenis increased during the 1970s from a mere \$80 to over \$500, due primarily to large numbers of young men working in Saudi Arabia. Well over one million of them remit \$1.5 billion back home each year. Traditionally, each male Yemeni reaching the age of 20 must own a dagger, and the most prestigious dagger is one with a rhino-horn handle, worth anything up to \$13,000.

Conservationists have tried to devise dagger handles made of plastic, carefully designed to resemble rhino horn. But no Yemeni wants a cheap imitation. So the best solution may lie with a plan to drug-dart the remaining rhinos in order to put them to sleep, whereupon their horns are sawn off, making them less tempting targets for poachers.

NORMAN MYERS

## Wildlife...

**THE JAPANESE LOBBY WAS SUCCESSFUL.** It sent a delegation around the world to member nations of the International Whaling Commission, and at the meeting in Brighton, England, July 20-25, the IWC rejected a ban on commercial whaling.

Sixteen countries at the annual meeting of the 30-member IWC voted for a moratorium, but a 75 percent majority is needed to stop whaling.

The U.S. and Britain proposed the ban, which gratified conservationists in the United States. Interior Secretary James Watt, who has been under fire by many environmental groups, personally backed the ban: "This issue should be elevated to the highest level of government consideration to reaffirm our national goal of a moratorium on commercial whaling."

**CORRECTION:** In the July 20 WER, page 7, we said Papua New Guinea had joined the International Whaling Commission. We were misinformed; it is not an IWC member.

**THE "HOT LINE"**—the red telephone used by West and East German authorities to defuse political crises—served to flash an alert that damming an East German stream threatened the lives of thousands of West German trout. The result: Within one hour the East German water was once again flowing westward and the trout were saved—for later meetings with barbed hooks and/or nets.

**AT THE U.S. HAHN AIR BASE** in West Germany, rats, mice, insects and other pests were making an overwhelming comeback as environmental bans curbed the use of pesticides. But West German foresters were able to provide a natural control: they presented the Air Force with six wild boars.

**WATER BUFFALO**, introduced to Australia 140 years ago, are wreaking tremendous changes on the Northern Territory coastlines of Australia. They are responsible for thousands of hectares of dead paperbark trees and have made huge areas of the coastal plain a "conservation wipeout," said Bob Fox, senior wildlife officer for the Conservation Commission.

Ironically, the animal has become a symbol of the Northern Territory.

Water buffalo wallows have destroyed natural levee systems and the habitat of native flora and fauna as saltwater has intruded along the coast, causing erosion and salination of the soil.

## Kenya's flamingos have flown to less polluted waters

**NAIROBI**—Kenya's famous flamingo lake, where clouds of hundreds of thousands of the birds filled both sky and water, has become so contaminated that the flamingos have flown to more hospitable shores.

Changes in the mineral content of Lake Nakuru, 160 kilometers northwest of here, are probably the main reason why this alkaline lake no longer hosts the many thousands of flamingos that formerly made it a unique attraction for tourists.

Few are seen on the 47 square kilometers of lake these days, although other forms of bird life are plentiful in the wildlife sanctuary which includes the lake. Scientists believe the algae on which the flamingos feed has undergone changes through contamination of the lake waters.

An industry to manufacture copper fungicides, set up near Lake Nakuru a few years ago, was closed in 1979 as a result of pressure from conservation groups who warned its effluent would poison the lake waters. But experts cannot say whether this was the only factor leading to the disappearance of the flamingos. Other possible causes of contamination are sewage from the nearby town of Nakuru, and insecticides carried by run-off from farming areas around the lake.

The flamingos appear to have shifted to Lake Bogoria, only 48 kilometers away, another alkaline lake but more remote from human habitation. Hundreds of thousands of them can be seen there.

Experts say it is not unusual for flamingos to vary their choice of habitat. In past years they have moved, for no apparent reason, from one alkaline lake to another in the Great Rift Valley area of Kenya and Tanzania.

CHARLES HARRISON



## Romanian pollution solution: pig wastes double crop yields

**BUCHAREST**—Romanian researchers are changing pig farming wastes into agricultural fertilizers and biogas.

"Mountains of animal dung and rivers of waste waters are obtained annually from the country's zootechnical farming complexes. Instead of environmental pollution (we have) a surplus of thousands of kilos of corn and meat," said an article in the Romanian Communist Party daily Scinteia.

However, some agronomists, Scinteia complained, still prefer chemical fertilizers, although their production requires the consumption of energy and costly fuel.

Specialists from the Institute of Agronomical Research said a complex with 45,000 pigs can irrigate 300 hectares with its waste

waters, while the pig dung can fertilize 100 hectares.

Experiments at a pig farming complex near Bucharest showed that 3,500 kilos of corn were obtained from non-irrigated fields. When irrigated by pig waste waters, the yield increased to 10,000 kilos on the same area.

In the same way, 1,900 kilos of barley were obtained from a non-fertilized field. With chemical fertilizers, the yield was 3,500 kilos. With pig fertilizer and waste water, the yield increased to 4,200 kilos.

Specialists estimated that by irrigating some 80,000 hectares near pig farming complexes throughout the country, an additional "several hundreds of thousands" of tons of corn and some 100,000 tons of meat might be produced.

Specialists believe that "tens of thousands" of tons of oil products could be saved by using biogas produced from wastes at the major pig breeding farms. The sludge left over from biogas production is a nutrient with no smell that can be mixed with fodder. Several pilot biogas stations have been set up in Romania in recent years.

Scinteia said the results of experiments call for a "more rational" location of zootechnical complexes, so that wastes can be discharged into nearby fields in order to get bigger farm yields and, at the same time, protect Romania's rivers from pollution.

SPECIAL TO WER



## Reject power station heat grows British tomatoes

**LONDON**—The largest tomato factory in the world (or so its owners claim) is growing its crop under glass with waste heat from a huge coal-burning power station in Yorkshire.

"This is the first substantial commercial application of reject power station heat for horticultural purposes," said Anthony Good, chairman of Exel Produce Limited, a company jointly owned by Express Dairy and the Central Electricity Generating Board.

Company director James Murphy said that the waste heat from the 2,000-megawatt Drax station alone could support the whole of Britain's horticultural industry.

In the £3 million (\$6.3 million) project, water is piped off before reaching the giant cooling towers of the station, passing through fan-assisted heat exchange units to emerge as warm air. Power costs for the exchange units are high, but the use of the reject heat halves conventional fuel costs, saving about one million gallons (4.5 million liters) of fuel oil a year.

Growers, hard hit by rising energy costs, hope this conservation technology will fend off encroachment from subsidized European competitors. However, British government support for this energy-saving project was only £15,000 (\$31,500), which chairman Anthony Good found "very discouraging." BARBARA MASSAM

## Agriculture ...

**FARM WASTE** at the Southern Philippines Grain Complex is being turned into useful household products. Owned by the National Food Authority, the 20-hectare integrated farm produces rice for export to Indonesia and nearby countries. Now, cooking oil, fuel, feeds and cleansers are being produced from rice bran which is usually thrown away by farmers. Building blocks made from rice hull ashes and soil will soon be produced as well. The first bottle of commercially available cooking oil was presented to first lady Imelda Marcos in June. The oil is said to be cholesterol-free and high in protetin content and B vitamins. A gallon cost around \$5.80. When production of the rice oil was only in its second month, businessmen from Japan said they were willing to import all the oil the farm can produce, even in its crude form. The farm, however, plans to supply local needs first.

**IN THE DROUGHT-PRONE STATE** of Karnataka, India, about half its 35 million people live in poverty. The government is now acting to create a more stable food supply, and with an International Development Association (World Bank) loan of about \$54 million will build 120 to 160 tanks throughout the state to irrigate about 25,000 hectares. Each tank will generally consist of an earthfill reservoir, fully lined canal network, system of field channels and a drainage network. All in all the project will cost \$77.4 million and should benefit directly about 8,500 farm families.

**THE SWISS** Federal Office for the Protection of the Environment in Bern has issued a brochure in five languages designed to educate the public in general, and rural areas in particular, on the dangers of pesticides.

Entitled "The Countryside and its Ecological Problems," it is aimed principally at farmers and gardeners, but copies are also being sent to manufacturers and importers of pesticides.

In addition to its sections on pesticides, the booklet contains chapters on: recycling used oils and other liquids dangerous to water; handling animal cadavers; and handling other potentially dangerous objects.

**THE WORLD BANK** has authorized a \$37 million loan to Colombia for the rehabilitation of irrigation and drainage for 47,000 hectares of farmland. The first of its type in Colombia, the project will cost a total of \$86 million and benefit six agricultural zones producing rice, soya, cotton, wheat and potatoes.

## Air quality...

**THE FREE FLOW OF INFORMATION** from the 5th International Clean Air Congress, held last October in Buenos Aires, turned out not to be free after all. Papers had not been published in time for the congress, and delegates were told the cost of the proceedings would be included in their registration fees.

Now it turns out that the proceedings are being offered for \$100, and that the papers are still in their original languages, not translated into the official languages—French and English—of the International Union of Air Pollution Prevention Associations (IUAPPA).

One delegate said recently: "IUAPPA is redrafting its rules on the conduct of congresses to avoid some of the confusion and mismanagement that was found in Buenos Aires." The congress was the first of its kind held in a developing country. IUAPPA has chosen Paris as the site of its 6th congress.

**A NATIONAL CENTER FOR AIR** quality forecasting was inaugurated in Jerusalem, Israel, in June. The center receives data on air quality and meteorological conditions from 19 fully automatic, continuous monitoring stations throughout the country.

The air quality forecasting center will give the public comprehensible information on air quality levels in municipal centers throughout the country. The daily index is already publicized over one radio station. Other stations, television and the daily press, are expected to follow suit in the near future.

**AIR POLLUTION** caused an enormous financial loss to West Bengal, said Dr. S. C. Bannerjee, Chief Inspector, smoke nuisance department of the state government. The survey was made in Greater Calcutta and districts over a five-year period.

The agricultural loss was over \$13 million annually, corrosion of metals \$6.25 million, medical expenses \$8.4 million, damage to and repair of buildings \$2.5 million, damage to textiles \$6.25 million, and laundry charges \$2.75 million.

Agriculture was affected in many areas because the rain water had turned acidic. In the Hoogly district, it was found that atmospheric pollution had poisoned the ground water. Dr. Bannerjee was surprised to find that tram tracks only lasted for three years because of the acidity in the soil after rain.

The department suggested to the state government that much of the pollution could be checked at the sources by using anti-pollution devices. But in general, the industries have not been cooperating, the study said.

## German poison gas weapons burned under strict eco-laws

**MUNICH**—Dangerous chemical weapon debris from two world wars has forced the West Germany Army to construct an incinerator designed to eliminate poisonous wastes while complying with strict new environmental laws.

The new poison gas incinerator facility at Munster was built under contract from the Bundeswehr (German Army). The sophisticated equipment, on the grounds of the Military Research Facility for ABC (Atomic-Biological-Chemical) Defense completely eliminates, without harmful impact on the environment, the dangerous residue from two world wars, said an article in the West German Information Office publication, "Focus on Germany."

Highly toxic chemicals, in quantities that are still not known, lie hidden on the grounds of the Bundeswehr's Munster-North exercise area. "The poison workshops of the Kaiser's Army and the Nazi Wehrmacht once did their work on the 10,000 hectare stretch of forest and heath," the article said. "The products, including grenades and spray canisters filled with nerve gas, were hastily and unsystematically buried after the war, or spread all over the place during attempts to blow them up."

The article said that accidents have been rare in recent years, but that the local newspaper estimates that some 400 persons have been injured since 1945 by the poisonous waste and that 16 of them have died. They were mostly people looking for food, such as mushrooms and berries, during the years of famine after the war.

When the Bundeswehr took the area over in 1957, a special unit started systematically looking for the poisons. Today, 29 men are still busy with metal detectors looking for individual grenades or larger "poison gas burial sites."

At first the items found were rendered harmless by relatively simple procedures. Since the early 1970s, however, strict environmental laws have prevented the use of these procedures, the article said, and therefore tons of dangerous material began to accumulate in storage.

By feigning the theft of two poison canisters in May 1975, a soldier of the Search Command managed to arouse public and official attention to the "poison depot's" uncertain future.

About 90 percent of the gas is the sluggishly flowing Lost, a form of mustard gas. The chemical properties of this poison, manufactured only in Germany, presented the experts with particularly thorny problems in construction, the article said.

The 1,200° Centigrade temperatures in the new facility's ovens break down the Lost's molecular structure. Smoke from the burning is so thoroughly washed and filtered that the smokestacks can release it into the atmosphere without danger. The sewage, that is just as painstakingly cleaned, goes into the city of Munster's biological sewage treatment plant. Only the poisonous arsenic created by the burning must be stored in a subterranean poison waste depository.

WILLIAM G. MAHONEY

## Sweden's search for nuclear storage sites presses ahead

**STOCKHOLM**—Despite persistent local protests, Sweden is pushing its test-drilling program, searching for suitable mountain storage for radioactive nuclear waste.

Swedish Nuclear Fuel Supply (SKBF) has written to 25 property owners in 20 areas from the far north to the south for permission to make geological investigations, the Swedish press reported. Each area is several square kilometers in size.

Geologists want stable rock cores at a depth of 500 meters which will not shift in the event of quakes. When and if they are found, underground caverns would be carved out of the mountain granite to serve as nuclear cemeteries. Lars-Bertil Nilsson of SKBF explained, "By the year 1990 we should find two or three suitable areas for a possible follow-through to completion. That could mean that we would give up Kynnefjaell in Bohus province where there has been so much trouble."

Since April of last year, protesters have been on guard at this mountain range along the west coast to prevent test boring. Protesters also stopped drilling at Svartbo mountain in Haelsingland, northern Sweden, but a month later work resumed under police protection.

In a national referendum a year ago, Swedes approved 12 nuclear reactors with the proviso that the plants would be gradually shut down after the year 2000.

A state Committee for Radioactive Waste will begin work July 1 in cooperation with SKBF and the nuclear industry on plans for the final storage of radioactive waste.

SPECIAL TO WER

## New British measures will control lead pollution

**LONDON**—A package of measures to reduce lead pollution in Britain was announced in May by the Minister for Local Government and Environmental Services, Tom King.

The Government has been accused of lagging behind other European countries and the U.S.A. in reducing gasoline lead content and for playing down evidence of the effect of lead on health and intellectual capacity, particularly in young children.

The new reduction measures result from Department of Health recommendations published in March, 1980. Their report concluded that most Britons were within the blood lead level requirements of the EEC, but it acknowledged areas of high risk.

On food, the highest source of lead intake, studies have been ordered into the effect of lead solder in cans, particularly of infant foods. New regulations reducing the maximum permitted levels of lead in food were put in force last year.

Modern paints are virtually lead-free, but where it is needed for specific uses, such as metal primers, manufacturers will be asked to

## Nuclear power...

**THE NUCLEAR ENERGY AGENCY** in its 1980 reports says that "in spite of the widely reaffirmed need for OECD countries to move away from oil... little or no progress was made during 1980 in reinforcing nuclear programs, except in the case of France" (now being re-examined by the Mitterrand government).

The NEA, which is part of the Organization for Economic Cooperation and Development, says causes for the slowdown are economic and loss of public confidence. But, it says, there are "emerging signs" that there is broad support for nuclear programs.

During 1980 eight nuclear power stations went into operation in OECD nations (the West's 24 most industrialized), bringing the total to 193. Eighteen stations were ordered (eight France, four each Japan and U.K., one each Germany and Spain), and 16 were cancelled, all in the U.S.

The Agency says it is still working on radiation protection, waste management, disposal at sea and underground, and that exchange of safety information was a priority. The Ninth Activity Report is available from the Nuclear Energy Agency, 38 boulevard Suchet, 75016 Paris, France.

**IN THE WAKE OF SEVERAL SERIOUS ACCIDENTS** reported at the Tsuruga Nuclear Power Plant in Fukui Prefecture this year, the Japan Atomic Power Co. has admitted 20 other accidents. In a report filed with the Ministry of International Trade and Industry (MITI), 10 power plant floor contamination accidents and 10 equipment trouble cases occurred in the building housing the reactor. The report said that none of the accidents was serious enough to contaminate the outer environment. One was similar to the recent publicized accident in that 10 tons of contaminated water leaked from a waste water treatment facility and covered about 200 square meters of floor space. The company admitted not reporting the accidents to MITI as required. The company now plans to establish an emergency report system, keep a more complete daily operations log and provide better safety training to employees. A new remote waste water treatment monitoring system will also be installed.

**THE CONTROVERSY** over the covered-up radioactive leaks at the Japan Atomic Power Co. (JAPC)'s nuclear plant in Tsuruga is far from over. An anti-nuclear group of residents has decided to take legal action against the nuclear power company. The group claimed that not only had the JAPC failed to report the radioactive leaks, but it had also repaired mechanical failures without proper permission.

## Environmental legislation . . .

**INDIA'S DEPARTMENT OF ENVIRONMENT** will set up a legal group to examine and plug loopholes in the nation's environment laws. There are at present 350 laws having direct or indirect bearing on environmental protection.

Many laws were geared to promote resource utilization for specific economic benefits and did not clearly state social objectives. Therefore, administrators were giving various interpretations of the laws. Under the present circumstances several of these laws are now obsolete.

**DURING THE FIRST FIVE MONTHS** of this year, Thailand's Industrial Works Department filed lawsuits against 312 factories for creating environmental problems. Of the 312 plants, 146 were closed by court orders. The majority of the factories involved were producing automobile exhaust pipes and iron products.

The deputy director-general of the department, Preecha Attawipat, urged that free consultation over possible environmental hazards should be held with his office before setting up factories. At the same time, applications for licenses must be made before any factory begins operating. He warned that violation of the licensing or anti-pollution laws would result in a heavy fine, possible imprisonment and demolition of the factory.

**THE HONG KONG** Secretary for the Environment, Derek Jones, said five environmental protection ordinances are being implemented. The Waste Disposal Ordinance and the Water Pollution Control Ordinance have passed into law. The Air Pollution Control Bill is now in its final draft stage and one on noise control is being drafted. The fifth, dealing with environmental impact statements, is also being drafted.

**LAWS DESIGNED TO PROTECT AUSTRALIA'S** sea and coastal environment from marine oil pollution are expected to come into effect towards the end of this year. One new law will ensure that ships involved in oil spills establish a fund, based on the ships' tonnage, to cover the cost of damage and clean-up. Another law will permit shipowners to limit their liability. Ships capable of carrying more than 2000 tons of oil in bulk must carry insurance certificates. This will apply both to Australian ships and foreign ships operating in Australia. The new laws prohibit operational discharges of oil within or near the outer reef of the Great Barrier Reef, and limit the amount of oil which may be carried in a single tank in case the tank is ruptured. The Transport Ministry will be given greater powers to insure that laws are implemented and enforced properly.

provide even more specific warning labels than presently exist. In old buildings, which contain old leaded paints—a particular source of danger for children—there will be a program of detection and health education.

There are areas of specific risk from a combination of old lead water pipes, lead-lined water tanks and lead-absorbent water. Authorities are asked to tackle the problem from both ends, to replace lead piping where necessary and to offer home improvement grants for tank replacement.

An air quality standard for lead of two micrograms per cubic meter, in line with EEC directives, is to be adopted, and current legislative powers are considered sufficient to bring this about. This will be difficult in practice, however, in areas with a combination of heavy industrial and traffic pollution.

By 1985 the lead content in gasoline is to be cut from .4 to .15 grams per liter in line with EEC directives, raising the cost an estimated 4p (8.5 cents) per gallon. These measures will bring extra costs to local water authorities at a time of general budget cuts. The Minister gave no reply on the question of extra funding, saying that exact costs were not yet known.

BARBARA MASSAM

## Venezuela is drafting an environment law with teeth

**CARACAS**—Although Venezuela's environmental legislation is considered among the most advanced in Latin America, it has been condemned publicly and privately as ineffectual. What it lacks, according to Environment Minister Carlos Febres, is teeth and, in the hope of providing the missing bite, his ministry has drafted a bill for an Environmental Protection Penal Law.

"We (have) come up against a wall of created interests, whether electoral or economic, which shield the damage and make the remedy difficult," said the minister.

At present, apart from paying fines, offenders are free to continue damaging the environment. The heaviest fine stipulated for breaking the Soils, Waters, Wildlife and Fishing laws is now \$11,600.

In 1980, for example, the Ministry fined 243 offenders in western Venezuela a total of \$50,000 for unauthorized land encroachment, clearing and lumbering.

The draft bill would make offences punishable by prison sentences of up to 10 years, fines of up to \$230,000 and suspension of concessions, contracts and licenses to exploit natural resources for up to five years.

The bill stipulates that offenders may be obliged to correct the damages suffered by the environment—for example, reforestation of stripped land.

Agrarian judges will have the power of arrest; the Ministry would be empowered to levy fines. A Conservation Investment Fund will be established to receive and put to work 50 percent of funds deriving from fines.

HILARY BRANCH

## Brazil has a new National Environment Council

**RIO DE JANEIRO**—Brazilian President Joao Figueiredo has signed a law creating the National Environmental Council (Conama), eight new ecology stations in various parts of the country and the 115,000-hectare Lençóis Maranhenses National Park in Maranhão.

The law provides for governmental action in maintaining ecological equilibrium. It considers the environment a national asset which needs to be preserved and protected in terms of overall use. The law calls for the rational use of soil, subsoil, water and air, and provides for planning and regulating national resources in an effort to preserve ecosystems.

Under the law state governors can close or reduce production in polluting factories for up to 15 days, an action which previously could be effected only through presidential decree. The law extends not only to industry but to any activity that causes pollution.

Mario Andreazza, Minister of the Interior, will preside over Conama, and Paulo Nogueira Neto will serve as its Secretary of the Environment.



In his first motion as Secretary of Conama, Nogueira Neto contacted the governor of Paraíba to begin the process of closing the Betonite Cement Facility in Joao Pessoa. Last August the plant was warned to install anti-pollution equipment or face an imposed shutdown.

In addition to the eight ecology stations created with the signing of the law, nine others are expected to be completed this year, Nogueira Neto noted.

Interior Ministry cabinet chief Luiz Carlos de Urquiza Nobrega said that political policies for the Amazon were not included in the law because that area is under study by the National Security Council. The director of IBDF, the Brazilian Institute of Forest Development, said, "Some people think that the Amazon will be closed to cattle raising. That isn't the idea; it's to discipline the occupation in terms of multiple use."

According to IBDF, the creation of the Maranhenses Park marks the twenty-fourth Brazilian National Park, and the first which preserves an ecosystem of dunes, mangroves and sandbars. The park will provide feeding and nesting sites for various species of marine birds and make scientific research possible on a variety of species and subspecies which are adapted to the ecosystem.

GEORGE HAWRYLYSHYN

## Environmental management...

**THE COST-BENEFIT ASPECT** of environmental management is the subject of a special issue of *Industry and Environment*, the specialized publication of the Industry and Environment Office of the UN Environment Program (UNEP).

Yusuf J. Ahmad, UNEP assistant executive director, discusses the technology of cost-benefit analysis in environment decision-making, and Per Waage, deputy director of Norway's Ministry of Environment, describes some of the economic factors involved in environmental decisions in his country. Other articles are from French, Russian, Swiss, German, Japanese and American experts.

*Industry and Environment*, special issue no. 2, is available from UNEP's Paris office, 17 rue Marguerite, 75017 Paris, France.

**STRIP MINING** often raises hackles in environmental circles. But there are acceptable ways of surface mining, and *WER's* correspondent in Bonn, J.M. Bradley, has just produced an informative and readable study of West German mining and land reclamation practices. The 42-page report examines the social problems involved—the relocation of farms and villages—and it compares West Germany's practices with those of other countries, focusing particularly on an examination of American laws. "Surface Mining and Land Reclamation in Germany" is published by the Rheinische Braunkohlenwerke AG, Press and Information, Stuttgartweg 2, P.O. Box 41 08 40, D-5000 Köln 41, West Germany.

**THE INTERNATIONAL CIVIL DEFENSE** Organization, will join the Algerian government in sponsoring a world conference on Protection Against Hydrocarbon Hazards to be held November 23-27, 1981, at the Palais des Nations, Algiers.

An ICDO spokesman said that hydrocarbons, which are "highly flammable," are an everyday hazard which involves the entire population, not only around the sites of refineries, processing plants, oil loading and delivery ports but also during transportation and at fuel storage tanks, such as in service stations.

The purpose of the conference is to bring together specialists linked with this danger: developers, constructors, engineers, forwarding, processing, administrative and insurance agents, and all officials in charge of production and safety of populations as a whole.

Organizations, firms and other interested parties wishing to participate should contact: Permanent Secretariat, ICDO, 10-12 chemin de Surville, CH 1213 Petit-Lanay (Geneva) Switzerland.



## Energy sources...

**BY THE END OF 1981** Australians can get details of national energy research in progress through an on-line computer information network.

The Minister for National Development and Energy, Senator Carrick, said that the project is a significant development in providing greater access to information on Australia's energy research efforts. It should reduce duplication, he said, and help to identify areas where greater emphasis is required.

**THE PHILIPPINE BOARD OF INVESTMENTS** has approved the country's first alcohol fuel project using cassava as the raw material. The \$20.4 million project will be undertaken by the Southeast Aquatic Corp., a joint venture between Mardon Engineering B.V. of Holland and a group of Filipino local investors. The firm will set up an integrated alcohol plant in Misamis Oriental with a daily capacity of 60,000 liters. Raw material for the project will come from the company's 28,000-hectare concession in the province. The project is expected to save the Philippines some \$10 million annually in imported fuel costs. The alcohol is being purchased by the Philippine National Oil Co. for mixing with gasoline as motor vehicle fuel.

**8,000 SQUARE METERS OF SORGHUM** will be planted near Lisbon as a first step toward the future manufacturing of alcohol for fuel in Portugal.

The pilot project will determine which type of sorghum is adaptable to the country's climate and will be under the auspices of the Sugar and Alcohol Board. The project is an outcome of the third Miami Conference on Alternative Energies last year and has had the support of U.S. and European energy developers. Experts think that Portugal with large arid and semi arid areas could be particularly suitable for sorghum and beet sugar crops.

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The Center is a non-profit, non-advocacy, educational organization which seeks to foster public understanding of global environmental issues. Established in 1974 by the UN Association of the USA with the support of the UN Environment Program (UNEP), the Center alone is responsible for WER's contents.

## Panama has the oil pipeline rejected by Costa Rica

**SAN JOSE**—The acrimonious environmental and political debate which rocked Costa Rica last year—over a proposal to build a cross-country pipeline to transport U.S. oil—was peremptorily resolved by Costa Rica's southern neighbor, Panama.

On July 8th, the Panamanians signed a construction contract for an oil "canal" between the Atlantic and Pacific Oceans. Construction is expected to start immediately. Ironically, this trans-isthmian pipeline will be located only a few kilometers from Costa Rica.

At capacity, some 600,000 barrels of crude oil will enter at Charco Azul Bay on the Pacific side and be piped 180 kilometers to Chiriqui Grande on the Caribbean side of the narrow isthmus. For the past few years, the Panama Canal has slowed down the flow of U.S. oil. Supertankers arriving from Alaska have had to unload crude oil into large storage facilities for reloading onto smaller tankers which can fit through the narrow locks of the Panama Canal.

The new pipeline will cross tropical forests committed for inclusion in the proposed International Park, "La Amistad" (Friendship), agreed upon by Presidents Carazo and Royo of Costa Rica and Panama in a joint declaration signed on the border in March 1979. This new reserve is presently under study by a binational commission, but the possible implications of the pipeline construction on the original proposal, as well as the ecological impact upon the entire area in question are still to be determined.

MURRAY SILBERMAN

## Australian biosphere reserve could be mined for coal

**PERTH**—Fitzgerald River National Park—one of two biosphere reserves in Western Australia—may be mined for coal. The only opponent is a local conservation group since government environment officials did not act within the legal time limit.

The park was the center of public controversy in the '70s when mining applications were being considered for the 242,727-hectare reserve. At that time, the government rejected the applications at the urging of the Environmental Protection Authority.

This time the private Conservation Council is the only group that lodged an objection on the coal mining application within the prescribed time. There is little chance its case will be heard, due to archaic laws relating to standing in court.

The Conservation Council commented: "It is an unsatisfactory situation when the protection of one of the world's outstanding reserves rests with a voluntary organization, short of funds and resources and continually under attack, while the government, backed by the expertise of departments and authorities whose responsibilities are to protect the environment, remains silent and inactive."

ANNE BLOEMEN



28 JUL 1981

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## US environmental consultants are helping Egypt in Sinai

**CAIRO**—As daylight faded and a chill desert wind came from the nearby Mediterranean, more than 30 village leaders from the Sinai town of Bir el Abd settled onto the sand to meet a delegation of American environmental and agricultural consultants, there to study development prospects for the land being retrieved from Israel.

The Americans work for Dames and Moore, a California-based consulting firm that is doing a \$3 million study, financed largely by the U.S. Agency for International Development (AID). Their mandate is to identify potential projects in agriculture, industry, fishing, tourism, and urban settlement—and to make sure that they are environmentally sound. With large infusions of cash flowing in from oil sales (and from AID), the Egyptian government has grand plans for the Sinai, the 63,200-square-kilometer chunk of desert it lost to Israel in the 1967 Middle East War.

The U.S. team was told by the Bedouin elders of Bir el Abd that they need clean drinking water, more schools, paved roads, better fishing facilities and government support for small-scale vegetable farming.

However, the planners believe tourism will provide one of the most fruitful opportunities for immediate development in Sinai, especially along the beautiful Mediterranean and Red Sea coastlines. William W. Moore, Jr., the study's resident manager in Cairo, said they will strongly recommend that hotel and road construction take place well back from the coastline so as to preserve the lines of palm trees.

Each project, according to the Dames and Moore contract, will be accompanied by either an initial environmental examination or a full impact statement. Moore said the planners will be sensitive to air and groundwater pollution and to the effects of development on the varied wildlife of the sparsely settled Sinai.

The Egyptian government may find that, in working with outside consultants, some of their more ambitious schemes for the Sinai will be questioned. While the government talks of making hundreds of thousands of hectares of the desert fertile, several independent observers believe that water shortages will limit agricultural development to smaller parcels of land.

Egyptian authorities have spoken of resettling two million people in Sinai by the year 2000. Given the limitations on commercial and industrial growth, outside experts feel that resettlement is likely to be limited to 500,000 people.

NATHANIEL HARRISON

## Fuelwood ...

**BURUNDI**, a small and densely populated nation in Central Africa, is getting a \$19.3 million loan from the World Bank's International Development Association to improve its agricultural practices through, for example, pest and erosion control. A related forestry program involves planting 2000 hectares with trees for fuelwood and building. And it too includes an erosion control scheme. The project as a whole will cost \$21.4 million.

**TREE PLANTING** and reforestation in the Philippines will be accelerated in 1981 and 1982. Finance Minister Cesar Vitara said that indiscriminate tree cutting has resulted in floods and a substantial loss of good soil. As the reforestation program is labor-intensive, it should ease the unemployment problem, he said. However, Vitara noted that the government is receiving reports that some workers, hired to replant trees, have been burning them down to safeguard their employment.

**A PROJECT TO CONVERT WASTE** farm and forest products into fuels has been undertaken by the Indian Institute of Technology in Delhi.

Prof. O.P. Jain, institute director, told a seminar on rural energy systems recently that the institute had already developed internal combustion engines using biogas, alcohol and hydrogen for pumping water, running generators and other industrial purposes.

It has also made several devices using solar energy, like a desalinator for drinking water, a heater for domestic and industrial use, and a generator with solar cells.

Some of these devices are ready for commercial exploitation, he said.

**A SOCIAL FORESTRY PLAN** for India's Uttar Pradesh state will cover more than 280,000 square kilometers. In the 41 districts involved, forest cover ranges from 10 percent to less than one percent. The direct benefits will be threefold: enough wood for fuel and fodder; increased employment, rural income and a resource base for developing rural cottage industries; and maintaining environmental stability to ensure a satisfactory quality of life and more food products.

Fuel supplies are expected to increase by 23 percent.

The scheme for the remaining 16 districts of the state would be carried out during the sixth five-year plan. It will cover the hill regions.



## Barrier of six million trees saves a Saudi oasis

**AL-HASA, Saudi Arabia**—A reforestation project undertaken in this Eastern Province oasis by the Saudi Ministry of Agriculture and Water is being credited with slowing desert encroachment, currently 10 meters a year.

The project was begun 19 years ago in an attempt to stabilize dunes whose movements had already forced some villagers to abandon their homes. Drifting sand covered palm trees in this 12,000 hectare oasis, one of the largest in the Arabian peninsula, and clogged some irrigation channels. It was feared that sand would eventually obliterate the entire oasis, as it had in settled areas to the east of Al Hasa.

Agriculturalists planted an L-shaped barrier of trees, mostly tamarisk, over an area of 500 hectares. Twenty kilometers long and 250-1,000 meters deep, the 5 million-tree barrier initially depended for water on 40 wells dug especially for the purpose. Four smaller east-west barriers were then built at intervals of 1½ to 2 kilometers. These strips contain about 1 million trees which sop up humidity in the sand in a system known as dry irrigation. But to be an effective shield against the wind, all 6 million trees require constant maintenance.

ROBERT FRAGA

## Faced with huge fuelwood loss India pushes social forestry

**NEW DELHI**—A program to promote social forestry will go ahead in 100 selected districts of India, under a plan drawn up by the Union Agriculture Ministry.

About 580 million seedlings will be supplied to farmers and children under the "a tree for every child" program. Over \$125 million has been earmarked for these schemes.

It is projected that India will need 225 million cubic meters of firewood by the year 2000. In 1979-80, about 18.5 million cubic meters of firewood were available from all sources.

Therefore, the National Commission on Agriculture has recommended implementation of a massive social forestry program. It adopted the term social forestry to distinguish it from commercial forestry. The program recommended by the Commission consists of: farm forestry, extension forestry, reforestation of degraded forests, and recreation forestry.

R. MURALI MANOHAR

## Soil degradation a threat to world food production

**ROME**—Soil degradation is so far advanced in many countries that world food production is threatened, said a UN Committee. It met here recently and urged a worldwide effort if agriculture is to maintain and increase its vital output.

The Committee on Agriculture of the UN Food and Agriculture Organization (FAO) agreed that soil and water conservation must be based on a better understanding of the environment and not simply on mechanical methods of erosion control.

A UN study shows that 35 percent of the soils of Africa north of the equator, 60 percent of Near Eastern farmland and 51 percent of India's agricultural lands are endangered by erosion, water-logging or salinity, with the certainty of grave deterioration unless suitable conservation measures are undertaken quickly.

Afforestation, better forest management and introduction of agro-forestry were considered by the Committee as essential elements for appropriate land management. Training at all levels, the Committee felt, was a pre-condition of any national and international soil conservation program, given the near total absence of expertise in many countries.

The FAO Committee urged governments to create the organizational infrastructure for soil conservation programs, to establish pilot demonstration areas to explain erosion control to rural populations, and to support such activities by appropriate legislation.

VITTORIO PESCIALLO

## Billions of tons of soil are lost in India every year

**NEW DELHI**—India has begun a watershed management program for 31 major river valley projects covering 75 million hectares.

Government figures estimate that about six billion tons of soil are lost annually to erosion. Erosion reduces the lives of the multi-purpose river valley projects, which the country has spent over \$3.7 billion constructing.

The Minister of State for Agriculture, R. V. Swaminathan, said in Parliament that an estimated 150 million hectares is subject to both wind and water erosion and that, therefore, a considerable amount of agricultural, animal and forest production is lost annually.

He said attention would be given to treating water catchment areas, rehabilitating the Himalayan region, and reclaiming and developing areas that have become degraded.

In addition, three state governments—Bihar, Uttar Pradesh, and West Bengal, all in northern India—are formulating and implementing several schemes to counter erosion from the Ganges River.

R. MURALI MANOHAR

## Agriculture ...

**SRI LANKA'S** Mahaweli Ganga project, an enormous irrigation and power program on which the nation's economic hopes rest, is going full-steam ahead now that the environmental assessment has been made (*WER*, March 16, p. 6). The World Bank, the Kuwait Fund and the government of Japan are providing \$180 million of the \$202 million total cost for this third phase of the development scheme formulated in 1968. All in all 365,000 hectares in Sri Lanka's dry zone will be irrigated; the project area in this phase is about 28,000 hectares. Families in the area are either landless or farming on uneconomic land. Under the irrigation development scheme, farmers in the area will be joined by settlers, and all will get assistance with seeds, tools and training.

**ROMANIA** is putting nearly \$380 million into a project that will irrigate and drain more than 130,000 hectares in its central and southeastern regions. The project will incorporate soil erosion control, reclamation of sandy areas, construction of four flood retention dams and the training of streams. The World Bank is providing an \$80 million loan for the project, which should substantially increase earnings from grain exports.

**ECUADOR** is putting \$57 million into a rural development project—upgrading farmland and forests in the Andean foothills. The project aims to improve living conditions for the rural poor and will include better roads, health services, schools, agricultural extension and credit etc. The idea is to rehabilitate coffee and cocoa plantations, develop other crops and improve pasture lands and range management. The World Bank is providing a \$20 million loan for the seven-year project.

**TUNISIA** is getting a \$24 million loan from the World Bank to help finance the first five years of a 15-year development program.

The area is in the country's northwest region, which is suffering from soil erosion and deforestation. Soil conservation measures will be combined with an agricultural extension program, research on improved farming, and credit to farmers for farm equipment, livestock and fruit trees. Reforestation in some areas, the Bank stated, will have the added advantage of providing much-needed fuelwood for the area's 143,000 people—40 percent are now living below the absolute poverty level.

All in all, the project will cost \$61.5 million. The government will provide slightly more than half, West Germany \$1.7 million and farmers' contributions are expected to be \$4.3 million.

## Forestry...

**AUTHORITIES IN SICILY** have acquired 15,000 hectares of woodlands and natural areas to preserve the environment. They were also pursuing a regional law allowing the expropriation of lands of natural interest to prevent unfettered building speculation.

The area acquired by the region includes several thousand hectares at the foot of Mount Etna, Europe's highest and most active volcano, and land in the Madonie and Nebrodi mountains to prevent plans for ski centers.

Longer-term plans include nature reserves for threatened species such as the wild cat, the eagle and the marten.

**CITY AUTHORITIES** donated 350,000 square meters of land on the outskirts of Milan, near the soccer stadium. The media publicized the event. Italia Nostra, an Italian environmental association, provided thousands of trees and shovels. And hundreds of Milanese and their children volunteered. Thus was the first "self-made wood" or public forest of this Italian industrial city born.

Italia Nostra is now forming groups of citizens to take care of the forest. And Milan schools are organizing study-visits and planning similar enterprises in other abandoned areas outside the city.

**MADAGASCAR** is adding 18,500 hectares of forest land to its existing plantations (about 70,000 hectares), all part of the government's efforts to establish a forest industry complex about 75 kilometers east of Antananarivo, the capital. This second forestry project will cost about \$30 million, and the World Bank's International Development Association (IDA) will provide more than half the funding. When logging and industrial operations become established, exports of sawn wood and wood pulp could earn considerable foreign exchange for this nation off Africa's eastern coast.

**THAILAND'S** Agriculture Ministry has to reduce the number of its "anti-deforestation centers" as the budget for this project was rejected. The proposed budget was to be used to establish such centers all over Thailand, to save an estimated 80 million rai (12.8 hectares) of forest land. But the Budget Bureau approved less than a tenth of the projected budget, which is not even sufficient to maintain the 45 existing centers. A Ministry spokesman said that while they can stop log poachers to some extent, there will not be enough forestry officials to prevent people from encroaching on reserved forest land. The Ministry said it will try to get more funds from other sources.

## Asian fuelwood experts urge action to solve supply needs

**BANGKOK**—The global fuelwood deficit, estimated at 100 million cubic meters in 1980, will double by the end of the century. Fuelwood and charcoal experts say this crisis is not the consequence of an increasing scarcity of other energy sources but rather the result of an increasing population drawing on diminishing supplies of what was traditionally "free fuel."

Their report was given at a meeting of the UN Economic and Social Commission for Asia and the Pacific, held here in May, and the experts sounded a serious warning. For some 67 million persons living in northern India, northern Afghanistan, on the hills of Nepal and in the rural towns of Asia and the Pacific, there is either not enough fuelwood for cooking and heating, or the price of this essential commodity is becoming prohibitive. At the same time, some 550 million more persons in the region are already forced to meet their minimum fuelwood requirements by gross overcutting. By the end of this century another 490 million will have joined their ranks.

The danger to the environment from this rapidly growing demand for fuelwood results from a wide range of related causes, they said: excessive pruning; opening the canopy through the removal of too many trees; the removal of residues even to the point, in some areas, of sweeping up leaves, thus removing soil nutrients; and the removal of stumps, bushes and shrubs which can lead to the destruction of much of the remaining protective cover and binding structure. All this, warns the report, will eventually lead to the disappearance of much of the world's remaining forests, with the likely consequence of climatic changes on a global scale. In Thailand, for example, the forested area is now estimated at less than 30 percent of the total land area. In 1960 it was 50 percent.

The experts recommended urgent action on a massive scale at the national, regional and international levels to improve supplies, distribution and use.

International organizations were urged to provide technical and financial assistance towards intensifying all aspects of fuelwood development programs, while bilateral and multilateral funding agencies were urged to give high priority to fuelwood related projects.

TONY OLIVER

## Thailand could be treeless in 20 years, a study finds

**BANGKOK**—In just eight years, Thailand has lost nearly half of its timber land, according to on-going studies carried out by the Forestry Department. Aided by satellite photography, the department discovered that more than a million hectares of forests have been cut every year since 1973.

Although the studies have not placed blame, it is widely known that illegal logging goes on with the support of corrupt

government officials and other influential persons. At the same time, it has been difficult to control the slash-and-burn agriculture practiced by hill tribes in northern Thailand.

Reforestation programs cannot keep up with the rate of destruction. The government and private concessionaires expect to reforest a total of 64,000 hectares in 1982, whereas at the present rate of destruction another million hectares will be cut down.

The study forecasts a gloomy future: If forest destruction continues unabated, the country's entire forestry resources will be wiped out in 20 years' time.

TONY OLIVER

## Forest dwellers are displaced by Indian tree plantations

**BOMBAY**—Hundreds of arrests and at least 25 deaths have occurred so far in a fierce "tree war" that has gone on for three years in the Indian state of Bihar. According to the *Hindustan Times*, the issue is the replacement of the native sal trees by teak. It has pitted local tribals—who use sal wood for building, its fruit for eating, its leaves as a cup, and the tree itself for religious rites—against a government that wants to make money from teak.

Teak is a favorite with state Forest Development Corporations because of the demand for quality furniture. But, for India's tribals, teak has no use (*WER*, May 7, 1979, p. 1). The story in Bihar is now being repeated in another state, Maharashtra, although on a smaller scale.

In a district called Peint, about 250 kilometers from Bombay, the Forest Development Corporation of Maharashtra clear-fells 600 hectares of forest land every year to make way for teak. This has been happening for the last seven years.

The official objectives of the corporation are to plant fast-growing, high-income trees in areas which have "inferior" forests, thereby ensuring the supply of raw material to rapidly growing wood-based industries. At the same time, it wants to provide more jobs in hilly regions, enable tribals to meet their firewood needs and undertake welfare schemes for them.

Inevitably, the latter objectives have been lost sight of. Teak is not a fast-growing tree—it takes 40 to 60 years to mature—especially in the difficult soil conditions prevailing in Maharashtra. The actual employment of locals in teak plantations has been poor. In the Chandrapur district, for example, laborers are brought in from neighboring states. Moreover, teak needs light and cannot be planted densely. It does not spread its branches and so does not provide shelter for birds and insects. In any case, the quality of teak grown in Maharashtra is comparatively poor because of the soil and fetches between Rs 2,500 and Rs 4,000 (\$300 to \$500) a cubic meter as against the Rs 8,000 (\$1,000) for superior varieties.

Clear-felling an area displaces its wildlife, which rarely returns once monocultural plantations are raised. A corporation official pointed out that wildlife is not its priority: "We are content to worry about the commercial aspect of nature. Let the national parks take the responsibility of preserving wildlife."

DARRYL D'MONTE

## Books & booklets . . .

**TRIBAL PEOPLES** can be, and have been, destroyed by thoughtless development. As populations expand and governments pursue the development of remote, marginal areas, the 200 million tribal peoples of the world will be acculturated or protected—or they will disappear.

The World Bank's Office of Environmental Affairs has produced an impressive policy study on this situation. The Bank says it will participate in projects affecting tribals only if the Bank can assist governments with acculturation or with protection of these peoples so as to avoid harm. It thoughtfully outlines the necessity for ethnic identity and survival and provides basic international documents on human rights, government agencies that coordinate tribal affairs, NGO tribal protection groups and an enormous bibliography. It is well worth reading. "Economic Development and Tribal Peoples—Human Ecologic Considerations" is available from The Office of Environmental Affairs, The World Bank, 1818 H Street, N.W., Washington, DC 20433, USA.

"**JUNGLES**" is a panoramic book that shows—with superb pictures—and tells—not too technically—some of the mysteries and complexities of this tropical "biological treasure trove." Edited by Prof. Edward S. Ayensu of the Smithsonian Institution, it explains what and where tropical rain forests are, then in 200 beautifully presented pages discusses the life of the jungle, including man, and its affect on the rest of us. "Jungles" costs \$35 and is available from Crown Publishers, Inc., One Park Avenue, New York, NY 10016, USA.

**ENVIRONMENTAL MONITORING AND ASSESSMENT** is a new quarterly journal launched by the Dutch publishing company of D. Reidel. International in scope, the editors hope the journal will be a useful forum for a discussion of monitoring and the use of the resultant data in environmental assessment and management. Its subscription price is \$71.50 a year, \$27.50 for individuals. For a free sample copy of the first effort, write: D. Reidel Publishing Company, P.O. Box 17, 3300 AA Dordrecht, Holland.

"**SMALL IS POSSIBLE**" is an outgrowth of E.F. Schumacher's philosophy and book, "Small is Beautiful," published seven years ago. This new, 331-page book by Schumacher's associate George McRobie outlines the progress that appropriate, or intermediate, technology has made in the U.S., U.K. and some developing countries. It shows that low-cost, small-scale development has had an impact. In addition, "Small is Possible" lists major A.T. organizations around the world. Published by Harper & Row, 10 East 53rd Street, New York 10022, U.S.A., for \$5.95.

## Energy sources...

**THE IDEA OF SATELLITE POWER** has been shot down, at least for the next decade, by the U.S. National Research Council (NRC). For the past decade, energy specialists have been giving serious thought to putting 60 satellites—each the size of Manhattan island—into space to convert solar energy into 300 billion watts of electricity and return it to the U.S.

An NRC committee found no insurmountable technical problems, but it did find that the \$1.3 trillion price tag was two-and-a-half times too low. It found that, technically, satellite power did not compare well with land-based systems. And other nations might be concerned about interference the energy satellites would create for their communications satellites. The committee concluded that the only approach to satellite power should be multilateral.

**A BRITISH FIRM** of consulting engineers will present the Thai government with a report on energy-saving methods. The British consultants, Ewbank and Partners, were called in last April to assist the government in identifying means of conserving energy in the industrial, domestic and transport sectors. Thailand depends heavily on foreign supplies of oil for its energy and is introducing a national energy-saving program.

**A PILOT POWER PLANT** that generates electricity from methane gas produced during sewage disposal recently started operation in Kitakyushu, Japan. It will produce 12 percent of the facility's annual electricity needs and save around \$153,846 a year.

**THE PHILIPPINES'** National Science Development Board is studying whether it is feasible to manufacture solar panels, using the country's vast deposits of high-grade sand.

**SWAZILAND**, an independent country on South Africa's eastern flank, is about to build a rockfill dam along the Little Usutu River that will funnel water into two 10 megawatt hydro-turbine generators. The project is the first step in a program designed to meet the mountainous country's demand for power up to 1990 and to reduce its dependence on imported electricity. The project will cost nearly \$60 million, and the World Bank is providing a \$10 million loan to finance, in part, studies of the impact on fish life, measures to avoid health hazards and to protect a nearby game reserve.

## New French government will debate energy & environment

**PARIS**—The French Socialist Party, which won an absolute majority in parliament recently, has declared that it will diversify the country's energy resources and not "put all (its) eggs in one basket."

A top party official, Paul Quiles, said that the new government is in favor of accelerating solar energy projects, increasing domestic coal production and building no more nuclear reactors until the parliament has dealt with the environmental implications of nuclear energy.

The new Socialist Environment Minister, Michel Crepeau, stressed in his first news conference that there would now be increased dialogue on all environmental problems, including those of nuclear energy, between his Ministry and private environmental groups. Crepeau is the first full-time Minister for Environment in France.

The parliamentary debates on nuclear energy will be a departure from the practice of former President Valery Giscard d'Estaing when nuclear energy issues were decided by the presidency and the ministries concerned.

The implication of parliamentary action is that Socialist President Francois Mitterrand may soft-pedal his predecessor's plans for producing more electricity from nuclear sources. The French Socialists have not explicitly committed themselves to an anti-nuclear energy policy, but after the accident in a nuclear reactor at La Hague in January, it is expected the new government will take time to determine public sentiment.

The accident at La Hague drew heavy fire from the media and trade unions, which accused the authorities of sloppy maintenance of the reactors and callousness in the storage of radioactive waste.

AHMED FAZL

## Kenyans are mobilizing to tackle their energy shortage

**NAIROBI**—In preparation for the UN Conference on New and Renewable Sources of Energy in mid-August, Kenyan nongovernmental organizations held a workshop here June 8-9. Kenya's NGOs have good reason to take this initiative: The country faces energy shortages that are growing worse with each tick of the clock.

Kenya's energy situation is roughly akin to that of many other developing nations, and local actions could be replicated by grass-root groups in other countries. Hence this brief review of Kenya's situation.

Petroleum imports account for about 33 percent of all energy used in Kenya—and 35 percent of its hard-currency earnings. Hydropower and other sources, such as geothermal, account for

only 7 percent of energy use. The largest share is taken by fuelwood and charcoal, almost 60 percent, with wood the main energy source for nine Kenyans out of ten.

But Kenyan forests are declining, from about 5 percent of national territory at the time of independence in 1963 to only 2.5 percent, or 130,000 square kilometers. One quarter of these forests lie in areas with considerable capacity for agriculture. Not surprisingly, these areas are crowded with people, whose numbers are growing faster than anywhere else on earth, at a rate of over 4 percent per year. There are great and growing pressures on the forests, both to supply woodfuel and to make way for croplands. If present land-use trends persist, Kenya could find itself by the year 2000 with virtually no forests left.

Government planners hope to increase the efficiency of wood burning by 20 percent, a reasonable prospect. The same planners also hope to see an additional 30-40,000 square kilometers of forest producing wood by the year 2000, a far less likely prospect since the planners assume that half the wood can be grown in good-rainfall, high-fertility areas with a potential for growing food.



The demise of forests cripples other energy sources, notably hydropower installations. The Kamburu Dam on the Tana River is headed for complete siltation in less than 30 years, half its original projected lifetime, due to deforestation-caused soil erosion. Over-exploitation of forests affects other sectors, especially agriculture. Every 2.5 centimeters of topsoil lost through deforestation causes a decline in maize yields of at least one-tenth of average output—and Kenya has recently become a food-deficit country. Food production is hit by deforestation in further ways: The waters of Lake Victoria are growing murky with sediment, suffocating fish stocks.

With financial support from the Canadian, Swedish and Norwegian development agencies and the Nairobi-based Environment Liaison Centre, the NGO meeting attracted almost 160 participants from around the country. The Ministers of Energy and of Natural Resources also attended with several of their deputies and assistants.

They discussed various energy sources: biomass, fuelwood and charcoal, wind, biogas and solar heat. The workshop also asked "How do we get things moving?" Scattered as many of the NGOs are, this was the first time they had had a chance to compare notes. Representing large numbers of citizens, they are trying to coordinate their activities, and pool their political clout, so the government will take greater notice of their needs and hopes. Their first objective is to make a solid contribution to UNERG in August, through demonstrations, lobbying, networking and the like. Their second objective is to keep their momentum going way beyond the August Conference. Despite dire predictions to the contrary, they hope that by 1985 there will be more trees growing in Kenya than there are today.

NORMAN MYERS

## Environmental management...

**CANADA IS WITHDRAWING** from the International Whaling Commission because, it says, Canada "no longer has any direct interest in the whaling industry or in the related (regulatory) activities of the IWC." The argument that since Canada is no longer a whaling nation, it need no longer participate in the IWC, does not necessarily make sense. The IWC's two most recent members, Costa Rica and Papua New Guinea, are not whaling nations, but they are concerned about the conservation of endangered whale species. Canada says it will continue as an observer with the IWC, and it will participate in its scientific activities. In a parliamentary debate, Canadian officials said they support international cooperation on the issue, but that the country's obligation was to conservation, not to the convention. Canada says it wants an international cetacean convention to supersede the 1946 Convention.

**MOHAMED KASSAS**, president of the International Union for Conservation of Nature and Natural Resources (IUCN), has received the Onassis Foundation "Olympia" prize 1980, for IUCN's conservation efforts.

The Athens-based foundation's committee of international statesmen, academics and businessmen awarded the prize to IUCN for its "important" contribution and effective action in the protection and conservation of the environment worldwide.

The Alexander S. Onassis Public Benefit Foundation was set up under the terms of the will of late Greek shipowner, Aristotle Onassis, in memory of his son Alexander who was killed in an air accident in 1973.

**THE CAR JUNKING PROGRAM** introduced in Norway May 1, 1978 (WER July 16, 1979, p. 1) has become increasingly efficient. During the last three years 170,000 discarded cars have been recycled, according to a report from the Environment Ministry.

The program combines a refundable \$100 deposit when a car is registered with a \$100 premium paid to owners when they deliver old cars for scrapping.

So far more than 100 local collection centers have been established. From there flattened car hulks are sent to a central destruction plant near Oslo. Last year 70 percent of all discarded private cars and delivery vans were disposed of under the junking program, the Ministry said.

About 70 percent of the total wreckage weight is sold as scrap iron. Last year car hulks resulted in 32,000 tons of scrap iron, or 14 percent of the total national consumption, the Ministry said.



## Land use . . .

**THOUSANDS OF ISRAELI NATURE LOVERS** joined a mass demonstration protesting a decision by Israel's Defense forces to establish a military installation on the summit of Mount Hillel in the Meron Nature Reserve in Upper Galilee. The Meron Reserve—the northernmost reserve in Israel and the largest in the Galilee—was one of the first nature reserves in Israel. Mount Meron is renowned in Israel as the last haven in the country for the coral peony, a rare flower that draws myriad visitors to the site each spring to witness its growth.

**A NATIONAL DESERT PARK** will be created in Jaisalmer in India's Rajasthan State.

India's Ministry of Rural Reconstruction allocated \$3 million over the next five years for its desert development program.

An area of 3,000 square kilometers will be declared a sanctuary and developed with local grasses, shrubs and trees to preserve fast-vanishing flora and fauna.

**JAPAN'S FIRST BIRD SANCTUARY** has been opened around Lake Utonai near Tomakomai City in southern Hokkaido. The sanctuary was set up with 100 million yen (\$477,400) in contributions donated to the Wild Bird Society of Japan over the past four years. Lake Utonai is a well-known transit and breeding place for migratory birds; an additional 199 species of birds live in the area throughout the year.

**AN AUSTRALIAN** industrial research organization will do a two-year survey of land-use potential in Papua New Guinea.

The PNG Minister of Primary Industry, Roy Evers, invited the Commonwealth Scientific and Industrial Research Organization to do the survey, which will cost \$225,000. The aims are to assess the natural resource potential of PNG for subsistence agriculture, small-holder cash cropping and population growth.

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## Asian Commonwealth energy group agrees on projects

**NEW DELHI**—A four-day meeting here of the Commonwealth Regional Consultative Group on Energy resulted in several cooperative projects in various fields of energy.

Delegates agreed to organize training programs for scientific and technical personnel, short-term visits of experts, and seminars and workshops.

The group agreed to institute an Advisory Service for the benefit of smaller island countries. The group will also set up networks of institutions in various energy fields, biomass, mini-hydropower, and solar heating and cooling.

The meeting was attended by representatives of Australia, Bangladesh, India, Kiribati, Malaysia, New Zealand, Sri Lanka and Vanuata. The Commonwealth Secretariat, the South Pacific Bureau for Economic Cooperation and the Secretariat of the UN Conference on New and Renewable Sources of Energy were also represented.

R. MURALI MANOHAR

## West Australia gets everyone involved in parkland studies

**PERTH**—The state of Western Australia has developed an innovative method of identifying areas to be set aside as parks and nature reserves. It involves all vested interests so that a balance can be struck between land use, development and conservation.

In 1972, the state's three-man Environmental Protection Authority and its Department of Conservation and Environment started studies of 12 state systems which cover more than 2.5 million square kilometers (each based on local administration, geography and land-use patterns). Reserves recommended in 10 of the 12 systems have already been accepted by the government.

There are land-use trade-offs: In the Kimberley system, reserve land turned out to be rich in diamonds. Mining is allowed to proceed, but it must comply with environmental requirements.

The most complicated study was of System 6, the Darling System, which includes Perth, the state capital, its hinterland which has mining, the surrounding agricultural land and state forest. Three quarters of the state's one million people live in the area, and competition for land is great.

Several hundred areas were identified as potential parks and reserves. However, the chairman of the study, Dr. Maurice Mulcahy, said the government could not set aside substantial areas without consulting land users. More specialized committees went to work, and conflicts were sorted out by the Conservation and Land Use Committee chaired by Dr. Mulcahy.

The effort succeeded, and the result was a 347-page System 6 Study Report, or "Green Book." Said Colin Porter, head of the state's Department of Conservation and the Environment, it proposes important new ways of balancing idealistic and practical considerations and reconciles conservation with other uses.

The public has been asked to comment by August 31, and local interest has been strong.

ANNE BLOEMEN



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## Acid rain is Sweden's most serious environmental problem

**STOCKHOLM**—"Acid rain" is Sweden's most serious environmental problem, Agriculture Minister Anders Dahlgren said recently.

Dahlgren's statement coincided with a bleak report issued by the National Environment Protection Agency (NEPA) and the state Bureau of Fisheries. The joint report, based on a five-year investigation, foresaw a worsening of the situation in this decade.

Dahlgren, the minister responsible for NEPA, said he is inviting his counterparts in 33 countries to a conference here next year on the problem. He also plans to visit the most important industrial nations in Europe in an effort to halt the emission of sulphur and nitric oxides in the air.

The 33 ministers would come from the states which signed the 1979 international agreement on controlling air pollution across national boundaries. It has been ratified by 10 countries. In an effort to hasten action, Dahlgren said he would try to reach bilateral agreements with these countries under the umbrella accord.

Sweden has the "thankless task," he said, of halving sulphur emissions within the country itself by 1985. In 1975, emissions totaled 800,000 tons a year, 600,000 of which came from the burning of oil and the rest from industry generally.

Even if that goal were reached, he continued, it still would be only a "modest improvement." The reason, Dahlgren said, is that "75 percent of the sulphur dioxide which blights Swedish nature originates in England and on the Continent."

Prevailing winds carry the pollution to Scandinavia where it is washed out as acid by rain. The process began in the 1950s and now has severely affected lakes and streams in the southwest coastal area and is gradually spreading elsewhere. Lakes and watercourses over a fourth of Sweden are either affected or threatened by acidity, the NEPA-Fisheries report said. To restore those damaged and combat acidity for the rest, Sweden must continue liming them at a cost of 200 million Crowns annually (\$40 million), the report said. It urged the government to budget for that sum.

The investigation showed that liming proved useful and for all practical purposes was without disadvantages. The fauna and flora in lakes treated by liming returned to normality. The lasting effects of the treatment depend on what dosages of lime are used.

The experts also noted that it wasn't only sulphur oxides which were causing the damage but also nitric oxides—at a rate of 310,000 tons a year—originating, for example, from road transport.

SPECIAL TO WER

## Toxics

**A TOTAL BAN ON CHEMICAL** spraying of Sweden's forests to keep down leafy undergrowth is in the works, according to Agriculture Minister Anders Dahlgren. He said he would present such a proposition to the autumn session of Parliament. Dispensations would be granted only in remote and rough terrain.

Parliament voted a one-year spraying ban in June 1980. The temporary ban then was extended until the government could present its draft law. It is likely to run into political headwinds because a majority of the committee favored lifting the ban.

However, Dahlgren has warned the forest industry that coming legislation on chemicals would be "very restrictive" and therefore it would be wise to search for other methods. "We must prevent social development from going beyond the ecological framework and see to it that environmental damage doesn't occur," he added.

**FEWER AND FEWER SWALLOWS MIGRATE** and nest in Italy every year. Some environmental associations charged that pesticides, pollution and hunters were responsible for the gradual disappearance of swallows.

Hunters countered that industrialization was responsible as they do not fire at swallows.

Pier Andrea Brichetti, an ornithologist, said, "Pesticides have practically destroyed insects, thus depriving swallows of their favorite food. There are no more garrets, with projecting beams, for nesting. And, further, hunters frighten and keep them away. Several migrant species are rapidly decreasing in Italy," he explained.

**TOWNSPEOPLE** in the Indian state of Andhra Pradesh have begun a protest campaign against a proposed pesticide plant, to be located on the banks of the Godhavari River near Kovvur.

In 1960, they fought in vain against locating a chemical factory on that same riverbank. In 1977 a chlorine gas leak made people ill, and in 1980 a chlorine cylinder burst outside the factory injuring scores of people.

It is against this background that the people are opposing the \$6 million pesticide plant, which will produce 3,330 tons of gamma benzene hexachloride when it goes into production two years from now.

So far, the state government has not responded, and work has already begun on the nine-hectare site.

## Industry charged with renegeing on toxics control in plants

**GENEVA**—The head of the International Federation of Chemical, Energy and General Workers' Unions said his 6.5 million members would resist industry's efforts to shift industrial health and safety onto the workers.

Charles Levinson, Secretary General of ICEF, said it was initiating an international campaign "against the growing lobbying of the chemical and allied industries... to transfer the onus of personal protection (onto workers) instead of introducing proper engineering controls over the emission of hazardous substances into the workplace."

Levinson's declaration specifically targeted the new U.S. Administration: "This tendency on the part of companies has been particularly noticeable in the industrially developing countries but is now an open strategy in others—especially in the U.S. where it is receiving support from the new Administration."

The statement charged that many companies hand out protective clothing and portable respiration sets that "are quite inadequate in the practical working environment against invasive chemicals, fumes and gases."

The union federation claimed that nearly half a million respirators of several different types have been recalled for modification or scrapping by U.S. authorities in the past two years alone as being potentially dangerous.

ICEF unions in 68 countries have been asked to join in common action to reject the attempt to shift the burden of responsibility for a safe work environment from the employer to the individual worker. It also issued an open invitation to other international agencies concerned with occupational health—such as the World Health Organization and the International Labor Organization—to make an unambiguous statement on the primacy of engineering controls in protecting workers. **WILLIAM G. MAHONEY**

## Sicilian petrochemical plants may be causing birth defects

**AUGUSTA, Sicily**—Two more babies were born deformed here recently, bringing to 15 the number of babies born with birth defects in 14 months in this Sicilian town. It has one of the highest concentrations of petrochemical plants in Italy.

Doctors suspect that the birth defects are caused by heavy pollution.

After the Italian press voiced concern that "another Seveso" was in sight, an investigative commission was named by the health ministry.

Commission members said recently that the average of birth defects in Augusta was not higher than national rates. However, they conceded that statistical data for the area were insufficient and that the industrial belt around Augusta was "highly unhealthy." They set up a special register for birth malformations so

as to have more precise data in the coming years.

Gaetano Correnti, who works in the maternity ward of Augusta Hospital, said, "We can't prove it, but the possibility exists that pollution and deformed babies have links."

Frank Carollo, a researcher at the University of Palermo, said there is "no doubt that the ecologic degradation in Augusta has reached dangerous levels. Technology, although costly, can stop such a process. There is no choice. Either one cleans and protects the environment or one risks death."

There has been evidence of heavy industrial pollution in Augusta, a town of 30,000, and in nearby areas during recent years: acid rains, excessive dustiness and mass poisoning of fish following heavy chemical pollution of sea waters.

Refineries and chemical plants are believed to be the major sources of pollution.

PIERO VALSECCHI

## More Swiss waste treatment = more fertilizer = more laws

**BERN**—Switzerland has new, strict regulations covering the operation of water and sewage purification stations.

The primary aim of the new regulations, said a spokesman for the Federal Office for the Protection of the Environment, is in manufacturing fertilizer, to ensure that sediment from the purification process is used correctly and at the proper time so that the level of toxic substances will not present any danger.

At first, purification stations and their by-products did not constitute a danger, since the quantity of such material was negligible. But as new stations went into operation throughout the country, the volume of fertilizer grew until annual production today amounts to three million square meters. This massive amount posed new problems, the spokesman said, such as the level of heavy metals.

As of May 1, all operators of purification stations had to begin adapting their installations to meet the new requirements. If the operators use their sediment for fertilizer, they must keep a register showing the quantities of fertilizer delivered and to what places. The transporters and utilizers of such fertilizer have the obligation to handle the product with care, according to the restrictions set forth in the new regulations.

Federal and Cantonal (State) Agricultural Offices will carry out regular controls and checks. Furthermore the Cantons are obliged to come up with a plan for improvement by 1983. These plans must show how the fertilizer will be hygienized, how the treatment is carried out, how the fertilizer is stored in winter, etc.

The improvement program itself must be achieved by the end of 1990 and estimates are that it will cost about 300 million Swiss francs (\$160 million). The Federal Government will contribute toward these costs within the framework of its Law for the Protection of Waters, but a specific breakdown of cost sharing will not be possible until the Cantons submit plans showing how they will conform to the new demands.

WILLIAM G. MAHONEY

## Environmental health . . .

**THE NORWEGIAN** Directorate for Labor Inspection wants to impose strict environmental rules on the use of video editing terminals to protect those who spend hours working at them.

Employees who are operating such terminals should not spend more than half of their daily working hours in front of the terminals and should not work continuously for more than two hours at a time on the screen, the Directorate said when presenting a series of proposals for regulating video terminal work.

The proposals have been sent to more than 40 national organizations for their comments before the final writing of the regulations.

The Directorate also wants all instruction books for operating video screens printed in the Norwegian language.

In the U.S., the newspaper industry is sponsoring a study to determine whether video editing terminals cause eye and other health-related problems.

**THE THAI HEALTH MINISTRY** has drafted a code that will limit the sales and promotion tactics of baby food distributors in the country. The purpose in drafting the code is to encourage breastfeeding among women, officials said. Under the draft code, distributors of baby food will have to inform the public that breastfeeding is the best form of nutrition for babies. The code also stipulates that no salesman of baby food can approach a pregnant woman in the promotion of his product without the written approval of a doctor or nurse. Pictures of chubby babies on label covers of baby food are also to be removed. Health officials said that the code will be made mandatory only when baby food distributors deliberately ignore it.

**IN SOUTH KOREA**, the National Institute for Environmental Studies found that 39.2 percent of the nation's drinking water was not fit for human consumption. The Institute examined 25,915 water samples taken from across the country in 1980.

**THE ELECTROPLATING INDUSTRY** in Delhi is discharging enough toxic chemicals to poison the entire population of the capital, according to India's Central Board for Prevention and Control of Water Pollution.

The Board has now laid down a code of practices which will not only curb pollution from the industry but also conserve chemicals. A World Health Organization expert is now in Delhi to help organize compliance by the 5,000 units in the city.

## Waterwise...

**MOROCCO** is getting a loan to provide safe water for the country's urban poor and residents of remote rural areas. The \$169 million project, the country's third water supply effort in recent years, will receive more than half its funding (\$87 million) from a World Bank Loan.

**INDIA'S WATER PROBLEMS** could be alleviated by desalination of sea water, says a local scientist. H.C. Katiyar, Director of the engineering group of the Bhabha Atomic Research Center (BARC) said, "The desalination process is of great relevance to us considering our large coastal areas, many of which are arid."

He said that India and West Germany would cooperate on desalination, particularly on the reverse osmosis and solar desalination processes.

A BARC pilot plant is already functioning on an experimental basis, with a 15 metric ton capacity. Based on this experience, another plant of 250 tonnes capacity is being built.

**MARINE LIFE** in the shallows off Bombay has been found to contain mercury in much higher quantities than considered safe by the World Health Organization and the U.S. Food and Drug Administration.

A study conducted by Dr. B.C. Haldar of the city's Institute of Science found that crabs contained up to four times more mercury than is permissible.

One explanation is the massive discharge of sewage into the sea—330 million gallons of partially treated wastes are discharged annually.

The Maharashtra (state) Prevention of Water Pollution Board does not permit the discharge of untreated effluent, but few industries undertake the expense of putting up treatment plants. The Bombay Municipal Corporation has negotiated with the World Bank for an integrated water and sewerage project to provide better treatment, but that will take a decade to complete.

**THE EAST-WEST CENTER'S** Environment and Policy Institute is putting together a selected bibliography on "Marine Policy and Management in Southeast Asian Seas." Those interested in receiving a copy can write: Environment and Policy Institute, The East-West Center, 1777 East-West Road, Honolulu, Hawaii 96848, U.S.A.

## Irish fight plan to pipe raw sewage into Cork Harbor

**DUBLIN**—Cork Harbor, acknowledged as one of the finest natural harbors in the world, has become the scene of a major confrontation between environmentalists and planners over a plan to pipe raw sewage into it.

The untreated human effluent would come from the 8,000-population town of Midleton in East Cork. The County Council claims that a treatment plant would cost nearly £2 million (\$3 million), which it cannot afford, and that scientific reports have proven that the self-cleaning processes of the harbor would ensure that there would be no pollution.

This has been rejected by 49 organizations, who formed a coordinating group called S.T.O.P.—Society to Oppose Pollution—claiming to represent 30,000 people. They range from community groups to sporting and leisure clubs, youth associations and development committees, who distrust the Council contention and want a treatment plant.

The world's largest artificial oyster breeding farm, which Atlantic Fisheries in the harbor claims to be, also objected to the pipeline which it said would devastate the £1 million (\$1.5 million) oyster fishery.

While the controversy rages, development of the town of Midleton has come to a halt, and townspeople are angry over what they claim are intolerable living conditions imposed upon them because of an inadequate sewage disposal system in the town. No immediate resolution of the dispute seems likely.

TOM MacSWEENEY

## Norway is using seawater to heat a new town area

**OSLO**—Two new residential areas in a Norwegian town may be the first in the world to be supplied with central heating from the sea.

The project calls for heating the villa areas of Haugesund with energy supplied by a heat pump based on seawater in combination with a district heating network.

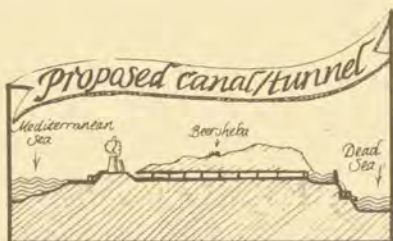
The pilot project has already been carried out by the building firm G. Block Watne A/S, the Institute of Refrigeration at the Norwegian Institute of Technology (NTH) and the consultant firm Imenco A/S of Haugesund. Financial support came from the Ministry of Petroleum and Energy.

When dealing with a district of about 200 to 300 residences, the costs of installing the necessary equipment are estimated at about \$185 more per house than the costs of conventional heating.

A recent report on the project states that the investments are on a par with those of planned hydropower projects. In other words, claim the initiators, the seawater-based heat pump can constitute a genuine addition to future power supply.

Inquiries may be addressed to: Imenco A/S, Haraldsgate No. 191, N-5500 Haugesund, Norway.

SPECIAL TO WER



## Israel's Med to Dead Sea energy canal is underway

**JERUSALEM**—In 1899 a Swiss engineer, Max Bourcart, presented Theodore Herzl, the founder of the Zionist movement, with a written proposal for a canal linking the Mediterranean and Dead Seas for the production of hydroelectric power. (*WER*, Sep. 22, 1980, p. 2). On May 28, 1981, a ceremony in Israel's Judean Desert launched the first phase of the canal plan and so transformed the 80-year-old dream into a reality, although final approval is still to come.

The \$800 million project—one of Israel's major enterprises of the 1980's—will generate 600 megawatts of hydroelectricity by utilizing the 400 meter drop between the Mediterranean and Dead Seas. It could be completed in eight years. The expenditure is expected to amortize itself within 12 years of operation of the hydroelectric station based on electricity sales alone.

Another advantage of the canal project would be to raise the declining level of the Dead Sea—decreasing at half a meter a year—by 17 meters. Other fringe benefits include a source of cooling water for a variety of industrial and power plants in the area and use of the water for artificial lakes in the Negev desert. Israel's Finance and Energy Ministers—present at the inauguration ceremony along with other notables including Prime Minister Begin—said the project would transform the northern Negev into “a center of human and economic activity.”

The canal route was chosen by a 21-member steering committee which began its deliberation in January 1978. The committee narrowed its choice from 27 different Mediterranean-Jordan Valley-Dead Sea routes to three routes before opting for the southern route for ecological, technological and economic reasons.

Ecologically, an anticipated problem involves the mixing of Mediterranean and Dead Sea water with its possible effect on the Dead Sea's micro-flora and micro-fauna. While a study of this problem has been initiated, environmentalists are pressing for additional ecological studies as well as for the presentation of an environmental impact statement.

The project itself has not been approved by the National Planning Council, the Israeli statutory body responsible for all national plans. Energy Ministry officials claim that work carried out thus far was in the nature of exploratory drilling only and that no earthwork would start until a permit is granted. The National Council has meanwhile called for the preparation of a national masterplan for the project whose various components—including environmental impact—would be subject to close scrutiny before approval is granted. In the course of the process, planning and environmental bodies will be given the opportunity to present their views and comments so that environmental considerations will be given full consideration before the final go-ahead for the actual work is given.

SHOSHANA GABBAY

## Renewable energy...

**ONE OF EUROPE'S LARGEST SOLAR ENERGY** plants has started production and is supplying electricity to the network of Italy's state-run company Enel.

The Eurelios plant was built in sunny Sicily and has a power of one megawatt. The “mirrors” plant was the result of joint efforts by Italy's Ansaldo and Enel, Germany's Messerschmid-Belkow-Blohm and France's Cathel. The utility of the utility will be considered by the European Commission before building similar plants in other European countries.

**THE LARGEST LOAN EVER MADE** to a Latin American country was approved recently by the World Bank to assist Colombia in building the biggest hydroelectric facility in the country. Total cost of the facility is \$1.3 billion, and the Bank loan was \$359 million. By the end of the century the plant should be producing 1,600 megawatts of electricity. The project includes a study to assist in adequately protecting the environment of the Guavio River, east of Bogota.

**WITHIN A FEW DECADES** wind power may be an important supplementary source of energy for Norway, according to the National Institute for Energy Technique, which is at present coordinating the wind energy research.

Spokesman Jan Nitteberg said the search has begun for the most suitable sites for wind energy plants.

Some projects are already in progress. On the southern tip of the Froeya island in central Norway, four masts have been erected, two 100 meters tall and two 45 meters high, to measure wind strength and direction.

**THE WORLDWATCH INSTITUTE**, a highly regarded U.S. research organization that analyzes global problems, has just published “Rivers of Energy: The Hydropower Potential.” Author Daniel Deudney says, “Hydroelectric complexes will be producing energy long after the oil wells run dry and the coal fields are exhausted.” Hydropower is, he asserts, “a clean, renewable and, above all, inflation-proof energy source” because it is widely dispersed throughout the world.

The Worldwatch paper (no. 44) also addresses some of the environmental, cultural and health problems caused by the construction of massive dams, and it suggests that planners and funders focus on small-scale hydropower plants, which have far fewer social and environmental problems. The 55-page paper costs \$2 from Worldwatch Institute, 1776 Massachusetts Avenue, N.W., Washington, DC 20036, U.S.A.

## In Latin America . . .

**DESPITE HOWLS OF PROTEST**, Mexico City Mayor Carlos Hank Gonzalez is remaining firmly behind a new regulation prohibiting trucks from loading or unloading cargo in the city center during daylight hours. Chambers of commerce and industry, union leaders and individual businessmen have sought unsuccessfully to have the regulation overruled. More than 1,000 requests for restraining orders against its enforcement were rejected by city judges who found the new regulation to be in the public interest. The rule was aimed at easing some of the massive traffic congestion and air pollution caused by the presence of cargo trucks during the day.

**AN INTER-AMERICAN SYMPOSIUM** on agroclimate will be held in Caracas, Venezuela, September 20-25. The Inter-American Development Bank is contributing \$96,000 towards the meeting. Other sponsors include the Aspen Institute and Venezuela's Fundacion Polar, Asociacion Venezolana para el Avance de la Ciencia and Fondo Nacional de Investigacion Agropecuaria.

The models and systems of agroclimate information have acquired growing importance in determining production potential in relation to climate, evaluation of growth conditions and the impact of climate variations on harvests.

**THE PICTURESQUE LAKE** where Mexican fishermen unfurl butterfly-shaped nets and hunters bring down ducks with spears had been proposed as the site for Mexico's national nuclear reactor center. But because of the site's ancient Indian heritage, its wildlife and scenic beauty, the proposal met a barrage of opposition. So, a National Institute of Nuclear Investigations spokesman recently announced that although they will build the nuclear center somewhere, it won't be on the shores of Lake Patzcuaro.

**A PREFEASIBILITY STUDY** released by Venezuela's Mines and Environment ministries says the Orinoco could be made navigable for ocean vessels up to Caicara, 966 kilometers from its delta, by a series of three dams with locks. Central to the Orinoco River development program, for which the government is now ready to make the feasibility studies, is hydroelectricity. The three dams would generate 6500 megawatts, energy equivalent to that derived from 250,000 barrels of crude oil a day. This enormous saving in energy, say ministry experts, would justify the vast sums needed to put the program into effect: almost \$8 billion. Estimated completion date for the Orinoco megaproject is near the end of the century.



## A Peruvian jungle dream turns into an ecological nightmare

**WASHINGTON**—The Agency for International Development (AID) is having second thoughts about investing \$22 million to develop two Peruvian jungle valleys into the country's "breadbasket." After pressure was brought to bear on the agency by congressmen and various environmental and cultural survival groups, AID decided to take a longer look at potential effects on the local environment and native cultures.

Called the Pichis-Palcazu project after the two rivers that intersect the highland jungle about 200 miles northeast of Lima, the scheme to develop the area into a massive agricultural and timber center has been a dream of President Fernando Belaunde Terry's for years. When Belaunde first approached AID, the plan entailed a major road into the area. To build the road, to plant and till crops and provide services, the government would transplant 150,000 settlers from the overcrowded east coast to the two valleys in the Central Selva (jungle).

AID sources said the agency's mission staff in Lima was all for the idea. "There was a tacit agreement that the project would go ahead," said one agency source. But a report by U.S. Congressmen Don Bonker and Michael Barnes, and pressure from nongovernmental groups have cooled AID's ardor. In March, American sociologist Charlotte Miller returned from the Selva with a report that recommended a quite different approach to developing the Pichis-Palcazu area. The report, written with the assistance of Peruvian anthropologist Hector Martinez, recommended a program to help the indigenous peoples of the area, including two protected primitive cultures, the Amuesha and the Campa. Miller and Martinez suggested that Peru help develop small-scale agriculture and settle title claims to land promised the Amuesha and Campa by Peruvian law. The report warned there was little potential for colonization.

Meanwhile, nongovernmental groups like London-based Survival International and AMARU-4, located in Washington, pressed AID to reconsider the massive development notion. And preliminary reports from ecologists observed that the highland jungle soil along the valley's hillsides is a poor candidate for supporting large-scale crops.

Probably most effective were warnings from Congressmen Bonker of Washington and Barnes of Maryland of the House Foreign Affairs Committee. In a letter dated February 25 to AID acting director Joseph Wheeler, the congressmen noted that such jungle projects rarely work: "Extensive uncontrolled forest clearing on the hillsides will lead to siltation of rivers and increase

the likelihood of flooding. The ultimate effects are obvious: productivity will decline and additional investments will be required to assure the project's viability." They also voiced concern about the Campa and Amuesha, and urged more environmental and cultural study before any money was sent to Peru.

The new AID director, Peter McPherson, also had doubts about Pichis-Palcazu. A former Peace Corps volunteer in Peru, McPherson reportedly had seen many jungle development projects fail despite good intentions. McPherson, AID officials said, agreed only to a cautious examination of some type of AID participation. AID wants to stay close to the project, said Richard Weber, head of the South American Division, because the Peruvians "obviously are going east of the (Andean) mountains whether we like it or not." Weber and others indicated that AID's wisest course now is to "moderate" the process rather than to reject the scheme out of hand. Other development agencies are also interested in the project, said a regional development official, who noted that the total cost could reach \$1 billion.

In the meantime, a team of about 11 ecologists, soil scientists and social scientists is now in Peru assessing the project. No longer called Pichis-Palcazu, the AID file now reads, "The Central Selva Natural Resources Management Project," with, say AID officials, the emphasis on resource management. CHRISTOPHER JOYCE

## Overgrazing and erosion bury a South African town in mud

**JOHANNESBURG**—It took three days of continuous rain, and then disaster struck the small South African town of Laingsburg. More than 250 million tons of soil washed off the bare countryside and buried the town up to three meters deep in mud.

It was the disaster soil conservationists had been anticipating for almost 30 years.

What has happened in this southern area, known as the Karoo, is that a once fertile and life-filled plateau with thick grass cover has been overgrazed.

The overgrazing was mostly done by sheep. When the wool price shot up earlier in this century vast areas were calculatedly overstocked, and many farmers made a killing even though they wrecked the land.

Without its natural centuries-old mantle of protective vegetation the soils of the Karoo were stripped away by wind and rain. Lake Arthur dam is a devastating example of siltation. Built in 1925, raised in 1939, and again in 1945, today it is three-quarters filled with silt.

Vic Allen, who recently produced a report on the environmental problems facing the Karoo, comments: "It is perhaps significant that despite an alarmingly comprehensive list of legal statutes, administered and enforced by several state and provincial departments, the problems have become more severe over the last three decades and, without concerted effort, will continue to worsen.

"Whether this means that the legislation is poor or its application is less than rigorous, is a sterile debate. What must be accepted is that land is a national asset and to allow such an asset to be squandered is almost criminal neglect." MIKE NICOL

## In Africa...

**SERIOUS AND PROLONGED WATER SHORT-AGES** continue in Ghana, sometimes for months at a time.

Following severe criticism in the press and Parliament, the Chairman of the Ghana Water and Sewerage Corporation Board of Directors, Mr. Baba-Alargi, complained of obsolete and broken-down machinery, lack of spare parts, inadequate, irregular or unavailable electricity supply, irregular supplies of fuel and lubricants, the exodus of trained personnel to neighboring countries and lack of "freedom to act, even to charge economic rates."

The public itself did not escape blame. The Chairman reported instances of theft of motors and acts of vandalism including drawing water without paying for it.

But the major cause of water problems in urban centers is that demand has far outstripped existing capacity. Consequently a number of projects, including the Wieja Water Works, are underway to increase production. These projects are, however, constantly delayed by the irregular supply of materials caused by a shortage of foreign exchange.

**THE WORLD WILDLIFE FUND (WWF)** has given special awards to the Tanzanian principal of a college that trains wildlife managers and an American woman who spent 10 years developing youth clubs in Kenya. The awards were made during the WWF's 20th anniversary celebration in London in late May.

The winners, who received their awards from WWF President, the Duke of Edinburgh, are: Dr. Felix Nyahoza, Principal of the College of African Wildlife Management, Mweka, Tanzania; and Miss Sandy Price, Director of African Operations of the African Wildlife Leadership Foundation in Nairobi.

**THE CENTRAL AFRICAN REPUBLIC**, which declined from a rather precarious level during the years of Emperor Bokassa's reign, is getting a \$4 million injection for technical assistance from the World Bank's International Development Association. Among the many sectors to be rehabilitated by the long-term, interest-free loan are forestry and cotton, once an important foreign exchange earner. Sector studies are expected to lead to further investment by providing a basis for improved management of the public sector.



## On the Subcontinent ...

**GEOLOGISTS HAVE WARNED** that the construction of the Pench Dams in central India could have disastrous consequences unless they are adequately reinforced. Indeed, they say, the wall across the Pench river may well collapse in its very first year.

The \$250 million project is comprised of three dams which lie in complex geological formations, where landslides are frequent. Faulty excavation carried out by engineers on abutments in the earlier stages have undermined steep hill slopes nearby.

Because of the curvature of the dam, experts feel, an additional thrust of water will be transmitted to one end, leading to greater stress. Besides, the foundation is on weak rock and no drainage holes have been provided for the release of uplift pressures. A severe earthquake, measuring 5.5 on the Richter scale, took place in the project area in 1957.

Engineers, it is alleged, have chosen to ignore the warnings of geologists and have not considered the remedial measures suggested for strengthening the dam, the construction of which began seven years ago.

**INDIA'S DEPARTMENT OF ENVIRONMENT** has commissioned a study of the long-term impact of three multi-purpose river valley schemes in the hills of Kerala state. The five-year, \$1 million survey, will include the controversial Silent Valley project.

The most important project is the Idukki hydroelectric scheme, which has a storage capacity of 2 billion cubic meters—the country's largest. Because of this project, Kerala's forest department has already reported a \$1 million loss of timber annually.

The Department points out that while Idukki is a "marvellous engineering feat," environmental considerations have been ignored. It is asking for legislation like the Silent Valley Protected Area ordinance, passed in 1978.

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## A big Himalayan dam may be a dangerous dud, say experts

**NEW DELHI**—Citizens of Tehri, a small pilgrimage center in the heart of the Himalayan mountains north of New Delhi, are fighting a losing battle to prevent a 260-meter-high rock-fill dam from being built two kilometers downstream from the town, at the confluence of two tributaries of the Ganges.

Work on the dam began in 1978. It should cost \$1 billion if it is completed by 1990. The idea is to store water in a 42-square-kilometer reservoir during the hot months, when Himalayan rivers are fed by melting snow, preventing flooding and irrigating the plains below. The scheme will also generate 1,000 megawatts of hydroelectric power.

Tehri and 94 surrounding villages—housing 70,000 people—will have to be evacuated, and the land they have carefully cultivated in terraces along the river valley will be submerged.

Virendra Dutt Saklani, the lawyer who heads the committee to oppose the dam, told *WER*, "The authorities are fooling the people" about the dam's benefits. He cited several geologists and other experts to bolster his case.

Project engineers estimated the reservoir will last 100 years, and justified its massive expense on this ground, but Saklani believes that with the heavy rate of sedimentation—the Ganges is said to have the world's highest—it will last only 30 to 40 years. The hillsides around Tehri have been badly scarred by deforestation, and flash floods are common.

Tehri, in the Uttarkhand district of Uttar Pradesh state (India's biggest and most populous), is an active seismic zone and the river bed suffers from shear faults, which weaken when subjected to the severe pressure of impounded water. The original project report disclosed that the rock at the base of the river gorge is weak, consisting largely of shale.

According to a Delhi university geologist, Dr. S.L. Gupta, if cracks develop in the dam, plains far to the south could be flooded. India suffered colossal destruction when the Koyna dam, not far from Bombay, collapsed after an earthquake in 1967.

Project authorities believe that any possible hazards have already been accounted for in the design of the dam. They are building tunnels on either side of the valley to divert the river before beginning work on the dam itself. While the scheme's opponents claim that the project can still be called off and the tunnels used for "run-off-the-river" power generation, the engineers feel that it is essential to create a reservoir in the Himalayas to store water for the lean months.

Although the project is unlikely to be completed by 1990 and will thus cost more, there seems little doubt it will go through. It already is an example of the necessity to examine environmental implications before approving such a massive dam.

DARRYL D'MONTE



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## Acid rain is Sweden's most serious environmental problem

**STOCKHOLM**—"Acid rain" is Sweden's most serious environmental problem, Agriculture Minister Anders Dahlgren said recently.

Dahlgren's statement coincided with a bleak report issued by the National Environment Protection Agency (NEPA) and the state Bureau of Fisheries. The joint report, based on a five-year investigation, foresaw a worsening of the situation in this decade.

Dahlgren, the minister responsible for NEPA, said he is inviting his counterparts in 33 countries to a conference here next year on the problem. He also plans to visit the most important industrial nations in Europe in an effort to halt the emission of sulphur and nitric oxides in the air.

The 33 ministers would come from the states which signed the 1979 international agreement on controlling air pollution across national boundaries. It has been ratified by 10 countries. In an effort to hasten action, Dahlgren said he would try to reach bilateral agreements with these countries under the umbrella accord.

Sweden has the "thankless task," he said, of halving sulphur emissions within the country itself by 1985. In 1975, emissions totaled 800,000 tons a year, 600,000 of which came from the burning of oil and the rest from industry generally.

Even if that goal were reached, he continued, it still would be only a "modest improvement." The reason, Dahlgren said, is that "75 percent of the sulphur dioxide which blights Swedish nature originates in England and on the Continent."

Prevailing winds carry the pollution to Scandinavia where it is washed out as acid by rain. The process began in the 1950s and now has severely affected lakes and streams in the southwest coastal area and is gradually spreading elsewhere. Lakes and watercourses over a fourth of Sweden are either affected or threatened by acidity, the NEPA-Fisheries report said. To restore those damaged and combat acidity for the rest, Sweden must continue liming them at a cost of 200 million Crowns annually (\$40 million), the report said. It urged the government to budget for that sum.

The investigation showed that liming proved useful and for all practical purposes was without disadvantages. The fauna and flora in lakes treated by liming returned to normality. The lasting effects of the treatment depend on what dosages of lime are used.

The experts also noted that it wasn't only sulphur oxides which were causing the damage but also nitric oxides—at a rate of 310,000 tons a year—originating, for example, from road transport.

SPECIAL TO WER

## Toxics

**A TOTAL BAN ON CHEMICAL** spraying of Sweden's forests to keep down leafy undergrowth is in the works, according to Agriculture Minister Anders Dahlgren. He said he would present such a proposition to the autumn session of Parliament. Dispensations would be granted only in remote and rough terrain.

Parliament voted a one-year spraying ban in June 1980. The temporary ban then was extended until the government could present its draft law. It is likely to run into political headwinds because a majority of the committee favored lifting the ban.

However, Dahlgren has warned the forest industry that coming legislation on chemicals would be "very restrictive" and therefore it would be wise to search for other methods. "We must prevent social development from going beyond the ecological framework and see to it that environmental damage doesn't occur," he added.

**FEWER AND FEWER SWALLOWS MIGRATE** and nest in Italy every year. Some environmental associations charged that pesticides, pollution and hunters were responsible for the gradual disappearance of swallows.

Hunters countered that industrialization was responsible as they do not fire at swallows.

Pier Andrea Brichetti, an ornithologist, said, "Pesticides have practically destroyed insects, thus depriving swallows of their favorite food. There are no more garrets, with projecting beams, for nesting. And, further, hunters frighten and keep them away. Several migrant species are rapidly decreasing in Italy," he explained.

**TOWNSPEOPLE** in the Indian state of Andhra Pradesh have begun a protest campaign against a proposed pesticide plant, to be located on the banks of the Godhavari River near Kovvur.

In 1960, they fought in vain against locating a chemical factory on that same riverbank. In 1977 a chlorine gas leak made people ill, and in 1980 a chlorine cylinder burst outside the factory injuring scores of people.

It is against this background that the people are opposing the \$6 million pesticide plant, which will produce 3,330 tons of gamma benzene hexachloride when it goes into production two years from now.

So far, the state government has not responded, and work has already begun on the nine-hectare site.

## Industry charged with renegeing on toxics control in plants

**GENEVA**—The head of the International Federation of Chemical, Energy and General Workers' Unions said his 6.5 million members would resist industry's efforts to shift industrial health and safety onto the workers.

Charles Levinson, Secretary General of ICEF, said it was initiating an international campaign "against the growing lobbying of the chemical and allied industries... to transfer the onus of personal protection (onto workers) instead of introducing proper engineering controls over the emission of hazardous substances into the workplace."

Levinson's declaration specifically targeted the new U.S. Administration: "This tendency on the part of companies has been particularly noticeable in the industrially developing countries but is now an open strategy in others—especially in the U.S. where it is receiving support from the new Administration."

The statement charged that many companies hand out protective clothing and portable respiration sets that "are quite inadequate in the practical working environment against invasive chemicals, fumes and gases."

The union federation claimed that nearly half a million respirators of several different types have been recalled for modification or scrapping by U.S. authorities in the past two years alone as being potentially dangerous.

ICEF unions in 68 countries have been asked to join in common action to reject the attempt to shift the burden of responsibility for a safe work environment from the employer to the individual worker. It also issued an open invitation to other international agencies concerned with occupational health—such as the World Health Organization and the International Labor Organization—to make an unambiguous statement on the primacy of engineering controls in protecting workers.

WILLIAM G. MAHONEY

## Sicilian petrochemical plants may be causing birth defects

**AUGUSTA, Sicily**—Two more babies were born deformed here recently, bringing to 15 the number of babies born with birth defects in 14 months in this Sicilian town. It has one of the highest concentrations of petrochemical plants in Italy.

Doctors suspect that the birth defects are caused by heavy pollution.

After the Italian press voiced concern that "another Seveso" was in sight, an investigative commission was named by the health ministry.

Commission members said recently that the average of birth defects in Augusta was not higher than national rates. However, they conceded that statistical data for the area were insufficient and that the industrial belt around Augusta was "highly unhealthy." They set up a special register for birth malformations so

as to have more precise data in the coming years.

Gaetano Correnti, who works in the maternity ward of Augusta Hospital, said, "We can't prove it, but the possibility exists that pollution and deformed babies have links."

Frank Carollo, a researcher at the University of Palermo, said there is "no doubt that the ecologic degradation in Augusta has reached dangerous levels. Technology, although costly, can stop such a process. There is no choice. Either one cleans and protects the environment or one risks death."

There has been evidence of heavy industrial pollution in Augusta, a town of 30,000, and in nearby areas during recent years: acid rains, excessive dustiness and mass poisoning of fish following heavy chemical pollution of sea waters.

Refineries and chemical plants are believed to be the major sources of pollution.

PIERO VALSECCHI

## More Swiss waste treatment = more fertilizer = more laws

**BERN**—Switzerland has new, strict regulations covering the operation of water and sewage purification stations.

The primary aim of the new regulations, said a spokesman for the Federal Office for the Protection of the Environment, is in manufacturing fertilizer, to ensure that sediment from the purification process is used correctly and at the proper time so that the level of toxic substances will not present any danger.

At first, purification stations and their by-products did not constitute a danger, since the quantity of such material was negligible. But as new stations went into operation throughout the country, the volume of fertilizer grew until annual production today amounts to three million square meters. This massive amount posed new problems, the spokesman said, such as the level of heavy metals.

As of May 1, all operators of purification stations had to begin adapting their installations to meet the new requirements. If the operators use their sediment for fertilizer, they must keep a register showing the quantities of fertilizer delivered and to what places. The transporters and utilizers of such fertilizer have the obligation to handle the product with care, according to the restrictions set forth in the new regulations.

Federal and Cantonal (State) Agricultural Offices will carry out regular controls and checks. Furthermore the Cantons are obliged to come up with a plan for improvement by 1983. These plans must show how the fertilizer will be hygienized, how the treatment is carried out, how the fertilizer is stored in winter, etc.

The improvement program itself must be achieved by the end of 1990 and estimates are that it will cost about 300 million Swiss francs (\$160 million). The Federal Government will contribute toward these costs within the framework of its Law for the Protection of Waters, but a specific breakdown of cost sharing will not be possible until the Cantons submit plans showing how they will conform to the new demands.

WILLIAM G. MAHONEY

## Environmental health . . .

**THE NORWEGIAN** Directorate for Labor Inspection wants to impose strict environmental rules on the use of video editing terminals to protect those who spend hours working at them.

Employees who are operating such terminals should not spend more than half of their daily working hours in front of the terminals and should not work continuously for more than two hours at a time on the screen, the Directorate said when presenting a series of proposals for regulating video terminal work.

The proposals have been sent to more than 40 national organizations for their comments before the final writing of the regulations.

The Directorate also wants all instruction books for operating video screens printed in the Norwegian language.

In the U.S., the newspaper industry is sponsoring a study to determine whether video editing terminals cause eye and other health-related problems.

**THE THAI HEALTH MINISTRY** has drafted a code that will limit the sales and promotion tactics of baby food distributors in the country. The purpose in drafting the code is to encourage breastfeeding among women, officials said. Under the draft code, distributors of baby food will have to inform the public that breastfeeding is the best form of nutrition for babies. The code also stipulates that no salesman of baby food can approach a pregnant woman in the promotion of his product without the written approval of a doctor or nurse. Pictures of chubby babies on label covers of baby food are also to be removed. Health officials said that the code will be made mandatory only when baby food distributors deliberately ignore it.

**IN SOUTH KOREA**, the National Institute for Environmental Studies found that 39.2 percent of the nation's drinking water was not fit for human consumption. The Institute examined 25,915 water samples taken from across the country in 1980.

**THE ELECTROPLATING INDUSTRY** in Delhi is discharging enough toxic chemicals to poison the entire population of the capital, according to India's Central Board for Prevention and Control of Water Pollution.

The Board has now laid down a code of practices which will not only curb pollution from the industry but also conserve chemicals. A World Health Organization expert is now in Delhi to help organize compliance by the 5,000 units in the city.

## Waterwise...

**MOROCCO** is getting a loan to provide safe water for the country's urban poor and residents of remote rural areas. The \$169 million project, the country's third water supply effort in recent years, will receive more than half its funding (\$87 million) from a World Bank Loan.

**INDIA'S WATER PROBLEMS** could be alleviated by desalination of sea water, says a local scientist. H.C. Katiyar, Director of the engineering group of the Bhabha Atomic Research Center (BARC) said, "The desalination process is of great relevance to us considering our large coastal areas, many of which are arid."

He said that India and West Germany would cooperate on desalination, particularly on the reverse osmosis and solar desalination processes.

A BARC pilot plant is already functioning on an experimental basis, with a 15 metric ton capacity. Based on this experience, another plant of 250 tonnes capacity is being built.

**MARINE LIFE** in the shallows off Bombay has been found to contain mercury in much higher quantities than considered safe by the World Health Organization and the U.S. Food and Drug Administration.

A study conducted by Dr. B.C. Haldar of the city's Institute of Science found that crabs contained up to four times more mercury than is permissible.

One explanation is the massive discharge of sewage into the sea—330 million gallons of partially treated wastes are discharged annually.

The Maharashtra (state) Prevention of Water Pollution Board does not permit the discharge of untreated effluent, but few industries undertake the expense of putting up treatment plants. The Bombay Municipal Corporation has negotiated with the World Bank for an integrated water and sewerage project to provide better treatment, but that will take a decade to complete.

**THE EAST-WEST CENTER'S** Environment and Policy Institute is putting together a selected bibliography on "Marine Policy and Management in Southeast Asian Seas." Those interested in receiving a copy can write: Environment and Policy Institute, The East-West Center, 1777 East-West Road, Honolulu, Hawaii 96848, U.S.A.

## Irish fight plan to pipe raw sewage into Cork Harbor

**DUBLIN**—Cork Harbor, acknowledged as one of the finest natural harbors in the world, has become the scene of a major confrontation between environmentalists and planners over a plan to pipe raw sewage into it.

The untreated human effluent would come from the 8,000-population town of Midleton in East Cork. The County Council claims that a treatment plant would cost nearly £2 million (\$3 million), which it cannot afford, and that scientific reports have proven that the self-cleaning processes of the harbor would ensure that there would be no pollution.

This has been rejected by 49 organizations, who formed a coordinating group called S.T.O.P.—Society to Oppose Pollution—claiming to represent 30,000 people. They range from community groups to sporting and leisure clubs, youth associations and development committees, who distrust the Council contention and want a treatment plant.

The world's largest artificial oyster breeding farm, which Atlantic Fisheries in the harbor claims to be, also objected to the pipeline which it said would devastate the £1 million (\$1.5 million) oyster fishery.

While the controversy rages, development of the town of Midleton has come to a halt, and townspeople are angry over what they claim are intolerable living conditions imposed upon them because of an inadequate sewage disposal system in the town. No immediate resolution of the dispute seems likely.

TOM MacSWEENEY

## Norway is using seawater to heat a new town area

**OSLO**—Two new residential areas in a Norwegian town may be the first in the world to be supplied with central heating from the sea.

The project calls for heating the villa areas of Haugesund with energy supplied by a heat pump based on seawater in combination with a district heating network.

The pilot project has already been carried out by the building firm G. Block Watne A/S, the Institute of Refrigeration at the Norwegian Institute of Technology (NTH) and the consultant firm Imenco A/S of Haugesund. Financial support came from the Ministry of Petroleum and Energy.

When dealing with a district of about 200 to 300 residences, the costs of installing the necessary equipment are estimated at about \$185 more per house than the costs of conventional heating.

A recent report on the project states that the investments are on a par with those of planned hydropower projects. In other words, claim the initiators, the seawater-based heat pump can constitute a genuine addition to future power supply.

Inquiries may be addressed to: Imenco A/S, Haraldsgate No. 191, N-5500 Haugesund, Norway.

SPECIAL TO WER



## Israel's Med to Dead Sea energy canal is underway

**JERUSALEM**—In 1899 a Swiss engineer, Max Bourcart, presented Theodore Herzl, the founder of the Zionist movement, with a written proposal for a canal linking the Mediterranean and Dead Seas for the production of hydroelectric power. (*WER*, Sep. 22, 1980, p. 2). On May 28, 1981, a ceremony in Israel's Judean Desert launched the first phase of the canal plan and so transformed the 80-year-old dream into a reality, although final approval is still to come.

The \$800 million project—one of Israel's major enterprises of the 1980's—will generate 600 megawatts of hydroelectricity by utilizing the 400 meter drop between the Mediterranean and Dead Seas. It could be completed in eight years. The expenditure is expected to amortize itself within 12 years of operation of the hydroelectric station based on electricity sales alone.

Another advantage of the canal project would be to raise the declining level of the Dead Sea—decreasing at half a meter a year—by 17 meters. Other fringe benefits include a source of cooling water for a variety of industrial and power plants in the area and use of the water for artificial lakes in the Negev desert. Israel's Finance and Energy Ministers—present at the inauguration ceremony along with other notables including Prime Minister Begin—said the project would transform the northern Negev into “a center of human and economic activity.”

The canal route was chosen by a 21-member steering committee which began its deliberation in January 1978. The committee narrowed its choice from 27 different Mediterranean-Jordan Valley-Dead Sea routes to three routes before opting for the southern route for ecological, technological and economic reasons.

Ecologically, an anticipated problem involves the mixing of Mediterranean and Dead Sea water with its possible effect on the Dead Sea's micro-flora and micro-fauna. While a study of this problem has been initiated, environmentalists are pressing for additional ecological studies as well as for the presentation of an environmental impact statement.

The project itself has not been approved by the National Planning Council, the Israeli statutory body responsible for all national plans. Energy Ministry officials claim that work carried out thus far was in the nature of exploratory drilling only and that no earthwork would start until a permit is granted. The National Council has meanwhile called for the preparation of a national masterplan for the project whose various components—including environmental impact—would be subject to close scrutiny before approval is granted. In the course of the process, planning and environmental bodies will be given the opportunity to present their views and comments so that environmental considerations will be given full consideration before the final go-ahead for the actual work is given.

SHOSHANA GABBAY

## Renewable energy...

**ONE OF EUROPE'S LARGEST SOLAR ENERGY** plants has started production and is supplying electricity to the network of Italy's state-run company Enel.

The Eurelios plant was built in sunny Sicily and has a power of one megawatt. The “mirrors” plant was the result of joint efforts by Italy's Ansaldo and Enel, Germany's Messerschmid-Belkow-Blohm and France's Cathel. The utility of the utility will be considered by the European Commission before building similar plants in other European countries.

**THE LARGEST LOAN EVER MADE** to a Latin American country was approved recently by the World Bank to assist Colombia in building the biggest hydroelectric facility in the country. Total cost of the facility is \$1.3 billion, and the Bank loan was \$359 million. By the end of the century the plant should be producing 1,600 megawatts of electricity. The project includes a study to assist in adequately protecting the environment of the Guavio River, east of Bogota.

**WITHIN A FEW DECADES** wind power may be an important supplementary source of energy for Norway, according to the National Institute for Energy Technique, which is at present coordinating the wind energy research.

Spokesman Jan Nitteberg said the search has begun for the most suitable sites for wind energy plants.

Some projects are already in progress. On the southern tip of the Froeya island in central Norway, four masts have been erected, two 100 meters tall and two 45 meters high, to measure wind strength and direction.

**THE WORLDWATCH INSTITUTE**, a highly regarded U.S. research organization that analyzes global problems, has just published “Rivers of Energy: The Hydropower Potential.” Author Daniel Deudney says, “Hydroelectric complexes will be producing energy long after the oil wells run dry and the coal fields are exhausted.” Hydropower is, he asserts, “a clean, renewable and, above all, inflation-proof energy source” because it is widely dispersed throughout the world.

The Worldwatch paper (no. 44) also addresses some of the environmental, cultural and health problems caused by the construction of massive dams, and it suggests that planners and funders focus on small-scale hydropower plants, which have far fewer social and environmental problems. The 55-page paper costs \$2 from Worldwatch Institute, 1776 Massachusetts Avenue, N.W., Washington, DC 20036, U.S.A.

## In Latin America . . .

**DESPITE HOWLS OF PROTEST**, Mexico City Mayor Carlos Hank Gonzalez is remaining firmly behind a new regulation prohibiting trucks from loading or unloading cargo in the city center during daylight hours. Chambers of commerce and industry, union leaders and individual businessmen have sought unsuccessfully to have the regulation overruled. More than 1,000 requests for restraining orders against its enforcement were rejected by city judges who found the new regulation to be in the public interest. The rule was aimed at easing some of the massive traffic congestion and air pollution caused by the presence of cargo trucks during the day.

**AN INTER-AMERICAN SYMPOSIUM** on agroclimate will be held in Caracas, Venezuela, September 20-25. The Inter-American Development Bank is contributing \$96,000 towards the meeting. Other sponsors include the Aspen Institute and Venezuela's Fundacion Polar, Asociacion Venezolana para el Avance de la Ciencia and Fondo Nacional de Investigacion Agropecuaria.

The models and systems of agroclimate information have acquired growing importance in determining production potential in relation to climate, evaluation of growth conditions and the impact of climate variations on harvests.

**THE PICTURESQUE LAKE** where Mexican fishermen unfurl butterfly-shaped nets and hunters bring down ducks with spears had been proposed as the site for Mexico's national nuclear reactor center. But because of the site's ancient Indian heritage, its wildlife and scenic beauty, the proposal met a barrage of opposition. So, a National Institute of Nuclear Investigations spokesman recently announced that although they will build the nuclear center somewhere, it won't be on the shores of Lake Patzcuaro.

**A PREFEASIBILITY STUDY** released by Venezuela's Mines and Environment ministries says the Orinoco could be made navigable for ocean vessels up to Caicara, 966 kilometers from its delta, by a series of three dams with locks. Central to the Orinoco River development program, for which the government is now ready to make the feasibility studies, is hydroelectricity. The three dams would generate 6500 megawatts, energy equivalent to that derived from 250,000 barrels of crude oil a day. This enormous saving in energy, say ministry experts, would justify the vast sums needed to put the program into effect: almost \$8 billion. Estimated completion date for the Orinoco megaproject is near the end of the century.



## A Peruvian jungle dream turns into an ecological nightmare

**WASHINGTON**—The Agency for International Development (AID) is having second thoughts about investing \$22 million to develop two Peruvian jungle valleys into the country's "breadbasket." After pressure was brought to bear on the agency by congressmen and various environmental and cultural survival groups, AID decided to take a longer look at potential effects on the local environment and native cultures.

Called the Pichis-Palcazu project after the two rivers that intersect the highland jungle about 200 miles northeast of Lima, the scheme to develop the area into a massive agricultural and timber center has been a dream of President Fernando Belaunde Terry's for years. When Belaunde first approached AID, the plan entailed a major road into the area. To build the road, to plant and till crops and provide services, the government would transplant 150,000 settlers from the overcrowded east coast to the two valleys in the Central Selva (jungle).

AID sources said the agency's mission staff in Lima was all for the idea. "There was a tacit agreement that the project would go ahead," said one agency source. But a report by U.S. Congressmen Don Bonker and Michael Barnes, and pressure from nongovernmental groups have cooled AID's ardor. In March, American sociologist Charlotte Miller returned from the Selva with a report that recommended a quite different approach to developing the Pichis-Palcazu area. The report, written with the assistance of Peruvian anthropologist Hector Martinez, recommended a program to help the indigenous peoples of the area, including two protected primitive cultures, the Amuesha and the Campa. Miller and Martinez suggested that Peru help develop small-scale agriculture and settle title claims to land promised the Amuesha and Campa by Peruvian law. The report warned there was little potential for colonization.

Meanwhile, nongovernmental groups like London-based Survival International and AMARU-4, located in Washington, pressed AID to reconsider the massive development notion. And preliminary reports from ecologists observed that the highland jungle soil along the valley's hillsides is a poor candidate for supporting large-scale crops.

Probably most effective were warnings from Congressmen Bonker of Washington and Barnes of Maryland of the House Foreign Affairs Committee. In a letter dated February 25 to AID acting director Joseph Wheeler, the congressmen noted that such jungle projects rarely work: "Extensive uncontrolled forest clearing on the hillsides will lead to siltation of rivers and increase

the likelihood of flooding. The ultimate effects are obvious: productivity will decline and additional investments will be required to assure the project's viability." They also voiced concern about the Campa and Amuesha, and urged more environmental and cultural study before any money was sent to Peru.

The new AID director, Peter McPherson, also had doubts about Pichis-Palcazu. A former Peace Corps volunteer in Peru, McPherson reportedly had seen many jungle development projects fail despite good intentions. McPherson, AID officials said, agreed only to a cautious examination of some type of AID participation. AID wants to stay close to the project, said Richard Weber, head of the South American Division, because the Peruvians "obviously are going east of the (Andean) mountains whether we like it or not." Weber and others indicated that AID's wisest course now is to "moderate" the process rather than to reject the scheme out of hand. Other development agencies are also interested in the project, said a regional development official, who noted that the total cost could reach \$1 billion.

In the meantime, a team of about 11 ecologists, soil scientists and social scientists is now in Peru assessing the project. No longer called Pichis-Palcazu, the AID file now reads, "The Central Selva Natural Resources Management Project," with, say AID officials, the emphasis on resource management. CHRISTOPHER JOYCE

## Overgrazing and erosion bury a South African town in mud

**JOHANNESBURG**—It took three days of continuous rain, and then disaster struck the small South African town of Laingsburg. More than 250 million tons of soil washed off the bare countryside and buried the town up to three meters deep in mud.

It was the disaster soil conservationists had been anticipating for almost 30 years.

What has happened in this southern area, known as the Karoo, is that a once fertile and life-filled plateau with thick grass cover has been overgrazed.

The overgrazing was mostly done by sheep. When the wool price shot up earlier in this century vast areas were calculatedly overstocked, and many farmers made a killing even though they wrecked the land.

Without its natural centuries-old mantle of protective vegetation the soils of the Karoo were stripped away by wind and rain. Lake Arthur dam is a devastating example of siltation. Built in 1925, raised in 1939, and again in 1945, today it is three-quarters filled with silt.

Vic Allen, who recently produced a report on the environmental problems facing the Karoo, comments: "It is perhaps significant that despite an alarmingly comprehensive list of legal statutes, administered and enforced by several state and provincial departments, the problems have become more severe over the last three decades and, without concerted effort, will continue to worsen.

"Whether this means that the legislation is poor or its application is less than rigorous, is a sterile debate. What must be accepted is that land is a national asset and to allow such an asset to be squandered is almost criminal neglect." MIKE NICOL

## In Africa...

**SERIOUS AND PROLONGED WATER SHORTAGES** continue in Ghana, sometimes for months at a time.

Following severe criticism in the press and Parliament, the Chairman of the Ghana Water and Sewerage Corporation Board of Directors, Mr. Baba-Alargi, complained of obsolete and broken-down machinery, lack of spare parts, inadequate, irregular or unavailable electricity supply, irregular supplies of fuel and lubricants, the exodus of trained personnel to neighboring countries and lack of "freedom to act, even to charge economic rates."

The public itself did not escape blame. The Chairman reported instances of theft of motors and acts of vandalism including drawing water without paying for it.

But the major cause of water problems in urban centers is that demand has far outstripped existing capacity. Consequently a number of projects, including the Wieja Water Works, are underway to increase production. These projects are, however, constantly delayed by the irregular supply of materials caused by a shortage of foreign exchange.

**THE WORLD WILDLIFE FUND (WWF)** has given special awards to the Tanzanian principal of a college that trains wildlife managers and an American woman who spent 10 years developing youth clubs in Kenya. The awards were made during the WWF's 20th anniversary celebration in London in late May.

The winners, who received their awards from WWF President, the Duke of Edinburgh, are: Dr. Felix Nyahoza, Principal of the College of African Wildlife Management, Mweka, Tanzania; and Miss Sandy Price, Director of African Operations of the African Wildlife Leadership Foundation in Nairobi.

**THE CENTRAL AFRICAN REPUBLIC**, which declined from a rather precarious level during the years of Emperor Bokassa's reign, is getting a \$4 million injection for technical assistance from the World Bank's International Development Association. Among the many sectors to be rehabilitated by the long-term, interest-free loan are forestry and cotton, once an important foreign exchange earner. Sector studies are expected to lead to further investment by providing a basis for improved management of the public sector.



## On the Subcontinent ...

**GEOLOGISTS HAVE WARNED** that the construction of the Pench Dams in central India could have disastrous consequences unless they are adequately reinforced. Indeed, they say, the wall across the Pench river may well collapse in its very first year.

The \$250 million project is comprised of three dams which lie in complex geological formations, where landslides are frequent. Faulty excavation carried out by engineers on abutments in the earlier stages have undermined steep hill slopes nearby.

Because of the curvature of the dam, experts feel, an additional thrust of water will be transmitted to one end, leading to greater stress. Besides, the foundation is on weak rock and no drainage holes have been provided for the release of uplift pressures. A severe earthquake, measuring 5.5 on the Richter scale, took place in the project area in 1957.

Engineers, it is alleged, have chosen to ignore the warnings of geologists and have not considered the remedial measures suggested for strengthening the dam, the construction of which began seven years ago.

**INDIA'S DEPARTMENT OF ENVIRONMENT** has commissioned a study of the long-term impact of three multi-purpose river valley schemes in the hills of Kerala state. The five-year, \$1 million survey, will include the controversial Silent Valley project.

The most important project is the Idukki hydroelectric scheme, which has a storage capacity of 2 billion cubic meters—the country's largest. Because of this project, Kerala's forest department has already reported a \$1 million loss of timber annually.

The Department points out that while Idukki is a "marvellous engineering feat," environmental considerations have been ignored. It is asking for legislation like the Silent Valley Protected Area ordinance, passed in 1978.

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## A big Himalayan dam may be a dangerous dud, say experts

**NEW DELHI**—Citizens of Tehri, a small pilgrimage center in the heart of the Himalayan mountains north of New Delhi, are fighting a losing battle to prevent a 260-meter-high rock-fill dam from being built two kilometers downstream from the town, at the confluence of two tributaries of the Ganges.

Work on the dam began in 1978. It should cost \$1 billion if it is completed by 1990. The idea is to store water in a 42-square-kilometer reservoir during the hot months, when Himalayan rivers are fed by melting snow, preventing flooding and irrigating the plains below. The scheme will also generate 1,000 megawatts of hydroelectric power.

Tehri and 94 surrounding villages—housing 70,000 people—will have to be evacuated, and the land they have carefully cultivated in terraces along the river valley will be submerged.

Virendra Dutt Saklani, the lawyer who heads the committee to oppose the dam, told *WER*, "The authorities are fooling the people" about the dam's benefits. He cited several geologists and other experts to bolster his case.

Project engineers estimated the reservoir will last 100 years, and justified its massive expense on this ground, but Saklani believes that with the heavy rate of sedimentation—the Ganges is said to have the world's highest—it will last only 30 to 40 years. The hillsides around Tehri have been badly scarred by deforestation, and flash floods are common.

Tehri, in the Uttarkhand district of Uttar Pradesh state (India's biggest and most populous), is an active seismic zone and the river bed suffers from shear faults, which weaken when subjected to the severe pressure of impounded water. The original project report disclosed that the rock at the base of the river gorge is weak, consisting largely of shale.

According to a Delhi university geologist, Dr. S.L. Gupta, if cracks develop in the dam, plains far to the south could be flooded. India suffered colossal destruction when the Koyna dam, not far from Bombay, collapsed after an earthquake in 1967.

Project authorities believe that any possible hazards have already been accounted for in the design of the dam. They are building tunnels on either side of the valley to divert the river before beginning work on the dam itself. While the scheme's opponents claim that the project can still be called off and the tunnels used for "run-off-the-river" power generation, the engineers feel that it is essential to create a reservoir in the Himalayas to store water for the lean months.

Although the project is unlikely to be completed by 1990 and will thus cost more, there seems little doubt it will go through. It already is an example of the necessity to examine environmental implications before approving such a massive dam.

DARRYL D'MONTE



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### World Environment Report . . .

is the first and only publication of its kind: a biweekly newsletter to keep you informed of significant happenings on today's world environment scene. WER's staff of 65 correspondents posted around the world monitors the environmental activities of governments, corporations, international organizations, scientists, universities and citizens groups. It is published by the World Environment Center (formerly the Center for International Environment Information), a private, non-profit organization established by the United Nations Association of the USA with the support of the UN Environment Program. The Center is responsible for all material in WER.



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## In This Issue ...

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## A bonanza for Brazil's fish-alcohol swill is fine food

**RIO DE JANEIRO**—A troublesome waste by-product of Brazil's Ambitious National Alcohol Program (Proalcool) could prove to be a boon to the country's fledgling commercial fishing industry.

The fishing bonanza would be realized by piping the *vinhaca*, or swill, produced during the distillation of sugarcane, to the ocean at selected points up and down the coast. The swill, which is highly pollutant when dumped into small lakes or streams, is not toxic and is a nourishing food for plankton and fish when dumped at sea.

Every liter of alcohol produced yields 13 liters of an unwanted organic waste, or swill. Hence, all that fuel alcohol targeted for 1985—10.7 billion liters—will also produce a whopping 139.1 billion liters of swill, a potential headache almost as big as the energy crisis itself.

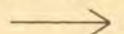
Alternative means of waste disposal have been suggested, although costs, desirability and possible benefits of the various systems are still unresolved. The fish feeding idea is among the latest—and most likely—to emerge.

Cristovao Mark Ostrovski, an environmental engineer with Rio de Janeiro's Fundacao de Tecnologia Industrial (Industrial Technology Foundation) said his organization is part of a group researching the possible construction of a swill pipeline to carry the waste from points where Proalcool distilleries are concentrated to the ocean for selective dumping. Most of the distilleries, like most of the Brazilian population, are located within 100 kilometers of the seacoast.

The dumping sites would have to be carefully selected, both to facilitate fishing and because "all that brown water would not be aesthetically pleasing," the Brazilian-born and Canadian-educated environmental engineer commented.

Cost surveys of various swill disposal systems show the pipeline to be the cheapest per liter of alcohol produced, Ostrovski said. Other alternatives, such as processing it in aeration ponds to produce fertilizer or in biodigesters to produce methane gas, are more expensive because of the initial cost of the huge ponds or industrial biodigesters required. Some swill disposal or treatment systems would cost as much as four or five times as much per liter as would the swill pipeline.

Funds for financing Proalcool distilleries are more than



## Recycling . . .

**EAST GERMANY AND CUBA** have developed a process for making textile fibers out of bagasse, the pulp left after sugar has been extracted from cane, the official East German Neues Deutschland has reported.

It said Cuba, which produces 9 million tons of bagasse a year, was converting a factory to produce the fiber.

**BRITONS SIPPING THEIR PINT** of beer can congratulate themselves on stimulating research into energy conservation. Under the government's Energy Conservation Demonstration Projects Scheme, Scottish & Newcastle Beer Production Ltd. have introduced a heat recovery scheme in their keg-cleaning operation which is saving 46 percent of the energy costs.

Heat is recovered from the final hot water rinse and transferred to the initial rinse of the next washing cycle. There have been additional benefits in reduced water consumption and effluent disposal costs. Further modifications and improvements are in hand to increase energy efficiency even more. In return for up to 25 percent support for capital and installation costs, plus full monitoring costs, the government can pass information about such energy saving schemes throughout the industry.

**THE MATHURA OIL REFINERY** in northwest India, due to open in June, had sparked off a fierce international controversy because of the threat it poses to the Taj Mahal monument. Now India's irrigation minister says effluent from the refinery will be used for irrigating fields nearby, where it will be carried through pipes.

According to Bir Bahadur Singh, this will prevent pollution of the Yamuna river (which flows through Delhi) and also boost crop yields.

The cost of laying the pipelines, he feels, should be borne by the refinery, which has already cost \$500 million.

**THE ASSOCIATION OF PETROLEUM** Re-Refiners is sponsoring the 4th International Conference on Used Oil Recovery and Reuse, Sept. 28-Oct. 1, at Caesars Palace, Las Vegas, Nevada, U.S.A. It is co-sponsored by the U.S. Department of Energy and the National Bureau of Standards. For information: Association of Petroleum Re-Refiners, 2025 Pennsylvania Ave., N.W., Suite 913, Washington, D.C. 20006, U.S.A.

adequate since the alcohol program has a tapline to the National Alternative Energy Development Fund, which is fed in turn by a special tax on all petroleum derivatives. However, Brazil is chronically short of capital and Brazilians are becoming increasingly conscious of alternative energy cost-benefits.

Although alcohol distilleries getting Proalcool financing are required to provide approved forms of swill disposal, unauthorized dumping in streams and rivers is still common among some distilleries. Swill in concentrated form uses up the oxygen in streams and kills fish and other marine organisms.

Ironically, when the "polluted" water from such contaminated streams or rivers reaches larger bodies of water capable of absorbing the waste, a sharp rise in the population of plankton, other organisms and fish is noted.

"The ocean would eat this stuff up, and it would be a tremendous boost to fishing," Ostrovski said. He explained that although Brazil has an extensive coastline and a fledgling commercial fishing industry which the government is trying to foster, fish stocks here are not as rich as along many other coasts. This is because the Brazilian coast has no upwelling current to raise organic matter off the ocean floor and attract top- and middle-level feeding fish.

To rectify that oversight of nature, Admiral Paulo Moreira da Silva, director of Brazil's Institute of Marine Research, has long advocated "fertilizing" the sea to improve fishing or creating giant fish marinas like cattle feed lots to fatten fish in captivity. It all sounded like another visionary Brazilian dream. Now, perhaps, the unwanted swill from fuel alcohol distillation could provide the raw material for accomplishing both programs.

JAMES BRUCE, GEORGE HAWRYLYSHYN



## Costa Rica's bishops preach environmental activism

**SAN JOSE, Costa Rica**—The "Asociacion Costarricense para la Conservacion de la Naturaleza," ASCONA, one of Latin America's most dynamic conservation NGOs, has initiated a church-sanctioned conservation program which could have continent-wide implications by bringing wider public attention to natural resource problems.

Some time ago, ASCONA officials met with the Catholic Bishops of the Episcopal Conference of Costa Rica. These sessions were devoted primarily to a discussion of the country's major conservation problems, their socio-economic consequences, and an appeal by ASCONA to the clergy for cooperation, which was readily obtained.

Within a relatively short period of time, a document was

prepared by the bishops, which was reviewed and revised by ASCONA technicians for final ratification by the clerical group. The bishops called a press conference on the date of the religious festival in honor of "San Isidro Labrador," the patron saint of farmers, and issued a "Pastoral on Conservation of Natural Resources," which has already had effect nationwide.

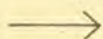
The Pastoral begins with a review of the country's major problems such as: deforestation, erosion, river contamination, slash and burn agriculture, etc., and links these problems with the Bible and religious precepts relating to conservation of natural resources. The document also refers to the Puebla, Mexico, encyclical which came out of the meeting of the entire Latin American Episcopate a couple of years ago. The Puebla document called on the entire Latin American continent to "do everything necessary to avoid the devastating effects of uncontrolled industrialization and an urbanization process which is taking on alarming proportions."

The Pastoral of the Bishops of Costa Rica, however, gets right down to business with the following recommendations:

- That a prevention policy be clearly defined to stop irrational natural resource destruction.
- That government institutions collaborate and cooperate in more coherent form and integrate the farmer in their decisions on the social and economic needs of the country.
- That a land-use plan be clearly defined to preserve forest areas and watersheds.
- That antiquated and confusing legislation be corrected and brought up to date.
- That owners of mountain property be given incentives to maintain their land in forest, avoid the use of rivers for industrial wastes and residues, etc.
- That the use of pesticides be rationalized and placed under strict biological control, and that the farmer be educated on proper utilization of agro-chemical products.
- That industry be obligated to install preventative systems in accordance with existing legislation.
- That urban growth be properly planned without the loss of rich agricultural soils.
- That the destruction of mangrove, wooded areas and watersheds be avoided and that reforestation programs be encouraged at the "campesino" level.
- That the Ministry of Education play a leading educational role to obtain democratic support so that the laws will be enforced without the need for violence and that environmental investigation and education programs be developed at every level.

The encyclical ends with: "We, the Bishops of Costa Rica, concerned for the welfare and development of our people, cannot remain indifferent to the problems which are constantly impoverishing us more and more, and which are soluble, above all, if we realize that, as men, intelligent human beings, we are those to whom God has confided this marvelous planet as our habitat..." It further calls for the support of all Costa Ricans to conserve the environment and makes a plea to national authorities to enforce the laws pertaining to conservation.

The Pastoral was published in its entirety in the country's



## In Latin America . . .

**EIGHTY PERCENT OF ALL CULTIVATED** lands in South America and the Caribbean suffer from some degree of erosion, said Jose Emilio Araujo, director general of the Inter-American Institute for Agricultural Cooperation. A Food and Agriculture Organization (FAO) report confirmed that the trend continues, largely due to overcutting the region's forest lands. It said up to 10 million hectares are severely affected.

The statements and reports were made at a ministerial-level meeting, the Eighth Inter-American Agriculture Conference, held in Santiago de Chile in April. It was attended by representatives of 27 countries and observers from several international organizations.

As a result of land abuse and mismanagement, it was reported that 40 million inhabitants of the Americas suffer from problems due to malnutrition.

**TOXIC FUMES** from the heavily industrialized and populated Valley of Mexico are sweeping out of the valley, endangering forests, vegetables and flower-growing industries, a Mexican botanist has warned. Unless carbon monoxide discharges from automobiles are reduced and factories convinced they must eliminate air pollution, new varieties of plants will have to be found and planted, L.I. deBauer, botanical disease specialist at the Agricultural Postgraduate College in Chapingo, Mexico, told a Mexico City seminar on the environment.

**WITH ONLY A TRACE OF RAIN** since January, residents of Haiti's capital and the surrounding regions are feeling the effects of a severe drought.

Meteorologists say that severe deforestation and the subsequent exposure of white reflective limestone rock may be a contributing factor as it reflects a substantial amount of solar energy skyward, thus preventing the formation of rain clouds.

Many areas of Port-au-Prince are presently out of potable water and residents are paying a premium to have water trucked in from questionable and frequently highly contaminated sources.

The Haitian government has declared this the "year of the tree" and is encouraging essays, songs and similar solutions for deforestation, but the replenishment of trees is almost non-existent.

**DURING 1981, COSTA RICA** plans to expand the number of wildlife refuges in the country to cover many important areas for seabirds and sea turtles.

## Environment & Industry...

**THE COLOMBIAN SUBSIDIARY OF TEXACO** has been denounced by one of Colombia's leading environment defenders, lawyer-journalist Albert Donadio, for contaminating the air at the company's El Guamo refinery in the central part of the country. According to on-site reports by Donadio, the refinery's residual debris is dumped untreated into a lagoon near the refinery's storage tanks, presenting a hazard to both the tanks and a town less than a mile away.

Residents told Donadio that the lagoon catches fire on an average of one to two times a year. The last conflagration, witnessed by Donadio in March, threatened to blow up the storage tanks. During the 24 hours needed to put out the fire, the town was enveloped in black smoke.

Under Colombia's new penal code, polluting the air is a crime punishable with up to six years in prison and a \$40,000 fine.

**THE WORLD BANK** has published a manual of environmental guidelines for the pulp and paper industry. Its purpose is to provide general guidance for those who are planning, starting up or assessing pulp and paper plants. The 101-page handbook gives an overview of the industry, discusses environmental input and assessment methods. It looks at water, air and land pollution control, environmental laws and regulations, and provides an environmental planning checklist. For a copy of "Environmental Considerations in the Pulp and Paper Industry," write: Office of Environmental Affairs, The World Bank, 1818 H Street, N.W., Washington, D.C. 20433, U.S.A.

**FOURTEEN LEFTWING TERRORISTS** have been charged in connection with the killing of Enrico Paoletti, industrial director of the Swiss-owned Icmesa firm, a victim of the first "ecological assassination" in history.

Milan magistrates investigating the case reported that three men and a woman, convicted members of the terrorist group Prima Linea or Front Line, were charged with the actual murder while 10 others were charged as accomplices and for illegal possession of arms.

Paoletti was assassinated in February 1980 in "retaliation" for the Icmesa dioxin leakage which led to evacuation of the town of Seveso.

leading newspaper, La Nacion, and in the "Eco Catolico," the clerical press organ, as well as being well reported on television, radio and in other local newspapers. And clergy are delivering sermons from their pulpits on this theme throughout Costa Rica. Although ASCONA played a discreet role in this strategy, it is producing 5000 copies of the Pastoral for distribution throughout the country.

While Costa Rica does not rank among the most conservatively religious countries of Latin America, the Church is highly respected and plays an important role in the countryside. The clergy also reaches a large segment of the country which is generally beyond the range of broad environment educational programs, namely, the "campesino," or small farmer, and the rural populace. This new approach in this part of the world, with the Church as an ally, could prove a significant tool throughout Latin America.

MURRAY SILBERMAN



## Its oil firm tax illegal, Curacao now faces bankruptcy

**PORT-AU-PRINCE, Haiti**—The Curacao government has been shaken by a court decision which, if implemented, may bankrupt the island.

In a judicial decision, the Netherland Antilles court of appeal turned over a lower court decision on the legality of an environmental tax levied on the Curacao Oil Terminal. The court ruled that the transshipment facility was eligible to reclaim the Nfl 80 million (\$44 million) it has been paying into the island treasury at a rate of a little over Nfl 20 million a year.

The decision is, in effect, a declaration of bankruptcy for the island, which is already in debt. The island has based past and present budgets on the tax, and it was used for everything other than improving the environmental pollution attributed to the oil facility's presence.

Said Reb Ves, Managing Director of Shell's local companies, "I have the bankruptcy of the island in my hands." Originally the company was given a 10-year tax holiday by the central government in 1974 only to have a stiff environmental tax imposed on it once the oil facility started to show a profit.

Central government MPs are now to discuss a change in the law and may pass retroactive legislation. Curacao may also take the case to the highest court of appeal in The Hague.

Oil company officials pointed out that they offered to make a voluntary early contribution at this time and in the past but only in the neighborhood of Nfl 1 or 2 million (\$500,000 to 1.1 million) a year, to be applied to environmental pollution controls. The island rejected this as "ridiculous."

ARTHUR CANDELL

## UNEP is facing a serious cash crisis and must cut back



**NAIROBI**—The United Nations Environment Program (UNEP) is facing its most serious cash crisis and must cut back on its spending. This is the message from the annual UNEP Governing Council (GC) meeting, held in Nairobi recently.

The U.S. and other Western delegations warned that there is no prospect that UNEP will receive the \$120 million proposed as a target for its environment fund in 1982-1983. A more realistic target is \$77 million, they said.

Debate on the target figure took up much of the GC with developing countries opposing a reduction. But the Western states (including the U.S., the biggest contributor to the Environment Fund) reminded the GC that the worldwide recession had limited their ability to provide cash.

Acrimonious and prolonged debate also arose on a Swedish proposal to create a special fund to finance environment projects in developing countries, with an initial target of \$15 million. This was solidly opposed by the U.S., Britain, France, West Germany, Canada and other Western states who said it would not produce more cash and would mean just one more fund to administer. Sweden (strongly supported by Third World countries) said many aid funds could not now contribute to UNEP because they were only allowed to help developing countries, and the proposed new fund would tap this source.

The pressure forced Sweden to withdraw its proposal.

In the closing stages of the GC, the African countries put forward a resolution to condemn South African apartheid, calling for support for the victims of apartheid and requiring UNEP Executive Director Mostafa K. Tolba to present a report to next year's GC on the impact of apartheid on the environment.

In a heated debate, U.S. delegate Mary Elizabeth Hoinkes said the U.S.A. was saddened to see such a politically motivated resolution in this forum. And even Sweden and Switzerland refused to support the resolution. It was, however, passed by 17 votes to two—with 28 states abstaining.

Another resolution put forward by the Third World states called on governments to stop the arms race and to allocate .001 percent of their arms spending for development projects and for the protection of the environment.

UNEP completes its first decade next year, and a special session of the GC is being organized to mark the 10th anniversary of the Stockholm Conference which gave birth to UNEP. Dr. Tolba is appealing to world states to revive their dedication to the principles of preserving the environment. CHARLES HARRISON

## International cooperation...

**CLEANING UP OIL SPILLS**, even accidental ones, should be the financial responsibility of the polluter, the OECD Council has recommended. The Organization for Economic Cooperation and Development (OECD), which is a consortium of the West's 24 most industrialized countries, recommended that the polluter pay for "reasonable remedial action taken by public authorities" to clean up an oil spill at sea.

In addition, the OECD calls on member countries to enter into mutual assistance agreements for the control of oil spills, so that financial terms of their operations are specified. This would be particularly useful in high-cost operations where the polluter would not be able to reimburse national authorities for the full cost of the clean-up.

**TEST DATA ON CHEMICALS** produced in any OECD country will be accepted as valid in all other countries of the 24-member Organization for Economic Cooperation and Development. The recent agreement by the OECD nations, who are major producers, traders and consumers of chemicals, came in a decision by the OECD Council. The Council also adopted two related recommendations: an international set of methods for testing chemicals, and an agreed set of principles to assure high quality results in testing chemicals.

One thousand new chemicals enter the market in OECD countries each year, adding to the 70,000 currently on the world market.

**MOST EUROPEAN AND NORTH AMERICAN** countries have taken major steps to reduce air pollution by sulphur dioxides, according to reports given at an Economic Commission for Europe seminar held recently in Salzburg, Austria.

The ECE prepared a special report noting that various legal, administrative and technical measures have been initiated by its member governments. It said that international cooperation had been strengthened, in particular, on the basis of the 1979 Convention on Long-range Transboundary Air Pollution.

Most countries have established ambient air quality standards or guidelines on sulphur dioxide or are in the process of doing so. Many have also imposed specific emission standards on particular enterprises or branches of industry.

Countries are also using alternatives to technological control of SO<sub>2</sub> emissions: energy conservation, energy other than fossil fuels, credits for control and charges for emission.

## Toxics

**THE THIRD DOLPHIN** in three months was found dead in the Adriatic Sea, at the mouth of the Po River, killed by water pollution in the area, health authorities reported.

Laboratory checks proved that each kilogram of dolphin flesh contained 50 milligrams of mercury as well as traces of chrome and lead.

Ecologists claimed the death of dolphins and other fishes indicated that pollution of the Po was beyond the danger point and that the concentration of mercury, the result of industrial dumping into Italy's longest river, was well above a ceiling of 0.005 milligrams per liter fixed by national law.

A recent study by Milan University professors found that every year the Po dumps into the Adriatic 3,000 metric tons of detergents, 485 tons of lead, 65 tons of mercury and 64,000 tons of oil and hydrocarbon residuals. In addition five thermoelectric and two nuclear power plants discharge their hot waters into the river.

Giorgio Marchetti, of the university, claimed that Po pollution was responsible for a 33 percent loss of fauna in the Adriatic over the past few years, with pollution effects reaching as far as 400 kilometers from the mouth.

**SWEDEN'S** Chalmers Technical University in Gothenburg has set up a free "chemical service" on a trial basis to answer questions arising from the use of chemicals.

Professor Bengt Norden told the Stockholm newspaper Svenska Dagbladet he expected most questions to deal with environmental problems or the need for quick decision on risks involved in handling dangerous chemical preparations.

A number of so-called chemical waste "scandals"—when barrels of toxic substances have been found buried or sunken in waterways—have alerted Swedes generally to the dangers of chemicals.

**THE CHEMICAL STUDY COMMITTEE** of the UN Economic Commission for Europe (ECE) will meet in Finland Sept. 5-11, 1981, to consider two main topics: environmental problems in the oil refining and petrochemical industries, and the chemical industry in relation to other industrial branches, particularly forest industries.

Following the formal meetings there will be a study tour of large, modern chemical installations in the country. The tour is open to all interested persons who have been nominated or approved by their governments, or to members of international organizations participating in the work of the ECE.

Information on the meeting and tour is available from: Industry Division, UN Economic Commission for Europe, Palais des Nations, 1211 Geneva 10, Switzerland.

## UNEP's toxic chemical register ready for use

**NAIROBI**—The International Register of Potentially Toxic Chemicals (IRPTC), part of the UN Environment Program's Earthwatch program, is now going into full operation—right on schedule.

IRPTC's Geneva-based director, Dr. Jan W. Huismans, interviewed at UNEP headquarters here, has been directing a massive operation to acquire, cross-check and collate scientific information on thousands of different chemicals. IRPTC has in its file information on more than 40,000 chemicals; and priority attention is being given to 300 to 400 (including around 160 agro-chemicals) which at present cause most concern because of their potential effects on health and the environment.

Formed in 1976, IRPTC already publishes and distributes regular bulletins (in English, French, Spanish and Russian) giving the latest information on chemical substances. China has now asked for the bulletins to be produced in Chinese for the benefit of its scientists.

And the office has just produced its first register, containing scientific details of 330 chemicals, with an indication of which data fields are covered by the IRPTC files. The index is computerized and will be updated at least twice a year.

More than half the world's countries, Dr. Huismans said, do not have effective legislative control on the use of pesticides. And there is growing concern about the supply to the developing countries of chemicals which have been banned elsewhere.

CHARLES HARRISON

## Argentinian to head the Environment Liaison Center

**NAIROBI**—Gary Gallon, the Canadian conservationist (*WER*, Jan. 30, 1978, p. 5) who has headed the Environment Liaison Center (ELC) here for the last four years, leaves in June and will be replaced by Delmar Blasco, Gallon's deputy since 1978. The ELC coordinates non-governmental environment groups (NGOs) worldwide.

Gallon will return to Canada (he was Canada's Environmentalist of the Year in 1976) but is remaining here until August to help organize an NGO Forum on New and Renewable Sources of Energy at the time of the UN Conference, August 9-16.

Blasco, a 35-year-old Argentinian, is a schoolteacher and social anthropologist who worked with the International Voluntary Service and the International Youth and Student Movement in the UN. While with the ELC he has been responsible for strengthening liaison with Spanish-speaking NGOs.

Blasco's appointment was made by the ELC Board, whose 12 members include eight from developing countries.

From an initial membership of 45 organizations in 1974, the ELC now has 175 members, ranging from international bodies like the League of Red Cross Societies and the World Federation of Democratic Youth to smaller bodies such as the Environment

Protection Society of Malaysia. The ELC works with about 6,000 organizations altogether, including 2,500 in the Third World.

Gallon says the last eight years have been spent building the NGO network, monitoring the development of UNEP, pushing to create the UN Center for Human Settlements (HABITAT) and improving the ELC's capacity to assist developing country NGOs to strengthen their programs.

The ELC feeds NGOs with information on environmental programs; answers their queries; issues a regular newsletter, Ecoforum, in English, French and Spanish; organizes seminars and workshops; and participates in national and international conferences (such as the annual UNEP Governing Council in Nairobi and last year's World Food Council in Arusha, Tanzania).

CHARLES HARRISON

## WHO has devised a method for rapid assessment of pollution

**GENEVA**—The World Health Organization (WHO) announced recently that it had developed a simple, new method for assessing air, water and land pollution sources.

WHO has been working for the past several years on developing and testing a relatively quick and applicable way to identify and assess environmental problems in a given city, region or even country. Their new method is called "rapid assessment."

It is based on available information such as industrial production figures, fuel usage, number of motor vehicles, population statistics and the like. When it is used alongside information such as local health statistics and regional development planning information, priorities can be set for environmental pollution control and prevention strategies.

WHO estimates that a rapid assessment study would normally take about six to eight weeks to complete for a city of two to four million inhabitants. The result could be an industrial waste profile that would show the most urgent control problems and those that may be emerging. Another application for WHO's rapid assessment might be for preparing environmental health impact statements of a proposed development project, either urban or industrial. And, on the national level, these studies could assist in determining the appropriate balance between economic development, health and environmental pollution control. WHO stated that this kind of rapid assessment would be of special interest to countries that have limited environmental control resources available since the method is an integrated approach and would reduce competition for scarce resources which might otherwise be spread over separate air, water and solid waste management programs.

The WHO guideline, "Rapid Assessment of Air, Water and Land Pollution Sources," will be published later this year. As a follow-up, the World Health Organization will ask help from other UN agencies in organizing a series of inter-regional workshops to train national environmental officials in the application of the rapid assessment technique.

WILLIAM G. MAHONEY

## Environmental management ...

**"THE PRIME MINISTER, MRS. GANDHI,** expects quick results," India's new secretary of the Department of Environment told *WER*. Dr. S.Z. Qasm, former head of the National Institute of Oceanography (which is working on bacteria that gobbles tar, *WER* Sept. 24, 1979, p. 6), says, "We have to do something fast—otherwise, everything will be over at the present rate of deterioration of the environment in the country."

One of Dr. Qasm's first projects is the launching of "eco-development" camps throughout the country for 25,000 youths during their summer holidays. "I want every child to look after a tree." Even at the panchayat, or local self-government level, he wants to spread the awareness of preserving forests.

"At present, any industry which has to be established requires a technical and economic feasibility report, but very soon, to qualify for a bank loan and other aid, a project will have to be cleared from the environmental angle."

The secretary, who took charge on May 15, agrees that the present penalties against polluters are too small and deserve to be tightened.

**A MULTI-MILLION DOLLAR WILDLIFE** protection and nature conservation project has been launched by Burma. The project involves setting up a number of national parks and nature reserves. The United Nations Development Program and the government of Burma are each contributing \$2.2 million to the three-year project.

**IN WEST GERMANY,** the city of Munich has begun a mapping project to determine where plants and animals live within the urban area so planners can prepare an overall recreational program.

The Bavarian Environmental Protection Ministry will provide 200,000 DM of the 400,000 DM (\$200,000) project, with the city picking up the rest.

Studies show citizens spend from 60 to 70 percent of their leisure time in their own living areas. Every improvement in local recreational facilities helps stem the "flight from the city," Environment Protection Minister Alfred Dick maintained.

Munich is not the first Bavarian city to carry out such a study. Augsburg and Passau have already completed their biotope mapping. Fuerth and Neu-Ulm have similar studies in progress and Bamberg and Schweinfurt are scheduled to start in the near future. In all cases the Bavarian Environmental Protection Ministry has either provided or pledged funding.



## Briefly . . .

**A NEW FELLOWSHIP PROGRAM** for developing country environmentalists has been announced by the Natural Resources Defense Council. The fellowship, which provides all expenses for up to two months of study and practical experience in the U.S., is open this year to one applicant working on environmental or natural resource issues in an NGO, government agency or academic institution. Applicants should have a record of environmental accomplishment, the potential for utilizing the fellowship experience in his country, and fluency in English. A letter of application for the Stephen P. Duggan Fellowship should be sent no later than August 15 to the NRDC International Committee, Natural Resources Defense Council, 122 E. 42nd Street, New York, N.Y. 10168. It should list qualifications, discuss the applicant's objectives and give the names of two references.

**THE WORLD WILDLIFE FUND** has announced that, thanks to conservation efforts, the population of the once highly threatened vicuna of South America has increased sevenfold in the past decade, from 10,000 in 1970 to 77,000 in 1980.

The figures, provided by two internationally recognized scientists, appear to end a controversy that has raged among conservationists for the past year (*WER*, Sep. 22, 1980, p. 7). An aerial sample count conducted last April indicated a vicuna population in Peru's Pampa Galeras reserve of only 15,000. A Peruvian government plan to cull up to 2,500 vicuna a year would have put the animal's survival in doubt.

The government asked WWF and the International Union for Conservation of Nature and Natural Resources (IUCN) to name independent observers to oversee a census that was carried out in September and October. The two-man team "completely vindicates" the original ground census method of the Peruvian project team in Pampa Galeras, the WWF said.

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## The environmental movement's "grande dame" has died

**LONDON**—One of the environmental movement's most impressive champions, Dame Barbara Ward (Baroness Jackson of Lodsworth) died in May at her home in Sussex, England, at age 67. She was a past president of the International Institute for Environment and Development, an author, scholar, and friend and adviser of leading statesmen and politicians. Most of all, she was an advocate of a more equitable distribution of the world's resources to aid the development of poor nations.

Dame Barbara showed early promise of a brilliant career. After completing her formal education at Oxford, she was appointed assistant editor of one of Britain's leading weekly journals, *The Economist*, at the age of 25. During the Second World War she was recruited to the Ministry of Information and became well-known to millions of Britons through her broadcasts. *The Times* of London said in its obituary: "Miss Ward at once began to display the extraordinary range of intellectual and social qualities that will long be remembered by all who knew her; to beauty, personal kindness and modesty of demeanour she added elegance, assurance, gaiety, wit and a capacity for sizing up complicated topics and making them plain to the common man either in writing or by word of mouth."

At the end of the war Dame Barbara was appointed governor of the British Broadcasting Corporation (1946-50) and of Sadlers Wells and the Old Vic. She also became more closely associated with the Labour Party and developed her powers as a speaker.

Then came a period of intense academic activity including visiting lectureship in the U.S.A. at Harvard and Columbia Universities and prolific writing. Among the books she published at this time were "India and the West," "Rich Nations and Poor Nations" and "Nationalism and Ideology."

One of the most important and significant features of Dame Barbara's personality was her religion. She was a devout Roman Catholic and was inspired by her Christianity.

The emergence of environmental concern with the UN Conference on the Human Environment in Stockholm in 1972 was marked by the publication of one of Dame Barbara's most important publications, "Only One Earth; The Care and Maintenance of a Small Planet," which she co-authored with Professor Rene Dubos.

She was appointed president of the International Institute for Environment and Development in 1973, but was forced to step down last year due to ill health.

A close colleague of Dame Barbara during her years at IIED said she considered the period to be the culmination of her efforts. She made outstanding contributions in the fields of environment, population, habitat, food policy, water resources, the law of the sea, and science and technology. Her leadership in these areas, along with the publication of her last two books "The Home of Man" and "Progress for a Small Planet," did much to shape global awareness of the importance of these issues. ALAN MASSAM



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## Overfishing has finally destroyed Namibian shoals

**JOHANNESBURG**—Avaricious fishing concessionaires have finally destroyed the Namibian fishing industry, leaving 8,000 out of work in Walvis Bay alone.

Marine deserts now exist along the South and West African coastlines, where once huge schools of pilchards, anchovies, hake and other fish teemed. When catches were high the fishing companies hurled more men and ships in to help with the plunder, overfishing even the liberal quotas allowed. When caught, skippers dumped their cargoes leaving 20-kilometer-long banks of dead fish floating on the sea. In the end the shoals were depleted below their ability to reproduce and the fish disappeared, possibly forever in the case of pilchards.

Eight months after publication of a commission of inquiry report on the industry there is silence from officialdom, and most of the 120 recommendations remain where they started—on paper.

That is the current state of an industry which was once the world's eighth largest. The pilchard catch alone brought in R100 million (\$118 million) a year. Today the money flows to pay for pilchards canned in Chile, while at home canning factories stand idle and the empty trawlers are mothballed three deep in their home ports. Cannery have stripped their factories of machinery and moved equipment, capital and know-how abroad to start again elsewhere. Walvis Bay and other fishing ports have been left to rot.

As long ago as 1968, a fish population expert, Dr. Jan Lochner, then head of the Oceanographic Research Institute at the University of Port Elizabeth, warned the South African government that the fishing industry off Namibia would collapse if uncontrolled fishing continued. But he was not listened to (*WER*, Nov. 3, 1980, p. 8). Instead the government followed the suggestions of its Fisheries Advisory Council.

The council, entrusted with the job of guiding the Institute of Sea Fisheries and the Department of Trade and Industries under which it fell, was dominated by people who had vested interests in the fishing industry. Council members laughed off warnings of a collapse and pointed to the biggest catches in the industry's history—which peaked at 1.22 million tons in 1969—as evidence that the boom would go on forever.

Today there is a ban on all pelagic fishing off the Namibian coast in the hopes that fish stocks will recover.

MIKE NICOL

## Waterwise...

**NIGERIA WILL SPEND** N174 million (\$313 million at the official rate) on developing its fishery sector during the Fourth National Development period, said Chief Olu Awotesu, Minister of State in Nigeria's Ministry of Agriculture.

The government hopes that N86.7 million will be committed by state and local governments.

Nigeria is anxious for rapid growth of this sector since most development in this area has been by private investors. They have done little to enrich the country or nourish the people.

Laws to ensure conservation and continuous development of the fish industry are urgently needed.

**MOLLUSCS FILTER VAST QUANTITIES** of estuarine water through their tissues, so they quickly accumulate chemical contaminants. This means they serve as first-rate monitors of environmental poisoning. In order to put these shellfish to work on behalf of human welfare, the U.S. government has launched a Mussel-Watch Program along the country's coastlines.

**INDIA'S DEPARTMENT OF ENVIRONMENT** is preparing a report highlighting major environmental factors that must be considered in all development projects in the Ganga and Brahmaputra river basins (India's two major rivers) during the next 15 years.

A map of major river systems in the country, indicating breeding grounds and migratory routes of important species of fish, is also being prepared.

In its first annual report, the department also proposed setting up a national environmental information system. And a committee has identified four areas as possible biosphere reserves. Another committee has recommended that an institute or field station be set up to deal with the ecological problems of the Himalayas.

**THE HOUSEBOAT LAKE** in Kashmir—Dal Lake in the state capital, Srinagar—may disappear in 50 years if money is not found for a massive reclamation project.

Some 3,000 houseboats dump their wastes in the lake, deforestation has caused erosion and pesticide and fertilizer runoff, and weeds have grown apace. Kashmir Chief Engineer Ghulam Rasool Mir stated that the lake has shrunk to half its size in the past 50 years. And the livelihood of 10,000 fishermen is in danger.

The state's Chief Minister Sheikh Abdullah has appealed to the federal government in Delhi and the World Bank for \$25 million for weed cleaning, afforestation, waste disposal systems, improving the catchment area and constructing sediment settling basins. Meanwhile, he allocated \$2.5 million to build a circular road around the lake to check runoff.

## Laos restores and expands its fish farming enterprises

**BANGKOK**—There is an old adage which says, "If you give a man a fish he will eat for a day, but if you teach him to grow a fish he will eat every day." Aware of the wisdom behind this saying, the Interim Mekong Committee for Coordination of Investigations of the Lower Mekong (River) Basin has been paying great attention to aquaculture in its member countries, the Lao Peoples' Democratic Republic, the Kingdom of Thailand the Socialist Republic of Viet Nam.

In Lao PDR, in particular, great advances have been made. With a \$116,000 grant from the Netherlands, Mekong Secretariat experts went to work. In just four years, they have helped Laos successfully breed Chinese carp by injecting mature fish with pituitary gland extract to speed up the breeding process.

Among other achievements have been the rehabilitation of an existing derelict hatchery at Nong Teng in under six months, using a grant of \$600,000 from the Netherlands, and the construction of a 50-hectare fish farm (including a modern hatchery) at Tha Ngone. The Mekong Secretariat's experts have also introduced stocks of exotic fish that are widely used and highly valued in Asia. To further increase aquacultural production, these experts have successfully produced several fast-growing intergenetic hybrids from the newly introduced species. The production of these hybrids is now routine practice at the Tha Ngone fish farm. Besides those grown by the Lao government farms, large numbers of selected hybrid fry have been distributed to fish farmers throughout the country. In 1980 alone, at least 3.5 million fingerlings were distributed to aquaculture farmers.

Meanwhile, over 100 officials from at least nine provinces, and from ministries, cooperatives and other national agencies have, or are receiving, one- to eight-month training courses in modern aquaculture management. Many of the earlier participants are now manning fish farms in various provinces in the Lao PDR.

TONY OLIVER

## Nigerian fishing methods: poison them or explode them

**ENUGU**—Nigeria's mostly illiterate and amateur fishermen have begun using "modern" and dangerous methods to harvest their catch. They are dumping chemicals such as pesticides, herbicides and poisonous herbs to stun the fish which are then harvested downstream for sale to unsuspecting consumers. They also use gunpowder and other explosives as well as small-mesh nets, which catch undersized fish. And they are overfishing.

These chemicals, herbs and explosives contaminate the water as well as destroy the fishes' food chain. Dr. M.O.E. Iwuala, Director of the World Health Organization's Arbovirus Vector Research Unit in Enugu, told *WER* that the acute and chronic effect of such practices on the consumer have not yet been properly assessed in the country. However, he said, it is safe to assume some significant

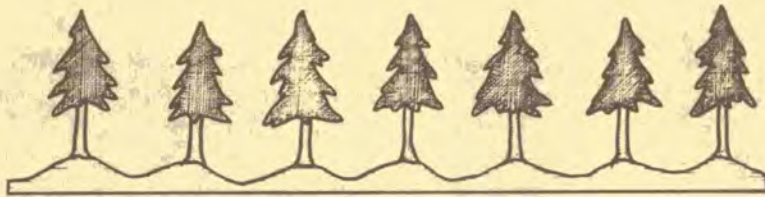
proportion of deaths in the country may not be unconnected with such unguarded exposure to toxic hazards.

Besides the direct harmful effects of pesticides to man and economic crops (including livestock), their unrestrained use in the Nigerian environment may also be instrumental in the appearance of resistant species and strains of insects and other pests which cause diseases. "For instance, we have today in Nigeria several resistant species of domestic flies, mosquitoes, and even ticks and bugs," he said. "These present more problems in terms of control since they are unaffected by routine use of the same or closely related groups of pesticides." Unfortunately, not much is being done in integrated pest management. There are only isolated reports from a few veterinary research establishments and agricultural farms.

What compounds the situation in Nigeria is that there are no clearly defined laws or edicts guiding or forbidding the free use of certain categories of pesticides, herbicides, insecticides, acaricides, rodenticides, etc.

The problem is becoming acute, and some legislative houses in the country have stepped in and are looking at the problem.

J. N. OBINEGBO



## Nigeria's forestry group asks government eco-enforcement

**ENUGU**—The Forestry Association of Nigeria has called for the urgent creation of a National Environmental Advisory Committee to ensure proper environmental management. The call was made at the end of their week-long 10th Annual Conference, held in Sokoto recently.

Their communique also called on the federal and state governments to create a new Ministry of Forestry, Animal and Fisheries Resources from the existing Ministry of Agriculture and Natural Resources.

The Association suggested a higher priority be accorded forestry, in view of the increasingly significant role forestry now plays in the socio-economic life of the nation.

To arrest the growing scarcity of firewood and its rising cost, the Association recommended large-scale, fast-growing fuelwood plantations, to relieve the masses of the burden of expensive firewood.

While it acknowledged federal and state contributions to the Arid Zone Afforestation program, the Association asked for a substantial increase in view of the magnitude of desert encroachment in the country.

The Association also called for effective regulation of road construction companies and other industries to avert further environmental disasters and soil erosion.

J. N. OBINEGBO

## In Africa...

**BLUE AND WHITE NILE IRRIGATION** schemes will be rehabilitated and modernized in the Sudan south of the capital, Khartoum, in a \$122 million project to step up cotton production. Major outside funders for the projects are the World Bank and the African Development Fund. It is expected that the income of nearly 50,000 farm families will increase and that 80,000 other farm laborers will also benefit.

**IN TUNISIA**, the UN Food and Agriculture Organization has introduced large cactus plants into the southern part of the country to help halt soil erosion. Afrique Agriculture reported that the World Food Program also allocated substantial assistance to the project and, over 10 years, 100,000 hectares of cacti have been planted. During the past six years of drought, these plants—which are also good for forage—are said to have saved approximately 230,000 sheep in the region.

**KENYAN CONSERVATIONISTS** are protesting a government decision to site a UN-backed primate research center in the Olulua Forest, a small area of unspoiled natural forest only 24 kilometers from central Nairobi. They object to the destruction of mature trees on a 40 hectare site in the forest.

The Kenya Government has ignored the protests, and officials say care will be taken to limit forest encroachment. They say the forest site is well suited to the primate research center and there will be no danger of disease spreading from it to nearby inhabited areas.

Part of the protest is on the ground that, by choosing a different site, the destruction of a natural forest area could have been avoided.

**A DEVELOPMENT PROJECT** aimed at improving the use of land and raising living standards for hundreds of thousands of people in nearly a quarter of KwaZulu—the proposed black state within South Africa—is being launched by the Institute of Natural Resources.

The request to undertake this huge project came from the KwaZulu Department of Agriculture and is being watched with interest by the central government, which is concerned about the damper put on development by tribal farming and land tenure methods.

Population density, water supply and erosion will be researched in detail, and the institute hopes to come up with new agricultural systems for poor rural areas.

KwaZulu has been in the grips of a severe drought for two years—a situation worsened by deforestation, overgrazing, and soil erosion—and the institute's project was largely born out of these catastrophic circumstances.

## Energy sources...

**AN ISRAELI PLANT** planning to convert from oil to coal will be required to present a statement detailing the potential impact of the conversion on the environment and the means to be used to keep pollution below national environmental quality limits—including installation of necessary technological devices. Israel's Environmental Protection Service, while not opposing conversion on principle, has unequivocally stated that no plant will be issued a permit for conversion unless it can meet all existing standards for water, air, noise quality, etc.

**GUYANA HAS SIGNED TWO CONTRACTS** with Montreal Engineering Co., Ltd., of Canada for hydroelectric studies as part of the government's overall program for developing alternative sources of energy.

The contracts provide for feasibility and pre-feasibility studies to be carried out on three sites.

In addition, the government is signing a contract with Sweco, a Swedish firm, to look at five or six sites in the upper Mazaruni region, preparatory to an ambitious billion dollar hydro-project. A difficulty there is that the territory is home to one of the last aboriginal tribes in South America. A World Bank official said they were considering funding the project and would prefer the site least disruptive to the indigenous people.

**IN KUMASI, GHANA**, the Technology Consultancy Center, with help from the Georgia Institute of Technology of the U.S.A., has had success in converting forest wastes into energy. According to Afrique Agriculture, there were initial problems in converting tropical hardwood sawdust by pyrolysis into charcoal, tar and gas. But they have been overcome and the converter was using 1.5 tons of forest wastes a day. A local sawmill owner reportedly became interested in buying a similar plant to produce a wood preservative from sawdust.

**INDIAN SCIENTISTS** have successfully converted forest waste, such as grass and leaves, into smokeless fuel pellets for use in domestic stoves. The work was done at the Indian Institute of Technology in New Delhi.

The pelletized fuel is said to be equivalent to coal in energy content and is pollution-free.

The fuel pellets are made by drying the agro-wastes and then converting the fibrous material into char. The char is blended with clay materials and pelletized and extruded into sizes suitable for burning them in stoves. Coconut waste, rice husk, leaves, pine needles, sawdust, grass and straw can be used as raw material for making the pellets.

## Coal-unloading controversy in Israel won by ecologists

**JERUSALEM**—Israel's energy needs may be urgent, but they do not supersede environmental quality. This, in essence, is the government's reaction to a controversy that developed after an accident looked as though it might delay the start-up of Israel's first, big coal-fired power complex.

Last December a storm damaged barges crucial to the building of an offshore coal-unloading pier at Hadera. The Ports Authority and Israel Electric Corporation (IEC) wanted to build a temporary coal-unloading dock in the port of Haifa. They said this emergency measure was required to save the country \$100 billion—the difference between using oil and coal for a year and a half in the new 1,400 megawatt complex. The power complex will be ready this summer; the Hadera jetty now cannot be finished before 1983.

However, representatives of Israel's Environmental Protection Service and the Haifa Municipality voiced their absolute opposition to the Haifa scheme, saying that unloading 800,000 tons of coal there would greatly increase the city's already severe air pollution problem.

Israel's National Council for Planning and Building rejected the Haifa unloading proposal on environmental grounds. Instead it granted a temporary permit, good until January, 1983, to unload in the open sea off Hadera.

Following this decision and an IEC protest that it was "misguided," the Ministry of the Interior issued a strongly worded statement in which it said no major planning decisions will be taken in Israel without prior examination of their potential effect on environmental quality. "The era in which planning decisions may be taken without a thorough review of their impact—including presentation of an environmental impact statement—is long over," it said.

SHOSHANA GABBAY

## Israel's solar skyline brings laws to stop esthetic anarchy

**JERUSALEM**—Israel's startling success in adapting solar water heaters for practical home use has created an unforeseen esthetic problem that is sending energy authorities back to the drawing boards.

With every second household in the country now using solar heaters, the skyline has undergone a transformation in the past decade. Urban horizons display a bewildering array of highly visible storage tanks and collector panels. This visual anarchy has led the country's planners to pause in their headlong pursuit of solar energy in an attempt to restore order to the skyline and perhaps even help beautify it.

Solar heaters began to be used in Israel in the 1950s, but it was the oil crisis following the 1973 Israel-Arab war that gave it major momentum. Today there are 500,000 units in the country, half of them installed in the past three years.

Israel saves 4 percent of its electricity output through solar

heaters, a saving estimated at \$36 million last year. At the pace the country is going solar—100,000 were installed in 1979 alone—this saving could be doubled within a few years. As of last year, all new houses less than 10 stories high are obligated by law to install a solar heating system for hot water—taller buildings do not have enough room on the roof for the solar collector panels necessary.

The same law takes note for the first time of the solar system's visual impact. It calls for installations to be visually integrated into the building to the satisfaction of local planning authorities.

This, however, did not solve the problem of existing installations. To cope with this, the Energy Ministry set up an interdisciplinary committee, including architects, engineers and builders. The committee came up with guidelines a few weeks ago which include the installation of storage tanks out of sight in attics on sloping roofs or concentrated on flat roofs in one central location where they can be masked by a fence or other structure.

Several cities, including Jerusalem, have adapted these guidelines and elaborated on them within local bylaws. A planner in the Jerusalem City Engineer's office said the south-facing installations could even become an architecturally unifying feature and an esthetic one if handled properly.

ABRAHAM RABINOVICH

## The Red Sea-Gulf of Aden action plan nears approval

**NEW YORK**—This June high-level officials from the Arab world are expected to meet and approve a draft action plan to protect and conserve the Red Sea and Gulf of Aden.

"One unique feature of the Red Sea program is its emphasis on conservation," said Dr. Abdulbar Al-Gain of Saudi Arabia. "The Red Sea and Gulf of Aden are not as polluted as many other regions of the world, and so we felt that the plan should be given a dynamic and positive orientation rather than a purely defensive one."

An environmental program has been operating in the region since 1975, but its focus had been on training marine scientists and strengthening marine science institutions. The effort now is to make it more comprehensive, bringing it into line with the UN Environment Program's other regional seas programs.

"One of our first goals is to see the ratification of the proposed Convention for the Conservation of the Marine Environment of the Red Sea and Gulf of Aden, and the Protocol concerning Regional Cooperation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency," said Dr. Al-Gain. He said this process should begin after the June meeting, when officials are expected to adopt the action plan and legal agreements. (The exact date and place of the meeting were not known to the UNEP liaison office in New York.)

One feature of the action plan is that it covers inland coastal areas as well as the marine environment. For example, there will be surveys of ground cover, the distribution of animals in coastal zones, the environmental impact of coastal human settlements, and pollution sources that could affect human health and the marine ecosystems.

SPECIAL TO WER

## Ocean management . . .

**NIGERIA** is one of 16 coastal countries of West and Central Africa that recently approved a treaty to protect their long coastline and coastal waters from pollution.

At a meeting held in Abidjan, Ivory Coast, participants agreed on a protocol committing them to cooperate in pollution emergencies such as massive spills of oil or toxic chemicals, and endorsed an action plan of environmentally sound development.

The widely praised project is a link in the regional seas program of the UN Environment Program (UNEP) that has already seen implementation of action plans in the Mediterranean, the Kuwait region, Caribbean, and the Red Sea and the Gulf of Aden.

Nigeria, the largest country in the region, will contribute the biggest sum, about \$440,000. Together the 16 states will contribute \$2.5 million in 1982 and 1983 to establish a special trust fund. UNEP has promised \$1.4 million during the next three years beginning this year.

**THE FRENCH STATE OIL COMPANY**, Elf Aquitaine, has been given the go-ahead for the second phase of a submarine survey around Barbados.

Company scientists will concentrate on a trench and canyon about 50 meters off the northeast coast of the island. Last year the company's research ship "Jean Charoc" surveyed areas up to 160 kilometers offshore. These maps of the ocean floor in Barbados' economic zone will provide the government with basic data for mineral exploration.

**THE HONG KONG** government plans to increase the fines and other penalties for marine pollution in the colony. A bill with stiffer penalties is expected to be enacted soon. The present fine of HK\$500 (US\$100) or three months in jail would increase to a fine of HK\$5,000 (US\$1,000) and six months imprisonment. And liability will extend not only to the person committing the act but also to the owner or master of a vessel or the owner or occupier of premises from which such an offense is committed. The new measure also proposes to extend the marine littering offense to waste that is deposited in any place from which it is likely to be swept into Hong Kong waters.

**THE WESTERN AUSTRALIAN** Department of Conservation and the Environment has issued a series of 12 educational pamphlets in its campaign to try to improve coastal management in the state.

They cover natural coastal processes, dune stabilization, beach management, control of off-road vehicles, preparation of coastal management plans and coastal engineering.

## In Europe ...

**PORTUGAL'S NORTHERN RIVERS** are dangerously polluted. A report on five rivers including the Spanish-Portuguese river, the Douro, states that the water quality for public use is very bad, surpassing maximum allowable pollution limits in some cases. The main causes for the heavy pollution are untreated industrial and urban wastes. In one river, the textile industry alone is responsible for 73 percent of total industrial pollution. The president of the northern river study commission suggested the immediate introduction of a "polluter pays" policy and pilot testing area projects to analyze water resources.

**THE SEARCH FOR CLEAN WATER** in the Szczecin region of Poland led to discovery of a subterranean "second Oder River," about six to ten meters below the river bordering East Germany. Preliminary research found the underground reserves to be 375 million cubic meters in an area 40 kilometers upriver. Experts reckon it will supply clean water at least until the year 2050.

**A WORKSHOP ON THE CONTROL** of Existing Chemicals will be held June 10-12 in Berlin. Sponsored by the Organization for Economic Cooperation and Development, participants will include experts from OECD member countries, the Commission of the European Community, World Health Organization, and the UN Economic Commission for Europe as well as representatives from industry, academia, trade unions and other concerned groups. Toxic Substances Control Newsletter reported it would address international cooperation procedures for controlling specific existing chemicals.

**THE FIRST INTER-GOVERNMENTAL CONSULTATION** on the UN Development Program's Regional Program for Europe (1982-86) concluded in Geneva with some criticism of the high rate of spending proposed for environment, but with general support for activities conducted in that field.

Twelve countries in Europe receive assistance from UNDP: Albania, Bulgaria, Czechoslovakia, Cyprus, Greece, Hungary, Malta, Poland, Portugal, Romania, Turkey and Yugoslavia.

UNDP intends to focus its activities in Europe on four main areas: energy, environment, transport and communications, and science and technology.

Most delegations supported the proposed allocation of 25 percent of the funding—a total \$5.1 billion—to energy projects. But several declared that the proposed 25 percent allocation to environment should be reduced.

## West Germany faces a water crisis if demand keeps up

**BONN**—At the water supply congress held in Berlin this Spring, West German experts warned that the days of cheap and abundant water may soon be over.

With an average annual rainfall of 30 to 34 inches (76-86 centimeters), there is no likelihood of the country turning into a European Sahara. But demand for water is increasing so rapidly that groundwater supplies are being steadily depleted, in addition to their becoming polluted by domestic and industrial wastes and fertilizers.

Last year household use of water was up by 3.5 percent from the year before, with no prospect of a decrease in sight. Between 1977 and 1979 industrial consumption was up by 17 percent. Total consumption came to 33 billion cubic meters in 1979. Projecting current rates of increase to the year 2000, West Germans will then use 60 billion cubic meters of water a year.

Groundwater provides practically all the water used in households and a substantial share of that used in industry. So far, underground deposits have been meeting all demands placed on them. But, according to Helmut Zander, a director of Gelsenwasser A. G., West Germany's biggest water enterprise, they are now being used to capacity and cannot be counted on to deliver more.

Complicating the problem is the rapid pollution of groundwater. Organic chloride compounds, widely used as solvents and for cleaning, are seeping into underground deposits in unacceptable volume, and additional contamination is caused by the lavish use of nitrate fertilizers and pest control agents in agriculture and forestry. Damage from the latter sources has become so extensive, according to Lorenz Fischer, an official of the Food Ministry of the State of Baden Wuerttemberg, that serious consideration must be given to restricting their use.

An independent study by Peter Obermann, a geologist at the University of Bochum, led him to the conclusion that groundwater contamination has become far more extensive than heretofore believed. While contamination near the surface has long been observed, drillers for water have been content to deal with the problem by going to deeper strata where the water is cleaner. But now, according to Obermann, "springs" frequently develop between rock strata which allow clean and contaminated water to mix.

At the Berlin congress it was generally agreed that the growing use and contamination of groundwater could force industry and households to rely more heavily on surface water. As far as quantity is concerned, lakes and streams will be able to meet all



foreseeable demands, but at a cost for cleaning which the congress termed "astronomical." West German industry now spends around \$20 billion a year on environmental protection measures, divided roughly equally between waterways and the atmosphere.

If domestic water is to come from rivers and lakes in the future, industry's bill for treating its discharges will go up by many times, and communities will have to invest large sums for water treatment. The result will be substantial increases in the price of manufactured goods and higher state and municipal taxes.

Such added cost could lead to sharp cutbacks in the use of water, in the same way that higher oil prices have already cut back (11.4 percent in 1980 alone) what traditionally had been considered the "essential" level of West German oil demand. The oil industry itself has set an example here, having cut its own water use to one-seventh in the past 20 years.

J. M. BRADLEY

## Transboundary pollution is a growing problem, OECD says

**PARIS**—Transfrontier pollution problems are going to get worse, not better, over the next decade or so, says the man responsible for spotting environmental trends in the 24 most developed nations on earth.

James MacNeill, who heads the Environment Directorate of the Organization for Economic Cooperation and Development, told *WER* that "Transfrontier pollution issues will grow in scale and intensity over the eighties."

He said there are three major areas in the OECD where transfrontier pollution is a problem: the emission of sulphur oxides in the atmosphere, the lack of cooperation in stopping industrial pollution of the Rhine river, and the siting of nuclear reactors near international borders.

"Air pollution by sulphur oxides is on the increase," MacNeill said. According to OECD estimates, the use of coal will double by 1990 and triple by 2000 in the OECD countries of Western Europe, North America and Japan. This would mean significant increases in emissions of sulphur oxides and dioxide in the atmosphere, causing even more "acid rain."

There is also, he said, the problem of accelerated construction of nuclear power stations. Currently, out of a total of 120 nuclear power plants in the European Community, 33, or nearly a quarter, are located within 40 kilometers of a national boundary.

At the OECD's recent 10th anniversary meeting in Paris delegates admitted that although some success had been achieved in controlling point sources of pollution, the problems with controlling dispersed pollution sources continue.

Environment officials of the 24 member nations agreed to work out a common program of action by December of this year to try to meet the global environment problems of this decade

AHMED FAZL

## Environmental management...

**THE GLOBAL 2000 REPORT** has been translated into German and Japanese and, says study director Gerald O. Barney, it has had amazing sales: 125,000 in West Germany in six weeks, and in Japan it is on the best-seller list. Barney, who coordinated this U.S. government look into the future of our world's population, natural resources and environment, has been asked to do the same for Canada. And he has been traveling to Europe, Japan, Latin America and will soon go to China—all because of growing interest in Global 2000 issues.

**THE JAPAN ENVIRONMENT AGENCY** has issued its 10th annual report on the environmental situation in the country and submitted for Cabinet approval its proposed antipollution measures for the 1981/82 fiscal year. The annual report, entitled "Toward Total Environmental Preservation," called for the nation to shift its policy to "total environment" control rather than dealing with problems separately. In this fiscal year, the Agency wanted greater attention paid to traffic noise, waste treatment and other pollution produced in urban life. The Agency pinpointed oxides in the air and contamination of lakes and marshes as major remaining pollution problems.

**A JAPANESE STUDENT ORGANIZATION** has launched a campaign for an environmental impact assessment system in which the public has more say. The students criticized the government-proposed environmental assessment system as "condoning" environmental destruction.

The Environment Agency has finally succeeded in submitting to the Diet (Parliament) a bill on environmental assessment over the opposition of the ruling party and industry. But the draft bill excludes power plants. This is to ease the industry's fears that the system will adversely affect the establishment of power plant projects.

**THE GOVERNMENTS OF THE FIVE ASEAN** (Association of Southeast Asian Nations) countries have adopted and signed the Manila Declaration on ASEAN Environment. The declaration aims at strengthening regional cooperation in environmental matters. It calls for the protection of ASEAN's environment and the sustaining of its natural resources. The declaration also stresses the need of educating the general public and heightening public awareness of the importance of a clean environment.



## Renewable energy...

**A LARGE SOLAR ENERGY SYSTEM** has been installed at Betty's Bay near Cape Town, South Africa. The system is 40 meters long, three meters high and contains 122 solar panels. Plans are underway to add a wind-charger as an alternative source of power. The Betty's Bay system will be used experimentally before similar systems are introduced in remote areas where electricity is unavailable.

**A SOLAR RESEARCH PROJECT** in Australia could result in economical power supplies for country areas.

The partners in the \$90,000 demonstration project are Arco Solar International, Inc., the Solar Research Institute of Western Australia, Good Samaritan Industries and the State Energy Commission.

A 5-kilowatt photo-voltaic power supply system is to be installed on a remote homestead to gain experience in the operation of the alternative power-supply systems.

**THE STUDY AND USE** of new energy forms are the main objectives of Portugal's first Solar Energy Society. Well-known Portuguese scientists and citizens are among the 40 founding members. A representative of the country's largest savings bank, which offers special credits for solar energy installations, is also a board member.

The association intends to study, inform, promote and develop ways to solve Portugal's energy problems. It expects to associate with international bodies involved in the same type of action.

**PRIVATE DEVELOPMENT OF BOGLAND** for peat fuel is to be officially encouraged by the Irish Government through state grants as a means of saving on oil imports.

The government estimates that private development already saves £47 million (\$77.5 million) a year on oil.

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## Pakistani priority: cut fuel imports over 10 years

**ISLAMABAD**—Energy-short Pakistan is now busy preparing a 10-year plan aimed at reducing costly fuel imports.

Finance Minister Ghulam Ishaq Khan asked the National Energy Policy Committee to update the 10-year energy forecasts worked out last October and to recommend investments in other fuel sources.

The Finance Minister said, "The Government is giving top priority to the development of domestic sources of energy to curtail the national import bill which is going to touch a record mark of over \$1.5 billion during the current financial year." He said the budgetary allocation for development of the energy sector, had increased from \$45 million in fiscal 1978 to \$98 million for the current fiscal year. It is expected to go to \$163 million for fiscal 1982 which begins this June 30.

The production of indigenous crude oil in March 1981 was 9,700 barrels a day, and is expected to surpass 10,000 barrels a day in the next year. Liquefied petroleum gas production will be raised to 47,000 metric tons a year, up from 36,000 metric tons at present.

In the field of renewable energy, at least 700 biogas units will be flared by the end of July 1981 and 100 more units installed during 1982. The first solar voltaic village will be commissioned by the end of June.

An energy conservation guide book for industry will be completed by September of this year. MOHAMMAD AFTAB

## India may invest \$80 million in renewable energy projects

**NEW DELHI**—For India's sixth five-year plan, the Planning Commission has allocated \$10 million to fund research in renewable energy sources, particularly solar energy. An outlay of at least \$70 million has been suggested for alternative energy demonstration programs throughout the country.

In Parliament, C.P.N. Singh, the minister of state for science and technology, said the government has decided to give a major push to programs relating to the development and use of solar energy during the next five-year plan.

The Department of Science and Technology will support and coordinate programs to develop prototypes and to field test and demonstrate them. The demonstration programs will include photovoltaic-powered systems for pumping water and lighting, thermal systems for water heating, drying and desalination systems, wind energy systems and community biogas plants (about 80,000 biogas plants are currently used in India). The objective is to popularize alternative energy throughout the country and to get field performance data for evaluation to improve the systems.

Funding for this program also includes methods to conserve energy and to find more efficient ways of using conventional sources of energy. R. MURALI MANOHAR



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29 JUN 1981

## SPECIAL REPORT: Environment in China— problems and progress

**NEW YORK**—"It is only eight years since the establishment of environmental protection agencies in China, and our environmental administration is not perfect." However, Qu Geping said in a talk to the World Environment Center's International Environment Forum, although China began its environmental protection work relatively late and although "we lack experience... we are feeling our way forward" and learning from other countries.

Mr. Qu is Deputy Director of the Office of the Environmental Leading Group of the State Council of China. It is the environmental policy-making body for the entire country and coordinates the work of other agencies from the central to the local level.

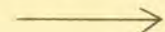
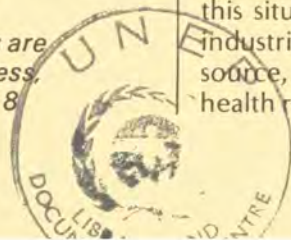
China passed its first environmental protection law in 1979, but for trial implementation only. The Leading Group is now drafting four laws controlling air, water, noise and marine pollution, and regulations and standards are also being worked out in different localities of the country. It will take three to five years to establish a preliminary administrative system of environmental laws, and regulations.

In his Forum speech, Qu Geping said China's environmental protection guidelines incorporate overall development planning, the rational siting of industry, comprehensive utilization of wastes, i.e., recycling, and reliance upon the masses to effect these policies.

What are some of the environmental problems confronting China and Mr. Qu's group?

### INDUSTRY

In just 30 years, since the 1949 revolution, the value of China's industrial output increased 40 times. "However, with this growth, numerous environmental problems sprang up," and, he said, "the control and abatement of industrial pollution has become an urgent issue." Mr. Qu believes the "irrational location of industries has been an important cause of environmental pollution." To mitigate this situation, "we have passed regulations to prohibit polluting industries from being built upwind of a city, upstream of a water source, in urban residential areas, scenic and sight-seeing spots, health resorts, places of cultural and historical interest, and nature



## Waste treatment...

**CHINA'S LARGEST WASTE WATER TREATMENT** plant has started operations at the Jilin industrial center in northeast China. The \$40 million plant's initial capacity is 100,000 tons a day, increasing to 200,000 a day when all work is completed. Previously, industrial waste containing 192 dangerous chemicals was discharged into the rivers, said the Xinhua News Agency.

**JAPAN WILL SPEND \$8.4 BILLION** on a five-year program for dealing with the nation's waste. The program was to begin this April and includes projects for the construction of more waste disposal facilities and for the reclamation of land using waste in the sea off Tokyo and Osaka.

In Tokyo, some 40 members of 26 groups met to voice their protests against the new government program, claiming the reclamation projects would seriously pollute the two bays and that they run against the government campaign to recycle waste. Only 0.8 percent of Tokyo's household waste is being recycled at present.

**TWO NEW CHEMICAL FERTILIZER** plants should solve the garbage problem in Thailand's capital, Bangkok. According to the city's Fertilizer Office, about 3,000 tons of garbage are being dumped every day, and the city's sole chemical fertilizer plant has a capacity of only 1,800 tons, leaving 1,200 tons untreated daily.

This growing mountain of garbage will create a serious pollution problem if it is not transformed into fertilizer soon, said the Director of the Fertilizer Office, Panya Thamavit. And, he added, the capital is running out of space for garbage disposal. The new plants will cost around \$12 million.

**IN A BID TO MINIMIZE POLLUTION**, Thailand's Industry Ministry will require factories to employ an "environmental engineer" to control waste treatment. The move was suggested by the House Environment and Public Health Committee after the wall of a sugar company's waste disposal pool collapsed and waste water flowed into a river. Because of a shortage of environmental engineers in Thailand, factories may employ sanitary industrial or chemical engineers to supervise the treatment of waste.

**AN INTERNATIONAL CONFERENCE** on "Solid Wastes, Sludges, and Residual Materials: Identification, Technology, and Management," will be held in Rome June 18-20. Organizers are Associazione Nazionale Ingegneri e Architetti Italiani, U.S. Department of Energy, U.S. Environmental Protection Agency, and the University of Rome. Contact: ANIAI, Piazza Solustio 24, Rome; telephone 06/4744397 or 486415.

conservation areas."

For older industries, "we can only apply a policy of gradual readjustment and avoid too hasty demands," he explained. Factories that are difficult to relocate are either being closed down or they are combined with other factories to produce products that do not harm the environment.

"To encourage the comprehensive utilization of discarded materials by factories and enterprises, the state stipulates that profits from such products need not be handed over to the state," he said, adding that "favored treatment is given to these producers in loans, taxes, etc."

But for those who continue to pollute, as of last year, factories whose discharges exceed set standards will have to pay pollution charges. Since that law was passed, he said, "we have had good results in pollution control."

## AGRICULTURE

China's grain yield has more than doubled since the "early post-liberation period," Mr. Qu said. Irrigated land has increased from 16 million hectares to over 46 million hectares, 84,000 reservoirs have been built, and more than two million motor-pumped wells have been sunk. This has led to environmental problems.

"Because population growth created tensions in food supplies," Mr. Qu said, "for a time there was a one-sided emphasis on grain production. As a result the ecosystem was damaged by reckless reclaiming of land... at the expense of forests and grasslands and by filling in lakes and seas." This, he asserted, "resulted in little increase of grain output but [caused] great damage to fishery and animal husbandry and aggravated soil erosion.

"The policy we are carrying out [now] does not allow a slackening in grain production, yet it actively promotes diversified [food supplies]... in areas where conditions are suitable." He said regulations have been issued to protect grasslands and to prohibit "blindly reclaiming land from lakes or seas."

## FORESTRY

Despite vigorous afforestation campaigns, forests now occupy only 12.7 percent of China. Mr. Qu believes that "there is a serious imbalance in the ratio of farming, forestry and animal husbandry—with forestry providing only 3 percent of output value.

The Central Committee of the Party and the State Council made several recent policy decisions to improve the use of the country's forests. One protects the rights of ownership by the state, the collective and individuals over trees and forests. Others decree centralized and unified forest management and allow cutting only according to state plan.

A forestry fund has been established to give economic assistance for afforestation and, Mr. Qu said, nationwide publicity is given the slogan "Afforestation is everyone's duty." March 3 every year is set aside as "Afforestation Day," and everyone, from Party leaders and the army to peasants, students and businessmen, is mobilized to plant trees.

## BIOMASS

Because of the shortage of energy sources in rural areas, plant stalks are burned as fuel and not left in the fields to replenish the soil. To solve this problem, the government is popularizing biogas-generating pits. To date, Mr. Qu said, 7 million of these pits have been built, providing fuel for 30 million people. And, he commented, "the biogas residues are organic fertilizer of fine quality."

"There is the view in the world that poverty is the biggest environmental problem facing some of the developing countries," Mr. Qu stated. "I appreciate this point of view. According to this view then, great changes have taken place in China's environment. In a nation with a population of one billion, people have food, clothes and shelter, children receive education, there is medical care and life is stable." But, he said, this very process of development has caused the environmental problems they are dealing with today.

LIBBY BASSETT

## Asian nations see sailpower as alternative to fuel oil

**BANGKOK**—The graceful wind-powered schooners of the last century may again sail the seven seas as the search widens for alternative means of power to beat the spiraling costs of oil. The first step in this direction was taken during the recent 37th session of the Economic and Social Commission of Asia and the Pacific (ESCAP), held here March 11-21, when delegates urged that a study be undertaken on the possibility of developing wind or coal technology to power ships.

It was felt that such a study was justified by the rapidly rising cost of bunker oil, the main fuel used by ocean-going ships, plus currency surcharges which were almost doubling freight charges.

Last year Japan launched a ship powered by sail and a waste-fuel recycler (*WER*, Aug. 25, 1980, p. 4) and similar sail-powered ships are being tested in the U.S.

Sailpower is also cleaner. The representative of the Inter-Governmental Maritime Consultative Organization (IMCO) said that "the amount of oil being pumped into the seas is too great for the oceans to absorb." He pointed out that one recent estimate established that some 2.1 million tons of oil were discharged annually into the sea.

In another area of transportation, the meeting sought ESCAP assistance for improving the design of bullock carts. The delegate for Bangladesh said it was very important that the efficiency of non-motorized vehicles be improved to meet the needs of the rural areas. He pointed out that some countries might have already introduced such improvements and urged ESCAP to help his country locate them.

TONY OLIVER

## Transportation . . .

**AS OF MAY 1**, a new sea-traffic separation scheme began operation in the Straits of Malacca, between Indonesia and Malaysia. One of the busiest waterways in the world, it provides passage for oil tankers and other ships between the Middle and Far East. The Straits have been the site of numerous large oil spills due to tanker collisions and ships running aground. The new regulations will demand increased clearance, a stipulation which will hit the Japanese oil tanker fleet (especially supertankers) hard. It has been established that a 280,000-ton tanker will have to lighten its load by 15,000 tons, a factor that may cause increased oil prices in Japan. The Japanese, however, are providing the bulk of funding for the new navigational buoys, beacons and charts.

**THE KOREAN MINISTRY OF TRANSPORTATION** has issued licenses for over 18,000 taxis powered by liquefied petroleum gas (LPG). The number of LPG-fueled taxis is now 24,904, or about 39 percent of all Korea's taxis.

**MOTOR VEHICLE EMISSIONS** in India will soon be strictly controlled.

The federal government asked states to grant police the authority to ticket and impound polluting vehicles. Municipal buses are now given frequent, thorough checks before they are put on the road, and city transport officials have been empowered to withdraw from service those which develop sudden mechanical defects which result in smoky emissions.

**THE EUROPEAN ECONOMIC COMMUNITY** is funding a £270,000 (\$432,000) study on the feasibility of a central computer system in Europe. It would give information on the movement by ship of dangerous cargoes and advice on how to handle problems.

**THE POLES ARE DESIGNING** a 23,000-ton bulk cargo sailing ship for their country's merchant fleet.

The Polish News Agency PAP said that the Lenin Shipyard and the Polytechnic University in Gdansk would build the 204-meter-long ship, which is expected to have a sailing speed of 12 knots. It is hoped that the use of sails as an auxiliary energy source will save 10-12 percent in fuel costs.

## In Asia ...

**A NEW ENVIRONMENTAL SOCIETY**, the China Environmental Engineering Society, has been set up in Jinan. It will be attached to the Chinese Society of Environmental Sciences and was created to research and develop pollution control projects, environmental engineering economics and monitoring of pollution sources.

**MALAYSIA IS RESETTLING** about 12,000 rice farmers on new and rehabilitated land in two areas, Pahang and Perak states, as part of the government's program to help the rural poor. Each farmer will be given title to more than two hectares of land.

The \$141 million Pahang project will develop irrigated rice land in what is largely a swamp forest. The World Bank, loaning \$40 million for the project, says measures will be taken to minimize adverse environmental effects and that there will be no loss of habitat for endangered species.

The \$200 million Perak project (\$50 million from the World Bank) will develop 14,800 hectares of the new land for rice, oil palm and cocoa trees, and rehabilitate another 3,700 hectares of rice land.

**IN MALAYSIA**, a movement by the national chapter of Friends of the Earth to protect the 440 million-year-old Batu Caves from limestone quarrying is gaining momentum. Blasting near the caves endangers the indigenous bat population and prevents the continued use of the caves as a national religious shrine.

They hope that their campaign will make the government stop the blasting.

**CONCERNED CITIZENS OF MARINDUQUE**, along Calancan Bay in the Philippines, have reported that continued dumping of mine tailings into the bay by the Marcopper Mining Corporation is rapidly destroying marine vegetation and fish life. The Constabulary Offshore Anti-Crime Battalion has confirmed the citizens' claims that the bay was once a rich fishing ground but that built-up layers of mine tailings have covered the coral reefs with silt, causing the destruction of a suitable environment for fish and plant life.

**WELL-KNOWN MOTORCYCLE** manufacturer Yamaha Motor Co. has developed a new pollution-free plating technique. Called the Yamaha Rapid Plating System (YRPS), the technique has been put into operation at its parts-making subsidiary, Showa Works Co. of Namazu. Yamaha described YRPS as a completely continuous, closed system which recycles used plating liquids. The YRPS has also a 50 percent electric power efficiency compared with 15 percent for conventional plating systems.

## Hong Kong's new EPA created in conflict

**HONG KONG**—This government's new Environmental Protection Agency (EPA) was created—in conflict—from the small Environmental Protection Unit (EPU), set up in 1976.

Officially, EPA's responsibilities cover fields such as environmental policy making, coordinating improvements to the environment, environmental impact assessment, monitoring pollution, and staff training and consultancy for other government departments in environmental matters.

While conservationists in the colony are generally hopeful that the new body will draw more attention to the environment in Hong Kong, some senior members of the agency are concerned about its powers.

Two environment experts from the old EPU are leaving: Michael Cockerell, the government's principal environment protection officer, and David Mackay, who has been drafting proposals to curb water pollution. A third member of the team, Dr. Peter Keyes, whose sphere is air pollution, has expressed reservations about staying in the EPA. The fourth member who had responsibility for solid waste disposal, Anthony de Fleury, was sacked in 1980 after a disagreement with the director, Dr. Stuart Reed.

The comments of these experts provide some insights into the approach of the Hong Kong government to protecting the colony's environment.

According to them, one of the main problems of the new agency is the continuing fragmentation of responsibility in the government for protecting the environment. For instance, at the moment responsibility for water pollution is shared among 18 different government bodies. And the lack of coordination and communication among these departments leads to overlapping of effort—both the Urban Services Department and the Public Works Department monitor pollution on the same public swimming beaches.

Getting these departments to work together and wading through "administrative treacle" has become a major task of the EPA.

The experts acknowledge that a single department for the environment with policy making and technical responsibilities is still a long way off. The "Environment Branch" of the government has policy responsibility for a vast number of departments, as well as for EPA. Inevitably, the Branch gives more attention to urgent land and transport matters than to the EPA. Environmental recommendations are expected to receive low priority.

Formation of EPA is nevertheless considered a major achievement, and a considerable amount of legislation to protect the environment has been passed in Hong Kong, or is in the pipeline—whatever the effectiveness of that legislation might be.

A marine pollution bill and solid waste bill were passed in 1980, and government experts defend its effectiveness in combating water pollution. While dismissing objections raised in 1980 on the

standards used to monitor beach pollution, the experts conceded that more "rigorous" methods of testing and analysis will be used in future.

Drafting of an Air Pollution Control Bill is completed and it will be submitted to the Legislative Council in the near future. A Noise Control Bill, with comprehensive provisions for construction site pile driving, air conditioning noise and neighborhood noise, will go before the Council in 1982. Both bills have been strongly criticized for not setting any precise standards as to what constitutes "pollution."

A major constraint on the effectiveness of this legislation is the inadequate staff and material resources of the EPA to implement the new standards. With complaints over pay, conditions and personnel disputes, it is becoming increasingly difficult to fill senior posts in EPA. The number of departments with pollution control responsibilities, and the low priority given by many departments to this work, diffuses enforcement of the laws.

The government is enacting a comprehensive program to protect the environment. But with all the problems mentioned above, a question mark hangs over its effectiveness.

SPECIAL TO WER

## Great Barrier Reef Park okayed by Australians

**PERTH**—Australia has begun turning one of its natural wonders—the Great Barrier Reef—into a marine park.

The Federal Parliament has accepted a proposal for protective zoning of the reef's 12,000-square-kilometer Capricornia Section. Capricornia is the most southerly and heavily used part of the barrier reef which runs along half of Australia's eastern coast.

The Minister for Home Affairs and the Environment, Ian Wilson, said he considered Parliament's approval an historic milestone in developing the marine park.

The zoning plan provides the basis for managing human use of the park so that the natural qualities of the reef are conserved. Plan regulations go into effect July 1.

Commercial, recreational and scientific activities will continue in the Capricornia Section subject to provisions of the six-zone plan. Commercial spearfishing has been banned; other types of fishing are permitted. The recovery of minerals is not permitted anywhere in the marine park, except for scientific research or other research approved by the Great Barrier Reef Marine Park Authority.

The zoning plan does not apply to islands which are part of Queensland and not owned by the Australian government; it operates from their low-water mark.

Day-to-day management of the Capricornia Section is to be carried out by agencies of the Queensland state government, but they will be subject to the Great Barrier Reef Marine Park Authority.

ANNE BLOEMEN

## Conservation . . .

**THE SINGAPORE** ministries of finance, and trade and industry are putting together the guidelines and mechanisms for a new nationwide energy conservation scheme. Aimed primarily at industry, it is said to include penalties for industries that do not work to cut consumption and more incentives and tax breaks for those that move to become more efficient users.

**PUBLIC INSTITUTIONS AND INDUSTRIAL PLANTS** in Israel are now required to appoint an officer-in-charge of energy conservation. The appointments will be mandatory in all public institutions and in those plants whose minimum annual consumption is 300 tons of crude oil (or its equivalent) or whose minimum electricity consumption is 1 million kilowatt hours. Israel's Minister of Energy will appoint a national commissioner to be responsible for coordinating activities designed to utilize energy in the most efficient way possible.

The appointed energy officers were required to present their first report on the utilization of energy in their institution or plant by June 3rd—one month after the new regulations come into effect.

**A SIGNIFICANT REDUCTION** in household electricity consumption—a first in Israel—has been noted since October 1980. While average electricity consumption rose by an average 4 percent in the first half of 1980, the upward trend was halted in October and an average decrease of 5 percent per month ensued. The decrease may be attributed to an intensive information campaign launched by the Israel Electric Corporation designed to increase public awareness of energy conservation and saving.

**A NATIONWIDE CAMPAIGN** to get every house in Ireland to cut energy costs by 10 percent and save the country £30 million (\$52 million) has been launched by Energy Minister George Colley.

Previous campaigns have not been a tremendous success, but spiralling energy prices—the cost of a gallon of gasoline is now £1.93 (\$3.36)—may give this campaign more punch.

**BOWING TO APPEALS** by ecologists and scientists, municipal authorities of Portofino, a fashionable Italian riviera resort, have banned fishing and coral collecting by divers with or without oxygen bottles.

The ban is aimed at restoring the original environmental conditions in a large area off Portofino, which now is threatened by uncontrolled fishing activities.

A similar nationwide ban, also providing rules for professional fishermen, was being considered by the government.

## Nuclear power...

**ENVIRONMENTALISTS IN BRITAIN** are fighting a Government decision to increase nuclear fuel reprocessing capacity at Windscale nuclear plant in Cumbria.

To handle the increased shipment of nuclear waste from Japan and Europe, British Nuclear Fuels Ltd. (BNFL) have begun construction of a £6 million (\$12.9 million) improvement to Ramsden Dock, near the entrance to Barrow-in-Furness, the north Lancashire port used for Windscale.

The Barrow Action Group, of citizens concerned at the use of their town for transshipment, are bringing a High Court action claiming that Ramsden Dock is on a category of land which requires planning permission for development. If BNFL is forced to apply for this, protesters have the right of public inquiry into the whole operation.

The Barrow Action Group is backed by the environmental action group Greenpeace, which is trying to raise £10,000 (\$21,500) from its supporters for court costs.

**THE JAPAN ATOMIC POWER CO.** recently admitted that radioactive waste from its Tsuruga power plant had been discharged into the city's bay for four years without warning residents of the potential dangers. A company official said that a pipeline linking the power plant to the city's sewer system was installed in 1977. The admission was the latest disclosure by the Japan Atomic Power Company, which already has confessed to cover-ups of two instances of radiation leakage affecting more than 85 workers.

**THE JAPAN ATOMIC POWER COMPANY** must shut down its nuclear power plant in Tsuruga, the government ordered. The order was prompted by the plant's failure to report leaks of radioactive water from a cooling system between the reactor and the steam turbine. Officials of the Natural Resources and Energy Agency said that the failure of the company to report the leaks betrays the trust held by the people in atomic power. The reactor at Tsuruga has an output capacity of 357,000 kilowatts.

"**NUCLEAR SAFETY RESEARCH** in the OECD Area" is a response to the Three Mile Island nuclear power plant accident in March 1979. It is a review of the extent to which existing programs in OECD member nations—Western Europe, North America and Japan—have been reoriented in response to the accident. It is available from OECD offices in member countries, including OECD Publications and Information Center, 1750 Pennsylvania Ave., N.W., Washington, D.C. 20006, U.S.A., at a cost of \$8.

## Swedish mine is site for nuclear storage study

**PARIS**—The Nuclear Energy Agency's member nations are cooperating on a project in Sweden, to see whether granite rock formations would be a safe place to store radioactive substances over a very long time.

The NEA, which is a part of the Organization for Economic Cooperation and Development, launched its "International Stripa Project" April 22, when an agreement establishing the project was opened for signature. Contracting parties are Finland, Japan, Sweden, Switzerland and the United States. Canada and France will join as associate members.

Research to determine the suitability of different geologic media for radioactive waste storage is an important part of NEA's program.

The Stripa project will be carried out in an abandoned iron mine located at Stripa in central Sweden. Although the mine itself is not a suitable site for a repository due to extensive mining activities in the past, it does provide a unique opportunity to investigate some of the features of deep underground rock mass. Radioactive waste will not be used during this test program, the NEA said.

Work has already begun and is concentrating on ion migration tests and investigating backfill material to buffer waste from the rock and to plug access to the biosphere.

The Stripa project will continue until 1984 at a cost of about \$10 million.

SPECIAL TO WER

## Earthquakes did not destroy Greek nuclear plan

**ATHENS**—The Greek government appears determined to go ahead with the establishment of nuclear plants for the production of electricity, despite a recent series of earthquakes which hit Greece.

Minister of Industry and Energy Stefanos Manos said that the government's nuclear program will not be changed because of the quakes, and that the first plant will go into operation in 1990 as scheduled.

But the political opposition and Greek scientists are strongly against it.

An opinion poll conducted by a Greek magazine showed that 70 percent of the 1,000 Greeks asked were against nuclear energy, 10 percent in favor, and 20 percent undecided. A similar poll held two years ago showed that 52 percent were opposed and 32 percent favored nuclear energy.

The first 700-megawatt nuclear plant is part of a large-scale plan to reduce the use of imported oil for producing electricity. The government's effort has also turned toward local energy resources such as lignite (brown coal) and waterfalls. At present about 40 percent of the country's electricity needs are produced from oil, 45 percent from lignite and 15 percent from waterfalls.

KYRIACOS CONDOULIS

## Venezuela decrees cleanup for its major oil-producing area

**CARACAS**—Venezuela's largest inland lake and the basin surrounding it—the largest oil-producing area in the country—have become increasingly contaminated. This spring, the director general of Venezuela's Environment Ministry, German Uzcategui, announced a series of measures to save the region.

Around Lake Maracaibo's 500 kilometers of shoreline lie some of the most fertile land in Venezuela. But, said a Presidential decree, "irrational land occupation, the result of uncontrolled urbanization, industrialization and farming activities," has created a "critical" condition in the Maracaibo basin. The decree then gave the Environment Ministry charge of regulating all land use in the area.

Uzcategui, who is rumored to be the next Environment Minister, said a bill was in the works to create an Institute for the Conservation of Maracaibo Basin.

Some \$200 million is needed for conservation, decontamination and hydraulic work, but, Uzcategui said, "the ministry can pay only for survey costs and the design of a new hydraulic system for the region." However, he added, the Ministries of Environment and Development will grant tax credits to companies installing water treatment plants.

The Water Works Institute (INOS) will build sewerage recycling plants in towns around the lake area, he said.

LILI STEINHEIL

## River cleanup follows series in Mexican newspaper

**MEXICO CITY**—The urgent need to do something about the contamination of Mexico's rivers has drawn the full focus of one of this nation's most popular and important newspapers in an unprecedented week-long campaign. Successive front page stories in Mexico City's "Excelsior" may have influenced Mexican President Jose Lopez Portillo to order all semi-state enterprises to increase their budgets in order to clean up wastes being dumped into the rivers.

The articles emphasized the amount of contamination to the nation's 11 major river basins; the role played by private, state and semi-state industries in this; and the long-term effects on humans of continued river contamination.

The Rio Lerma, which provides Mexico City's water supply, is typical, said a federal official. It receives wastes from semi-state, private and multinational firms the length of its 745 kilometers. The capital's first water treatment and repurification plant is to begin operating this year.

Only three multinational companies doing business in Mexico have initiated the installation of anti-contamination apparatus for their liquid wastes, the series reported: Celanese, Cydsa and duPont's Productos y Pigmentos Quimicos.

At series' end, President Lopez Portillo told the Secretary of the

## Waterwise...

**COLOMBIA HAS A MASTER PLAN** for the recovery of the polluted Magdalena River, the country's main waterway, with a 280,000-square-kilometer basin housing 75 percent of the Colombian population. The plan includes: erosion and river-drift control, navigational improvements, hydroelectric projects, irrigation and drainage, flood control, protection of river banks, water supply and sewage projects, pollution control systems, and fauna and flora protection. Several institutions will participate in the program.

**THE WORLD BANK HAS GRANTED** a \$10 million loan to the Colombian wildlife service, Inderena, to partially finance a \$30 million project for the recuperation of 5.5 million hectares of the Magdalena River basin in southwestern Colombia. The project includes soil maintenance, reforestation, technical assistance and financing to small farmers, erosion and pollution control and protection of natural resources. It will also include research activities on pollution and sediment control and preliminary studies for the master plan for the recovery of the 280,000-square-kilometer Magdalena River basin.

**THE SOUTH-EAST PACIFIC** Action Plan, another of the UN Environment Program's regional seas programs, is being developed. It is hoped the plan will be approved at an intergovernmental meeting planned for Lima, Peru, August 31–September 4. The region covered is the west coast of South America and includes Panama, Colombia, Ecuador, Peru and Chile.

**THE URBAN POOR** in five Brazilian states and Brasilia will benefit from a massive water supply and sewerage project estimated to cost \$589 million. Its purpose is to improve environmental and health conditions for an estimated 2.5 million people by providing safe water, sewerage or waste disposal facilities for 600,000 and pollution abatement in Brasilia. The World Bank is lending \$180 million for this project; it is the ninth loan made by the Bank to Brazil's water supply and sewerage sector.

**A SERIES OF HANDSOME MAPS** on the "Worldwide Distribution of Sea Turtle Nesting Beaches" has been published by the Center for Environmental Education. The maps and corresponding descriptive notes describe areas where the seven remaining species are known to nest. Its purpose is to help sea turtle conservation efforts around the world. It is available for \$6.95 plus 90 cents postage from CEE at 1925 K Street, N.W., Washington, D.C. 20006, U.S.A. Telephone (202) 466-4996.





## Aquaculture...

**EGYPT** is expanding its efforts to produce fish for its rapidly growing population. It's beginning a \$26 million project (\$14 million to come from the World Bank's IDA) to establish fish farms in several areas in and outside the Nile Delta region. The fish farms will use drainage water and land unsuitable for crops to produce an additional 3,800 tons of fish a year. Safeguards have been incorporated to minimize health risks from the possible spread of communicable diseases from the fish ponds, the World Bank said. The UN's Food and Agriculture Organization joined the Bank in preparing the project.

**INCREASING INTERNATIONAL PRESSURE** has forced Japanese fishermen to adopt measures to prevent the accidental catch of dolphins in their nets. A special, ultrasonic-wave-emitting device will be attached to the nets to frighten off the dolphins. In addition, the nets themselves will be designed to be easily recognized by dolphins. These measures will at first be undertaken on an experimental basis. If proven successful, they will be used by the fishing industry from 1982. Four fishing fleets have installed the new device at a cost of 7 million yen (\$33,420).

**A NEW DOLPHIN REFUGE** and research station in the Straits of Taiwan will also serve as the site of a large-scale breeding and training program.

The developer is a privately funded group which will also construct profit-oriented oceanaria at two other locations in Taiwan.

The researchers recently purchased a herd of 36 bottlenose dolphins from Penghu Island fishermen, site of the refuge; 17 are considered excellent prospects for the oceanaria training program. The others were returned by the Chinese Navy to the open sea to prevent their capture and slaughter by local fishermen.

In addition, the developer, Ocean World, plans to export trained dolphins to oceanaria around the world, thus profiting by one of Taiwan's few natural resources.

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The Center is a non-profit, non-advocacy, educational organization which seeks to foster public understanding of global environmental issues. Established in 1974 by the UN Association of the USA with the support of the UN Environment Program (UNEP), the Center alone is responsible for WER's contents.

Navy, Admiral Ricardo Chozaro Lara, that it is the navy's duty to keep the nation's waters clean out to the 200-mile (370 kilometer) territorial limit. Besides ordering semi-state industries, such as the oil, electrical and fertilizer industries, to increase their budgets to clean up discharged water, President Lopez Portillo ordered all public and private industries to immediately take steps to install antipollution equipment to prevent marine contamination.

KATHERINE HATCH

## Romanian rivers in bad shape, stringent fines foreseen

**BUCHAREST**—Negligence, law infringements and lack of adequate equipment are blamed for ruining the quality of some of Romania's rivers.

A recent series of articles in the Romanian official press stated that urbanization, the upsurge of industrialization, the growth of agriculture and allied developments would not have led to this situation, had more attention been paid to laws establishing obligatory anti-pollution norms for all enterprises. The situation has grown much worse in the last five years, the articles said.

Prahova county, which borders the Carpathian Alps to the north, is Romania's leading crude oil producer and most important oil refining region. Tatiana Pavel, head of the Prahova Water Husbandry Department told the Bucharest weekly *Flacara* that there are 300 "pollution sources in Prahova county and 10 percent are not equipped with filtering stations.

Ms. Pavel said the huge petrochemical complex at Brazi, among the largest in Europe, discharges 24 tons of oil products and residues into nearby rivers every day because its modern purifying station, which entered operation in 1978, has been only partially functioning. The paper factory at Busteni, Ms. Pavel said, discharges 31 tons of paper fiber and pulp daily due to malfunctioning filters. But the largest pollution source in the area is the Valea Calugareasca chemical complex. Its 1,200 tons of residues have destroyed all fauna and flora on several kilometers of rivers flowing southward to the Danube River.

Ms. Pavel told *Flacara* that waste water from the preparation of pesticides, insecticides and fungicides is discharged into local rivers or into the ground, polluting subsoil water. As a result, fish can be caught only in four country streams. Prahova waterways were once famous for their trout.

Ms. Pavel said 159 fines were handed down last year by her Department. But she said that because the fines are ridiculously "mild"—up to \$90—the situation has not improved in recent years.

A survey done by the daily *Scinteia* revealed similar problems in other Romanian counties as well, where both industrial and farm plants disregard provisions of the water protection law.

To remedy the situation, specialists demanded increased investment for purchasing proper anti-pollution equipment, better training for personnel working in this field, law enforcement and much stiffer fines to discourage law violations.

SPECIAL TO WER



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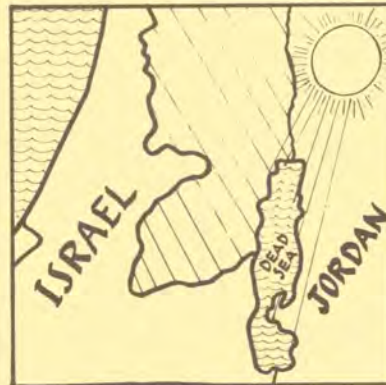
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## Israel's Dead Sea to be an energy pond

**DEAD SEA, Israel**—At this furthestmost point from the sun on the face of the earth, Israel recently launched one of the most ambitious projects yet undertaken to harness solar energy.

Land clearing operations were begun on the shores of the Dead Sea—400 meters below sea level—for a quarter-of-a-kilometer-square pool which should begin to produce five megawatts of electricity within two years.

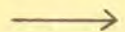
The engineers in charge of the project believe that this solar pool and others like it will yield 2,000 megawatts of energy by the year 2000—20 percent of Israel's anticipated energy needs. This is in addition to savings through solar water heaters on building roofs.

Israel is several years ahead of the rest of the world in this aspect of solar technology, and energy officials here expect worldwide application for this fuel-free energy source. Industrial authorities, however, say the system must yet prove itself economically.

Conceived by Hebrew University Professor Zvi Tabor, the solar pond is a shallow pool with a dark bottom whose lower depths are heated by the sun. In order to prevent the heated water from rising to the top, the lower layers are infused with salt in order to make them heavier than the water at the top. Plastic baffles are placed on the surface to prevent wind from mixing the layers. As temperatures build up in the lower levels to more than 80 degrees Centigrade, the water is carried off by pipes to locally developed low-temperature turbines capable of producing steam at 70 degrees Centigrade.

An experimental pond has been operating successfully on the shores of the Dead Sea since 1978, a one hectare pool producing 150 kilowatts of electricity. The intense sunlight and the ample supply of saline water makes the area—lowest point on the planet's surface—ideal for solar pools. If the pool presently being built proves successful when it is completed in two years, it will become a standardized module which will be multiplied according to the space available. Plans already exist for linking it to three other modules to create a kilometer-square pool producing 20 megawatts by 1985.

Solar ponds are a joint venture of the government, which is putting up 80 percent of the funding, the academic world and



## Renewable energy...

**THE WORLD'S LARGEST WIND POWER FARM**, at Kahuku Point on the island of Oahu, Hawaii, will be built by the Swedish Shipyard (Svenska Varv) and the American firm Hamilton Standard.

"That we are participating in the first commercial wind power project in the world implies enormous responsibilities," Svenska Varv's chief Erland Wessberg told the Swedish press. "Of course, there are both technical and economic risks in a project of this kind where one is working with an entirely new technology."

The contract calls for 20 windpower aggregates of four megawatts each. They are to be built in tight groups, so-called wind farms, which give environmental as well as economic operational advantages, the newspaper Svenska Dagbladet said. The Swedish share in the contract amounts to about 200 million crowns (\$43.5 million).

**IRELAND SEES WINDPOWER** as a winner, and will use it for electricity linked to the national grid, heating farms and horticultural projects and even for land reclamation.

An £800,000 (\$1.3 million) project to build eight wind machines has been announced by the country's Minister for Energy, who said that every step had to be taken to find alternatives.

**A HYDROPOWER** project, to produce 200 megawatts of power for Colombia's most populated state, will cost a third of a billion dollars. Since the capital, Medellin, is becoming increasingly industrialized, consultants will carry out studies to protect the Playas reservoir against siltation and pollution caused by population and industry growth along the Guatape River.

**THAILAND'S GASOHOL DEVELOPMENT** project, which calls for an annual output of 480 million liters of ethyl alcohol for use as a fuel mix, is being incorporated by the government into the Fifth Five-Year National Economic and Social Development Plan (1982-1986). The move is aimed at giving greater support to the project, which is expected to replace at least 15 percent of Thailand's annual consumption of gasoline.

**JAPAN'S ENVIRONMENT AGENCY** has decided to relax restrictions on the development of geothermal power resources in national and quasi-national parks. The agency was considering approval for two geothermal power generation plans by Kyushu Electric Power Co. and Tohoku Electric Power Co. The decision was prompted by the country's urgent need for alternative energy sources.

private industry. The company developing the ponds, Solmat, was created by Hebrew University and a private company.

The head of an Israeli industrial investment company, Yosef Vardi, recently challenged the viability of the solar pond on the grounds of the high investment required. In response, Solmat director general Yehudi Bronicki says viability has indeed not yet been achieved but that it will be. The pilot plant had required an investment of \$10,000 per kilowatt but the module presently being built will require only \$4,000 per kilowatt. To equal the viability of conventional oil-fired power plants, he says, the solar pond should require an investment of no more than \$3,000 per kilowatt. This, says, Bronicki, will be met when the next module is built.

Meanwhile, Israel will be reducing its dependency on imported oil and the political debts that go with such dependency as it makes use of the one natural resource it has in abundance—sunlight.

ABRAHAM RABINOVICH

## A new leader revitalizes the August UN energy conference

**NEW YORK**—After getting off to a shaky start, there are indications that real progress could emerge from the first UN Conference on New and Renewable Sources of Energy (UNERG), being held from August 10-21 in Nairobi.

With a new Secretary-General, Uruguayan Enrique Iglesias, at the helm since February, confidence is high in the once-troubled secretariat that this conference will succeed in raising international awareness to the possibilities of alternative energy.

A UN source told *WER* that unsubstantiated allegations against the former Secretary-General for unprofessional behavior had prompted his resignation and Iglesias' appointment to the position.

Until his assignment, Iglesias was Executive Secretary of the UN's Economic Commission for Latin America, and in 1972 he served as a principal advisor to the UN Conference on the Human Environment.

Iglesias told *WER* that he expects several heads of state from developing countries to attend the conference, lending it the political visibility he considers vital to its success. Representatives of major lending institutions around the world are also expected to participate.

A forum for non-governmental organizations (NGOs) will be held in Nairobi at the same time as the UNERG conference, from August 9-16. Workshops and panels will be held on all aspects of NGO involvement in the promotion of new and renewable sources of energy.

Iglesias stressed that the UNERG conference would not present a "panacea" or "miraculous solution" for the world's energy crisis. Instead, he suggested that the meetings might stimulate a practical design by which the world could, by the year 2000, generate as much as 25 percent of its energy through alternative

schemes. The current figure is about 15 percent.

The Secretary-General commented that in the past attitudes toward new and renewable energy sources have been a major obstacle to their acceptance. We are accustomed, he said, to thinking of energy as a "passive input" to development, rather than as a possible product. Citing the manner in which, for example, hydropower dams return the energy expended in their construction many times over, he said that when people realize that development itself can be a provider and not just a consumer of energy, renewable sources will be more likely to gain adherents. He thinks the Nairobi conference could help bring about this change in attitude.

The conference will be especially crucial for rural areas within developing countries. Iglesias told *WER* that "there is a huge capacity" for solar, biomass and windpower projects in the LDCs. Such schemes are particularly appropriate for societies organized at the village level—in China and India, for example—where the means of local production are already in place.



Specific types of new and renewable sources to be discussed at the Nairobi conference, all reviewed by eight technical panels in preparation for the August meeting, are: fuelwood and charcoal, wind, geothermal, oil shale and tar sands, ocean (thermal ingredients, wave and tidal), biomass, hydropower and solar.

What makes some of these sources attractive is their relative low cost. Although huge hydropower projects are high-investment items, mini-hydropower, wind power and biomass schemes are relatively inexpensive. As a result, Iglesias said, major financial institutions like the World Bank are taking very active roles in the promotion of alternative energy schemes.

Secretary-General Iglesias told *WER* he expects five results from the Nairobi conference. First, he predicted the beginning of a movement of awareness with high political visibility and a strong technical component. Second, he sees the potential for strengthening national capabilities to take greater advantage of renewable resources. This would involve national, regional and international programs.

Next, Iglesias said he envisions stronger cooperative programs to meet such current problems as the fuelwood crisis, which affects half the world's population. On the critical global shortage of firewood, Iglesias said: "Billions of people live in this condition—this is not a joke."

Fourth, Iglesias expects the conference to help accelerate programs on promising technologies like solar, wind and biogas. And finally, he forecast programs to ease constraints on the use of renewable resources. These would involve training, assessment and the transfer of technology—all three critical to the advancement of renewable resource exploitation in the developing world.

CHRIS KERREBROCK

## Energy sources...

**GREATER ATTENTION** is being given to the development of wood-saving stoves in Thailand. Already one such stove has proved popular in its trial run in Ratchaburi province, and it is being introduced to other parts of the country by the Department of Agricultural Extension, Ministry of Agriculture and Cooperatives.

Invented by farm home technologist Kanya Pounsiri, the "Smokeless Siam-type" stove can save up to \$50 worth of fuel per year for a family of five. It does not need wood or processed wood materials like charcoal to run; fuel can consist of fiber surpluses and other waste materials such as sawdust, plastic bags, straw, burnt rice husks and various types of grass. The stove can be constructed in approximately two hours, using large-size bricks, cement and fine sand. The cost—about \$7.50.

**INCREASED CONSUMPTION OF COAL** in Japan is inevitable, said an Environmental Agency study panel, which warned that great care must be taken not to damage the environment permanently by its use. An agency official said that coal emissions are virtually unchecked at the moment and that the government must impose much tighter controls, especially as the nation becomes more dependent on coal to offset the expense of oil.

Japan now produces 20 million tons of coal a year and plans to consume over 163 million tons by 1990.

**IN PAKISTAN**, recent statistics indicate that natural gas has replaced oil as the country's principal energy source.

Extensive gas fields located near Sui in Baluchistan Province now produce 200 million cubic meters a day—38.1 percent of the country's total energy consumption. Oil supplies 37.9 percent of the total.

A beneficial byproduct is that natural gas is a cleaner source of energy.

**"ENERGY STRATEGIES for Developing Nations"** is the title of a new and extremely informative book by Resources for the Future, a nonprofit research and educational organization. It surveys Third World energy problems and recommends general strategies for making these problems more manageable. The 266-page study is aimed at developing-area planners and those in industrial countries and international organizations concerned with maintaining economic development while achieving a successful long-term energy transition for the world as a whole. The cost is \$9.50, from Johns Hopkins University Press, Baltimore, MD 21218, U.S.A.

## Waterwise...

**THE ASIAN DEVELOPMENT BANK (ADB)** recently approved a technical assistance grant for South Korea. The grant is to cover expenses for preparatory work on a project to control environmental pollution of the Han River Basin. South Korea's principal pollution problems are concentrated on its four major rivers—the Han, Nakdong, Geum and Yongsan—and the coastal waters of certain towns. The basins of these rivers cover about two-thirds of the whole country.

In early 1980, ADB's experts, at the request of the South Korean government, carried out a study of environmental pollution in the country. The ADB team recommended that the highest priority should be given to protecting the Han River and the Nakdong River basins from pollution. The technical grant will also cover the services of four experts in water and air pollution control and solid waste and data management.

**A SURVEY CONDUCTED** at the end of last year by the Tokyo municipal government showed that although 84 percent of consumers questioned were aware of the government's appeal to stop using phosphate-based detergents, over 40 percent continue to use them. Force of habit and the superior cleaning power of the phosphate detergents were cited as the reasons for the continued use.

A Tokyo consumer group recently dumped about three tons of synthetic detergent powder boxes outside a building housing the office of the Japan Soap and Detergent Industry Association. To their dismay, the boxes were stolen during the night and will undoubtedly end up being re-sold and used.

**PAPUA NEW GUINEA** has a new Water Resources Act, designed to cover all aspects of water use.

The previous legislation (Water Resources Act 1962) began as a way of protecting the interests of private companies who wished to exploit the country's resources and as such it is not outmoded.

However, the 1962 Act has been totally rewritten in order to protect the nation's largest natural resources, the customary rights of land owners and water users as well as ensuring orderly development of water resources by both Government agencies and private industry.

Water use will be controlled through a system of permits issued by the Minister for Minerals and Energy on advice of the Water Resources Board.

## The state of the environment? Benefits outweigh costs: UNEP

**NAIROBI**—The costs of sound environmental policies are generally more than balanced by the benefits achieved by reducing damage to the environment, UN Environment Program Executive Director Mostafa K. Tolba says in his State of the Environment Report to this year's UNEP Governing Council, meeting in Nairobi May 13-26.

This year's State of the Environment report covers questions of environmental economics, ground water, toxic chemicals and their relation to human food chains.

"Much of the debate about environmental economics in recent years has concentrated on the fact that the costs of environmental damage may fall on people different from those benefitting from the actions which cause the damage," Tolba says.

Clean-up costs of oil spills have been estimated at \$1000 for each barrel of oil spilled, but in 1974 when an oil tanker spilled 50,000 barrels of oil in the sea off Japan, it cost \$180 million to clean it up.

The accident at the Seveso chemical plant in Italy caused damage estimated at \$150 million. And rehabilitation of the Three Mile Island nuclear power station after the 1979 breakdown is estimated at over \$1 billion.

Even without accidents, large quantities of pollutants enter the environment through human activities, Tolba says. Air pollution is estimated to cost the U.S. up to \$35 billion a year. In the Soviet Union the cost of air pollution, in terms of health expenditure and decreased work capacity, is estimated at \$38 a person. Damage to pasture and crops is estimated at \$130 a hectare.

But where pollution damage in developed countries costs between 3 and 5 percent of gross national product, it costs less than this to introduce sound environmental policies. In the U.S., a 60 percent reduction in air pollution could save the nation \$40 billion in health costs, UNEP says.

"In the developing countries, the costs of improving the quality of the environment and the protection of natural resources are far outweighed by the benefits accruing to society," Tolba says.

He warns against relocating industries to developing countries (to take advantage of cheaper labor, availability of natural resources, etc.) if this raises new environmental questions.

**Ground water:** Tolba warns that by the time sub-surface pollution is conclusively identified, it is often too late to apply remedial measures. "Ground water monitoring is often neglected because its importance is not recognized.... Such monitoring, to obtain early warning of the depletion of the resource, or of its pollution, is an important component of sound management."

Ground water protection programs in most countries are inadequate, he warns, adding they will remain inadequate until there is greater recognition of the need to develop better understanding and management of these resources.

New procedures for applying chemicals to the land must be stringently scrutinized, he says, and prevention is the only possible option.

**Toxic chemicals and human food chains:** Through a food contamination monitoring program, 21 countries, supported by UN agencies, are trying to produce a more accurate assessment of the problem.

The more evidence is obtained about contamination of food with toxic chemicals the more obvious it becomes that present knowledge is inadequate. "There is a dearth of information about the long-term risks involved," Tolba says. "The public is understandably concerned by the fact that toxicologists are at present unable to give reliable estimates of the risk of carcinogenic, teratogenic and mutagenic effects following long-term exposure to low levels of many of the chemicals now present in food."

In 1971-72, over 500 people died in Iraq after eating bread made from contaminated cereals; in 1974, 97 people died in a small area of northwest India from jaundice caused by badly stored maize.

Residues of veterinary antibiotics and hormones may be present in meat, milk and eggs consumed by people.

Tolba says there is an urgent need to improve sampling techniques and quality control in food analysis. There is also a need for better international cooperation to restrict the discharge of toxic chemicals into rivers, and to limit atmospheric pollution by chemicals which can affect food production and increase levels of toxic substances in food.

"There is a great need for research to understand the mechanisms of migration, transformation and concentration of contaminants in the food chain—and for research on the effects of these contaminants on human health," he adds.

CHARLES HARRISON

## SOLIDARNOŚĆ

### Poland's Solidarity promises polluting factory cleanup

**KRAKOW**—The Polish workers organization Solidarity is promising to work for a "clean Poland."

Some new and tough anti-pollution laws have been issued recently by the Council of Ministers—on factory emissions, noise and tree felling—but, Solidarity said, it is not enough.

As reported in the February 16 *WER* (p. 5), the Skawina aluminum smelter, near Krakow, was closed because of its excessive pollution—even though it produced half the aluminum in Poland. Plant workers will probably be given jobs in the same factory, which may produce finished, and less polluting, aluminum products such as pots, pans and aluminum sheeting.

A factory that produced cellulose was also closed recently at the request of Solidarity because, they said, it had been poisoning the resort area around Jelenia Gora.

Experts from the newly independent and powerful union are now looking into several other centers of pollution and are promising to clean them up within a few years.

JERZY BRODSKY

## International cooperation...

**THE UN ECONOMIC COMMISSION FOR EUROPE (ECE)** concluded its 36th annual session in Geneva by adopting an "omnibus" resolution on planned future activities, including the holding of an all-European Congress on cooperation in environmental protection. The Commission also adopted six decisions relating to water problems in agriculture, cooperation in the Mediterranean, cooperation in science and technology, harmonization of summertime in Europe, economic trends and international cooperation and integration of ECE work.

Some 250 delegates representing all 34 member countries (comprising 32 European states, Canada and the U.S.) took part, along with representatives of 20 international organizations.

**A DELEGATION** from the Venezuelan Environment Ministry visited Nicaragua recently, beginning a year's program of cooperation. The mission evaluated needs of the Nicaraguan Institute of Natural Resources.

Among the areas of cooperation are wildlife inventories, mangrove ecosystem conservation, breeding stations for endangered species, water quality studies, garbage and environmental legislation.

A land use planning course may be taught by Venezuelans later this year, while Nicaraguans concerned with national park planning have been invited to Venezuela to study the National Parks Institute.

**REQUESTS FOR AID** from Australia's Commonwealth Scientific and Industrial Research Organization to developing countries are increasing enormously, said Minister for Science and Technology David Thomson.

In 1980 CSIRO's Center for International Research Cooperation handled projects in 40 countries in Africa, Asia, South America, the Middle East and the Pacific Islands. The funds involved exceeded \$3.8 million; of this about \$2.36 million went to the Center for Animal Research and Development near Bogor, Java, a joint Australian-Indonesian project.

Aid sought has been mainly in the fields of agriculture and forestry research.

Money for the projects came from several sources including the Australian Development Assistance Bureau, various UN agencies, foreign governments and private bodies.

## Toxics . . .

**THE SWEDISH GOVERNMENT** will extend indefinitely its temporary ban on the use of chemicals in forests. The prohibition was to expire June 30 when it was expected new legislation could take effect.

Minister of Agriculture Anders Dahlgren, in making the announcement to Parliament, said, "Time is too short to present parliament with a new draft law this spring, and it also would be difficult to put such legislation into effect this year."

During the year of the ban, the use of chemicals to fight undergrowth, weeds and insects not only in the forests but also in agriculture has been under intense investigation.

Meanwhile, the Agricultural Research Institute found that 60 percent of the farmers thought the use of pesticides, weed-killers and the like should be reduced. Another 37 percent felt there should be no change while only one percent favored an increase. Three out of four farmers expressed fears that chemical preparations could affect their health.

**THE INTERNATIONAL FEDERATION OF CHEMICAL**, Energy and General Workers Union (ICEF) said at its Geneva headquarters that dioxin-exposed workers have 40 times the cancer rate of non-exposed workers, according to U.S. and Swedish studies. This gives added weight to ICEF demands for a ban on the herbicide 2,4,5-T and zero workplace exposure to dioxins, the spokesman declared.

**LINKS** between the defoliant Agent Orange and cancer are to be tested in an extensive survey by the Australian Commonwealth Institute of Health. The new survey is in addition to the \$20 million survey on the effects of exposure to Agent Orange on Vietnam veterans conducted by the Institute for the Department of Veterans Affairs. The health institute decided on the survey after recent Swedish studies showed that exposure to chemicals contained in Agent Orange made human beings six times more vulnerable to cancer.

The survey comes after reports that hundreds of tons of the chemical, part of the stockpile used by the U.S. in the Vietnam war, were illegally imported into Australia and could have been sold for commercial use.

**THE KOREAN OFFICE OF ENVIRONMENT** has set limits on the permissible levels of chemical residues on commercial crops. The new restrictions cover 21 kinds of agricultural chemicals used on 33 different types of agricultural produce. The limits are similar to those levels already designated in Japan, the United States and West Germany.

## Sweden's central toxic waste facility finally finds a home

**STOCKHOLM**—SAKAB, Sweden's state-owned enterprise for the destruction of toxic wastes, finally has found a site for its new plant—the spot where the search began two years ago (*WER*, Sept. 8, 1980, p. 1).

The government has given a go-ahead for construction at Norrtorp near Oerebro in central Sweden, a site SAKAB wanted all along but which was disapproved by the National Environment Protection Agency (NEPA). Residents immediately demanded the go-ahead be cancelled.

"The issue between NEPA and us mainly concerned discharges into the waters of Froemmesta stream," said SAKAB chief Per Ahlerup. "There are techniques to improve cleansing of the discharge. We are prepared to meet the demands for far-reaching measures."

After NEPA said "no" to Norrtorp originally, community after community cold-shouldered SAKAB. "All are agreed that someone must take care of environmentally dangerous waste," summed up the morning newspaper Svenska Dagbladet, "but to harbor SAKAB on one's own home ground—that is another matter."

But then the local council at Kramfors in northern Sweden offered SAKAB a site, primarily because it would mean job opportunities. Rejected everywhere else, SAKAB applied for permission to build. NEPA's licensing bureau held a two-day hearing and just before the new year rejected the new bid. By comparison with Norrtorp, the bureau said, the dangers of transporting wastes so far were too great and the costs of operating Kramfors would be too high because most of the waste originates in south and central Sweden.

SAKAB Director Ahlerup said the Norrtorp installation should be ready to begin operations within two years.

Once again local inhabitants and neighboring communities are working intensively to block construction. When Premier Thorbjorn Faellidin arrived in the area for a political meeting, his entry into the hall was blocked for an hour by 600 demonstrators, mainly farmers, demanding that the government decision be cancelled.

SPECIAL TO WER

## Ireland plans a comprehensive toxic waste disposal strategy

**DUBLIN**—The problem of dumping toxic waste in Ireland is about to be resolved, *WER* has learned.

The Department of the Environment and the Irish Industrial Development Authority have completed proposals for an overall strategy for waste disposal throughout the country, and the IDA itself will operate a national collection center for toxic waste on a six-hectare site near the main road into Dublin, about 32

kilometers from the capital.

Irish waste disposal companies had halted the disposal of toxic waste following the closing of some dumps against them and their claim that facilities should be provided. The major disposal companies offered help in operating and establishing dump sites.

The Irish Institute for Industrial Research and Standards proposed that the new center should export hazardous waste, mainly to Britain, where it would be treated and recycled.

Toxic waste disposal has been a controversial subject in Ireland for a number of years, and the U.S. company Raybestos Manhattan, which announced last year it was pulling out of Ireland, became embroiled in a major controversy over a site for asbestos waste in Cork.

The Cork County Council is still looking for a site for a toxic waste dump and is engaged in a High Court battle with local farmers who are opposing a site in southeast Cork. TOM MacSWEENEY



## West Germany's Green party stages an election comeback

**MUNICH**—West Germany's environmental party, the "Greens," rocketed back into a position of power in a vital state election in Hesse this Spring, and strategists of all three major parties are now attempting to assay the results and evaluate future impact.

Many politicians had brushed off the "Green" threat—which had made a considerable impact on state and local elections over the last three years—after last October's general election. Then the "Greens" won only 1.5 percent of the vote nationwide and did little better in Hesse, with 1.8 percent.

But in Sunday's Hesse elections they came back to stun the old pols. They got into nearly every town council they contested—including the most prestigious one in West Germany's financial center of Frankfurt—plus some district councils.

They were clearly able to exploit local opposition to a controversial nuclear reprocessing plant and an expansion of Frankfurt's international airport—the busiest and biggest in Germany.

The "Greens" rolled up a stunning 41.66 percent of the vote in the city of Volkmarsen, often named as a site for the reprocessing plant cited above.

The pattern was similar in the town of Moerfelden-Walldorf, a center of opposition to the new airport runway. That town gave the "Greens" 24.7 percent of the vote and for the District Council, 14.2 percent. In both cases the "Greens" deprived the Social Democrats of their absolute majorities for the first time.

The lesson: faced with detrimental environmental impacts, voters tossed aside party discipline. WILLIAM G. MAHONEY

## Environmental management...

**THE JAPANESE GOVERNMENT APPROVED** a \$10 billion anti-pollution program for 18 areas across the country. The five-year program will emphasize improvement of sewerage systems and over half the funds are designated for that area. The program will also include the improvement of water quality in lakes and rivers, the creation of "green belts" of trees, waste disposal facilities, dredging of rivers and ports and the installation of air pollution monitoring devices. Local governments will provide about 80 percent of the projects' funding, private companies around 15 percent and the central government the rest. Targeted completion for the projects is the end of fiscal 1985.

**THE GOVERNMENT OF INDIA** has formed a National Committee on Environmental Planning (NCEP) with B.B. Vohra, a top official in the federal government, as its chairman.

Its 28 members, 13 from government, will hold office for two years, as of this April 1.

The committee will formulate guidelines, review existing legislation and environmental management administration and advise authorities regarding necessary changes to ensure that environmental policies and measures are coordinated with economic policies. It will also advise on nature conservation, promote environmental research and enlarge public awareness of environmental problems through conferences, seminars, symposia and other means.

It will cooperate with UN and other international agencies in environmental programs of global concern and keep in close touch with developments in environmental fields in other countries.

**SOUTH KOREA'S ECONOMIC PLANNING** Board (EPB) recently announced a comprehensive five-year anti-pollution scheme. A total of 17 projects covering oil refineries, industrial wastes and urban sewage systems will be undertaken. Total cost is estimated at \$3.53 billion.

**TO GET PEOPLE POWER** behind their anti-pollution drive, South Korea's Office of the Environment (OE) will broadcast pollution information at theaters, trains, bus stations and through loudspeakers in other facilities. The OE also asked for and received assurance from the Education Ministry that schools would teach subjects related to environmental preservation. The OE believes voluntary participation from the people will be necessary if their program is to have long-lasting success.



## Agriculture . . .

**THE FARMERS OF RWANDA**, Africa's most densely populated nation, will be learning about soil fertility and erosion, plantation maintenance and pest control as part of a \$16.6 million project to improve their coffee and food production. The World Bank's International Development Association will provide a \$15 million long-term, no-interest loan for the project and the government of Switzerland \$600,000.

**MADHYA PRADESH** is India's largest state and, although it is rich in natural resources, is one of the poorest in India. The government has recently embarked on a \$232 million irrigation scheme to use the water resources of the many small rivers throughout the state. A long-term, no-interest loan of about \$140 million from the World Bank's International Development Association will help build about 30 medium-size irrigation projects over an area of 107,000 hectares during five years. Farm incomes are expected to increase 420 percent.

The use of fertilizers and pesticides is not expected to have a significant environmental impact, the Bank said, since the project areas are relatively small and scattered. Precautions are being taken to minimize the risk of water-related diseases.

**THE WEST AUSTRALIAN** State Government has set up a new organization to streamline the operations—public and private—of all groups involved in research and field work on soil salinity and erosion.

The committee is comprised of the Ministers for Agriculture, Works and Water Resources, Lands and Forests, and Conservation and the Environment. The government also plans a review of the Soil Conservation Act to determine whether it needs to be broadened.

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## Kenya's destitute Turkana to learn desert farming

**LODWAR, Kenya**—Kenya's Turkana District, a 32,000-square-kilometer near-desert, is the setting for an ambitious project aimed at raising the living standards of its 170,000 people, many destitute after losing their cattle, goat and camel herds in two years of drought.

The European Community and a group of states, including Britain, The Netherlands, Ireland and the U.S., are backing a \$1.5 million rehabilitation scheme. It will provide relief food for 40,000 destitute Turkana and, simultaneously, encourage them to turn to agriculture wherever the land is suitable and where water supplies can be made available from underground boreholes or from seasonal rivers.

Food is being supplied in return for work on the new agricultural schemes, and volunteers from the U.S. and several European countries are supervising both food distribution and farming projects.

Traditionally, the nomadic Turkana people have lived almost exclusively on their livestock herds. Thousands would have starved to death if the relief operation had not been launched last year. The Kenya government, missionaries and aid workers are now cooperating in efforts to convince the Turkana people to alter their life styles, to make them less vulnerable to drought conditions.

Near the small trading center of Lokitaung, close to the Sudan and Ethiopian borders in northern Turkana, techniques developed in Israel's Negev desert 2,000 years ago by the Nabateans (WER, March 2, 1981, p. 6) are being used.

A British agriculturist, Adrian Cullis, who studied under Professor Evenari in Israel, says the Nabatean system of channeling seasonal rainfall into enclosed areas is the answer to many of Turkana's problems. He has encouraged groups of local families to clear the stony, arid ground, to build walls one meter high to contain the water from infrequent rain floods and to plant crops of drought-resistant sorghum.

In other areas of Turkana, small-scale irrigation schemes are being developed using underground water.

The rehabilitation scheme administrators say they are pleased with the response of the Turkana people, who are being urged to adapt their centuries-old lifestyle. They recognize that it will take several generations to make a significant impact, but they hope to make a start through the 40,000 Turkana now participating in the rehabilitation scheme.

CHARLES HARRISON



5 MAY 1981

## In This Issue ...

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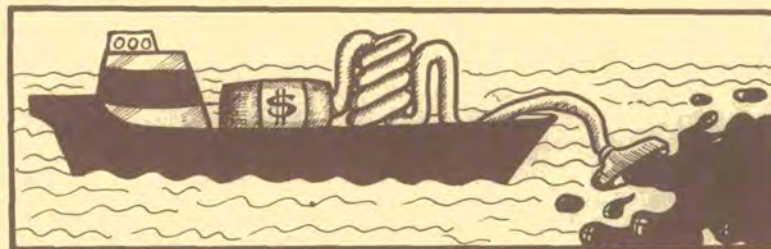
## A miner of black gold in Brazil's polluted waters

**RIO DE JANEIRO**—"I am mining Guanabara Bay for spilled oil and selling it for a profit." These are the words of Antonio Jose Ferrer, president of Sermapi (Servicos Auxiliares Maritimos Piloto S.A.), the Brazilian company that is cleaning up—both environmentally and financially—in the massive bay fronting this Brazilian city.

The company signed a contract with Petrobras, the state oil company, that had nothing to do with services rendered in cleaning up the heavily polluted bay. Instead, it was a previously agreed-upon price list for recovered petroleum to be sold by Sermapi to the oil company.

Such an avowedly commercial approach to environmental protection might even be seen as a threat by companies that sell their clean-up services to governments. "I've been to some of those international environmental protection meetings," laughed the barrel-chested Ferrer aboard his motor launch "Thieza," from which he frequently runs his company. "When I tell them what I'm doing, they want me to shut up and go away."

That's not likely to happen soon. Sermapi's "mining" operation is too profitable, and the prospects for expansion are almost as numerous as there are oil-polluted bays.

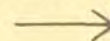


While developing its skimmer ship, the company last year took 11,100 tons of oil (about 66,000 barrels) out of Guanabara Bay and sold it for \$1.8 million. Indeed, expenses for developing the oil skimmer were amortized in only three years.

In February Sermapi launched the first commercial model of the oil skimmer, dubbing it the "Pureza II," and has already taken export orders from several African and Asian countries. The export model of the 600 deadweight-ton boat sells for \$3.8 million.

"Pureza II's" complete list of functions includes: 1) recovering spilled oil and processing it through centrifugal separators, high vacuum distillers and filters; 2) separating ship sewage in special tanks, producing clean water and organic waste fertilizer; and 3) providing alternative electrical power for ships undergoing repairs via a 400 kilowatt auxiliary generator.

The boat has an oil separation capacity of about 200,000 barrels of oil per month. All the vessel's functions are controlled by



## Waterwise...

**THE FIRST IMPORTANT STEP** has been taken to meet the basic water and sanitation needs of 1.5 million people who live in Uganda's seven major cities and town. The \$18 million project (half will come from the World Bank's IDA) will include feasibility and detailed engineering studies for rehabilitating and expanding water supply facilities, upgrading sewerage systems and sanitation facilities. It will also include preparing a training program for technical staff.

**THE LAO PDR, VIETNAM AND THAILAND** are continuing their cooperation on projects in and around the Lower Mekong Basin—despite their political differences. One project is the proposed national training center for hydrologists and hydro-meteorologists in Vientiane. Another will enable Vietnamese agronomists, economists and hydraulic engineers to visit the Thai delta areas to compare methods of irrigation and flood control.

During a recent meeting of the Interim Mekong Committee (interim until Kampuchea can join), several pledges of support were received for 1981: \$4.5 million from the Netherlands, \$45,000 from New Zealand, and \$30,000 from Japan. The UN Development Program will provide \$7 million for three years—1982-85.

**SINGAPORE IS PLANNING TO SPEND \$394.2 million** over the next five years to control water pollution in the country. There are programs to clean up the Singapore River, Kallang Basin and all water catchment areas. About 10,000 run-down premises without proper sanitation will be redeveloped in those areas. In addition, about 250,000 pigs will be cleared from all water catchment and other areas by December 1983. All remaining pig farms will be provided with proper waste treatment facilities.

**A NEW SET OF MEASURES** aimed at controlling South Korean industrial firms which neglect waste water disposal facilities will be introduced by the Office of Environment. Under the new regulations, industrial firms will be required to install electronic gauges to help inspectors determine whether their waste disposal equipment has been used properly. Plant operators will also be required to keep records on their purchase and consumption of chemicals. Some 230 industrial firms, which discharge some 70 percent of the total waste water in the country, will be affected by the new measures.

computer.

Rio de Janeiro's Guanabara Bay presents special environmental problems—and commercial opportunities, depending on the viewpoint. The big bay is almost closed at the entrance and is highly polluted, not only from industrial waste but from oil slicks from the tankers that unload imported oil and oil from Brazil's Campos Basin offshore fields at the Duque de Caxias refinery, which lies inside the bay.

"Pureza II" began operational trials in the bay this April and will also be pressed into service cleaning up the country's new Sepetiba Bay coal and iron ore port when it begins operating in June.

Actually, four experimental "purezas" were designed and built by Sermapi during the course of the vessel's development, with only the final, commercial model being christened the "Pureza II." All of them are busy periodically skimming oil out of Guanabara Bay and—incidentally—pouring money into the Sermapi coffers.

JAMES BRUCE

## Environmental diplomacy gets Caribbean nations together

**NEW YORK**—For the first time in the long, colorful and disparate history of the Caribbean, almost all of its nations, trusts and colonies agreed to work together on a plan to protect their environment as they develop their economies (see also *WER*, March 16, p. 1).

At a three-day meeting this April in Montego Bay, Jamaica, ministers of 23 of the 27 governments agreed to the 66-project Caribbean Action Plan (CAP). St. Vincent and the Grenadines pledged support by telegram as did the European Community.

It is, said Jamaican Prime Minister Edward Seaga, "a most ambitious program by any evaluation. . . . It is the greatest collaboration ever made in the Caribbean." But, he cautioned, the plan will not work unless all live up to their financial pledges.

The ministers agreed to launch the plan with a \$1.5 million trust fund and pledged \$1.2 million at the meeting (France \$375,000, Mexico \$250,000, Venezuela \$230,000, Colombia and Cuba \$30,000 each, and Barbados, Haiti and Nicaragua \$16,500 each). Neither the United Kingdom nor the United States was able to make a financial commitment at the time. The UN Environment Program, which is sponsoring the CAP with the UN's Economic Commission for Latin America, said it would provide \$1.38 million dependent on the participating nations honoring their pledges. The balance of the three-year \$8.2 million program is to be raised from other governments and aid organizations.

Jamaica was chosen as plan-coordinating headquarters, and a nine-country plan-monitoring committee was named to work with UNEP. A Caribbean Environmental Treaty was proposed for signing in 1983.

The three Caribbean states that did not participate were the Bahamas, Belize and Guatemala.

LIBBY BASSETT

## WER interviews Mexico's new director of the environment

**MEXICO CITY**—After years of what continues to be an uphill battle, Mexico's environmental protection policies are beginning to show results, the new director of those policies said in an interview with WER.

"We are beginning to reap some results from what has been, and is, a difficult and arduous task," said Dr. Manuel Lopez Portillo, Sub-secretary for Environmental Improvement in the Federal Health Secretariat.

Leaders of private industry, through their business and professional associations, are ready to sign an agreement promising to practice ecological preservation and protection, he asserted. Since assuming office last July, Dr. Lopez Portillo has obtained similar agreements from major government sectors, including the oil and steel industries.

A neurosurgeon who also holds an advanced degree in sociology, Dr. Lopez Portillo believes his twin fields make him well-qualified for his job. "Environmental contamination is a matter of individual health. My work is a great deal of health and a great deal of sociology." A cousin of Mexican President Jose Lopez Portillo, the sub-secretary said he accepted the appointment "because I am totally and absolutely dedicated to improving the environment. This job gives me an opportunity to serve my country in a position of responsibility within my field of knowledge."

He describes the work of his department as a kind of balancing act: "How to have industrial and social development in harmony with the environment—that is the problem. How do you balance social justice and industrial development with a clean environment and without going to extremes?"

Dr. Lopez Portillo's main theme is that a cleaner environment is the responsibility of everyone. Working with the federal Secretariat of Public Education, school programs are underway in all primary classrooms. A massive advertising campaign via radio, television, newspaper advertisements and signboards is aimed at the adults.

"Each day we are getting more participation. It's a question of time," he said. While the still-smoggy view from the 14th floor office of the sub-secretariat hasn't improved considerably in the near-decade of the office's existence, Dr. Lopez Portillo observed that the pollution has not worsened to any great degree in recent years. "As an absolute, it isn't very good. Taken relatively, the situation is improving," he noted.

Man is a permanent consumer of energy, Dr. Lopez Portillo said. "Because of this, we have permanent contamination. What we must develop is a rational use of energy, all forms of energy. Mexico is rich in mineral resources, but we are developing all kinds of energy—nuclear, solar, wind, water."

Acknowledging that some pesticides considered unsafe by the U.S. are used in Mexico, the subsecretary said it is, thus far, impossible to have total control over what is sold in Mexico. But by

## Environmental management ...

**MAKING THE AIR 50 PERCENT CLEANER** would cost the European nations of the Organization for Economic Cooperation and Development (OECD) \$4.6 billion by 1985. However, a new OECD study has found, this would be within the range of estimated savings on improved lake quality (destroyed by acid rain), health, crops and building damage. The study develops a methodology for estimating the costs and benefits of controlling sulphur oxide emissions from oil and coal power stations. "The Costs and Benefits of Sulphur Oxide Control—a Methodological Study," is available from OECD sales offices in member nations or from the main office: 2 rue Andre Pascal, 75775 Paris Cedex 16, France.

**THE PROVINCE OF ONTARIO, CANADA**, has submitted a 130-page report to the U.S. Environmental Protection Agency outlining its reasons why EPA should not relax sulphur dioxide emission limits in six states—and urging enforcement of existing standards. "It is clear," the reports says, that relaxing standards on the 20 plants in question "will more than double" the acid rain received in Ontario's environmentally sensitive areas. The report is available from: Ontario Ministry of the Environment, 135 St. Clair Avenue West, Toronto, Ontario M4V 1P5, Canada.

**THE HONG KONG GOVERNMENT** will carry out a series of intensive clean-up operations in all urban areas of Hong Kong and Kowloon over the next few months.

As the clean-up is held in each district, a spokesman explained, staff in all sections of the local Urban Services Office will be mobilized to participate in the daily clean-up throughout the month. Law enforcement staff will also move into each target area which has undergone a clean-up on the previous day, to warn the public against dumping wastes and, if necessary, to issue summonses to "litterbugs."

**CHINA HAS SET UP A NEW COMMITTEE** to monitor sanitation regulations and practices in the country, the Xinhua News Agency reported. The committee, known as the Chinese National Committee for Sanitation Standards, was formed at a national conference held in Beijing recently. The Conference, attended by 70 officials, health administrators and doctors, also drafted a five-year plan which covers the control standards for hospital waste and industrial effluent as well as sanitation laws for schools and factories. The new committee will operate under the Ministry of Health. The Chairman is the Vice Minister of Health, Yang Shoushan.

## Energy sources...

**THE JAPANESE MINISTRY OF TRANSPORT** has a \$3.3 billion plan to build the world's first artificial island for coal-fueled thermal power plants.

Kooji Yamamoto of the ministry's ocean affairs division says the project is designed to assist Japan's conversion from oil to coal dependency. The island would be built two to five kilometers off the Japanese coast and would have three floating power stations, each generating about a million kilowatts. Undersea cables would connect the stations with a distribution center on the main island.

The 130-hectare island would be ringed by a semi-circular breakwater, and wastes from the plants would be stored in the island itself.

Construction of the complex would take about three years, but Yamamoto says it will be several years before it is started.

**IN JUST 10 YEARS, THAILAND'S** demand for energy will have risen by 63 percent compared to 1980, and electricity alone will account for 10.8 percent of the rise. To counteract this expected increase, the Government has been preparing a 10-year plan designed to find alternative sources of energy.

If the 10-year energy plan achieves its targets, oil, which will constitute 71 percent of energy use at the end of the Fourth National Economic and Social Development Plan (1981), will decrease to 49 percent at the end of the Fifth Plan (1986) and 45 percent by the end of the Sixth Plan (1991). However, despite increases in the use of natural gas, lignite and water as energy sources, the demand for oil will continue to rise to reach an expected minimum cost of \$6.3 billion by the end of 1991.

**PANAMA** is getting a \$6.5 million loan from the World Bank for its \$8 million project to explore the nation's petroleum and coal potential, improve its energy planning and investigate the potential for developing its geothermal energy potential—24 geothermal sites will be studied.

**BRAZIL'S MINISTER OF ENERGY** Cesar Cals, responding to criticism that coal production goals would not be reached for lack of money, said that the government will invest Cr\$11 billion (\$157 million) in coal this year.

Brazil's private sector had complained that the government goal of 27 million tons a year by 1985 would not be reached. The main complaint was about the lack of funds, not only for opening or expanding mines but also for improving rail and ship transportation networks.

exchanging information with the U.S. Environmental Protection Agency, and in cooperation with the U.S. Food and Drug Administration, Mexico is drawing up its own legislation to outlaw those chemicals which are dangerous.

"Besides protecting the environment and humans, it is of technical and economic importance to us. Recently, some Mexican vegetables were not allowed into the U.S. because of a spray that had been used on them. It is to our advantage to know the levels of chemicals we can use safely," he said.

While the sub-secretariat has the authority to levy fines or close sources of pollutants, such as cement factories, Dr. Lopez Portillo sees this as "the worst route to take, the last thing to do" because Mexico needs industrial development.

"We want to emphasize that environmental contamination is a problem with a solution in the participation of all citizens. Through the efforts of all citizens, we can offer a better outlook for the new generations, a better quality of living."

KATHERINE HATCH

## Venezuela's Orinoco Oil Belt site of several eco-studies

**CARACAS**—Petroven, the Venezuelan oil holding company and the La Salle Foundation for Natural Sciences are undertaking an environmental study to determine the principal technological decisions to be taken for development of the Orinoco Oil Belt, a 32,000-square-kilometer area under evaluation in southeast Venezuela.

Plans for developing the Orinoco Oil Belt call for an initial 125,000 barrel a day production by 1988. Reserves are estimated at one billion barrels.

The Orinoco Oil Belt covers part of the States of Guarico, Anzoategui and Monagas, as well as most of the Delta Amacuro Federal Territory. The region is mostly unpopulated savannas, except for a few cattle farms. Venezuelan authorities are seriously concerned with the impact of the development projects, which will involve enormous infrastructure investments in the area.

Two groups from the foundation are presently involved in studying a 6,100-square-kilometer portion of the area, assigned to Lagoven and marked for exploratory drilling. One group is concentrating on botanical species while the other studies aquatic life.

The purpose of the La Salle study is to provide an independent and reliable recommendation on the technologies to be used so as to cause as little damage as possible to the environment. It will take an inventory of the most important species of flora and fauna and will establish the quantity and distribution of species, noting the main characteristics of their habitat.

The Venezuelan Government has assigned a part of its exploratory budget to other ecological studies and projects. Several were made by different university and other independent groups, and an extensive study was done by the National Oil Company Research Institute (Intervep).

LILI STEINHEIL



## Sweden proposes phasing out its nuclear power plants

**STOCKHOLM**—The Swedish government has presented parliament with a 10-year energy proposition which it says lays the groundwork for winding up atomic power and sharply reducing the use of oil.

"Atomic power will be liquidated by the year 2010," said Prime Minister Thorbjørn Faellidin when he introduced the bill.

But what will replace the nuclear reactors, now generating about 25 percent of Sweden's electricity, when their life span ends toward the end of the century? And how will the government cut its 70 percent dependence on oil for heating and power by one-third, or nine million tons, over the next 10 years?

Coal and domestic energy sources such as peat, wood chips and other biomass products are one answer. Extra taxes on heating oil also are expected to help, as well as conservation. The proposed bill says nothing about alternative renewable energy sources such as solar power and wind power, probably because they haven't proven themselves yet.

Consequently, the bill recognizes that the government is counting on research to make significant energy breakthroughs during the next decade. It is setting aside 1.4 billion Swedish Crowns (currently \$304 million) over the next three years for research.

The return of coal will be at a level reached in the 1950s but with the important difference that environmental demands now will be very much stricter, Minister of Energy Carl Axel Petri told newsmen.

The bill sets a limit of 2,100 tons of sulphur emissions a year for a coal-fired heating plant and then, by introducing advanced processing and cleaning techniques, reducing that level to 1,600 tons by the end of the decade.

Air polluted by sulphur, which in turn falls as acid rain and poisons lakes and forests, is often described as Sweden's most pressing environmental problem together with automobile engine exhaust. The effects on the environment are spreading. A National Environment Protection Agency prediction is that Sweden soon will be spending 200 to 300 million Crowns (\$44-65 million) on liming lakes to check the effects of acid rain. Sweden claims that most of the sulphur dioxide is carried by the prevailing winds from the Ruhr and from England, but its own smokestacks also emit considerable pollution. It has tried to keep this type of pollution down by buying expensive low-sulphur oil.

SPECIAL TO WER

## Nuclear power...

**CITIZENS OF KUBOKAWA**, Japan, have ousted their mayor, Susumu Fujito, for supporting a preliminary study for a nuclear power plant to be built in their town. It was the first recall of its kind in Japan's history. The move is considered a major set-back for Japan's pro-nuclear lobby.

In spite of a government campaign to convince the Japanese people of the safety of nuclear power, a recent survey showed that only 38 percent of those questioned supported an increase in nuclear power capacity.

**A PROPOSED NUCLEAR POWER STATION** in Guangdong province, China, has received the go-ahead in a preliminary feasibility study. The study was conducted by the Guangdong Power Company and the Hong Kong-based China Light and Power Company. Two sites, about 64 kilometers northeast of Hong Kong, have been selected for the station. The station, to be jointly owned by the Guangdong Electric Company and China Light & Power Company, will also supply electricity to Hong Kong when completed. Construction is expected to take at least eight years. Sir Lawrence Kadoorie, Chairman of China Light, said safety would be of paramount importance in the project.

**HOLLAND'S FISHING INDUSTRY** has given its blessing to the experimental breeding of warm water ocean fish in the cooling water of one of the Netherlands' two nuclear plants. The station will be located at Borssele on the Westerscheldt estuary which separates Holland from Belgium. Local government authorities have given their approval. The initiative was taken by the firm of Deltaconsult whose spokesman said there was little chance that radioactively polluted fish will come on the market. Moreover, he said, they also use cooling water from two conventional electricity plants. In the beginning of August a start will be made with six different kinds of ocean fish.

**THE ENVIRONMENT COMMITTEE** of the Organization for Economic Cooperation and Development (OECD) held its 10th anniversary meeting recently in Paris and, said a participant, no significant progress was made.

After a day of panel discussions on global issues, representatives got down to business: whether to derestrict a report on chlorofluorocarbons (many felt they hadn't had enough time to review it), and how the Environment Committee should get involved in the Nuclear Energy Agency's monitoring of the North Sea radioactive dump (they couldn't agree and decided to try to resolve it this summer).

## In Europe ...

**TWO ITALIAN INVENTORS** have developed an electric anti-pest device which they say could eliminate the use of pesticides in agriculture.

Antonio Resca, a nuclear physicist, and Athos Ferraresi, an agricultural specialist—both residents of Bologna—said their anti-pest equipment is inexpensive, safe and easy to use.

The device, which has a flexible, rotating antenna, produces an electric shock of between 250 to 400 volts to kill pests in orchards.

It can be mounted on a traditional pesticide sprayer, towed by a tractor. Sprayed water works as a conductor for electricity; however, water can be saved if the equipment is used after a rainfall.

Resca and Ferraresi said the device, called LEA (Anti-parasite electric fighter), is operated by a generator which can be powered by the tractor. Tests proved that trees and leaves are undamaged by the electric treatment.

With some modifications LEA can also be used on cereal crops.

**BECAUSE THE INCIDENCE OF DEAFNESS** is on the increase in Ireland, a £200,000 (\$348,000) foundation has been set up to determine which occupations are most prone to the affliction. It will also conduct research to help formulate protective legislation for industrial purposes.

The research unit is attached to Dublin's Royal Victoria Eye & Ear Hospital and has the latest equipment available.

**THE SWISS** Federal Office for the Protection of the Environment has just published a book on recycling and reducing wastes that is designed to assist major waste producers—industries and artisans—in improving their handling of the problem.

The book, entitled "Exploiting the Recuperation and Elimination of Wastes," distinguishes 80 different types of wastes and details methods of recycling or disposal. It is published in German, French and Italian—the languages of the country.

The book is available at the Federal Central Printing Office, 3003 Bern, order number 319,700. It costs 19 francs (about \$10).

**THE LJUBLJANA FAIR** in Yugoslavia hopes to attract top environmental protection equipment firms to its May 26-29 exhibition—"Technique for Environment ENV-YUG." Its purpose is to acquaint Yugoslav buyers and the public with the needs and prospects for environmental protection, particularly the useful consumption of all energy sources. For information: Gospodarsko rastavisce Ljubljana (Ljubljana Fair), Titova 5, 61000 Ljubljana, Yugoslavia. Telex: 31127 JU GR. Or contact Dr. Vladimir Petkovski, Counselor for Science and Technology at the Yugoslav Embassy in Washington (202) 462-6566.

## Britain's nuclear program meets Parliamentary criticism

**LONDON**—Britain's proposed £15 billion (\$34.5 billion) 10-year nuclear power program, which includes the construction of one plant a year, has been severely criticized by an all-party group of Members of Parliament.

The Parliamentary Select Committee on Energy made no apology for the length of its four-volume report as the nuclear program involves such a large sum of public money. It set out to question government assumptions about energy policy and future economic growth.

"A number of the assumptions contained in the figures produced by the Central Electricity Generating Board (CEGB) and the Government in support of their case are, in our view, questionable. Moreover, the methodology employed is in many ways unsatisfactory," said the report. To help in assessing the government case, the committee obtained evidence from a wide variety of individuals and institutions connected with science, industry and government both in Britain and abroad. It also visited appropriate sites and institutions in Europe, Canada and the United States.

"Further stations should not be ordered simply because they form part of a predetermined program commitment," said the committee report. It suggested that each proposed station be evaluated on its own economic merits.

Following publication of the report, the Government pointed out that its 1979 energy statement was not a rigid program but "an intention," open to adjustment according to energy cost and demand. However, what makes the report both an embarrassment and something difficult to ignore, is that the committee cannot be accused of political bias and seems to have done its homework so much more honestly and efficiently than either the Government or the CEGB.

BARBARA MASSAM

## UN European agency writes an environmental success story

**GENEVA**—When the UN Economic Commission for Europe held its annual session here March 30-April 8, Executive Secretary Janez Stanovnik of Yugoslavia reported that, once again, political differences between the Communist and Western worlds did not prevent them from cooperating fully in his unusual United Nations agency.

For at the working level in the ECE, experts and scientists—as they have since the agency was founded 34 years ago—tend to ignore politics as they work out cooperative agreements in such areas as environment, energy, agriculture, timber, human settlements, industry, transport, trade, technology and economic planning.

Improvement of the environment is a major objective of the ECE, a body that brings together experts and scientists from Western Europe and North America and from the Soviet and East European areas.

Stanovnik's report to the Commission highlighted some of the past year's activities:

- The follow-up to the Convention on Long-Range Transboundary Air Pollution has been most encouraging. Work has begun to review strategies and policies for abating air pollution caused by sulphur compounds; on the effects of sulphur compounds on the environment; on strengthening monitoring and evaluation of long-range air pollutants in Europe. The purpose is to limit, then reduce and eventually to prevent air pollution.

"It can be expected that these activities will have a significant effect on the emission level of air pollutants in the ECE region, which, with respect to sulphur emissions, is approaching 100 million tons per year, an estimated two-thirds of global emissions," the Executive Secretary told delegates. "Other factors such as economic growth rates for large industrial sectors, changes in energy efficiency, future fossil fuel prices, and retirement rates for older industrial facilities, will also influence air pollution developments in the region."

- Following adoption of the Declaration of Policy on the Prevention and Control of Water Pollution, including Transboundary Pollution, the Committee on Water Problems will meet to prepare draft terms of reference for the project.

The Committee on Water Problems convened a meeting on International River Commissions in September, 1980, which, Stanovnik said, marked an important step in the common effort to strengthen cooperation among countries bordering rivers and international lakes.

This same committee is working on a project to organize a Seminar on Drinking Water Supply and Effluent Disposal Systems in 1982 and, in 1983, another on the protection of groundwater.

- Activities in the field of human settlements have been directed increasingly to the impact of energy considerations on human settlements policies. Urban renewal and modernization have been receiving priority attention.

Many of the ECE activities in other fields overlap into environment. For example, all its many groups in the energy field find themselves involved in environmental impacts. The Industry Committee also is deeply involved, especially the Chemical Industry Committee which is now preparing a study on the influence of environmental protection measures on the development of pesticide production and consumption.

The Timber Committee is evaluating the environmental benefits of forests and making an inventory of total forest biomass, for possible use as a source of energy.

Thus the ECE has developed into the United Nations agency—apart, perhaps, from the UN Environment Program—most active in the environmental field down at the working level.

And because experts and scientists concentrating upon specific areas are involved, political differences have a diminished impact. Decisions to move ahead in a specific area are by consensus instead of votes—so there are no winners and losers. National prestige thus seldom becomes a delaying or blocking factor, as it has in other UN bodies.

WILLIAM G. MAHONEY

## International cooperation...

**DISCOVERY OF THOUSANDS OF CANISTERS** of dangerous chemical wastes near an old mine site in northern Mexico touched off an intensive investigation by Mexican and U.S. authorities. The wastes—mercury and PCBs—apparently were sent from the U.S. for decontamination, burial or incineration.

In the last five years, an estimated 5,000 tons of wastes arrived in the area, 160 kilometers southwest of Monterrey. They were either buried in the abandoned mine, burned, or decontaminated and sold back to the U.S. while their containers were sold to nearby villagers as water storage tanks.

"The U.S. government is working very closely with the Mexican authorities because of the possible hazards to health involved," said a U.S. Embassy spokesman in Mexico City.

A U.S. citizen who ran the facility was arrested and charged with bringing in contraband—PCBs and mercury. The U.S. spokesman said the two countries were determining what to do with him and what to do with the wastes.

The companies are Monochem, Inc., Diamond Shamrock Corp. and, reportedly, B.F. Goodrich.

**ONE OF BRAZIL'S BIGGEST AGRICULTURAL** producers, the state of Parana, has asked UN assistance to prevent the state from turning into a sugarcane monoculture.

The request was made to FAO, the UN's Food and Agriculture Organization, for a three-year assistance program on means of avoiding the problem of food versus fuel crops and the takeover of small farms by big enterprises.

Most farms in Parana are small or medium sized so there is fear of absorption of small farms by agro-industry.

**TROPICAL DEFORESTATION** is being urged as a high priority program by the international organizations subcommittee of the U.S. House of Representatives. It is recommending that the full Foreign Affairs Committee ask President Reagan to urge improved cooperation and coordination among UN agencies and other international organizations on this issue.

**CHINA AND JAPAN** have signed a treaty on the protection of migratory birds. The new treaty covers 227 species or about two-thirds of the number which migrate between China and Japan each year. The agreement prohibits hunting, egg collecting and any commercial use of the birds. It also established protected areas for the birds in each country. Japan has similar treaties with the U.S., Australia and the Soviet Union. This is the first time, however, that China has entered into a migratory bird protection agreement.



## Environment & Industry...

**JAPAN'S RULING LIBERAL-DEMOCRATIC PARTY** blocked the Environment Agency's plan to control nitrogen dioxide emissions from industrial plants in Tokyo, Aichi, Osaka and Kanagawa prefectures. The LDP's environmental committee concluded that the Agency's control measure would impose economic burdens on the industries. Without clearance from the ruling party, the plan cannot be submitted to the Diet (Parliament) for approval. The Ministry of International Trade and Industry (MITI) and business circles were strongly opposed to tighter pollution controls.

**AN ANNUAL SURVEY** of 92 companies producing pollution-control devices in Japan reports an impressive increase in sales for fiscal 1980, 793 billion yen (\$3.86 billion), up 10.2 percent over fiscal 1979. Air pollution preventing devices have replaced sewage and garbage treating devices as top sellers, about 131 billion yen (\$638.7 million), a rise of 40.4 percent over the previous year. But, according to the report, due to sluggish governmental and public demand in fiscal 1981, two out of every five of the companies will face diminishing profits or suffer a loss.

**TWO SOUTH AFRICAN INDUSTRIAL** concerns plan to build a \$27 million pipeline which would discharge about 100 million cubic meters of effluent annually into the Natal Sea off Richards Bay.

If the pipeline is built it would disperse toxic industrial effluent from several paper mills and a fertilizer factory.

Presently some 10 pipelines discharge an equal amount of effluent annually into the sea between Richards Bay and Port Shepstone, a distance of about 200 kilometers.

Scientists asked to carry out surveys into the effects of the proposed pipeline complained that they were rushed and could not conduct thorough tests.

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The Center is a non-profit, non-advocacy, educational organization which seeks to foster public understanding of global environmental issues. Established in 1974 by the UN Association of the USA with the support of the UN Environment Program (UNEP), the Center alone is responsible for WER's contents.

## Center sponsors conference on eco-development

**NEW YORK**—For two days last month, the World Environment Center, the World Bank and the U.S. Agency for International Development held a conference on the "Environmental Practices of Consulting Firms working on International Development Projects."

It was, said one participant-speaker, very "worthwhile . . . No other conference which I have attended has been more interesting to me, or more valuable as a source of first-hand information about environmental experiences and lessons learned with large projects in developing countries."

Some 77 participants—primarily planners and consulting engineers—from the U.S., Europe and Latin America heard speakers from the World Bank's Environmental Affairs Office outline the environmental requirements of the Bank and how consultants are chosen for Bank contracts. They heard also how AID has refined its environmental assessment procedures and learned to look beyond a specific project area for impacts and influences.

Several case studies of massive development projects were presented, including some that had gone very wrong.

Center Executive Director Whitman Bassow reported on useful sources of international environment information. And in informal, small discussion groups the consultants discussed their problems in including environmental considerations into contract terms of reference, how to get environmental assessment into the earliest stages of project design and whether there is a need for an "honest broker" to help developing countries find organizations with environmental expertise. Finally, they debated whether there should be a code of environmental practices for consulting engineers and what that code should incorporate.

Proceedings of this conference are available from the World Environment Center, 300 East 42nd Street, New York, NY 10017, USA, for \$65, plus \$5 for overseas postage. LIBBY BASSETT

## The ILO urges trade unions to push environmental education

**GENEVA**—"The time has come for trade unions to stimulate interest among workers not only in the further betterment of working conditions, but also in the protection and enhancement of the environment as a whole," said the International Labor Organization, reporting on a recent meeting of 21 national union representatives.

"Industrial pollution hazards do not stop at the factory gate," the ILO added.

Trade unions, however, can do little on their own in this broader field, the delegates concluded, and they must therefore work together with government, employers, consumer groups and environmental associations, as well as international organizations concerned if the problems are to be tackled effectively.

The report of the union delegates has been submitted to the ILO Governing Body. WILLIAM G. MAHONEY



22 APR 1981

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**SPECIAL SUPPLEMENT:**  
*Beset by an enormous foreign debt, Brazil is easing up on environmental controls to keep workers on the job*

## A player falls and sickens: the field is highly toxic

**BONN**—A minor scratch on the leg of a soccer player from the town team of Bachem, near Cologne, which developed into a skin disease that required three weeks' hospitalization, has seriously upset the complacency of West Germany's sports community. The source of the irritation was traced to contaminants found in fill material used throughout the country on athletic fields, tennis courts, running tracks and children's playgrounds.

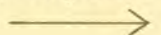


The material is derived from slag and refuse dumps of steel refining and processing plants. These have been accumulating for decades, long before the passage of environmental protection laws which require the removal of potentially harmful substances before the material is consigned to dumps. The slag and other refuse, when crushed and ground, possesses ideal properties as to compaction and drainage. There is a vast supply of it, and its cost is low. Unfortunately, it contains high levels of arsenic, cadmium, mercury, lead and zinc, a fact discovered only after the cause of the Bachem player's skin inflammation had stumped attending physicians. Since then, the Bachem field and a second one nearby have been closed.

Now a widespread investigation of sports grounds has been launched. It has revealed, so far, that up to 90 percent of them used the popular fill material, including the satellite fields (but not the main ones) at the Olympic Stadium in Munich. Current laws set a limit of 35 milligrams of arsenic per kilogram of bulk material on any public site, a level exceeded on most fields investigated so far. When the soccer field at nearby Frechen was analyzed and found to contain contaminants above the permitted level, 23 of the local team's players were given careful physical examinations. Twenty showed "high traces" of arsenic in their bodies, while in four there were "disturbing quantities," according to medical reports.

In a third community the local health authority announced that some 500 residents—either regular participants or observers of sporting events—would be required to undergo biennial physical examinations to detect possible delayed reactions from exposure to harmful metals.

These developments raise the obvious question of why these



## Toxics...

**AN EXPLOSION** at a chemical plant in Collesalvo, Italy, about 60 kilometers northeast of Rome, injured one worker and caused damage up to one kilometer from the site, Hazardous Materials Intelligence Report said. The Sna Viscosa S.p.A. plant manufactures polyester components. The accident necessitated temporary evacuation of the plant.

**ABOUT 200 METRIC TONS OF SHARK** and 100 tons of frozen crayfish were sent back to shippers earlier this month by the authorities of Ravenna, Italy, on the grounds they contained excessive amounts of mercury and other chemicals.

The shark, most from Japan, contained 8.6 milligrams of mercury per kilogram, 12 times the ceiling allowed by Italian laws.

The crayfish, shipped from Japan, the Soviet Union, Taiwan and South Africa, had been treated with boric acid and aldehyde formic.

Only a few samples of the imported fish have been checked by health officials, who now plan intensified controls in view of the growing amount of "illegal" fish coming from abroad.

**SPECIALISTS** appointed by the Portuguese National Environment Commission are making an inventory of all chemical products on the local market.

Inadequate legislation in the country causes problems for experts in controlling product quality or even in identifying chemical compounds in some commercial products. There are over 400,000 chemical products on the market and 80 percent are imported.

Once the inventory is done, the specialists plan to eliminate dangerous products from the market.

**AN ACID RAIN/FISHERIES** symposium will be held August 2-5, 1981, at Cornell University in Ithaca, N.Y. It is sponsored by the U.S. Fish and Wildlife Service and Fisheries and Oceans Canada. Speakers from Norway, which just completed a nine-year acid rain study, will also participate. For information: Dr. Terry A. Haines, c/o Zoology Department, University of Maine, Orono, ME 14469, USA.

**AN INTERNATIONAL SYMPOSIUM** on the Safe Use of Solvents will be held March 23-27, 1982, at the University of Sussex in Brighton, England. It is being organized by the International Union of Pure & Applied Chemistry Commission on the Atmospheric Environment. For information contact: Secretariat, International Symposium on the Safe Use of Solvents, 142-144 Oxford Rd., Cowley, Oxford OX4 2DZ, England.

dangers did not come to light before. The answer is that not all cuts and scratches incurred by players developed into serious skin inflammations and in the cases of those that did, the victims and attending physicians simply did not connect them with the toxicity of the fields. What is now seen to be more serious is that dust from the fields, when inhaled, can have far more harmful effects over the long term than dirt entering minor wounds.

A second factor is that practically all the sports grounds using the contaminated material are used by amateurs, whose troubles attract only local attention. The better known professional teams, whose ups and downs are widely reported in the press, radio and TV, play on elaborately prepared grounds with a good cover of grass planted in neutral soil.

State authorities, responsible for local environmental problems, are treating the matter with great concern. They are faced with the problem of whether to close large numbers of sports- and playgrounds or attempt to salvage them by replacing their surfaces with non-contaminating materials.

In either case they will be required to pay penalties for past neglect of environmental problems.

J.M. BRADLEY

## Acid rain a catastrophe says a Norwegian nine-year study

**OSLO**—Air-borne pollution from Britain and the European continent has caused the worst ecological catastrophe in Norwegian history. This was the conclusion of a nine-year, \$15 million Norwegian research program, the SNSF project, on the effects of acid precipitation.

Project leader Lars N. Overrein said that all lakes in a 13,000-square-kilometer area of southern Norway are now empty of fish and that lakes and rivers in another 20,000-square-kilometer area contain lakes and rivers with significantly reduced fish stocks.

The project report concluded, however, that acid rain has so far led to no decrease in forest growth in Norway. Nevertheless, large forest areas in Central Europe are threatened, Overrein claimed.

Some 150 Norwegian and foreign scientists participated in the SNSF project. They agreed that only joint international effort can help solve the acid rain problem and that continued research and monitoring are needed.

In 1979, 34 countries signed a convention committing them to fight pollution transported across borders. Overrein said the efforts to reduce such pollution are basically a question of willingness to increase investments for anti-pollution equipment.

The SNSF project has been followed closely by many other countries and has inspired similar projects in the United States and Canada, Norway's environment minister Rolf Hansen said at a press conference formally closing the project.

The project and its preliminary findings were discussed by 300 scientists from 20 countries at a seminar in Sandefjord, Norway, last year (WER, April 21, 1980, p. 7).

SPECIAL TO WER



## Irish mist changes to acid rain at Shannon

**DUBLIN**—Acid rain is worsening in Ireland.

Research by the Irish Meteorological Service has shown that the acidity of Irish rain has increased over the last two decades. While trends are not uniform over the country, samples have shown the worst incidences on the west coast at Shannon and the southeast coast at Rosslare.

"Being situated on the western edge of Europe and with a predominantly south-western airflow, Ireland is unlikely to be subjected to appreciable long-range transboundary air pollution, but considerable industrial and urban growth has taken place in the past two decades. The consequent increase in the consumption of fossil fuels could have resulted in some increase in the acidity of rain," the survey said.

It also predicted that worsening trends could become more pronounced with industrialization and urbanization and particularly with the increase in the use of solid fuels for home heating in response to government campaigns.

The researchers argued that the results underlined the need for more intensive and specific monitoring of Irish rain, because of its potentially adverse effects on fishing and agriculture.

TOM MacSWEENEY

## The environment gets cabinet level attention in Portugal

**LISBON**—Portugal's recently appointed center-right government promises to spend more time on the environment.

For the first time the country has a Ministry for the Quality of Life. Augusto Ferreira do Amaral, a monarchist, pro-ecologist and former minister of agriculture, will head the new post. Although the ministerial responsibility includes social communication and sports as well as the environment, Amaral said he expects to spend "80 percent of my time" on environmental problems.

The new ministry will have directorates for planning and natural resources, to aim a serious attack on Portugal's growing environmental problems. The new ministry is considered a victory for the country's hard working but often ignored environmentalists. "Now, with a minister sitting in on cabinet meetings, polluting projects cannot go through behind our backs," said Ribeiro Teles, a leading ecologist.

MARY MILLS

## In Europe ...

**POLLUTION COSTS FRANCE** an estimated \$22 billion annually, according to the Center for Documentation and Information about Insurance.

Noise is the worst offender: the resulting health damage leads to charges amounting to \$7 billion, the Center reported. Claims arising from air pollution amount to \$5.5 billion, those for water pollution to slightly less than \$5 billion.

The side-effects of fertilizer, pesticides and solid waste also seriously damage the environment in France. To give an idea of the scale of the problem, the Center said that French industry produces 150 million tons of waste material a year which has to be absorbed by the environment.

**IRELAND IS CRACKING DOWN** on litterbugs.

Stiff new penalties have been announced, with £500 (\$870) fines for abandoned cars, on-the-spot fines for dropping litter in the streets, which can be imposed by new litter wardens, and powers to local authorities to compel industry and traders to keep their premises and the areas around them clean and tidy.

**FOLLOWING ROME'S EXAMPLE**, Milan city officials have banned private traffic from a large downtown area, which includes the Gothic cathedral and La Scala opera house, in an effort to reduce the damaging effects of air pollution and to return streets to pedestrians.

The traffic ban, started early in March, applies to Sundays only. "However, one cannot exclude that the ban might be extended to weekdays, in certain hours," said Vittorio Korach, traffic counselor in this north Italian city.

Milan's monuments, especially the Gothic cathedral and other churches, have long been suffering from smog and traffic vibrations. The "Duomo" was closed recently for restoration expected to last five years.

**MUNICIPAL AUTHORITIES IN IZMIR, TURKEY**, have ordered the installation of a locally made filter system in all chimneys to prevent smog, which has become a problem for this Aegean city's two million inhabitants.

The authorities announced that heavy fines will be imposed on all those who disregard the order. Public buildings, factories and several homeowners immediately started to install the system.

Izmir is the first Turkish city to put such a regulation into force. Other cities, and particularly Ankara, which has one of the world's worst air pollution problems, are expected to follow suit soon.

## Air quality...

**AN ENVIRONMENTAL STUDY** published by West Germany's weekly magazine Stern is sharply critical of air pollution in the major cities of the country.

The sulphur dioxide and dust particle content is comparatively very high, it noted. The study of air pollution in 97 major cities of 17 industrialized countries was conducted by political scientist Martin Jaenicke.

There is more sulphur dioxide pollution in the relatively smaller German cities of Wiesbaden and Cologne than in the 12-million metropolis of Tokyo, the study said. The sulphur dioxide load in Berlin is only surpassed by that of Ankara. The dust particle load in the air in Hamburg and Nürnberg is higher than that in the huge industrial city of Chicago, the study found.

**SWISS ENVIRONMENTAL AUTHORITIES** unveiled this country's first air pollution monitoring network and said early results showed that certain pollutants had already reached a critical level.

Nitrogen dioxide, mainly from auto exhaust, was particularly heavy, officials said. Sulphur dioxide was also named as a major polluter, and the experts declared that this was caused almost exclusively by heating elements in industries and homes.

The decision to set up a nationwide net was made in 1978 by the Federal Office for the Protection of the Environment and the Federal Laboratory for Testing Materials. It went into service the middle of 1980 and cost \$800,000.

**A "POLLUTION FORECAST SYSTEM"** will provide Seoul, Korea, around-the-clock information on the extent of pollution in the metropolitan area.

In 1983 air and water pollution data will be broadcast every day by television and radio. It will also be seen on electronic signboards at major intersections in the city. A computerized central station will be set up to integrate the control and management of the pollution forecasting system.

**CHINA'S ANTI-POLLUTION PROGRAM** for its southern city of Guilin is starting to show results, Xinhua News Agency reported. Eighty-eight of the city's 292 factory chimneys no longer spout black smoke thanks to technical improvements. Five serious polluters have been shut down. The Guilin rubber plant is recycling its 140 tons of waste water daily and taking its 30 tons of coal cinder each day to be made into bricks. Indiscriminate rock quarrying has also been brought under control, the report said. And local citizens had been mobilized to clean up 170,000 cubic meters of garbage and residue.

## German industrial pollution seriously damages forests

**BONN**—Although West German state and local governments have taken drastic steps in recent years to tighten anti-pollution laws—including prison sentences for managers and directors of offending industrial plants—evidence suggests they might be fighting a losing battle.

The Ministry of Agriculture in North Rhine Westphalia reports that damage to the state's forests from air pollution is far more serious than believed heretofore. In an investigation that extended over two years, it was established that in no part of the state are there forests that have not suffered from air pollution to some degree.

North Rhine Westphalia is West Germany's most populous state with, at its center, the Ruhr District, Western Europe's greatest industrial complex, and other substantial industrial centers scattered throughout its 34,000-square-kilometer area. One-fourth of the area is forested and over one-half is devoted to agriculture.

Spruce, one of the most common and widely distributed species in the forests, shows the most conspicuous damage. Fifty-eight percent of the forests inspected were suffering from sulphur dioxide damage "to a degree that has permanently damaged them," according to the report.

Other agents causing damage, not only to spruce but to most other species as well, include free sulphur, chlorides, fluorine and heavy metals.

In addition to those chemicals that have been long recognized as damaging to plant life, others, traditionally ignored, have now been shown to have the potential for causing considerable damage. Among them is common salt, used in vast quantities to melt snow and ice on roads and highways. The anti-pollution laws place no restrictions on its use for this purpose, with the result that its widespread scattering may be countering measures taken to reduce the emission of chlorine compounds from industrial installations.

J. M. BRADLEY

## Worldwide carbon dioxide study urgently needed

**GENEVA**—Experts from three international agencies issued an appeal here for an urgent worldwide study to seek ways of controlling the impact of increasing carbon dioxide upon climate and the total environment.

The appeal, issued through the World Meteorological Organization (WMO), followed a meeting of experts from the WMO, the United Nations Environment Program (UNEP) and the International Council of Scientific Unions (ICSU).

As fossil fuels are used to meet increasing energy demands, carbon is released to the atmosphere primarily as carbon dioxide. In this manner, at present more than five gigatons (10<sup>9</sup> metric tons) of carbon are transferred into the air annually. Simultaneously, human manipulation of forests and vegetation provide another



# World Environment Report

## SPECIAL SUPPLEMENT:

### Brazil's huge debt causes easing of environment rules

**SAO PAULO**—Sao Paulo's satellite city of Cubatao has Brazil's highest rate of infant mortality—due to industrial pollution. Recently the government announced it will help relocate 15,000 residents of Cubatao's suburb, Parisi, because of these intolerably high pollutant levels.

Parisi, considered the Love Canal of South America's leading industrial metropolis, will be used instead as an industrial waste dump, although as a sop to environmentalists no new industries will be allowed to locate in the area.

Dr. Waldemar Ferreira de Almeida, president of the Brazilian Ecological Society, protested the decision as a serious inversion of values. "The government proposes to remove the population, as if it were the people who are polluting the environment," he said.

Perhaps, but the alternative, shutting down offending industries or forcing them to clean up, would turn hundreds of workers out on the streets without jobs, an alternative which the Brazilian government is less and less willing to face.

The international petroleum crisis is playing havoc with Brazil's recently acquired resolve to clean up its heavily polluted industrial cities. Environmental protection measures could well be one of the first casualties in the fight by Latin America's largest economy to maintain an acceptable level of growth in the face of threatened energy shortages and recession.

In contrast to the zeal of only one or two years ago, pollution control officials now are adopting a go-slow attitude.

Only a few years ago, the government acknowledged that Brazil could not continue its policy of industrialization at any price, embraced with visible impact between 1950 and the early 1970s. Tougher environmental laws were passed, and the country adopted many of the pollution control measures which already had begun to show results in more highly industrialized countries.

Pollution officially became a dirty word in Brazil, instead of just an unfortunate side effect of economic development.

Then came the petroleum crisis. Brazil must import more than 80 percent of the crude oil needed to fuel its rapidly expanding economy. For a while, earnings from additional export sales almost kept up with the higher oil bills, and authorities maintained pressure on industry to clean up pollution.

The economy continued to grow 5-7 percent annually—down

**A town dumped**

**New go-slow attitude**

**Go for broke in a boom**

## Going broke in a boom

admittedly from the 10-12 percent recorded during the beginning of the 1970s, but an exemplary rate compared with the rest of the world.

However, the weight of cumulative OPEC price hikes has begun to tell. Brazil last year registered a \$3 billion trade deficit, the third in a row, largely due to a \$9 billion bill for imported oil. It owes the world's largest foreign debt among developing countries, \$56 billion, most of it also going to pay for imported oil.

The economy expanded 8 percent during 1980, but the government must slow it down now in order to curb inflation, which exceeded 110 percent last year, and to assuage international bankers who hold Brazil's notes. A major concern is to avoid plunging the country into recession or even depression, triggering social unrest among Brazil's urban masses.

As a result, all but the most blatantly polluting industries can expect more lenient treatment for the time being. The government is in no mood to shut down plants which provide jobs for workers.

Environmental guidelines are not being scrapped outright. Companies operating here have become accustomed to earmarking a bigger portion of their budgets to purchase, install and maintain pollution control equipment, and that will continue.

Instead, authorities are taking a more lenient attitude toward polluters. According to Dr. Paulo Nogueira Neto, head of the Special Environmental Secretariat (SEMA), Brazil's equivalent to the Environmental Protection Agency, the major problems now are either smaller companies, which cannot afford pollution control equipment, or older plants, where the equipment might cost more than the offending plant itself. Zealous enforcement of regulations would merely force them to close down, putting workers out on the street.

As long as that possibility and the threat of recession remain, polluting industries can expect less pressure from the government.

Meanwhile, efforts to produce new, alternative energy sources threaten to add even more sources of pollution. Brazil already is the world leader in efforts to develop alcohol fuel as a gasoline substitute. New distilleries today assure 60 percent of the goal of 10.7 billion liters of alcohol by 1985.

However, each liter of alcohol distilled also yields 13 liters of a highly polluting organic waste, or swill. Distillers traditionally dumped it into nearby streams of rivers, but with a national program to produce billions of liters of alcohol, an alternative disposal system must be developed.

Brazil also has ambitious plans to increase production and consumption of domestic coal sixfold, to 27 billion tons annually, by 1985 to substitute for fuel oil burned by the country's industrial plants. Unfortunately, Brazil's coal is abundant but of very low quality, with an average 46 percent ash content.

The pollution prospects of such a mass transition to such a potentially dirty fuel are already giving environmentalists headaches as the coal development plan shifts into first gear.

GEORGE HAWRYLYSHYN

## Leniency for the small & old

## Alternative energy pollution

perturbation to the natural interchange of carbon. It is the net effect of these disturbances that is responsible for the observed increase of carbon dioxide in the atmosphere. However, the scientists stressed, the major problem arises from the use of fossil fuel.

Of the five gigatons of carbon released annually through consumption of fossil fuel, approximately half remains in the atmosphere. The other half is partitioned between the ocean and the biomass. Although the details of the partitioning are only partly understood, the experts said that it is believed that the ocean is a major sink, while the biomass may serve as either a source or a sink. This increase of carbon dioxide changes the atmosphere's energy balance, resulting in a temperature rise of the earth's surface and in the lower layers of the atmosphere, they stated. Experiments carried out with global atmospheric models strongly suggest that early in the next century carbon dioxide concentrations could increase global average surface temperature by one degree centigrade or more, they said. This change would be significantly greater in the higher latitudes of the northern hemisphere and slightly less in the tropics.

"A major international interdisciplinary research effort is necessary to develop a set of impact scenarios based on extended sets of data not now available so as to deal successfully with uncertainty and to prepare a management plan of action adequate to cope with the likely impacts. It is essential that the research proposed here be undertaken as a matter of urgency," they concluded.

WILLIAM G. MAHONEY

## UNEP's latest money maker: fees for using air & water

**NAIROBI**—A system of fees for use of the world's oceans, air space and telecommunications frequencies could provide the cash needed to protect the environment for mankind. This proposal is to be put before this year's Nairobi meeting of the UN Environment Program (UNEP) Governing Council.

UNEP says there is a strong case for levying fees for use of the "international commons." The case for a levy is even stronger if the users pollute the oceans or the atmosphere, and UNEP suggests that fees should be charged for ships using certain high-density traffic lanes—with lower rates for ships which are fitted with anti-pollution devices.

A small percentage levy on air travel and freight could easily be introduced, UNEP suggests. In addition to fees for ordinary telecommunications frequencies, charges could be made for parking satellites in orbit.

The Environment Fund is supported by voluntary contributions from governments, and the flow of cash has been below expectations, leading to a slowdown in UNEP-financed projects.

Last year, Sweden suggested a special "window" in the Fund for developing countries, and UNEP Executive Director Mostafa K. Tolba has asked 10 major donor governments whether they are willing to support the Swedish proposal. He will report on their responses at the May 13-26 Governing Council meeting.

CHARLES HARRISON

## International cooperation...

**THE WORLD BANK ENERGY AFFILIATE**, proposed last year by Bank President Robert McNamara (*WER*, Sep. 22, p. 5), has been put on hold, but not quite cut off, by the new U.S. administration. The purpose of the new Bank institution would be to channel about \$30 billion into Third World energy projects over the next five years, to more than double the Bank's lending for energy development. The Reagan administration, in its budget-cutting mood, said that at this time it was not in a position to support or participate in the affiliate, a Bank official told *WER*. This does not preclude participation in the future, he said, and the Bank is continuing its discussions with other member countries. However, the official admitted that the proposed energy-lending agency's future was now in doubt.

**A NEW INTERNATIONAL ORGANIZATION** to tackle environmental problems in the South Asian region was formed recently. The organization, known as the South Asia Cooperative Environment Program (SACEP), was set up at a three-day meeting of ministers from Bangladesh, India, Iran, Maldives, Pakistan, and Sri Lanka. Nepal, Bhutan and Burma are expected to join the organization.

**THE INTERNATIONAL CONGRESS ON TECHNOLOGY** and Technology Exchange will be held May 3-6, 1982, in Pittsburgh, Pennsylvania. Among the topics to be discussed are alternative energy-related issues, optimal use of natural resources, recycling and transportation. Abstracts of proposed papers should be submitted by June 1 to: ICTTE, Engineers' Society, William Penn Hotel, 530 William Penn Place, Pittsburgh, PA 15219, USA. Telephone (412) 261-0710.

**AN INTERNATIONAL CONGRESS** on the environment and geocancerology will be held in Brussels, Belgium, May 5-7, 1982. It is being organized by the European Institute of Ecology and Cancer (INEC International). For information contact: INEC General Office, 24 Bis, rue des Fripiers, 1000 Brussels, Belgium.

**A 1,383-PAGE REPORT**, "Tropical Ecology and Development," has been published by the International Society of Tropical Ecology in Kuala Lumpur, Malaysia. It is the proceedings of the Fifth International Symposium on Tropical Ecology, held in 1979, and includes papers from the three main tropical regions of the world. It costs \$70 and can be ordered from its editor, Prof. J.I. Furtado, Department of Zoology, University of Malaya, Kuala Lumpur, Malaysia.



## New fuels...

**HEALTH IMPACTS** of Different Sources of Energy will be the subject of an international symposium held in Nashville, Tennessee, USA, June 22-26. It is sponsored by the World Health Organization, US Environment Program and International Atomic Energy Agency in cooperation with the US Department of Energy and Oak Ridge National Laboratory. For information contact: John H. Kane, Conference Manager, Office of International Affairs MS:A1-5216, US Department of Energy, Washington, D.C. 20585; telephone (301) 353-3378.

**INDIA'S PRIME MINISTER** Mrs. Indira Gandhi told Parliament that the government had decided to establish an alternative energies commission for developing policies and programs, coordinating and conducting research and development activities and for ensuring implementation of government policies.

Over \$50 million has been set aside for this purpose during the coming years, said Parliamentary sources.

**TWO EXPERIMENTAL PLANTS** using that proliferating and pesty weed, the water hyacinth, as fuel have been installed by the Central Mechanical Engineering Research Institute in Durgapur, West Bengal, India. The institute says that about 40 kilograms of coarsely chopped, semi-dried water hyacinths can produce 3,000 liters of gas a day. The waste by-product could be used for manure.

**THE USE OF ALTERNATIVE ENERGY** is not expected in Norway until the turn of the century, the Ministry of Oil and Energy stated in its latest survey of future energy consumption and production.

Norway is a net exporter of oil and gas, and is rich in renewable hydroelectric power.

Therefore, the survey said, Norway does not count on the production and use of nuclear power within this century. The Ministry also said it is unrealistic to count on the use of other alternative energy sources, like the sun, the wind, the waves or biomass until a more distant future. Norway, nevertheless, is carrying out scientific experiments within all four categories.

**THE ONLY CASSAVA-ALCOHOL PLANT** in the world outside of Brazil is to be built in the Baiyer River Valley of Papua New Guinea, local officials said.

Unlike the Brazilian plant at Curvelo, which has a capacity of 60,000 liters a day, the Baiyer complex is designed as a small plant, to produce 6,700 liters daily. It is seen as a pioneer of smaller rather than larger plants.

## Does the exhaust from alcohol burning cars cause cancer?

**RIO DE JANEIRO**—Can the exhaust gases from cars powered by alcohol fuel cause cancer?

Brazil's Ministry of Industry and Commerce has contracted a study worth 40 million cruzeiros (about \$570,000) to look into that question and other possible side effects of new concentrations of gases in the atmosphere resulting from the country's program to substitute alcohol for gasoline in its automotive fleet.

The study will be conducted by the environmental protection agency of Latin America's largest industrial city, Sao Paulo's Company of Technology and Environmental Sanitation (Cetesb).

Brazil's National Alcohol Program (Proalcool) has set a goal of producing 10.7 billion liters of fuel alcohol by 1985 to be substituted for derivatives of expensive imported petroleum. The country must import more than 80 percent of the 1 million barrels of oil it consumes daily at a cost last year of about \$9 billion.

Brazil is putting approximately \$10 billion annually into energy development programs through 1985. Of that, half goes to hydroelectric projects and \$1 billion this year will go to alcohol. Approximately \$750 million was invested in Proalcool last year, up considerably from funds released in 1979.

The increased cash flow came from the Central Bank which, although it surpassed its Proalcool loan quota by mid-1980, diverted funds from other sectors, and it came from state governments and private companies, which issued stocks and debentures.

As part of the \$2-3 billion in foreign loans needed to finance the \$5 billion Proalcool plan through 1985, a consortium of 15 banks from 15 countries lent Brazil \$1.2 billion last year for alcohol and other energy programs. And recently a Brazilian delegation went to Washington to finalize a \$1 billion World Bank Loan.

New distilleries built or under construction with Proalcool sponsorship already have assured more than 60 percent of the 1985 goal of 10.7 billion liters annually, and the transition to alcohol-burning automobiles is well under way.

Dr. Paulo Nogueira Neto, head of the Special Environmental Secretariat (SEMA) said that newspaper reports warning that the alcohol engine emissions cause cancer are "premature and inconsistent."

"There is no scientific basis for this type of warning," said Nogueira. "Personally, I am less concerned about the consequences of alcohol pollution than I am about the kind we are already putting up with now, derived from gasoline," he said.

Another pollution problem is that of the sludge left over from distilling sugarcane; each liter of alcohol also produces 13 liters of organic waste.

Starting next year, the Brazilian government says it will enforce its rule of withdrawing credit from distilleries lacking pollution control facilities. All Proalcool projects are to be inspected, and if they don't have plans to combat pollution, they won't receive government financing. If a project has already received government funding, additional installments will be withheld until anti-

pollution measures are taken.

CENAL, the National Executive Commission on Alcohol, has set aside \$800,000 as a special fund to finance anti-pollution projects in small and older distilleries.

JAMES BRUCE & GEORGE HAWRYLYSHYN

## Mexican meeting hailed as environmental turning point

**MEXICO CITY**—Signs that the Mexican government at high levels is taking a long-overdue, serious interest in environmental matters were evident here during a recent seminar on environmental administration and technology. Held under the auspices of the prestigious National Council of Science and Technology, the week-long meeting drew more than 160 participants, making it by far the largest such event ever held in Mexico.

The fact of the council's involvement was one sign of the new official interest. Cosponsors were another: ICATEC, an environmental technology firm owned by the largest construction company in Mexico, and the Environmental Research and Technology Company of Concord, Mass.

The selection of speakers was another indication of the new importance environmental matters are assuming here. Bernardo Quintana, head of the ICATEC parent firm, gave the welcoming address, and by his presence, demonstrated the private sector's concern. Sharing the podium were Jose Lizarraga, UNEP director for Latin America and the Caribbean, and Dr. Manuel Lopez Portillo, Sub-Secretary for Environmental Improvement in the federal Health Secretariat and a relative of Mexican President Jose Lopez Portillo.

More than appearance was involved. It was disclosed that the Mexican Congress is formulating a long-awaited law that will require an environmental impact study for any major land-use change proposed in the country.

Dr. Jose Sarukhan, director of the Biology Institute of the Mexican National University and 1980 winner of the National Science Award, observed that while there has been continuing "goodwill by the government, there has been very little commitment to implementing, in a practical way," what needs to be done to protect and preserve the environment.

Until now, environmental impact studies have been "five meters ahead of the bulldozers," he said, having been done "as a ritual, although some information may have come from them."

In a *WER* interview after those public remarks, Dr. Sarukhan said he sees "some signs that the government may be becoming more interested" in the environment. For a long time, Mexico has had "plans, but no implementation."

He said, "Mexico's most serious environmental problems are not cities or industrialization. The core of the problem is the mismanagement of Mexico's natural resources." Relations between the private and university sectors and the government agencies involved have been "rather random," he said, but he feels they are improving.

KATHERINE HATCH

## Environmental management...

**THE SOUTH KOREAN** Office of Environment (OE) recently complained that its environmental impact system for large construction projects is facing difficulties due to a lack of cooperation from other authorities concerned. According to an OE spokesman, the country's Environment Preservation Law makes it compulsory for any chief of an administrative office which has control over large construction projects to consult with the OE before final plans are worked out. However, most government offices start such projects without consulting the OE, he said, citing an example: the state-run Industrial Site and Water Resources Development Corporation's scheme to construct a dam in the estuary of the Naktong River. The project is expected to cause serious damage to rare migratory birds in the area. The OE, however, only learned of the project through newspapers.

**HONG KONG HAS SET UP** an Environmental Protection Agency to coordinate environmental policies and programs. The Agency evolved from the Environmental Protection Unit, set up within the Environment Branch of the Hong Kong government Secretariat in 1976. A government spokesman said that the new agency's responsibilities include: environmental protection policy, overseeing and coordinating environmental improvement programs, monitoring pollution levels, environmental impact studies for new development projects, advising other governmental departments on environmental matters, and training environmental control staff. The Commissioner for Environmental Protection, Dr. Stuart Reed, will head the new agency.

The government is expected to increase the budget for environmental protection four-fold to HK\$20 million (\$4 million).

**AFTER HEATED DEBATE** the Western Australian State Government has passed amendments to its Environmental Protection Act.

Under new legislation passed in January, the Director of the State's Department of Conservation and Environment lost his chairmanship and voting rights on the 16-member Environmental Protection Authority (EPA).

The new chairman of the EPA is a lawyer, P.R. Adams, 72, who has been a member of the EPA for 10 years. His view is that "environmental control must continue hand in hand with development that is important for the economy of the State."

## Down under . . .

**THE NEW ZEALAND** government has appointed its most energetic and articulate environmental critic Minister of the Environment. The post goes to Dr. Ian Shearer, 40, an agricultural scientist before his election to Parliament. Shearer takes the portfolio from Lands Minister Venn Young, 52, ending an era in which environment was an appendage to portfolios connected with lands and forests. Environmentalists hailed the new emphasis, particularly at a time when legislative processes seem to be making the way easier for big industrial projects to get permits for construction. Shearer's other portfolios will be science and technology.

**THE PREMIER OF THE ISLAND** state of Tasmania, off Australia, has put his job—and his government—on the line over a conservation issue: a hydroelectric scheme that could flood 70 kilometers of the state's last wild river. Premier Doug Lowe has refused to unilaterally proclaim a Wild Rivers National Park, to cover most of the southwest wilderness area, although he could do so; instead he has called for a conference of both houses of parliament. The Upper House supports the Hydro Electric Commission that insists the Franklin River be dammed. Lowe, pressured by conservationists, hopes they can reach a compromise by damming a nearby river. Even so, there would be extensive losses—240 kilometers—of wild, scenic country.

**AN INTERNATIONALLY RECOGNIZED** research scientist has been appointed chief of Australia's Division of Forest Research, part of the Commonwealth Scientific and Industrial Research Organization (CSIRO).

Dr. Joe J. Landsberg, currently working in England, is expected to take up his post in June. He succeeds Dr. Max Day who retired in December.

The Forests Division, headquartered in Canberra, is concerned with the long-term use of Australian forests, in relation to wood production, water supply and ecosystem preservation.

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## Australian eco-groups sue two U.S. aluminum companies

**PERTH**—The Conservation Council of Western Australia and the Campaign to Save Native Forests launched an historic class action in the U.S. Federal Court in Pittsburgh this year against the Aluminum Company of America (Alcoa) and the Reynolds Metals Company.

The plaintiffs seek a trial by jury and claim a breach of anti-trust laws and equity. "The case could have far-reaching ramifications not only for bauxite mining in the Darling Range but wherever US-based multinational companies are irresponsibly exploiting the environment," said Conservation Council spokesman Bill Hare.

Quoting from the complaint he said: "The fundamental issue in this litigation involves determination of whether bauxite mining, alumina refining and aluminum smelting represents a danger of serious, permanent and irreparable damage to the regional resources and environmental systems of the Darling Range Ecological System . . ."

The bauxite is mined in the unique Jarrah forest of the Darling Range that lies between the capital city of Perth on the coast and the vast arid interior of Western Australia. The Jarrah forest is a vital catchment for the southwest where some million Australians live. The Jarrah forest has, over millions of years, adapted to the semi-arid condition; once destroyed by bauxite mining it cannot be replaced.

In other parts of southwest Australia the water has become salty as a result of forest clearing, and bauxite mining threatens to aggravate this precarious situation.

The aim of the Jarrah Class Action is not to close the aluminum industry but to modify its present operations. Under the terms of the writ the Council seeks to restrain the aluminum industry from spreading dieback disease, causing salinity in the water supply or in any way completely destroying the Jarrah forest and the Darling Range ecosystem.

The Western Australia government and the aluminum companies claimed that bauxite mining would not cause these problems. If their claims, after objective scientific scrutiny, are substantiated, then bauxite mining will continue.

However, the Council believes there is a case for modifying Alcoa's present level of activities in the forest. The long-term viability of the aluminum industry can be maintained by diverting its operations to areas outside the State Forest, the Council said.

Organizers hope this class action will open the way for other suits against American and multinational corporations degrading the environment in Australia and other parts of the world.

Whatever the outcome of the Jarrah Class Action case the ramifications are enormous for the environment as well as for the corporations and governments involved. Already in Western Australia the state government has asked the Commonwealth to stop all funding of the Conservation Council because of its legal action in the U.S.A.

ANNE BLOEMEN



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## Global 2000 an elitist tool says a conservative thinker

**NEW YORK**—The Global 2000 Report produced by the U.S. government last summer "presents an alarming and misleading view of the problems facing mankind," said Herman Kahn, founder and director of the Hudson Institute. Kahn, an unofficial economic and national security advisor to the Reagan administration, argues that Global 2000 (WER, April 7, 1980, p. 1; Jan. 5, 1981) is "pervasively biased toward pessimism."

Kahn and his research associate Ernest Schneider have co-authored a paper charging that the government is "crying wolf" in the Global 2000 Report. Schneider told WER that he and Kahn are recommending that the Reagan administration produce "a more realistic study."

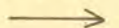
Global 2000 "pessimism," Schneider said, "is manifested by a preoccupation with the gap between affluent and poor nations—which has little importance other than as a device to stimulate guilt feelings among elites in advanced nations. The key point is that in most parts of the world poor people will be considerably better off in the year 2000 than they are now." The gap between rich and poor may be getting bigger, he said, but poor people are getting richer. "They (elitists) talk instead about the gap. They may be right that this is the way to get action," he added.

"One explanation for the pessimism about Global 2000 is that its authors depended heavily upon the advice of people whose priorities are directed much more toward environmental protection and egalitarian income distribution than economic growth."

The policy implications of the Global 2000 Report "point towards more foreign aid, support for family planning and conservation. While these aims may be unexceptionable," said Schneider, "the report promotes confusion of priorities."

"The main trouble with Global 2000 is that it tends to undermine the morale of our society, especially among young people," Schneider said he and Kahn concluded.

From **BUENOS AIRES**, Barbara Schaffer reports that Kahn had harsh words for environmentalists during a visit to Argentina. He claimed that the U.S. environmental protection act was a costly



## In Latin America . . .

**VENEZUELA'S MINISTRY OF HEALTH** has initiated steps to prevent the import of some types of U.S.-manufactured clothing containing carcinogenic substances.

Minister Jose Luis Gonzalez Herrera ordered the measure once he learned that these products were prohibited for sale in the United States but were imported by Venezuela.

**A NEW MEXICAN PUBLIC WORKS LAW**, effective this year, requires institutions and federal agencies to predict the environmental effects of any planning, programming, execution, conservation, maintenance, control or demolition of public works under their control. When the environment might be affected, the agencies and institutions must plan to preserve, restore or improve environmental conditions and ecological processes, the law states.

**GASOLINE CONSUMPTION IN BRAZIL** fell 15 percent in 1980, according to the Ministry of Transportation (MT). The major reason cited is the government's policy of discouraging consumption through doubling the price, which resulted in a major decline in personal automobile traffic.

They said people are resorting more to mass transit for daily commuting and long trips, relegating private autos to short pleasure trips.

In Rio de Janeiro, daily passenger car trips have fallen an estimated 450,000 from last year's average three million. Meanwhile, use of the Metro, commuter trains, buses and ferries increases daily. The city's interstate bus terminal, which last year averaged 100,000 passengers during weekend traffic, has seen that number jump to 215,000.

**NEARLY HALF** the 15,000-hectare Tayrona National Park on Colombia's Caribbean coast has been sold to land speculators by private individuals claiming land titles prior to Tayrona's nationalization in 1964. The two areas sold last year include Concha Bay near the tourist resort of Santa Marta and four other bays considered among the most beautiful in the park. The properties cover over 6,900 hectares and were sold for a mere \$20,000.

The Colombian wildlife service Inderena has declared the property transfers invalid, but will have to challenge their legality in court and possibly pay for land improvements, because the agency never resolved land claims when it assumed the park's administration. At a resort development under construction at Concha, visitors must pay admission to enter the area. Elsewhere in the park, some dozen marijuana farms are flourishing.

failure and advised Argentinians they were better off without such legislation.

Ironically, Kahn's warning came shortly after the Fifth International Clean Air Congress was held in Buenos Aires. The fundamental importance of environmental planning and legislation for developing countries was emphasized at this congress by numerous delegates from heavily industrialized countries. Kahn took the position that concern for the environment was an elitist position foisted on the world by upper middle class and upper class intellectuals.

He also disputed reports that some resources were on the verge of depletion; likewise he stated that there was no global population explosion but did admit that overpopulation was a problem in Southeast Asia and in parts of Africa and Latin America.

Kahn had been invited to Buenos Aires by the Argentine Chamber of Advertisers to address local businessmen and the press and to appear on television.

He was not the first American to bring the anti-EPA gospel to Argentina. Last November an American industrial pollution consultant spoke out against environmental protection laws at a local exposition of pollution control devices.

Given the depressed state of the Argentine economy in general, and industry in particular, such questions at this moment are largely academic. It has been jokingly suggested that the military government in power since 1976 has decided to clean up the environment by shutting down factories.

LIBBY BASSETT  
BARBARA SCHAFFER

## Wildlife in Colombia: Smugglers shoot park workers

**BOGOTA**—Officials of the Colombian wildlife service Inderena have been repeatedly threatened by marijuana and timber smugglers, reports Cesar Ocampo Palacio, Inderena's director general.

Drug traffickers have virtually expropriated the Tayrona national park on the Caribbean coast near the marijuana fields of the Sierra Nevada foothills. Harvey Zambrano Torres, Inderena financial director, said that the park "is being used to store large quantities of marijuana until international prices improve." (Prices for the region's "green gold" have sharply declined in recent months due to overproduction in Colombia and increased cultivation in the United States, Colombia's principal drug customer.) Tayrona's many bays have long been used by marijuana smugglers to transport the drug by rafts and canoes to "mother" ships waiting outside Colombia's 20-kilometer offshore limit.

The park's chief inspector has received frequent death threats, and drug traffickers shoot at park guards who venture near their loading activities or interfere with trucks and mule trains passing through the park, Ocampo said. Guards at the park entrance at Palangana have been so terrorized that they now leave the entrance unchained at night and, said Ocampo, one park employee who received death threats "just disappeared."

Meanwhile in Bucaramanga in central Colombia, two trucks

belonging to Inderena were bombed; a third bomb failed to explode inside the office. Subsequent investigations showed that the bombings were in reprisal for an Inderena seizure of nine trucks containing illegal lumber.

Ocampo recently announced an Inderena housecleaning, including the dismissal or transfer of 20 corrupt employees.

"We're not going to be frightened by bombs or threats," he stated.

PENNY LERNOUX

## In Costa Rica it's budget vs. new wildlife legislation

**SAN JOSE**—The Costa Rican Legislative Assembly is studying a sweeping new law for the protection of wildlife, prepared by the National Association of Biologists. The Association claims there are approximately 120 endangered species in this country and attributes the situation to urban development, deforestation, burning by farmers, illegal hunting and the irrational use of pesticides.

The biologists denounced the recent destruction of some 10,000 birds, including herons, storks, doves and wild ducks. The excuse given was the apparent harm these species were doing to rice plantations. However, after their massacre, it was demonstrated that the great majority of these birds did not eat the grain but were primarily interested in the insects and small vertebrates that abound in the rice fields.

The proposed law would declare the conservation of wildlife of "national interest" and would enable the Executive Branch to establish the conditions and requirements for hunting and fishing. It would also require that the Ministry of Public Security collaborate with the Ministry of Agriculture in prosecuting violators.

It would prohibit trade in wildlife, wildlife products or parts and would require all scientific and private organizations connected with animal skins to be accountable to the Ministry of Agriculture for every skin taken. Hunting and exportation of animals would be prohibited whenever the Executive Branch declared a species to be of "reduced population" or in "danger of extinction." Government permission would be necessary to destroy any kind of wildlife which is supposedly harming agriculture products.

The Executive Branch would be empowered to decree wildlife refuges within the confines of existing forest reserves and to expropriate lands important for the creation of refuges. The ambitious proposal goes on to suggest the prohibition of dumping any contaminating material into waterways which are government property.

Although Costa Rica is quite advanced in conservation policies, it is likely that this ambitious law will be self-defeating in a legislature presently locked in a serious battle to reduce federal government spending. A recent agreement between the government and the International Monetary Fund requires the country to reduce present expenditures by about 20 percent of the total budget.

MURRAY SILBERMAN

## Wildlife...

**SUMATRAN TIGERS KILLED** 14 people in Central Sumatra during 1980. In neighboring Riau Province, police claimed more people were killed by tigers in 1979 than by their fellow-men: 30 people were killed by the animals compared with 25 murder victims. Police Chief Brigadier-General Hudioro said it was difficult to solve the tiger problem because the animals are protected by the Environmental Protection Agency, which is supported by the World Wildlife Fund.

According to the latest official statistics, there are 600 to 800 Sumatran tigers left from the more than 2,000 known to be alive several years ago.

**BATS IN BELFRIES** and elsewhere play a key role in the balance of nature.

Bavaria, West Germany, Environment Minister Alfred Dick asked city and town authorities and all those concerned with the reconstruction of castles, church belfries, parish houses and rustic forestry buildings to take extreme care to avoid disturbing what he called "our ultrasonic occupants."

Renovation and use of protective sprays and paints presented a special danger, he said, and work to seal off roofs and eaves or to close ventilation slits in steeples denied bats living and mating areas.

The appeal was issued following a two-year study commissioned by the Ministry.

**THERE ARE ONLY FIVE** Knysna elephants left in the world. Their habitat is the most southerly part of Africa, in the Knysna forest some 300 kilometers from Cape Town.

Although there is a plan to create an elephant sanctuary in the forest, several conservationists feel the herd is now too small to build itself up again no matter how much protection it is given.

The herd is important from a scientific point of view, said Dr. Anthony Hall-Martin, senior researcher with South Africa's National Parks Board, because it represents a unique gene pool.

**AT LEAST 180 GIANT PANDAS** have died of apparent starvation over a three-month period, the Kyodo news service reports. This brings the endangered species nearer extinction. The high death toll was attributed to extensive destruction of forests in China's Sichuan Province and other natural habitats, leading to dwindling supplies of bamboo grass, a major source of food for pandas.

**LION TAILED MONKEYS** have held up proposed hydroelectric projects in India's Tamil Nadu State. The forestry department and the department of environmental planning of the government of India are concerned that the few lion tailed monkeys left might face extinction if their habitat was disturbed.

## International cooperation...

**THE ANNUAL MEETING OF IUCN'S COMMISSION** on Environmental Planning (CEP) was held this year in Costa Rica at the Centro Agromonico Tropical de Investigacion y Ensenanza (CATIE), at Turrialba, from March 16 to 22. The CEP meeting was combined with a workshop on "Planning Approaches to Conservation Strategies and Development Plans" at regional, national, and sub-national levels, and a small group of Latin American environmental planners was invited. The workshop portion of the conference was being sponsored jointly by the United Nations University (Tokyo) and IUCN, the International Union for the Conservation of Nature and Natural Resources.

**A PROCESS TO DETOXIFY PCB**-contaminated heat transfer fluids so as to permit their recycling at considerable cost savings has been devised by the Goodyear Tire and Rubber Company's Research Division in Akron, Ohio, USA. Developed by scientist Dane K. Parker, the process was found effective at the highest PCB levels and holds the promise of eventual elimination of this major environmental problem. The company has donated the technology for its process to the public.

**INDIA AND SWEDEN** have signed a two-year project agreement for Swedish support to forestry development in India.

Sweden will give India about \$3 million for the project, which will emphasize social forestry, training in logging and soil conservation.

**EGYPT HAS NOW OFFICIALLY RATIFIED** the Nuclear Non-Proliferation Treaty (NPT), a step planners hope will be the last bureaucratic obstacle to implementation of a program to build eight nuclear reactors by the end of the century. Each station is expected to cost a billion dollars. One expense the Egyptians may not have to worry about is nuclear fuel. A project began last year to extract and process pure uranium from three mines in the Eastern Desert.

**A NEW REPORT** on the kinds of research necessary to help nations cope with carbon dioxide-induced climate change has been produced jointly by the American Association for the Advancement of Science and the U.S. Department of Energy.

"Environmental and Societal Consequences of a CO<sub>2</sub>-Induced Climate Change: A Research Agenda" is available from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161, USA, at a price of \$12.50. A microfiche version may be obtained for \$3.50.



## Trade in many more species controlled, says CITES

**NEW DELHI**—More than 300 delegates from 67 nations and 100 national and international organizations met here for 12 days to debate how the multimillion-dollar trade in endangered plant and animal species should be controlled.

Peter Sands, Secretary General of the Convention on International Trade in Endangered Species (CITES), told *WER*, "We want to preserve wildlife for the future. It is a pact between this generation and the next."

CITES is administered by the UN Environment Program in cooperation with the Swiss-based International Union for Conservation of Nature and Natural Resources (IUCN) and the World Wildlife Fund (WWF). The 1973 Convention is the most widely accepted international treaty on nature conservation, and this meeting was the largest in CITES history.

In all, there were 92 proposals to amend the Appendices, or CITES lists, which either ban or strictly control trade.

CITES delegates had a difficult task, to protect the world's most threatened species from commercial over-exploitation. Trade in wildlife products is big business in many countries. Last year in West Germany, for example, the value of wildlife imports topped \$50 million.

A major area for discussion was whales. A proposal by West Germany to ban all trade in three species of great whales—the sperm, sei and fin—was passed by a vote of 37 to 2. Until recently, Germany was one of the world's major traders in whale products, importing 7000 tons of whale oil in 1978, mostly for use as an industrial lubricant. Only two whaling nations, Japan and the USSR, expressed reservations to the ban.

WWF conservation director Arne Schiotz said, "The massive vote in favor of the ban is the most forceful statement on whaling by the international community since the 1972 Stockholm conference on the environment. A cross-section of Third World and industrialized nations have said that whaling is an unacceptable part of the wildlife trade."

There was another overwhelming vote on the U.K. proposal to list the entire parrot family—with three exceptions. The vote, this time 32 to 4, was based on evidence provided by the International Council for Bird Preservation, WWF-U.S. and other groups that many parrot species were being traded to extinction.

This vote is likely to curb illegal bird trade. India, which hosted the CITES meeting, heads the list of wild bird exporters—1.85 million out of a total of 7.5 million traded annually.

Provisions to curb illegal trading in ivory were also taken. The

value of elephant ivory has jumped over the past few years from \$3 a pound to \$50. Because of this, a wave of elephant poaching has swept several countries. To stop ivory smuggling a new system for marking legal ivory was demonstrated: forgery-proof documents printed on banknote paper. Security stamps will be produced for all other products. Also discussed was the introduction of a signature register to control the use of falsified licenses.

"CITES cannot hope to stamp out the illegal trade," said Peter Sands, "but it can make smuggling more difficult."

CITES faces another difficulty: how to educate customs officials as to which species are banned and which not. Australia suggested the present listing system be reversed, to include only those species that may be legally traded. The Conference decided to set up a committee on reverse listing which will report in two years' time.

Following a long debate, the Convention came up with guidelines for ranching green turtles and other endangered species. They agreed it should be allowed but only under very strict conditions. One condition is a marking system which will distinguish between ranched and wild species. Marine turtles, crocodiles and lizards are just a few of the species for which ranching projects are likely to be developed.

Australia proposed a complete ban on trade in rhino horns. The IUCN suggested destroying all rhino horns, but Kenya and Zambia opposed the idea. Kenya said that some stocks were private property and if they were to be destroyed, the government would have to pay heavy compensation. CITES banned the trade; it has now appealed to non-members to comply.

And Peter Sands told *WER*, "We have no super police force to prevent illegal trade. The purpose of this convention is to make it quite clear that some trade in wildlife is perfectly legitimate. We only want rational utilization of wildlife. We are concerned at the increasing illegal trade and smuggling of endangered species."

R. MURALI MANOHAR

## National air pollution bill passed by Indian Parliament

**NEW DELHI**—The Indian Parliament has passed a bill to control air pollution nationwide.

It empowers the government to declare any area an "air pollution control area," and the federal anti-pollution board can prohibit the use of a fuel if it is causing air pollution.

The board will plan and execute a nation-wide program for preventing air pollution. It will also coordinate the activities of various state boards and resolve disputes.

Board officers are empowered to inspect factories and other plants "at all reasonable times" to collect information on emissions.

The plant owner or manager is required to furnish any information required by the anti-pollution board; if he fails to do so, he can be jailed for up to three months or be fined up to \$625. Officers of factories found to be polluting the air can be imprisoned for up to three months, fined up to 10,000 rupees (\$1,250) or both.

R. MURALI MANOHAR

## On the Subcontinent...

**THE MADHYA PRADESH** government in India has nationalized all private forests larger than 41 hectares.

Chief Minister Arjun Singh said that under the State's non-agriculture land ceiling ordinance, all forests bigger than 41 hectares belonged to the government and that private owners would have no right over them.

**THE UTTAR PRADESH** state government in India has banned cutting trees in hill areas which are more than 4,000 feet above sea level.

State Forest Minister Govardhan Tewari said that the forestry program would be given top priority.

**IN INDIA**, the Water Resources Development Training Center at Roorkee University has developed a low-cost micro hydroelectric unit to generate four to five kilowatts of power. It can be put up wherever there is a perennial stream for use by a small village.

The prototype is to be erected at Katgoan in the Kinnaur district of Himachal Pradesh. The system would cost between \$3,500 and \$4,000. The WRDTC hopes to get \$40,000 for developing this technology from a \$2 million USAID grant to India.

**THE GULF OF KUTCH** in the Indian State of Gujerat will be a test lab to establish its potential for generating tidal energy.

The Minister of State for Energy, Vikram Mahajan, said the investigation would take up to five years and would lead to preparation of a preliminary feasibility report.

**THE FIRST SOLAR-POWERED ELECTRICITY** plant in Pakistan will soon be operational. It is being built at Chakwal, near Rawalpindi in the Punjab, at a cost of 1.2 million rupees (about \$120,000), which includes a foreign exchange component of 1 million rupees (\$100,000). The plant will provide electricity to 100 houses, 20 street lights and a water pump with a capacity of 28,000 liters. Pakistani solar experts believe that if properly utilized, the country could generate more electricity with solar energy than the combined output of Tarbela, Mangla and Karachi power plants.

**A SILICON** Technological Development Center will be set up soon in Pakistan at a cost of nearly \$1.3 million. One of 19 global projects being undertaken by the UN Fund for Science and Technology for Development (UNIFSTD), it will conduct applied research in silicon processing and train technical personnel in the production of photovoltaic devices. The Center will also inform Pakistan's scientists and technicians of the latest developments in the economical application of solar energy, especially for rural areas.



## Ocean management . . .

**IF THE MINISTRY OF ENVIRONMENT** gets its way, Norwegian regulations regarding off-shore pollution will be extended to apply in a 12-mile (nautical mile) zone from the coast instead of the present four-mile zone.

The Ministry is preparing a bill on this reform which is expected to be studied by the Government this spring.

If the protected zone is extended, Norway will have the right to introduce stiff penalties, including fines, confiscation of a ship's certificate and even imprisonment of those who release oil in Norwegian territorial waters.

**"OIL POLLUTION FROM TANKER Operations—Causes, Costs, Controls"** is a readable technical study produced by the University of British Columbia's (Canada) Center for Transportation Studies. Purpose of the book is to provide a wider understanding of the facts and issues involved in controlling oil discharges by routine tanker operations. It can be obtained from: The Center for Transportation Studies, University of British Columbia, Vancouver, British Columbia V6T 1W5, Canada, for \$22.

**OCEANS '81**, an international ocean technology conference and exhibition, will be held in Boston, Massachusetts, USA, September 16-18. For information write: Oceans '81, P.O. Box 360, Portsmouth, R.I. 02871, U.S.A.

**FOUR NORTH GERMAN COASTAL STATES** have called on the West German government to start negotiations with Czechoslovakia and East Germany on banning the discharge of pollutants into the Elbe River.

The call came following a conference held in Hamburg where the environment ministers of Schleswig-Holstein, Lower Saxony, Hamburg and Bremen also urged Bonn to negotiate a halt to dumping sewage sludge into the North Sea with all the other countries touching the Sea.

The conference also ordered an ecological study of measures that could be taken to end long-term pollution of the Elbe River and the North Sea.

**WESTERN AUSTRALIA'S** State Department of Conservation and the Environment has just issued a report: "Wetlands: Guidelines for Protection and Management."

The new guidelines will help planners, developers, local authorities and land owners to protect surviving wetlands.

## Mediterranean nations agree on massive sea-saving plan

**CANNES**—A three-year program to save the world's most polluted sea, the Mediterranean, was agreed upon at a six-day meeting here of ministers from 16 of the 18 countries that surround it.

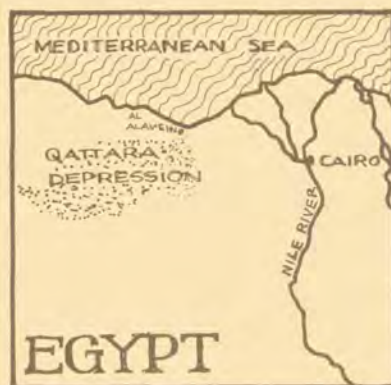
The Mediterranean nations and the UN Environment Program pledged to spend \$12 million on research, monitoring and cleanup programs. One quarter of the money will be spent on pollution monitoring and research, now being carried out by 83 marine laboratories in 16 countries. Other funds will go to the Blue Plan, which projects the impact of such activities as industry, tourism and transportation on the basin from its headquarters in France; on the Priority Actions Program, based in Yugoslavia, for projects such as fish farming and solar energy; and for the Oil Combating Center in Malta.

Sewage, industrial waste and agricultural runoff account for 85 percent of all Mediterranean pollution. And 80 percent of the sewage from 44 million people who live on its shores flows untreated into the sea.

Seventeen nations and the European Economic Community participate in the Mediterranean Action Plan (Albania is the only hold-out), and they carry out national programs as well to improve their coastal areas.

To coordinate all these programs, an office will be set up in Athens, to be headed by Aldo Manos, an Italian.

SPECIAL TO WER



## Egypt will blast a channel from the Med into the desert

**CAIRO**—In the late 1960s, when the Aswan High Dam was just starting to operate, an Egyptian botany professor had the temerity to go public with his reservations about its potentially damaging environmental consequences. It was a step that nearly landed him in prison as the High Dam was the much cherished showpiece of a newly independent, revolutionary Egyptian government.

Today, however, as Egypt is about to undertake another mammoth hydroelectric project, the government is at least talking to the environmentalists before breaking ground. And the outspoken botany professor, Dr. Mohammed El Kassas of Cairo University, is one of 17 prominent Egyptian scientists on a special committee to determine the environmental impact of the endeavor known as the Qattara Depression Project.

"We have established a reasonably effective environmental

movement, which wasn't there as recently as 10 years ago," Dr. Kassas said, "and the government is listening."

The plan now under study calls for a canal to run from a point along the country's Mediterranean coast at El Alamein, west of Alexandria, to the Qattara Depression, 56 kilometers away in the desert northwest of Cairo. The huge, naturally formed depression, with a surface area of about 20,000 square kilometers, lies 134 meters below sea level at its deepest point. The sea water, sluicing down from the coast toward the depression, will be regulated by water turbines to generate electrical power—enough electricity to save 15 million tons of oil in the first decade of operation alone.

The depression will be permitted to fill with sea water until it reaches a level of 60 meters below sea level, which should take between 45 and 55 years. At that point, an equilibrium should be established, as the amount of water emptying into the depression will be roughly equal to the amount evaporated from the formed lake.

Mohammed Kamel Mahmoud Hamed, an engineer and chairman of the Qattara Project Authority, says the plan still may be scrapped if objections raised by environmentalists prove compelling.

The Qattara project has been discussed and studied for decades.

Dr. Kassas has criticized the environmental reports submitted to date by foreign consulting firms for failing to determine what will happen to water evaporated into the atmosphere from the depression.

One study cited by Mr. Hamed found that the amount of water released will be less than one percent of that which moves naturally across northern Egypt. The effects of evaporation, according to this theory, will be local and negligible.

"As far as the engineers are concerned," noted Dr. Kassas, "the water vapor goes up into the sky and that's the end of it."

What must be examined now, he said, is the extent to which the increased humidity will be moved around by the prevailing winds. If humid air were transported into the Nile Delta, Egypt's most bountiful agricultural land, the relative humidity of the region would be increased. Even a rise of but 10 percent, Dr. Kassas believes, would sharply increase the incidence of fungal plant diseases that thrive in a humid environment.

Environmentalists are also saying that even though the salty water in the vast depression will be below sea level, there is the danger that it may move, through osmosis, out of the depression and toward the soil in the Delta where it would increase the salinity of the farmland.

The seismic stability of the area has also been questioned by some scientists who fear that the land around the depression is more fractured than the land surrounding the High Dam where tremors have lately been reported.

Though not unmoved by these concerns, the country's engineers and planners anxiously point to Egypt's population growth. By the year 2000, they say, the number of Egyptians will have risen from 40 to 66 million and per capita demand for electricity will have risen five-fold, a demand that cannot be met by the country's finite oil reserves.

Egypt has no choice, they argue, but to exploit sea water as its last regenerative source of constant energy.

NATHANIEL HARRISON

## In Africa ...

**KENYANS TURNED OUT** in thousands to dig drainage trenches, build hillside terraces and repair eroded river banks in a recent soil conservation week. President Daniel Arap Moi joined the workers, helping to build anti-erosion barriers on a river.

The campaign results from growing concern in Kenya about increasing soil erosion caused by a rising population and a lack of attention to conservation practices in many areas. It drew widespread public support, with villagers turning out to work (without pay) on communal schemes.

Local conservationists say the benefit to Kenyan farmers will be enormous, provided that the advances now made are consolidated and continued.

Food shortages caused partly by dry weather and local marketing problems have made Kenyans more conscious of the need to increase farming yields—and to ensure conservation of the soil in farming areas.

**CHARCOAL BRIQUETTES** made from the husks of coffee beans are now being marketed in Kenya. The husks formerly were used for fertilizer or were wasted, because no economic use could be found for the large quantities produced from Kenya's coffee crop.

The Kenya Planters' Cooperative Union, which markets the coffee crop, has pioneered a new process to turn thousands of tons of formerly useless husks into high-quality briquettes. As a fuel, the briquettes have a high calorific value and produce no pollution.

**THERE HAVE BEEN RUMORS** of uncontrolled hunting in South Africa's black "homelands" and criticism of the lack of conservation measures, but in fact some 150,000 hectares (nearly one percent of the land) have been set aside for conservation.

In 1973 the Department of Cooperation and Development started employing conservationists to work on the land under its direct control, or to develop conservation organizations in the homelands, or to train black conservation students. At present it employs 12 university-trained professionals and 28 other conservation officials.

Major reserves have been established in Kwa-Zulu, Transkei, Gazankulu, Lebowa and Bophuthatswana, and a guide plan for conservation is being prepared for Ciskei.

## Books & booklets . . .

**THEIR ARTICLE ON DUMPING PESTICIDES** in the Third World won them the 1980 National Magazine Award in the U.S. Now authors David Weir and Mark Schapiro have expanded on their previous work to produce an extremely disturbing book, "Circle of Poison—Pesticides and People in a Hungry World." It shows how pesticides banned or restricted in the U.S. are sold overseas and return in food exported to America. It names the major manufacturers of hazardous pesticides sold in the Third World. The 101-page book is available from the Institute for Food and Development Policy, 2588 Mission, San Francisco, CA 94110, U.S.A., for \$3.95.

**REFORESTATION IN ARID LANDS** is a how-to book produced jointly by the Peace Corps and VITA, Volunteers in Technical Assistance. In its 248 pages the authors discuss long-range planning, soil and water, choosing species, project planning and management and even include a guide to writing funding proposals for reforestation projects. The manual is available from VITA, 3706 Rhode Island Ave., Mt. Rainier, MD 20822. Further information on the subject is available from Dr. John L. Malcolm, Senior Soil Specialist, Office of Agriculture, Room 406, SA-18, Development Support Bureau, USAID, Washington, D.C. 20523.

**TWO OF THE MOST INFLUENTIAL ACTORS** and researchers in the international environment and energy field have collaborated to produce a book designed to stimulate new energy initiatives, "The World Energy Triangle." Authors Thomas Hoffman and Brian Johnson of the International Institute for Environment and Development assess the environmental and geopolitical difficulties faced by the West, the oil-rich states and the oil-importing developing countries and suggest a strategy for cooperation to end the energy crisis for all three groups. It can be purchased from the Ballinger Publishing Co., 17 Dunster Street, Harvard Square, Cambridge, MA 02138, U.S.A. for \$20.

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The Center is a non-profit, non-advocacy, educational organization which seeks to foster public understanding of global environmental issues. Established in 1974 by the UN Association of the USA with the support of the UN Environment Program (UNEP), the Center alone is responsible for WER's contents.

## South Korea begins a major air and water cleanup

**SEOUL**—Since its founding in January 1980, South Korea's Office of Environment (OE) has been conducting national surveys to monitor pollution levels, and it will soon begin a project to clean and revitalize its major rivers.

An estimated 12 million people live in the Han River basin, where the river is a main source of drinking water. It is, however, heavily polluted by household, industrial and livestock waste totalling 2,961 cubic meters a day. The OE forecasts this amount will nearly double by 1991. At present, only two sewage and 47 nightsoil treating plants are operating in the river basin.

Later this year the environment office will start a two-year survey of all four major rivers—the Han, Naktong, Kum and Yongsan—in preparation for a major effort to clean them within 10 years. Loans totalling six billion won (\$10 million), provided by the Asian Development Bank and the World Bank, will cover part of the 10 billion (\$16 million) in expenses required for the survey and drafting the 10-year plan.

Academics and research institutions have been asked to participate in drawing up the plan, and a special body, the Environmental Preservation Planning Group, will be formed with officials from the Economic Planning Board and the Ministries of Home Affairs, Commerce-Industry, Agriculture-Fisheries and Construction. The group will oversee and coordinate the long-range activities, which involve comprehensive surveys on the extent of pollution of the four rivers, establishing environmental standards for the river basins and priorities for pollution control projects.

South Korea also suffers from severe air pollution. According to a Korea Institute of Science and Technology (KIST) survey, the sulphur dioxide emitted by one of the country's largest industrial complexes, Kuro-dong in Yongdungpo-ku, was three times the permissible level of 0.05 parts per million set by the Environment Preservation Law. KIST forecast that with increased consumption of oil and coal, and the establishment of more industrial plants, thermal power plants and increased traffic, larger Korean cities will become increasingly polluted. An OE national survey shows that out of 244 days from the beginning of 1980 to last August, Seoul had only 68 pollution-clear days, Pusan 143 clear days and Ulsan 157 days. The OE is planning to supply low-sulphur oil to major industrial facilities to help reduce air pollution. Control over automobile emissions will be increased with the nationwide installation of 92 air-pollution gauging devices in addition to the 142 now operating in the country.

The OE will also conduct a tentative 10-year program of setting up waste disposal plants in large cities, such as Pusan, Taegu and in the industrial complexes in Kumi, Ulsan, Yochon, Changwon and Panwol. The program provides also for nightsoil disposal plants in five cities and 20 villages at a cost of 6.5 billion won (\$10.8 million). The OE will train qualified anti-pollution personnel.

The Office of Environment's total budget for 1981 is 15 billion won (\$25 million). SPECIAL TO WER



# World Environment Report

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## Caribbean Action Plan agreed to—final decision in April

**NEW YORK**—As the U.S. administration beat warning drums about the political situation in El Salvador, that small Central American country and 22 others in and around the Caribbean met for five days in Managua, Nicaragua, and agreed to cooperate on a sweeping environmental action plan.

The Caribbean Action Plan is somewhat different from the seven others that the UN Environment Program has helped formulate and fund in that it focuses not so much on environmental protection as on reconciling development and environment.

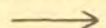
The Managua meeting of government-selected scientific and legal experts (co-organized by the Economic Commission for Latin America) favored establishing a Caribbean Trust Fund to finance the Action Plan. The cost of implementing 25 "high priority" projects (out of 66 presented) over the next three years would be \$3.1 million. Of this, \$1.5 million would come from the new fund and \$1.38 million from UNEP. Other projects will be financed directly by interested governments and international aid agencies and banks, and the recommended total three-year budget is \$8.2 million.

Immediate action was urged on eight projects. They include cooperation in combating oil spills, management of watersheds, improvement of environmental health services, a survey of technical capabilities, and creation of environmental education packages in the four languages of the region: Dutch, English, French and Spanish.

Other high priority projects deal with assessing coastal and land-based sources of pollution, endangered species, surveying non-conventional forms of energy and tightening up disaster relief.

Experts at the meeting also agreed to recommend to their governments that an environmental treaty be drafted. A legal experts' meeting would then be held to consider it, either late this year or early in 1982.

Participants also agreed to recommend to their governments that a small Regional Coordinating Unit be located somewhere in



## International cooperation...

**FIVE ARCTIC-TERRITORY COUNTRIES**—Canada, Denmark, Norway, the Soviet Union and the United States—agreed during a two-day meeting in Oslo this January to prolong indefinitely the agreement they signed in 1973 aimed at protecting polar bears.

There is no firm estimate of the Arctic polar bear population. It may now count more than 30,000 animals, according to figures presented by an expert group of the International Union for the Conservation of Nature and Natural Resources (IUCN).

U.S. delegation leader Richard J. Myshak said, "In areas related to polar bears the state of Alaska has gone so far as to repurchase from oil and gas companies rights for exploration."

**EMPHASIS** was placed on more regionally oriented development efforts in the lower Mekong River basin, rather than nationally oriented projects, during the 10th session of the Interim Committee for Investigations of the Lower Mekong Basin, held at Bangkok January 13-19.

The Committee considered proposals for river bank protection and diking, irrigation and navigation projects. Committee members include the Lao People's Democratic Republic, the Kingdom of Thailand, and the Socialist Republic of Viet Nam. The Interim Committee will revert to full Committee status once the former fourth member, Kampuchea, resumes membership.

**THE ASIAN ENVIRONMENTAL SOCIETY**, in association with several national, international and UN agencies, is organizing an international conference on environmental education, to be held in New Delhi, India, Sept. 28-Oct. 4, 1981. For information contact: Dr. Desh Bandhu, Secretary General, Asian Environmental Society, 8 Darya Ganj, New Delhi-110002, India.

**THE GOVERNMENT OF PAKISTAN** recently sponsored a three-day international seminar on wildlife management. It was attended by wildlife experts from all over the country and by delegates from Nigeria, Switzerland and the United States. Experts from Uganda, India and Bangladesh sent papers for the meeting.

The seminar addressed a broad range of environmental issues and focused on wildlife management in developing countries.

Recent activity in Pakistan has included the creation of a policy-making National Council for Conservation of Wildlife. Regionally, all four provinces have formed wildlife management boards to implement government policies.

the Caribbean to run the program.

Final decisions on all this will be taken at a high-level intergovernmental meeting in Jamaica April 6-8.

Three participating countries, Great Britain, The Netherlands and the U.S.A., declared support of the Action Plan but said they could not promise money now for the Trust Fund. After initial reticence, France agreed to contribute substantially. Other major contributors are likely to be Colombia, Cuba, Mexico and Venezuela.

Other states represented were Barbados, Costa Rica, Dominican Republic, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Panama, St. Lucia, St. Vincent and the Grenadines, and Surinam.

"The participation of so many Caribbean governments at the Managua meeting is a remarkable achievement," said Trevor Boothe, the Jamaican coordinator of the program (*WER*, Aug. 27, 1979, p. 1), "especially in view of the great political and economic diversity in the region. Obviously, they don't all have the same interests or priorities, but they do clearly recognize the common character of many of their environmental problems, and they have identified high priority areas of common concern."

LIBBY BASSETT

## Oil-rich Mexico looks ahead and plans 30 nuclear plants

**MEXICO CITY**—A plan to build as many as 30 nuclear power plants with a combined capacity of 20,000 megawatts is being formulated for Mexico's next two decades. Details will be made public in the last quarter of this year, said Alberto Escofet Artigas, director of the Federal Electricity Commission. He spoke at a Canada-Mexico symposium on nuclear energy, sponsored by the Mexican Academy of Engineers.

While Mexico has not signed contracts with any nation to assist in nuclear construction, Escofet Artigas said proposals have been received from France, Canada and Sweden, and Mexico will invite offers from other interested nations.

Mexico is especially interested in the Canadian "Candu" reactors because they do not require enriched uranium. Mexico has "very large" uranium reserves, Escofet Artigas observed, and would like to be independent of any other country in using that uranium. Mexico's only nuclear plant to date is under construction in the eastern state of Veracruz.

The government's basic contractual requirement, he said, is the transfer of technology, so Mexicans will be able to operate their own facilities. The director, an engineer, said the country's present installed capacity for generating electricity is 15 million kilowatts, just under half the proposed nuclear capacity.

KATHERINE HATCH

## West German nuclear politics affect its energy future

**MUNICH**—West Germany's people and its politicians are fighting bitter battles that may well determine whether this country's nuclear energy industry has a future.

No new nuclear plant has gone into operation here for about two years and no new construction for the past three and one-half years due to protests by environmentalists, court rulings and government hesitation.

But nuclear industry spokesmen, citing the economic and energy crises triggered by soaring costs of oil on which industrialized West Germany is so dependent, have been attempting to reopen the door to increased use of nuclear energy.

Today, nuclear power provides less than 4 percent of this country's energy and slightly more than one-tenth of its electricity. Fourteen plants are allowed to operate, nine are "under construction" and 10 more are still awaiting permission for construction to start.

In the meantime a major battle is underway over one of the most controversial projects, and it has developed into a proxy conflict for nuclear energy in general. This is the project at Brokdorf on the lower Elbe River, scene of violent clashes since 1976. At the end of February, 20,000 demonstrators armed with gasoline bombs, sticks, stones and slingshots fought for hours with police who retaliated with water cannons and tear gas.

The Brokdorf project threatens to divide the ruling coalition parties as well—the Social Democrats and the Free Democrats. The opposition Christian Democrats support Brokdorf and have been wooing those Free Democrats who also back the project.

But the problem, politically, is not federal. The main responsibility for Brokdorf is in two northern states—Schleswig-Holstein, where the pro-nuclear Christian Democrats have an absolute majority, and Hamburg, where the majority Social Democrats are split on nuclear power. Hamburg is the home town of German Chancellor Helmut Schmidt and other leading Social Democrats.

The Hamburg government met on the issue Feb. 11 and with the eyes of the country focused upon it, managed to avoid a clear-cut decision to produce a feeble "maybe." It announced that it was ready to go ahead with Brokdorf—but only if Schleswig-Holstein agreed to stop construction for three years. This, Hamburg argued, would enable the issue of disposal of radioactive waste to be clarified, along with the question of a newer type of reactor. If Schleswig-Holstein did not agree, Hamburg announced, then the Hamburg government would pull out of the Brokdorf project.

Schleswig-Holstein Premier Gerhard Stoltenburg said that his state would not agree to a delay. He pointed out that construction has already been delayed several years, increasing the cost by at least 1,000 million marks (\$500 million).

Brokdorf's future—and that of nuclear energy in general in the country—is still murky. But there is a consensus that if and when a final decision is reached on Brokdorf, it will also be a decision on the energy future of West Germany.

WILLIAM G. MAHONEY

## Nuclear power...

**IN JAPAN**, environmental impact surveys must be done for those regions slated for nuclear power plant construction, according to a 1980 white paper on atomic energy from the Science and Technology Agency. These surveys should be conducted before construction work begins, the Agency said. The government should also launch an information campaign to help people understand the safety problems of nuclear power plants. The white paper will be submitted to the Cabinet for approval in the near future. Japan plans to raise its nuclear power capacity from the present 28 million kilowatts to 53 million kilowatts by 1990.

**ABOUT 6,000 JAPANESE** staged a demonstration against the proposal put forward by Tokyo Electric Power Co. to build two nuclear reactors at Kariwa, Niigata Prefecture. The demonstration was held during a public hearing on their construction (the first reactor of the plant was already under construction). Japan now operates a total of 21 nuclear reactors.

**6,000 JAPANESE** staged a demonstration against Chugoku Electric Power Co.'s plan to construct a 820,000-kilowatt nuclear power plant in Shimane Prefecture. The demonstration was held while the government was holding a public hearing on construction of the plant.

**SOUTH KOREA** plans to step up the development of atomic energy. The country will have 13 nuclear plants in operation by 1991. By that time, the Ministry of Energy and Resources forecasts that South Korea's dependence on oil will be lowered to 42 percent from the present 64 percent while atomic energy will meet some 36 percent of domestic energy requirements.

**MALAYSIA'S FRIENDS OF THE EARTH** group, Sahabat Alam Malaysia (SAM) has asked the government to rethink its plans to develop the Tun Ismail Atomic Research Center at Bangi. The government said, according to SAM, that building the reactor would allow Malaysia to produce its own radioisotopes rather than having to import them. But, said SAM, the cost of the reactor is now \$22 million, a big escalation from the original price of \$7.5 million, and they question whether it might not be cheaper to purchase isotopes from overseas.

The motivation behind the plant, they suggested, is the establishment of a nuclear power generating plant. But, they continued, "the irony of such a motivating factor is that Malaysia still has a host of other safe, productive alternatives to nuclear power which have yet to be tapped but interestingly are still low on the government's priority list."

## In Europe ...

**SWEDISH INDUSTRY'S TOTAL INVESTMENT** in environmental protection is diminishing, according to estimates by the National Environment Protection Agency (NEPA).

From 5 percent in the early 1970s, soon after Sweden's law on environmental protection went into effect, the figure sank to 4 percent in the 1975-1980 period to 3 percent this year, NEPA estimated in connection with the economic department's long-term studies. Three percent works out at about \$97.8 million at current exchange rates.

Between 1970 and 1975 major basic investments were made by industry for environmental protection equipment, with 25 percent state support.

**SEVEN SMALL HYDRO-POWER** stations, abandoned years ago mainly for economic reasons, are getting a \$1.6 million subsidy from the Swedish government for their restoration.

Rising oil import bills forced the government two years ago to search for environmentally sound energy sources. It found that it would pay to restore many of the 1,500 forgotten power stations along small streams. The Swedish Association estimated that 150, rebuilt over four years, could provide 400 million kilowatt hours of electricity annually.

Acting on the report, the government set up a \$91 million fund to subsidize up to 35 percent of the cost of restoration. The key is new turbines which don't need constant attention and therefore are cost-efficient.

**THE WORST DROUGHT** in 30 years forced the Portuguese government to decree cuts in the use of electricity and water. Rainfall has been half the average since October and reservoirs are less than half full.

The agricultural situation is considered a catastrophe: 60 percent of the cereal crop has been lost; olive oil production is down 30 percent, wine down 40 percent, citrus fruit down 61 percent. The government is subsidizing cattle farmers while temporarily prohibiting meat imports.

**A POSTAGE STAMP** honoring environmental protection has been issued by the West German Federal Post. It sells for 60 pfennig (about 30 cents) and pictures the damaging effects of modern production on flora and fauna.

## England's wildlife and lands bill is widely criticized

**LONDON**—A major piece of legislation claiming to provide comprehensive protection to Britain's threatened wildlife and countryside has already had more than 50 amendments added to it in its passage through Parliament.

The Wildlife and Countryside Bill seeks to cover endangered species, footpaths, hedgerows, woodlands and many other Sites of Special Scientific Interest (SSIs).

The heavily populated British countryside has to face the conflicting demands of farmers, conservationists and recreational interests. Since the end of the last war over a third of Britain's traditional woodland, and a quarter of its hedgerows—225,000 kilometers of them—have disappeared. Heathland, moorland, ponds and wetlands have also been drained or plowed up for extra agricultural land, or have disappeared under housing or industrial development.

Far from increasing protection, conservationists believe some aspects of the bill could lessen that which already exists.

Existing SSIs are disappearing yearly through farming and forestry practices. Extra protection is given by the bill but to fewer sites, and conservationists are convinced this will increase rather than lessen their disappearance. Instead of having power to prevent farmers plowing up moorland within their boundaries, national park authorities will have one year's grace to seek a voluntary restraint.

The Nature Conservancy Council, with the backing of the World Wildlife Fund and other conservation groups, is trying to get the bill extended to cover marine life and coastal waters.

At present, comparatively little is known about marine habitats and some widespread conservation areas would be needed to discover the most endangered habitats, food stores and species.

Other amendments question the powers given to local authorities to be judge and jury over footpaths and diversions.

The bill will reach the House of Commons in March and could become law by next summer. Critics fear that the question of what to conserve will then be considered closed. BARBARA MASSAM

## Norway's new anti-pollution act forbids all pollution

**OSLO**—The Norwegian Parliament's Odelsting has passed new anti-pollution legislation which will replace many existing laws.

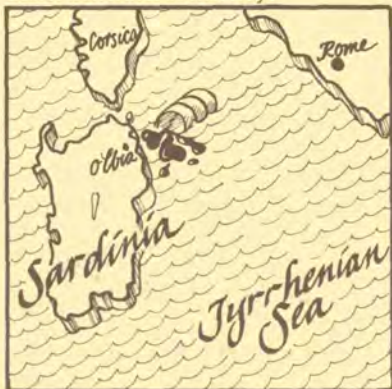
The underlying principle of the new legislation is that the release of all kinds of polluting materials is forbidden unless special permission has been granted by the authorities.

The new act covers pollution of the air, water and land and also contains paragraphs on refuse and noise pollution.

Other new Norwegian measures to combat pollution include the purchase by the State Pollution Control Authority of advanced radar equipment for surveillance of off-shore oil slicks. The

equipment will be installed aboard an aircraft chartered by the Environment Ministry.

SPECIAL TO WER



## Salvage off Sardinia: tons of toxics from a '79 shipwreck

**OLBIA, Sardinia**—After months of bitter controversy and appeals by ecologists, SSOS, an Italian company specializing in underwater work, recently received government authorization and funds to begin the recovery of highly toxic chemicals from a Greek merchant ship, which sank off Sardinia in 1979.

SSOS frogmen inspected the wreckage, which is 73 meters under Tyrrhenian Sea-level, and reported that many barrels of poisonous chemicals were scattered across the seabed. SSOS has been given 9 billion lire (\$9 million) to complete recovery in 130 days, thus preventing what several experts said was a growing threat to the sea and coastal environment of this Italian island, a favorite summer vacation resort.

The Klearchos, a 1,354-ton ship, sank 13 kilometers off the port of Olbia following a huge fire in July 1979. According to an official list given by the shipowners, Klearchos' hold was filled with 50 metric tons of formic acid, 80 tons of caustic sodium, 113 tons of hydrocarbons, 3.5 tons of pesticides, 16 tons of methyl bromide and sulphuric and arsenic acids.

Some cases of chemical intoxication were reported among people who had eaten fish from the area of the Klearchos sinking, and minor skin diseases reported by swimmers last summer were attributed by some ecologists to pollution from the broken barrels. However, Olbia authorities said there was no evidence to support such claims.

Sergio Albanese, who heads the Olbia port authority, was frustrated in his attempts to keep fishermen, swimmers and water skiers from the potentially dangerous area last year when the regional authority failed to approve a law barring activity in the area.

"The zone should have been barred and recovery of the barrels should have been started long ago. At last the government realized a decision could not be postponed," a local politician said recently.

The Klearchos case was the second major shipwreck threat in five years to the Italian coastal environment.

In 1976 a Yugoslav merchant ship with a load of chemicals sank in the Otranto Channel. The Italian government dealt with the recovery, after several months, when ecologists and experts warned that severe pollution of the Mediterranean Sea was likely in the long term, and it would have repercussions on tourist activities along the Italian coast

PIERO VALSECCHI

## Toxics...

**ACID RAIN** was at the top of Canada's agenda for discussion when Prime Minister Trudeau met with President Reagan in mid-March. Canada is concerned, said Environment Minister John Roberts, because it changed its air quality laws last December to be in alignment with U.S. laws, and now the new American administration is considering overhauling its Clean Air Act which would set reciprocity back once again.

**THE CASE AGAINST THE RAIN**, a new publication of the Ontario Ministry of the Environment, describes the extent to which eastern North America is affected by acid rain. It outlines Ontario's programs and addresses the need for action by the governments of Canada and the U.S. It is available in French and English.

The Ministry and Canada's Atmospheric Environment Service have also produced "A Bibliography: The Long-Range Transport of Air Pollutants and Acidic Precipitation." This 95-page technical bibliography is available for \$5 from: the Publications Centre, Ministry of Government Services, 5th Floor, 880 Bay Street, Toronto, Ontario M7A 1N8, Canada.

**COLOMBIA'S INDUSTRIAL DEVELOPMENT** institute (IFI) will finance the installation of a \$600,000 mercury decontamination plant at the government-owned soda complex at Zipaquira near Bogota. The plant will eliminate mercury pollution of the Bogota river and its tributaries by July of this year, according to the soda complex's president Julio Cesar Gaitan. Equipment will be supplied by the Dutch firm Axon.

**DDT** is being used by the Philippine government for its anti-malaria campaign. A government spokesman explained that the DDT is sprayed selectively. So far, he said, he was unaware of any adverse effects of DDT on Filipinos. The government will rely less and less on DDT in the future as it is now working on other measures to fight malaria, he added. At present, the Philippines uses some 136,000 kilograms of DDT a year. Under present policy, only the government can import DDT.

**ZIMBABWE** will phase out the use of DDT over the next five years.

Michael Burgess, an adviser to the Cotton Growers Association in Salisbury, said plans are well under way to use less harmful pesticides throughout the country.

About 90 percent of commercial farmers had already stopped using DDT in favor of less damaging pesticides, and only half the tribespeople are using DDT on their plots, said Burgess.

A major factor in the switch from DDT is a series of courses at the government research center of Gatooma in the heart of the cotton country.



## Environment & Development . . .

**A \$45 MILLION HYDROELECTRIC** power station below the Ord River Dam in northwest Australia has been given environmental clearance by the Western Australia Environmental Protection Authority.

A review covered the major areas of potential environmental impact. The management program prepared by the State Energy Commission and its consultants proposed an environmental watching brief for the construction and first three years of the station's operation.

**LAOS** is getting preparatory technical assistance from the Asian Development Bank for a hydroelectric project at Xeset in the southern part of the country. This assistance will include a team of consultants who will investigate the feasibility of constructing a hydropower station at the Xeset River site. The team will then design a scheme which includes a powerhouse, associated transmission lines and a distribution system.

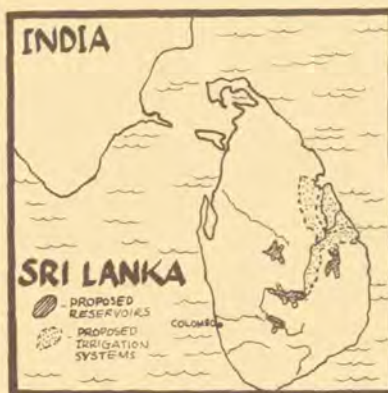
The Xeset scheme will also benefit irrigation and industry, and Government plans for the area include irrigation pumping, rice and coffee processing, flour milling, sawmilling, water supply, ice making and small factories for food processing. The technical assistance study will start in April.

**THE FIRST OF 10 MINI-HYDROPOWER** schemes are to get underway in Burma following a recent agreement by the Asian Development Bank to provide a technical assistance grant to the Burmese Government.

The project will provide continuous power supplies to the areas involved, at a relatively lower cost. At present, these areas are supplied with power by old and inadequate diesel generators for only a few hours each night. Expansion of the present supply system is not economically feasible, and as a result economic development in the areas has suffered. Located in various parts of the country, the 10 mini-hydropower schemes will basically serve agricultural activities, with industrial activities limited to rice mills, oil mills, sugar mills and sawmills.

**MORE THAN A BILLION DOLLARS** in World Bank loans have now gone to Indonesia to develop its power system. The most recent loan, \$250 million, is for the country's largest hydroelectric station, to be built in West Java at a total cost of nearly three-quarters of a billion dollars.

The World Bank says that from the outset, "due consideration has been given to the environmental aspects of the project." Measures have also been taken to compensate and resettle people in the reservoir area.



## U.S. funds Sri Lanka's Mahaweli assessment

**COLOMBO**—Most of Sri Lanka's economic hopes rest on the massive Mahaweli River Diversion project. It involves the transfer of huge volumes of water to this Indian Ocean island's dry zone, and its magnitude means major ecological changes.

Recognizing this, the U.S. Agency for International Development (USAID) funded a \$750,000 study of potential environmental impacts. The study was done by the New York firm of Tippetts-Abbett-McCarthy-Stratton (TAMS) over a one-year period.

The Mahaweli irrigation and power project had been under consideration for decades, as economic insurance for this developing nation's 14.5 million people. But, until recently, the government had not been able to raise funds for planning, much less implementation. Now that the environmental impact study is complete, both USAID and the World Bank are considering funding various aspects of the project, and the British and Japanese reportedly are interested in other sectors.

The project is too big for any one assistance organization to handle by itself. The project area is 400,000 hectares, of which nearly 100,000 will be transformed into new agricultural lands. Projected reservoirs, for water control and hydroelectricity, would be upstream, outside the project area, said TAMS study director Michael T. Sobczak.

Sri Lankan government officials, the Mahaweli Development Board and the Mahaweli Authority are deeply conscious of the environmental implications of the project, local officials told WER. One of TAMS' major recommendations, the urgent need to reforest hill slopes along the upper reaches of the Mahaweli River, has already been accorded highest priority.

A spokesman for the Mahaweli Authority said deforestation of the river's upper catchment could adversely affect the entire project since it would reduce the volume of water carried by the river. Last year, 1200 hectares of the Mahaweli's upper catchment were reforested, or 9 percent of its area. The Forest Department hopes to increase this area to 25 percent over a five-year period.

From Sri Lanka's point of view, one of the most important sections of the report was its identification of project benefits and adverse environmental impacts.

The benefits include permanent employment of 175,000 families in agriculture and agriculture-related activities. They would produce 600,000 tons of rice and other crops annually, meaning Sri Lanka would be self-sufficient in food. And the Mahaweli reservoirs would substantially increase the country's

hydro-power output—although the number of reservoirs and their potential output have not yet been determined.

“To obtain these long-term benefits,” the TAMS report said, “a commitment of resources is required which will result in a number of adverse environmental impacts, some of which would in all likelihood be unavoidable.”

They include: losing a substantial portion of existing forest due to agricultural clearing, timber and fuelwood needs; the resultant loss of a large number of plant species and the reduction of wildlife carrying capacity of the area—the area has elephants, for example. Breeding and feeding grounds will be lost for fish and birds, and some livestock grazing areas reduced. The water table is expected to rise, necessitating drainage channels, and return flows will reduce the quality of the receiving waters. Pesticide use will increase as agriculture does, with the subsequent increase of pesticides throughout natural food chains; this will affect aquatic life as will the blockage by reservoirs of their migratory routes. And more than 25,000 people must be relocated from reservoir sites.

TAMS made many recommendations, acceptable to the Sri Lankan government and its agencies, for avoiding or mitigating potentially adverse impacts: siting national parks and conservation areas, water monitoring and a host of other protective measures.

The Minister for Mahaweli Development, Gamini Dissanayake, told *WER* that environmental considerations had always been accorded high priority in planning the project. “We are aware of the problems and doing everything possible to avoid or minimize adverse environmental consequences within the constraints of the country’s development needs,” the Minister said.

MANIK DE SILVA

## Pakistan will assess the life expectancy of its Tarbela Dam

**ISLAMABAD**—Pakistan’s Water and Power Development Authority (WAPDA) is carrying out a detailed survey of the silt deposits in the Tarbela Dam reservoir to ascertain the life span of the dam.

The \$1.5 billion dam, 97 kilometers west of Islamabad, is the largest earthfill dam in the world. It is part of a \$3.5 billion Indus Basin Development Plan which took more than 15 years to complete with aid from Western nations. It divided the waters of the Indus river systems between India and Pakistan.

Present WAPDA estimates put the life of the dam at between 60 and 70 years, but the survey will provide a more accurate estimate later this year.

The Tarbela Dam should produce 3,500 megawatts of power when fully developed in 1987. Last year the dam supplied 40 percent of the nation’s power or less than 1,000 megawatts.

However, official sources say the dam has already paid back its cost by providing irrigation water and power during the past four years.

MOHAMMAD AFTAB

## Forestry...

**SEVERE EROSION** of watersheds and failure to construct new reservoirs have led to daily rationing of electricity in the rainy Colombian capital of Bogota. The Tomine reservoir of the Guatavita hydroelectric complex supplying Bogota’s energy has less than one-sixth of its normal capacity this summer, although the weather has not been abnormal and there has been intermittent rainfall.

Aerial reconnaissance and onsite checks show that erosion has destroyed many of the rivers feeding Tomine and two other reservoirs. The Bogota river, suffering from pollution as well as erosion, has all but disappeared. Soil and water engineers claim the only solution is to construct new reservoirs on five sites still fed by rivers in order to store at least 300 million cubic meters during the winter rains, which often flood the savannah.

**THE STATE OF ASSAM** in India has allocated about \$1.5 million for a police force to stop encroachment on forest reserves. It is the first such forest force in the country. The state police department has been assigned to recruit and train about 600 men.

**CHINA’S STATE COUNCIL** (Cabinet) recently issued an emergency circular banning reckless logging and called for its immediate implementation. Indiscriminate logging has reached critical proportions in many areas and, said Xinhua News Agency, if uncurbed not only would the timber supply be affected but also China’s ecological balance.

**IN INDIA**, the government of Andhra Pradesh state has issued a ban on the indiscriminate cutting of trees. Prabhakar Reddy, the Minister of Forestry, conceded that the ban was long overdue but said the state simply could not afford continued deforestation.

He added that the state will begin planting trees along roadsides and that efforts to plant entire forests will also soon begin as part of an attempt to halt the changes that have already begun to affect the state’s ecology.

**THE PHILIPPINE MINISTRY OF NATURAL RESOURCES** wants to set up a P1 billion (\$137 million) development bank to finance reforestation and other forest-related projects such as water and soil conservation, wildlife and outdoor recreation activities. To encourage tree farming, the proposed bank will grant loans at an annual interest rate of 3-6 percent. The loan will be limited to P2,000 (\$274) per hectare with a maximum repayment period of 40 years, depending on the tree species planted. Initially, the bank will have a paid-in capital of P150 million (\$21 million).

## Briefly . . .

**THE CONTROVERSIAL UN CENTER** in Nairobi is being redesigned and should cost no more than \$34 million, the General Assembly agreed late last year. The original design, which the lowest bidder, an Israeli firm, said it could build for \$22.2 million, was withdrawn last summer when Arab and African states protested. The reason given for withdrawing the tender at that time was that the conference facilities were unnecessary, but the General Assembly restored them.

**CARBON DIOXIDE** and its environmental implications were discussed by 37 experts from 14 countries and several international organizations at a recent OECD meeting in Paris. (Two dozen of the industrialized nations of Western Europe, North America and Japan comprise the Organization for Economic Cooperation and Development.) The experts' conclusions were inconclusive given the nature, they said, of the evidence available to the scientific community of cause and effects. They recognized the need to continue research into the effects of CO<sub>2</sub> buildup in the atmosphere which, some experts believe, could cause world temperatures to rise as fossil fuel use is increased.

**PLANNERS OF RURAL DEVELOPMENT PROJECTS** may want a new handbook, produced by the U.S. Agency for International Development (AID), on "Environmental Design Considerations for Rural Development Projects." The book has design guidelines for rural roads, electrification, water supply and sanitation, irrigation and farm management, and small-scale industry.

It has been sent to all AID missions for trial use, and an AID official told *WER* they hope to receive results from the field on how applicable the guidelines are.

To receive a free copy write: AID Office of Engineering, U.S. Agency for International Development, Washington, D.C. 20523, USA.

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The Center is a non-profit, non-advocacy, educational organization which seeks to foster public understanding of global environmental issues. Established in 1974 by the UN Association of the USA with the support of the UN Environment Program (UNEP), the Center alone is responsible for *WER*'s contents.

## New U.S. hazardous exports control law killed by Reagan

**WASHINGTON**—Former President Jimmy Carter's long-sought policy to control exports of hazardous products has fallen victim to the Republican Administration's regulatory housecleaning.

President Reagan on February 17 reversed an executive order signed by Carter (*WER*, Feb. 2, p. 2) that would have created a list of restricted American products. The list would have been distributed to potential foreign importers. The order would have added certain extremely hazardous items to the government's existing commodity control list, and these products were to have been licensed before being allowed into foreign markets.

Reagan voiced displeasure with the policy in a memo to the State and Commerce Departments that described export controls, especially those calling for licensing, as a "cumbersome regulatory program costly to both the public and private sectors." Industry lobby groups in Washington, particularly the Chemical Manufacturers Association and the Pharmaceutical Manufacturers Association, had fought the Carter policy and denounced its last-minute promulgation.

While dumping Carter's order, Reagan at the same time asked State and Commerce to report back within six months on alternatives that are currently available for controlling hazardous exports. A State Department source said some of the less controversial parts of Carter's order, such as an internationally circulated notification system for regulated substances, might turn up again in suggestions for a Republican policy.

One export practice not covered in Carter's order—export of potentially dangerous wastes—is now covered under a new set of federal regulations. Since November, rules set down for the Resource Conservation and Recovery Act have required American companies that plan to ship such wastes overseas to notify Washington four weeks in advance of shipment. Several such shipments have been made, all to developed countries where the wastes are reprocessed to recover valuable materials or for research work.

CHRISTOPHER JOYCE

## West Germany's eco-groups demand Global 2000 action

**MUNICH**—Publication of the U.S. environmental study "Global 2000" (*WER*, April 7, 1980, p. 1; Aug. 11, p. 4; Jan. 5 & Feb. 2, 1981, p. 1) has triggered demands in West Germany that the Government and Parliament take radical measures to prevent the ecological disasters forecast in the American report.

The West German Federation for Environmental and Nature Protection coupled its demands with sharp criticisms of governmental action in the field thus far. It urged the government to consider, "without delay," a complete about-face in its environmental policies.

The West German Government has expressed rhetorical support for Global 2000 cooperative activities, a U.S. State Department official said, but it has not initiated any actions of its own.

WILLIAM G. MAHONEY



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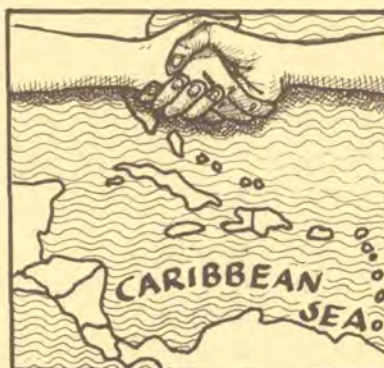
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27 MAR 1981



## Caribbean Action Plan agreed to—final decision in April

**NEW YORK**—As the U.S. administration beat warning drums about the political situation in El Salvador, that small Central American country and 22 others in and around the Caribbean met for five days in Managua, Nicaragua, and agreed to cooperate on a sweeping environmental action plan.

The Caribbean Action Plan is somewhat different from the seven others that the UN Environment Program has helped formulate and fund in that it focuses not so much on environmental protection as on reconciling development and environment.

The Managua meeting of government-selected scientific and legal experts (co-organized by the Economic Commission for Latin America) favored establishing a Caribbean Trust Fund to finance the Action Plan. The cost of implementing 25 "high priority" projects (out of 66 presented) over the next three years would be \$3.1 million. Of this, \$1.5 million would come from the new fund and \$1.38 million from UNEP. Other projects will be financed directly by interested governments and international aid agencies and banks, and the recommended total three-year budget is \$8.2 million.

Immediate action was urged on eight projects. They include cooperation in combating oil spills, management of watersheds, improvement of environmental health services, a survey of technical capabilities, and creation of environmental education packages in the four languages of the region: Dutch, English, French and Spanish.

Other high priority projects deal with assessing coastal and land-based sources of pollution, endangered species, surveying non-conventional forms of energy and tightening up disaster relief.

Experts at the meeting also agreed to recommend to their governments that an environmental treaty be drafted. A legal experts' meeting would then be held to consider it, either late this year or early in 1982.

Participants also agreed to recommend to their governments that a small Regional Coordinating Unit be located somewhere in



## International cooperation...

**FIVE ARCTIC-TERRITORY COUNTRIES**—Canada, Denmark, Norway, the Soviet Union and the United States—agreed during a two-day meeting in Oslo this January to prolong indefinitely the agreement they signed in 1973 aimed at protecting polar bears.

There is no firm estimate of the Arctic polar bear population. It may now count more than 30,000 animals, according to figures presented by an expert group of the International Union for the Conservation of Nature and Natural Resources (IUCN).

U.S. delegation leader Richard J. Myshak said, "In areas related to polar bears the state of Alaska has gone so far as to repurchase from oil and gas companies rights for exploration."

**EMPHASIS** was placed on more regionally oriented development efforts in the lower Mekong River basin, rather than nationally oriented projects, during the 10th session of the Interim Committee for Investigations of the Lower Mekong Basin, held at Bangkok January 13-19.

The Committee considered proposals for river bank protection and diking, irrigation and navigation projects. Committee members include the Lao People's Democratic Republic, the Kingdom of Thailand, and the Socialist Republic of Viet Nam. The Interim Committee will revert to full Committee status once the former fourth member, Kampuchea, resumes membership.

**THE ASIAN ENVIRONMENTAL SOCIETY**, in association with several national, international and UN agencies, is organizing an international conference on environmental education, to be held in New Delhi, India, Sept. 28-Oct. 4, 1981. For information contact: Dr. Desh Bandhu, Secretary General, Asian Environmental Society, 8 Darya Ganj, New Delhi-110002, India.

**THE GOVERNMENT OF PAKISTAN** recently sponsored a three-day international seminar on wildlife management. It was attended by wildlife experts from all over the country and by delegates from Nigeria, Switzerland and the United States. Experts from Uganda, India and Bangladesh sent papers for the meeting.

The seminar addressed a broad range of environmental issues and focused on wildlife management in developing countries.

Recent activity in Pakistan has included the creation of a policy-making National Council for Conservation of Wildlife. Regionally, all four provinces have formed wildlife management boards to implement government policies.

the Caribbean to run the program.

Final decisions on all this will be taken at a high-level intergovernmental meeting in Jamaica April 6-8.

Three participating countries, Great Britain, The Netherlands and the U.S.A., declared support of the Action Plan but said they could not promise money now for the Trust Fund. After initial reticence, France agreed to contribute substantially. Other major contributors are likely to be Colombia, Cuba, Mexico and Venezuela.

Other states represented were Barbados, Costa Rica, Dominican Republic, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Panama, St. Lucia, St. Vincent and the Grenadines, and Surinam.

"The participation of so many Caribbean governments at the Managua meeting is a remarkable achievement," said Trevor Boothe, the Jamaican coordinator of the program (*WER*, Aug. 27, 1979, p. 1), "especially in view of the great political and economic diversity in the region. Obviously, they don't all have the same interests or priorities, but they do clearly recognize the common character of many of their environmental problems, and they have identified high priority areas of common concern."

LIBBY BASSETT

## Oil-rich Mexico looks ahead and plans 30 nuclear plants

**MEXICO CITY**—A plan to build as many as 30 nuclear power plants with a combined capacity of 20,000 megawatts is being formulated for Mexico's next two decades. Details will be made public in the last quarter of this year, said Alberto Escofet Artigas, director of the Federal Electricity Commission. He spoke at a Canada-Mexico symposium on nuclear energy, sponsored by the Mexican Academy of Engineers.

While Mexico has not signed contracts with any nation to assist in nuclear construction, Escofet Artigas said proposals have been received from France, Canada and Sweden, and Mexico will invite offers from other interested nations.

Mexico is especially interested in the Canadian "Candu" reactors because they do not require enriched uranium. Mexico has "very large" uranium reserves, Escofet Artigas observed, and would like to be independent of any other country in using that uranium. Mexico's only nuclear plant to date is under construction in the eastern state of Veracruz.

The government's basic contractual requirement, he said, is the transfer of technology, so Mexicans will be able to operate their own facilities. The director, an engineer, said the country's present installed capacity for generating electricity is 15 million kilowatts, just under half the proposed nuclear capacity.

KATHERINE HATCH

## West German nuclear politics affect its energy future

**MUNICH**—West Germany's people and its politicians are fighting bitter battles that may well determine whether this country's nuclear energy industry has a future.

No new nuclear plant has gone into operation here for about two years and no new construction for the past three and one-half years due to protests by environmentalists, court rulings and government hesitation.

But nuclear industry spokesmen, citing the economic and energy crises triggered by soaring costs of oil on which industrialized West Germany is so dependent, have been attempting to reopen the door to increased use of nuclear energy.

Today, nuclear power provides less than 4 percent of this country's energy and slightly more than one-tenth of its electricity. Fourteen plants are allowed to operate, nine are "under construction" and 10 more are still awaiting permission for construction to start.

In the meantime a major battle is underway over one of the most controversial projects, and it has developed into a proxy conflict for nuclear energy in general. This is the project at Brokdorf on the lower Elbe River, scene of violent clashes since 1976. At the end of February, 20,000 demonstrators armed with gasoline bombs, sticks, stones and slingshots fought for hours with police who retaliated with water cannons and tear gas.

The Brokdorf project threatens to divide the ruling coalition parties as well—the Social Democrats and the Free Democrats. The opposition Christian Democrats support Brokdorf and have been wooing those Free Democrats who also back the project.

But the problem, politically, is not federal. The main responsibility for Brokdorf is in two northern states—Schleswig-Holstein, where the pro-nuclear Christian Democrats have an absolute majority, and Hamburg, where the majority Social Democrats are split on nuclear power. Hamburg is the home town of German Chancellor Helmut Schmidt and other leading Social Democrats.

The Hamburg government met on the issue Feb. 11 and with the eyes of the country focused upon it, managed to avoid a clear-cut decision to produce a feeble "maybe." It announced that it was ready to go ahead with Brokdorf—but only if Schleswig-Holstein agreed to stop construction for three years. This, Hamburg argued, would enable the issue of disposal of radioactive waste to be clarified, along with the question of a newer type of reactor. If Schleswig-Holstein did not agree, Hamburg announced, then the Hamburg government would pull out of the Brokdorf project.

Schleswig-Holstein Premier Gerhard Stoltenburg said that his state would not agree to a delay. He pointed out that construction has already been delayed several years, increasing the cost by at least 1,000 million marks (\$500 million).

Brokdorf's future—and that of nuclear energy in general in the country—is still murky. But there is a consensus that if and when a final decision is reached on Brokdorf, it will also be a decision on the energy future of West Germany.

WILLIAM G. MAHONEY

## Nuclear power...

**IN JAPAN**, environmental impact surveys must be done for those regions slated for nuclear power plant construction, according to a 1980 white paper on atomic energy from the Science and Technology Agency. These surveys should be conducted before construction work begins, the Agency said. The government should also launch an information campaign to help people understand the safety problems of nuclear power plants. The white paper will be submitted to the Cabinet for approval in the near future. Japan plans to raise its nuclear power capacity from the present 28 million kilowatts to 53 million kilowatts by 1990.

**ABOUT 6,000 JAPANESE** staged a demonstration against the proposal put forward by Tokyo Electric Power Co. to build two nuclear reactors at Kariwa, Niigata Prefecture. The demonstration was held during a public hearing on their construction (the first reactor of the plant was already under construction). Japan now operates a total of 21 nuclear reactors.

**6,000 JAPANESE** staged a demonstration against Chugoku Electric Power Co.'s plan to construct a 820,000-kilowatt nuclear power plant in Shimane Prefecture. The demonstration was held while the government was holding a public hearing on construction of the plant.

**SOUTH KOREA** plans to step up the development of atomic energy. The country will have 13 nuclear plants in operation by 1991. By that time, the Ministry of Energy and Resources forecasts that South Korea's dependence on oil will be lowered to 42 percent from the present 64 percent while atomic energy will meet some 36 percent of domestic energy requirements.

**MALAYSIA'S FRIENDS OF THE EARTH** group, Sahabat Alam Malaysia (SAM) has asked the government to rethink its plans to develop the Tun Ismail Atomic Research Center at Bangi. The government said, according to SAM, that building the reactor would allow Malaysia to produce its own radioisotopes rather than having to import them. But, said SAM, the cost of the reactor is now \$22 million, a big escalation from the original price of \$7.5 million, and they question whether it might not be cheaper to purchase isotopes from overseas.

The motivation behind the plant, they suggested, is the establishment of a nuclear power generating plant. But, they continued, "the irony of such a motivating factor is that Malaysia still has a host of other safe, productive alternatives to nuclear power which have yet to be tapped but interestingly are still low on the government's priority list."

## In Europe ...

**SWEDISH INDUSTRY'S TOTAL INVESTMENT** in environmental protection is diminishing, according to estimates by the National Environment Protection Agency (NEPA).

From 5 percent in the early 1970s, soon after Sweden's law on environmental protection went into effect, the figure sank to 4 percent in the 1975-1980 period to 3 percent this year, NEPA estimated in connection with the economic department's long-term studies. Three percent works out at about \$97.8 million at current exchange rates.

Between 1970 and 1975 major basic investments were made by industry for environmental protection equipment, with 25 percent state support.

**SEVEN SMALL HYDRO-POWER** stations, abandoned years ago mainly for economic reasons, are getting a \$1.6 million subsidy from the Swedish government for their restoration.

Rising oil import bills forced the government two years ago to search for environmentally sound energy sources. It found that it would pay to restore many of the 1,500 forgotten power stations along small streams. The Swedish Association estimated that 150, rebuilt over four years, could provide 400 million kilowatt hours of electricity annually.

Acting on the report, the government set up a \$91 million fund to subsidize up to 35 percent of the cost of restoration. The key is new turbines which don't need constant attention and therefore are cost-efficient.

**THE WORST DROUGHT** in 30 years forced the Portuguese government to decree cuts in the use of electricity and water. Rainfall has been half the average since October and reservoirs are less than half full.

The agricultural situation is considered a catastrophe: 60 percent of the cereal crop has been lost; olive oil production is down 30 percent, wine down 40 percent, citrus fruit down 61 percent. The government is subsidizing cattle farmers while temporarily prohibiting meat imports.

**A POSTAGE STAMP** honoring environmental protection has been issued by the West German Federal Post. It sells for 60 pfennig (about 30 cents) and pictures the damaging effects of modern production on flora and fauna.

## England's wildlife and lands bill is widely criticized

**LONDON**—A major piece of legislation claiming to provide comprehensive protection to Britain's threatened wildlife and countryside has already had more than 50 amendments added to it in its passage through Parliament.

The Wildlife and Countryside Bill seeks to cover endangered species, footpaths, hedgerows, woodlands and many other Sites of Special Scientific Interest (SSIs).

The heavily populated British countryside has to face the conflicting demands of farmers, conservationists and recreational interests. Since the end of the last war over a third of Britain's traditional woodland, and a quarter of its hedgerows—225,000 kilometers of them—have disappeared. Heathland, moorland, ponds and wetlands have also been drained or plowed up for extra agricultural land, or have disappeared under housing or industrial development.

Far from increasing protection, conservationists believe some aspects of the bill could lessen that which already exists.

Existing SSIs are disappearing yearly through farming and forestry practices. Extra protection is given by the bill but to fewer sites, and conservationists are convinced this will increase rather than lessen their disappearance. Instead of having power to prevent farmers plowing up moorland within their boundaries, national park authorities will have one year's grace to seek a voluntary restraint.

The Nature Conservancy Council, with the backing of the World Wildlife Fund and other conservation groups, is trying to get the bill extended to cover marine life and coastal waters.

At present, comparatively little is known about marine habitats and some widespread conservation areas would be needed to discover the most endangered habitats, food stores and species.

Other amendments question the powers given to local authorities to be judge and jury over footpaths and diversions.

The bill will reach the House of Commons in March and could become law by next summer. Critics fear that the question of what to conserve will then be considered closed. BARBARA MASSAM

## Norway's new anti-pollution act forbids all pollution

**OSLO**—The Norwegian Parliament's Odelsting has passed new anti-pollution legislation which will replace many existing laws.

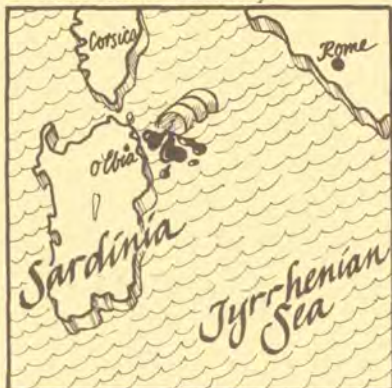
The underlying principle of the new legislation is that the release of all kinds of polluting materials is forbidden unless special permission has been granted by the authorities.

The new act covers pollution of the air, water and land and also contains paragraphs on refuse and noise pollution.

Other new Norwegian measures to combat pollution include the purchase by the State Pollution Control Authority of advanced radar equipment for surveillance of off-shore oil slicks. The

equipment will be installed aboard an aircraft chartered by the Environment Ministry.

SPECIAL TO WER



## Salvage off Sardinia: tons of toxics from a '79 shipwreck

**OLBIA, Sardinia**—After months of bitter controversy and appeals by ecologists, SSOS, an Italian company specializing in underwater work, recently received government authorization and funds to begin the recovery of highly toxic chemicals from a Greek merchant ship, which sank off Sardinia in 1979.

SSOS frogmen inspected the wreckage, which is 73 meters under Tyrrhenian Sea-level, and reported that many barrels of poisonous chemicals were scattered across the seabed. SSOS has been given 9 billion lire (\$9 million) to complete recovery in 130 days, thus preventing what several experts said was a growing threat to the sea and coastal environment of this Italian island, a favorite summer vacation resort.

The Klearchos, a 1,354-ton ship, sank 13 kilometers off the port of Olbia following a huge fire in July 1979. According to an official list given by the shipowners, Klearchos' hold was filled with 50 metric tons of formic acid, 80 tons of caustic sodium, 113 tons of hydrocarbons, 3.5 tons of pesticides, 16 tons of methyl bromide and sulphuric and arsenic acids.

Some cases of chemical intoxication were reported among people who had eaten fish from the area of the Klearchos sinking, and minor skin diseases reported by swimmers last summer were attributed by some ecologists to pollution from the broken barrels. However, Olbia authorities said there was no evidence to support such claims.

Sergio Albanese, who heads the Olbia port authority, was frustrated in his attempts to keep fishermen, swimmers and water skiers from the potentially dangerous area last year when the regional authority failed to approve a law barring activity in the area.

"The zone should have been barred and recovery of the barrels should have been started long ago. At last the government realized a decision could not be postponed," a local politician said recently.

The Klearchos case was the second major shipwreck threat in five years to the Italian coastal environment.

In 1976 a Yugoslav merchant ship with a load of chemicals sank in the Otranto Channel. The Italian government dealt with the recovery, after several months, when ecologists and experts warned that severe pollution of the Mediterranean Sea was likely in the long term, and it would have repercussions on tourist activities along the Italian coast

PIERO VALSECCHI

## Toxics...

**ACID RAIN** was at the top of Canada's agenda for discussion when Prime Minister Trudeau met with President Reagan in mid-March. Canada is concerned, said Environment Minister John Roberts, because it changed its air quality laws last December to be in alignment with U.S. laws, and now the new American administration is considering overhauling its Clean Air Act which would set reciprocity back once again.

**THE CASE AGAINST THE RAIN**, a new publication of the Ontario Ministry of the Environment, describes the extent to which eastern North America is affected by acid rain. It outlines Ontario's programs and addresses the need for action by the governments of Canada and the U.S. It is available in French and English.

The Ministry and Canada's Atmospheric Environment Service have also produced "A Bibliography: The Long-Range Transport of Air Pollutants and Acidic Precipitation." This 95-page technical bibliography is available for \$5 from: the Publications Centre, Ministry of Government Services, 5th Floor, 880 Bay Street, Toronto, Ontario M7A 1N8, Canada.

**COLOMBIA'S INDUSTRIAL DEVELOPMENT** institute (IFI) will finance the installation of a \$600,000 mercury decontamination plant at the government-owned soda complex at Zipaquirá near Bogota. The plant will eliminate mercury pollution of the Bogota river and its tributaries by July of this year, according to the soda complex's president Julio Cesar Gaitan. Equipment will be supplied by the Dutch firm Axon.

**DDT** is being used by the Philippine government for its anti-malaria campaign. A government spokesman explained that the DDT is sprayed selectively. So far, he said, he was unaware of any adverse effects of DDT on Filipinos. The government will rely less and less on DDT in the future as it is now working on other measures to fight malaria, he added. At present, the Philippines uses some 136,000 kilograms of DDT a year. Under present policy, only the government can import DDT.

**ZIMBABWE** will phase out the use of DDT over the next five years.

Michael Burgess, an adviser to the Cotton Growers Association in Salisbury, said plans are well under way to use less harmful pesticides throughout the country.

About 90 percent of commercial farmers had already stopped using DDT in favor of less damaging pesticides, and only half the tribespeople are using DDT on their plots, said Burgess.

A major factor in the switch from DDT is a series of courses at the government research center of Gatooma in the heart of the cotton country.



## Environment & Development . . .

**A \$45 MILLION HYDROELECTRIC** power station below the Ord River Dam in northwest Australia has been given environmental clearance by the Western Australia Environmental Protection Authority.

A review covered the major areas of potential environmental impact. The management program prepared by the State Energy Commission and its consultants proposed an environmental watching brief for the construction and first three years of the station's operation.

**LAOS** is getting preparatory technical assistance from the Asian Development Bank for a hydroelectric project at Xeset in the southern part of the country. This assistance will include a team of consultants who will investigate the feasibility of constructing a hydropower station at the Xeset River site. The team will then design a scheme which includes a powerhouse, associated transmission lines and a distribution system.

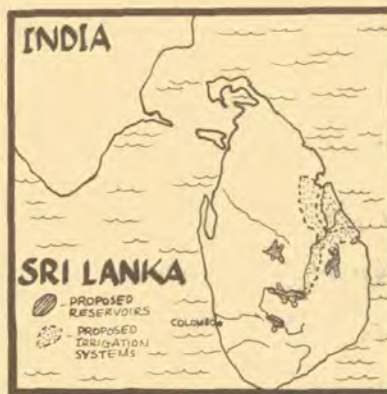
The Xeset scheme will also benefit irrigation and industry, and Government plans for the area include irrigation pumping, rice and coffee processing, flour milling, sawmilling, water supply, ice making and small factories for food processing. The technical assistance study will start in April.

**THE FIRST OF 10 MINI-HYDROPOWER** schemes are to get underway in Burma following a recent agreement by the Asian Development Bank to provide a technical assistance grant to the Burmese Government.

The project will provide continuous power supplies to the areas involved, at a relatively lower cost. At present, these areas are supplied with power by old and inadequate diesel generators for only a few hours each night. Expansion of the present supply system is not economically feasible, and as a result economic development in the areas has suffered. Located in various parts of the country, the 10 mini-hydropower schemes will basically serve agricultural activities, with industrial activities limited to rice mills, oil mills, sugar mills and sawmills.

**MORE THAN A BILLION DOLLARS** in World Bank loans have now gone to Indonesia to develop its power system. The most recent loan, \$250 million, is for the country's largest hydroelectric station, to be built in West Java at a total cost of nearly three-quarters of a billion dollars.

The World Bank says that from the outset, "due consideration has been given to the environmental aspects of the project." Measures have also been taken to compensate and resettle people in the reservoir area.



## U.S. funds Sri Lanka's Mahaweli assessment

**COLOMBO**—Most of Sri Lanka's economic hopes rest on the massive Mahaweli River Diversion project. It involves the transfer of huge volumes of water to this Indian Ocean island's dry zone, and its magnitude means major ecological changes.

Recognizing this, the U.S. Agency for International Development (USAID) funded a \$750,000 study of potential environmental impacts. The study was done by the New York firm of Tippetts-Abbett-McCarthy-Stratton (TAMS) over a one-year period.

The Mahaweli irrigation and power project had been under consideration for decades, as economic insurance for this developing nation's 14.5 million people. But, until recently, the government had not been able to raise funds for planning, much less implementation. Now that the environmental impact study is complete, both USAID and the World Bank are considering funding various aspects of the project, and the British and Japanese reportedly are interested in other sectors.

The project is too big for any one assistance organization to handle by itself. The project area is 400,000 hectares, of which nearly 100,000 will be transformed into new agricultural lands. Projected reservoirs, for water control and hydroelectricity, would be upstream, outside the project area, said TAMS study director Michael T. Sobczak.

Sri Lankan government officials, the Mahaweli Development Board and the Mahaweli Authority are deeply conscious of the environmental implications of the project, local officials told *WER*. One of TAMS' major recommendations, the urgent need to reforest hill slopes along the upper reaches of the Mahaweli River, has already been accorded highest priority.

A spokesman for the Mahaweli Authority said deforestation of the river's upper catchment could adversely affect the entire project since it would reduce the volume of water carried by the river. Last year, 1200 hectares of the Mahaweli's upper catchment were reforested, or 9 percent of its area. The Forest Department hopes to increase this area to 25 percent over a five-year period.

From Sri Lanka's point of view, one of the most important sections of the report was its identification of project benefits and adverse environmental impacts.

The benefits include permanent employment of 175,000 families in agriculture and agriculture-related activities. They would produce 600,000 tons of rice and other crops annually, meaning Sri Lanka would be self-sufficient in food. And the Mahaweli reservoirs would substantially increase the country's

hydro-power output—although the number of reservoirs and their potential output have not yet been determined.

"To obtain these long-term benefits," the TAMS report said, "a commitment of resources is required which will result in a number of adverse environmental impacts, some of which would in all likelihood be unavoidable."

They include: losing a substantial portion of existing forest due to agricultural clearing, timber and fuelwood needs; the resultant loss of a large number of plant species and the reduction of wildlife carrying capacity of the area—the area has elephants, for example. Breeding and feeding grounds will be lost for fish and birds, and some livestock grazing areas reduced. The water table is expected to rise, necessitating drainage channels, and return flows will reduce the quality of the receiving waters. Pesticide use will increase as agriculture does, with the subsequent increase of pesticides throughout natural food chains; this will affect aquatic life as will the blockage by reservoirs of their migratory routes. And more than 25,000 people must be relocated from reservoir sites.

TAMS made many recommendations, acceptable to the Sri Lankan government and its agencies, for avoiding or mitigating potentially adverse impacts: siting national parks and conservation areas, water monitoring and a host of other protective measures.

The Minister for Mahaweli Development, Gamini Dissanayake, told *WER* that environmental considerations had always been accorded high priority in planning the project. "We are aware of the problems and doing everything possible to avoid or minimize adverse environmental consequences within the constraints of the country's development needs," the Minister said.

MANIK DE SILVA

## Pakistan will assess the life expectancy of its Tarbela Dam

**ISLAMABAD**—Pakistan's Water and Power Development Authority (WAPDA) is carrying out a detailed survey of the silt deposits in the Tarbela Dam reservoir to ascertain the life span of the dam.

The \$1.5 billion dam, 97 kilometers west of Islamabad, is the largest earthfill dam in the world. It is part of a \$3.5 billion Indus Basin Development Plan which took more than 15 years to complete with aid from Western nations. It divided the waters of the Indus river systems between India and Pakistan.

Present WAPDA estimates put the life of the dam at between 60 and 70 years, but the survey will provide a more accurate estimate later this year.

The Tarbela Dam should produce 3,500 megawatts of power when fully developed in 1987. Last year the dam supplied 40 percent of the nation's power or less than 1,000 megawatts.

However, official sources say the dam has already paid back its cost by providing irrigation water and power during the past four years.

MOHAMMAD AFTAB

## Forestry...

**SEVERE EROSION** of watersheds and failure to construct new reservoirs have led to daily rationing of electricity in the rainy Colombian capital of Bogota. The Tomine reservoir of the Guatavita hydroelectric complex supplying Bogota's energy has less than one-sixth of its normal capacity this summer, although the weather has not been abnormal and there has been intermittent rainfall.

Aerial reconnaissance and onsite checks show that erosion has destroyed many of the rivers feeding Tomine and two other reservoirs. The Bogota river, suffering from pollution as well as erosion, has all but disappeared. Soil and water engineers claim the only solution is to construct new reservoirs on five sites still fed by rivers in order to store at least 300 million cubic meters during the winter rains, which often flood the savannah.

**THE STATE OF ASSAM** in India has allocated about \$1.5 million for a police force to stop encroachment on forest reserves. It is the first such forest force in the country. The state police department has been assigned to recruit and train about 600 men.

**CHINA'S STATE COUNCIL** (Cabinet) recently issued an emergency circular banning reckless logging and called for its immediate implementation. Indiscriminate logging has reached critical proportions in many areas and, said Xinhua News Agency, if uncurbed not only would the timber supply be affected but also China's ecological balance.

**IN INDIA**, the government of Andhra Pradesh state has issued a ban on the indiscriminate cutting of trees. Prabhakar Reddy, the Minister of Forestry, conceded that the ban was long overdue but said the state simply could not afford continued deforestation.

He added that the state will begin planting trees along roadsides and that efforts to plant entire forests will also soon begin as part of an attempt to halt the changes that have already begun to affect the state's ecology.

**THE PHILIPPINE MINISTRY OF NATURAL RESOURCES** wants to set up a P1 billion (\$137 million) development bank to finance reforestation and other forest-related projects such as water and soil conservation, wildlife and outdoor recreation activities. To encourage tree farming, the proposed bank will grant loans at an annual interest rate of 3-6 percent. The loan will be limited to P2,000 (\$274) per hectare with a maximum repayment period of 40 years, depending on the tree species planted. Initially, the bank will have a paid-in capital of P150 million (\$21 million).

## Briefly . . .

**THE CONTROVERSIAL UN CENTER** in Nairobi is being redesigned and should cost no more than \$34 million, the General Assembly agreed late last year. The original design, which the lowest bidder, an Israeli firm, said it could build for \$22.2 million, was withdrawn last summer when Arab and African states protested. The reason given for withdrawing the tender at that time was that the conference facilities were unnecessary, but the General Assembly restored them.

**CARBON DIOXIDE** and its environmental implications were discussed by 37 experts from 14 countries and several international organizations at a recent OECD meeting in Paris. (Two dozen of the industrialized nations of Western Europe, North America and Japan comprise the Organization for Economic Cooperation and Development.) The experts' conclusions were inconclusive given the nature, they said, of the evidence available to the scientific community of cause and effects. They recognized the need to continue research into the effects of CO<sub>2</sub> buildup in the atmosphere which, some experts believe, could cause world temperatures to rise as fossil fuel use is increased.

**PLANNERS OF RURAL DEVELOPMENT PROJECTS** may want a new handbook, produced by the U.S. Agency for International Development (AID), on "Environmental Design Considerations for Rural Development Projects." The book has design guidelines for rural roads, electrification, water supply and sanitation, irrigation and farm management, and small-scale industry.

It has been sent to all AID missions for trial use, and an AID official told *WER* they hope to receive results from the field on how applicable the guidelines are.

To receive a free copy write: AID Office of Engineering, U.S. Agency for International Development, Washington, D.C. 20523, USA.

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## New U.S. hazardous exports control law killed by Reagan

**WASHINGTON**—Former President Jimmy Carter's long-sought policy to control exports of hazardous products has fallen victim to the Republican Administration's regulatory housecleaning.

President Reagan on February 17 reversed an executive order signed by Carter (*WER*, Feb. 2, p. 2) that would have created a list of restricted American products. The list would have been distributed to potential foreign importers. The order would have added certain extremely hazardous items to the government's existing commodity control list, and these products were to have been licensed before being allowed into foreign markets.

Reagan voiced displeasure with the policy in a memo to the State and Commerce Departments that described export controls, especially those calling for licensing, as a "cumbersome regulatory program costly to both the public and private sectors." Industry lobby groups in Washington, particularly the Chemical Manufacturers Association and the Pharmaceutical Manufacturers Association, had fought the Carter policy and denounced its last-minute promulgation.

While dumping Carter's order, Reagan at the same time asked State and Commerce to report back within six months on alternatives that are currently available for controlling hazardous exports. A State Department source said some of the less controversial parts of Carter's order, such as an internationally circulated notification system for regulated substances, might turn up again in suggestions for a Republican policy.

One export practice not covered in Carter's order—export of potentially dangerous wastes—is now covered under a new set of federal regulations. Since November, rules set down for the Resource Conservation and Recovery Act have required American companies that plan to ship such wastes overseas to notify Washington four weeks in advance of shipment. Several such shipments have been made, all to developed countries where the wastes are reprocessed to recover valuable materials or for research work.

CHRISTOPHER JOYCE

## West Germany's eco-groups demand Global 2000 action

**MUNICH**—Publication of the U.S. environmental study "Global 2000" (*WER*, April 7, 1980, p. 1; Aug. 11, p. 4; Jan. 5 & Feb. 2, 1981, p. 1) has triggered demands in West Germany that the Government and Parliament take radical measures to prevent the ecological disasters forecast in the American report.

The West German Federation for Environmental and Nature Protection coupled its demands with sharp criticisms of governmental action in the field thus far. It urged the government to consider, "without delay," a complete about-face in its environmental policies.

The West German Government has expressed rhetorical support for Global 2000 cooperative activities, a U.S. State Department official said, but it has not initiated any actions of its own.

WILLIAM G. MAHONEY



# World Environment Report



27 MAR 1981

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## The polluter pays for fouling West Germany's waterways

**BONN**—Any community or industry that pollutes a West German waterway or body of water will be required to pay for pollution treatment under a new federal law that came into effect here January 1.

The assessment is based on an arbitrary unit, called the Unit of Damage, which is roughly equal to the pollution generated by one person in a year.

The law, designated the Waste Water Duty Law, was passed in January 1978, but payment of the assessment was deferred until January of this year, to permit communities and industrial establishments time to prepare for its administration and to install water treatment facilities. Although it is a federal law, payments are made to state authorities, which have the final responsibility for water pollution in their areas.

During the first year of the law's operation the assessment per Unit of Damage will be DM12 (about \$5.60) a year, rising in steps to DM40 (\$18.50) by 1986. In practice under this schedule, a city of 100,000 inhabitants would pay \$25,000 in 1986.

The Deutscher Industrie und Handelstag (Chamber of Industry and Commerce) estimates that 20 percent of all industrial plants and business establishments will be required to pay for the discharge of wastes into open bodies of water, while 80 percent will have to make payments for discharges into sewage systems. The chamber estimates that commercial and industrial establishments will pay between \$370 and \$415 million during the first year of the law's operation.

Federal Minister of the Interior Gerhart Baum, whose ministry is responsible for administration of the law, said he expected it to produce the following benefits:

- Polluters will build more waste water treatment plants.
- Waste water treatment technology will be advanced.
- Pollution-free or low-polluting manufacturing processes will be developed.
- There will be a reduction in the output of goods that are inherently polluting.

In addition to those benefits, the Waste Water Duty Law has the following virtues: It makes all communities and industrial establishments responsible for the pollution they generate at the source; it deprives them of the opportunity of passing their pollution on to neighboring or downstream communities; and it puts all generators of pollution under the same obligation to pay their proportionate share of the cost of prevention or correction.

J. M. BRADLEY

## In Europe ...

**TRASH REMOVAL AND DISPOSAL** have become serious problems in the city of Brussels. Daily garbage production amounts to some 1,400 tons, and the authorities cannot handle it all. One major dumping site has had to close its gates following repeated warnings that its excessive waste accumulation is a danger to health, while trash collection has been reduced to once a week. As a result, only half of the capital's waste is being properly removed; the other half is left to pile up on the sidewalks in ever-growing quantities.

The construction of a new city incinerator, which previously was postponed due to cost, is now being urgently reconsidered.

**OIL** from a Greek tanker in the North Sea killed an estimated 100,000 sea birds along the coast of Norway, Sweden and Denmark during the first week of 1981, zoologists said.

Volunteer hunters shot birds in acts of mercy along the southeastern coast of Norway. "This was no regular hunting job. It was our duty to kill all the polluted and suffering birds," said Egil Holt, chairman of the wildlife committee at Hvaler near the Norwegian town of Fredrikstad.

**IMPROVED CONTROLS** over products representing health hazards will be adopted in Norway early this year when new regulations are imposed and product control itself is transferred from the Ministry of Social Affairs to the Government's Anti-Pollution Agency (SFT).

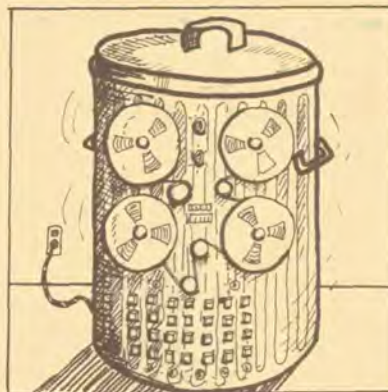
The new regulations require producers to clearly mark all dangerous products with special symbols, warnings and directions for storing and handling.

In general the Norwegian regulations will follow the same pattern as previously imposed by European Economic Community (EEC) countries. Norway is not an EEC member.

SFT spokesman Per A. Gulden said a special list of some 1,000 dangerous products requiring special marking will be issued initially. The list will be continuously supplemented.

**SUPERFLIES**, resistant to known insecticides, are on the increase in Britain and could spread infection throughout the country.

The Ministry of Agriculture research station at Slough, Buckinghamshire, has been studying the problem for three years. Scientists there believe the flies have been immunized unintentionally by the new chemical insecticides used in modern farming practice.



## The Germans find that garbage may be good for their country

**WEST BERLIN**—West German garbage men have been picking through the nation's domestic trash for the past 15 months in the first survey of its kind in the world.

Their goal has been to find out what households throw away that could be recycled. The findings of the probe—just completed—could save the country millions of dollars, and help the environment.

"Leave it to the Germans," said a housewife here, "to turn garbage into statistics."

The environment agency's survey was financed by the Interior Ministry—at an estimated cost of 3-4 million DM (about \$1.5-\$2 million). It was conducted by four regional laboratories covering a computer-selected cross section of the country as a whole. Samples were taken from household trash every six weeks, then weighed, measured and otherwise probed by scientists.

The garbage researchers found initially—the full results of the survey will not be known for some months—that the average household regularly discards an enormous quantity of organic waste that could be converted into compost. Also junked in large amounts were tin cans, glass and paper—major sources of raw material if recycled. Even more valuable objects, including car radios, telephones, watches and flashlights, were found. These items should have been segregated for collection at regular roadside pick-ups.

Officials at the environment agency here said certain categories of trash could be banned from the kitchen garbage can altogether. There may also be a ban on the manufacture of certain materials—non-returnable bottles, plastic bags and lavish packaging devices, for example. And industrialists are awaiting advice on whether or not the full-scale development of sorting and processing machinery for garbage recycling will pay.

Some thought is being given to extending the garbage probe to the other nine countries of the European Economic Community, according to EEC officials in Brussels.

The West German households whose trash has been under scrutiny ("garbage guinea pigs," as one reporter called them) were only notified of the fact when they were sent extensive questionnaires inquiring into the nature of their garbage and their sorting preferences. "Would you be prepared to collect certain categories of waste separately—or more separately than hitherto—if the appropriate containers were supplied?" was one query.

The 10,000 completed questionnaires are now being analyzed at the Berlin Technical University, and the results will be published

next autumn.

Meanwhile, plans are being drawn up to establish a nationwide network of measuring stations to compile garbage data over a period of at least 10 years. Only then, or so say the garbage pundits, will West Germany know best how to run its refuse disposal program.

GARY YERKEY

## South Africa plans to grow algae food from wastewater

**JOHANNESBURG**—South Africans soon will be eating large quantities of fish fed on half-treated sewage. Durban and other areas along the country's east coast Natal province intend pumping sewage sludge out to sea to save treatment costs.

The high cost of turning industrial and domestic effluent into usable water can be partly offset by growing algae for food, not only for fish but for other consumers, said Dr. J.C. du Preez of the University of the Orange Free State.

He was a participant in a recent international conference on aquaculture held in this country. Delegates from Taiwan, the U.S., Germany and Kenya presented papers on the use of domestic and industrial effluents to produce food substances by cultivating algae to digest the wastes. The algae can then be used for enriching stock feed and also used in tablet form as health food.

South African scientists believe that effluent from the country's giant oil-from-coal plant, Sasol, could yield 36,000 tons of high-protein algae food a year worth \$16 million. And, scientists at the conference said the effluent from pineapple canneries could grow enough algae to produce four million liters of ethanol fuel a year.

MIKE NICOL

## Arab nations agree on a plan to protect their marine areas

**JEDDAH**—An international "Conference for the Protection of the Red Sea and the Gulf of Aden Environment" met in Saudi Arabia recently and recommended establishing a regional organization to protect the marine environment. The Jeddah-based organization will set up a system to monitor pollution, a secretariat to communicate with the governments involved and a legal committee to settle disputes.

A Marine Emergency Mutual Aid Center is to combat pollution by oil and other harmful substances caused by ship collisions, oil-well blowouts and accidents at industrial plants.

The delegates' plan of action, as well as the original draft agreement, have been sent to the states represented for approval within the coming six months. Proposals cover not only the Red Sea and the Gulf of Aden but also the Gulfs of Aqaba and Suez and the Suez Canal. Countries represented at the conference were Saudi Arabia, Jordan, Sudan, North Yemen, South Yemen and Somalia, with the UN, the World Organization for Marine Science, and the Palestine Liberation Organization involved as well.

JEAN GRANT

## Water quality...

**NITRATE-FREE BOTTLED WATER** will be provided to pregnant women and babies in 62 villages of West Hungary's Vas Country.

Radio Budapest said that in those villages the nitrate levels in well water exceeded ceiling values.

The report said that women will be entitled to receive the bottled nitrate-free water from the fifth month of pregnancy and babies will receive it until they reach the age of one year.

**VENEZUELA'S** Central University has developed a method to purify lakes and rivers contaminated by oil or mercury discharges with water hyacinths. Luis Benito Tugues, head of a UCV sanitary engineering research team, said that "water hyacinths are more effective and safer than chemicals for the purification of water, and they are more compatible with the environment." Also, he observed that the water hyacinth can serve as animal food, providing it was not in contact with toxic chemicals, and can also be used as fertilizer.

**A FEASIBILITY STUDY** for the recovery of Columbia's polluted Medellin River will be done by the U.S. firm Greeley and Hansen. The two-year, \$3 million study will be carried out in coordination with the National University at Medellin for water treatment plants, sewage systems and quality control laboratories.

**WASTE DISCHARGED BY SHIPS** calling at South Korean ports has aggravated the pollution of coastal seawater around the country. According to maritime police authorities, there were 140 cases of pollution in coastal waters in 1980, up 9 percent over the 1979 figure. An estimated 130 of the cases were caused by waste oil.

**THE UNIVERSITI SAINS MALAYSIA** is conducting research on the effects of naturally and chemically dispersed crude oil on the tropical environment. The research will increase understanding of the effects on marine life ecosystems, and the data will contribute toward the development of measures to protect Malaysia's marine environment, a university official said. Esso Malaysia Bhd is sponsoring the project with a \$184,162 grant, spread over three years.

**ONE THIRD OF JAPAN'S RIVERS,** lakes and coastal waters are still polluted above standards set by the government in April, 1970, according to a survey conducted by the Japanese Environment Agency during 1979. The Agency collected water samples from 2,236 river sites, 98 lake sites and 532 coastal sea sites. The survey revealed that only 66.7 percent of these samples met the government's water standards.

## Environment & Industry...

**INTERNATIONAL CHEMICAL REGULATION** compliance will be the subject of a two-day seminar held April 29-30 at the Mayflower Hotel in Washington. Sponsored by the U.S. chemical industry's International Affairs Group, it is intended to provide an overview and indicate sources of more detailed information on chemical laws and regulations in various countries. It will stress awareness of the growing number of regulations in the areas of health, safety and the environment in order to minimize barriers to trade.

For registration information: Mary A. Corbin, Chemical Manufacturers Association, 2501 M Street N.W., Washington, D.C. 20037, USA.

**A NATO-SPONSORED STUDY** has surveyed the technologies now being used in North Atlantic Treaty Organization countries and Japan to control the emission of sulphur oxide into the atmosphere.

The NATO study, made under the auspices of its Committee on the Challenges of Modern Society (CCMS), is available to any interested country or organization. Write: Dr. M. Sudarksi, NATO Scientific Affairs Division, NATO Headquarters, B-1110 Brussels, Belgium.

**A DELEGATION** from Japan's Ministry of International Trade and Industry was to be in Singapore in mid-February to conduct a comprehensive environmental impact study on a coal-fired power station. The station is to be built by the Public Utilities Board (PUB). PUB plans to appoint its own consultant to undertake a feasibility study within the next two months. Several consultancy firms from the U.S., U.K., West Germany, Australia and Canada have already sent their quotations in for the job.

**WITH THE NEAR-CERTAINTY** of at least one aluminum smelter being built in Western Australia by the middle of the decade, the battle lines are emerging for an intense environmental campaign.

The South-West Aluminum Inquiry Group has been formed because of concern about the effects of fluoride emissions from the proposed smelter and its adverse effects on area livestock and pasture production.

Environmental studies are being undertaken by the group and by the State Government Department of Conservation and Environment. The Environmental Protection Authority would call for public submissions as part of its report on the plan.

## Brazil's oil company refines a new water treatment system

**RIO DE JANEIRO**—Brazil's state oil monopoly, Petrobras, has undertaken a conservation campaign which includes a new system of water treatment and tree planting at refinery sites, sodding over pipeline routes and hiring a special oil skimming vessel for permanent work in Rio's Guanabara Bay.

The company says it has had "great success" in the campaign's pilot project, a new system of water treatment equipment at refineries. The UTDI (Treatment Unit for Industrial and Sanitary Effluents) was first installed in the Sao Jose dos Campos Refinery in the state of Sao Paulo. It has the capacity for processing about 450 cubic meters of effluent an hour. The water is cleansed to government sanitary purity levels and flows through eight kilometers of pipes and open channels to the Paraiba River.

The Petrobras experience at the Sao Jose refinery was so successful that the company is now implementing the same system in all of its refineries.

The effluents are put in storage tanks and discharged into a treatment unit by gravity. As the oil floats on top, it is skimmed off. In this manner not only is the water cleansed but oil is recovered for recycling.

The novel aspect of the UTDI system comes in the second stage of the process. Here the water, which still contains oil particles and pollutants, passes to the Flocculation Units where, with the stimulation of chemicals, the oil and pollutant particles are lumped together. Next the waste passes through Flotation Units, which separate these lumped pollutants with the aid of air bubbles. In the next step the floating, lumped pollutants are skimmed off forming a foaming solution which is again put through a water-oil separator and thus additional oil is recovered, the pollutants separated and the water passes on for further purification.

According to Petrobras officials, the water, even at this stage, still contains some organic compounds like sulphides, and these are then removed through a process of biological oxidation and transformed into non-polluting byproducts or buried. A part of the process is an aeration unit in which mechanical aerators stir up the water introducing oxygen which in turn eliminates most of the remaining pollutants. The soluble organic matter which still remains in the water is then broken down by micro-organisms and transformed into non-toxic compounds.

Officials say this is a man-made copy of the natural process of cleaning that takes place in rivers and other waterways.

Once more the water is separated from the biological mass in a stage called clarification and then it is clean enough to be pumped into a waterway.

The pollutants and other residue separated from the water go through one last process, the Mud Treatment. Petrobras officials call this leftover matter biological mud. It goes through a drying basin and after any useful mineral or other byproducts are removed for possible recycling, the residue is dumped into earthfills, thus completing the UTDI process.

GEORGE HAWRYLYSHYN



## Lobbyists mobilize to stop coal mining in Kruger Park

**JOHANNESBURG**—In an attempt to save the unique northern region of the Kruger National Park from being mined for coking coal, the Wildlife Society of Southern Africa recently published a special report on the area.

This report has been sent to all decision makers as part of an intensive public lobbying campaign to keep the park intact.

Compiled by the country's most influential ecologist, Dr. Ken Tinley, the report states that the area is biogeographically unique as it lies at the crossroads of nine major ecosystems of Africa.

There are several plant communities that exist only in this corner of South Africa as well as numerous fauna found nowhere else in the country.

Coking coal mining in this region would have serious consequences for the wildlife as the animals rely on a number of perennial fountains, including several hot springs, for water. The most important of these lie directly in the path of the proposed mines.

MIKE NICOL

## England to test windmills as a source of energy

**LONDON**—A program to test the economics, technology and environmental acceptability of windmills as a renewable energy source, was announced recently by Britain's Central Electricity Generating Board.

The first step is the construction of a medium-sized wind-powered generator, probably with traditional horizontal axis, alongside the coal-fired power station at Carmarthen Bay, Dyfed in Wales. It will generate between 50 and 200 watts of electricity and should be in service by next year.

Sites for a windmill "farm" of perhaps 10 giant generators up to 100 meters high and generating between one and four megawatts, are being considered for the next step. The choice of more ambitious and experimental designs, such as using vertical axis turbines, are likely on the "farm," which could be operational by 1985.

One possible site is that of the Bradwell nuclear power station on the Blackwater estuary in Essex. But the giant generators will be spread well apart across the countryside, partly for technological reasons, partly to test public reaction to their environmental impact.

BARBARA MASSAM

## Energy sources ...

**"FIREWOOD CROPS,"** a 237-page report published recently by the U.S. National Academy of Sciences is, in effect, an encyclopedia of 60 shrubs and trees, some little known, selected by an international panel of forestry experts. Each tree or shrub is thoroughly described, its attributes and environmental requirements discussed, and its alternative uses given.

The panel warns that if misunderstood, this book is potentially dangerous. The species selected are aggressive, quick-growing and potentially invasive; they are not for use in areas where no fuelwood shortages exist.

Their report includes several appendixes: on fuel-efficient stoves and research contacts, for example.

A free copy will be sent to persons in institutions affiliated with government, education or research. Write on letterhead to: Commission on International Relations (JH 215), National Academy of Sciences—National Research Council, 2101 Constitution Ave., Washington, D.C. 20418, USA.

**A CALL FOR PAPERS** has been issued for the 4th Miami International Conference on Alternative Energy Sources, to be held December 14-16, 1981.

It is open to all energy scientists, engineers, educators, architects, economists and planners from industry, universities, research organizations and government agencies.

Titles and abstracts (400 words) may be sent to: Dr. T. Nejat Veziroglu, Director, Clean Energy Research Institute, University of Miami, P.O. Box 248294, Coral Gables, Florida 33124, USA.

**BRITAIN'S FIRST** megawatt-sized wind-powered generator is to be built in the Scottish Orkney Islands at an estimated cost of £5.6 million (\$13.5 million).

It will have a steel blade 60 meters in diameter, with rotating tips to "feather" the wind. The machine is designed to produce full power of three megawatts at wind speeds of between 60 and 97 kilometers per hour. Above this speed the machine will be automatically stopped by a powerful disc brake.

It should be in operation and feeding into the local electricity grid by 1983-4.

A smaller 250 kilowatt machine will also be constructed on the same site, to be operational by October 1981. Data from this will be collected for its application to the larger generator.



## Agriculture . . .

**INDIAN FARMERS** have been advised by the government to make more effective use of rainwater.

R.V. Swamanathan, the Minister of State for Agriculture, told Parliament that because of prevalent drought conditions and erratic rainfall the need for more effective rainwater management has become acute. Strategies for increasing the utility of rainwater include storage, conservation, re-use of unavoidable runoff, restoration and development of degraded land.

Meanwhile, throughout India's 74 drought-prone districts, the government is considering 31 river-valley catchment projects and two federal government-sponsored soil propagation and moisture conservation projects for medium rainfall regions. Watershed management projects for the catchment areas of flood-prone rivers are under consideration as well.

**THE WOMEN WHO HUGGED TREES** in India to keep them from being cut down—the Chipko movement, started in 1972—are now launching a new program: planting fodder and fuel trees amongst conifers, which they consider harmful to the soil.

**THE DIBBLER** is holding up the release of 920 hectares of land slated for agricultural development in Western Australia.

The Dibbler is a rare marsupial, *Anthechinus apicalis*, thought extinct until 14 years ago when the first of nine now known living was seen.

The Minister for Lands has held up land clearing until it is established, with reasonable certainty, that it is a Dibbler habitat. If so, the Minister said, it would be considered an area worthy of permanent preservation.

**THE GOVERNMENT OF UPPER VOLTA** is to receive a \$16 million credit from the World Bank's International Development Association for a second five-year agricultural project in the Bougouriba area.

The purpose of the project, which will cost a total of \$17.5 million, is to spur production of cotton, livestock and foodcrops.

The project is also designed to encourage fruit and fuelwood tree planting and erosion control.

**THE USE AND MANAGEMENT** of U.S. pesticides internationally was the subject of a strategy conference held in Washington, D.C., in 1979. Participants were U.S. and international experts. The proceedings have just been published, and they include lists of critical issues and recommendations for U.S. policymakers.

For a copy of the proceedings and further information, contact: Robert J. Glickstein, Teknekron Research Inc., 2118 Milvia Street, Berkeley, CA 94704, USA, or telephone (415) 548-4100.

## SPECIAL REPORT: The greening of Israel's barren Negev desert

**JERUSALEM**—A popular Israeli song reiterates a prophecy made over 2500 years ago by Isaiah: "The wilderness and the parched land shall be glad and the desert shall rejoice and blossom as the rose." This prophecy is challenging modern-day Israel to transform the barren Negev desert into productive and fruitful land.

While all of Israel may be classified as arid or semi-arid, its southern half—60 percent of its pre-1967 borders—is characterized by rainfall levels decreasing from 300 millimeters annually in the northern Negev to 25 mm in the south. The process of desertification—in progress for many millennia—was largely man-induced. Overgrazing and the use of wild plants and trees for fodder, fuel and building materials exterminated natural plant communities. The neglect and destruction of terraces and dams resulted in soil erosion and further intensified desertification.

Since 1948, when Israel became a state, major effort has been expended on halting desertification and developing the Negev. David Ben-Gurion, Israel's first Prime Minister, considered the Negev "the testing ground for the people of Israel" whose efforts would be called upon to fulfill the "great goal of settling and greening this desolate land."



The major problem—lack of water—was tackled by a variety of means. The 1959 Water Law made water a national commodity, owned and regulated by the government in accordance with a centralized plan for its distribution and usage. In the mid-'60s, a National Water Carrier, carrying over 300 million cubic meters of water annually was constructed to bring fresh water from the north to the arid south. The efficient use of water in the Negev was encouraged through development of new irrigation techniques, efficient use of minimal rainfall, utilization of local brackish water resources and organization of agricultural management systems adapted to desert conditions.

While the major system of irrigation is sprinkling, the use of drip or trickle irrigation—an original Israeli development—has been expanded in recent years. Using plastic tubes with tricklers at desired intervals in the fields, the system reduces evaporation and results in exceptionally high yields per unit of water and of surface.

The collection of runoff water offers another water source. Rains in the Negev, as in other deserts, frequently occur as torrential downpours of relatively high intensity often resulting in floods. The Ministry of Agriculture makes long-term loans to settlements that build dams to catch these rains for use in irrigation. To avoid losses due to evaporation, leakage and infiltration resulting from storage, the water is frequently used

immediately as supplementary irrigation for winter crops in areas with marginal rainfall. This additional water has often raised yields by over 50 percent. In areas where natural underground storage is possible, runoff water is pumped into basins where it infiltrates and enriches subterranean aquifers. The water is then pumped out of shallow wells and used for irrigation of summer crops.



An especially interesting experiment conducted by Professor Evenari has been ongoing for some years at Avdat, the remains of an ancient Nabatean town whose inhabitants cultivated the low areas of the wadis (dry valleys) between 200 B.C. to 400 A.D. The Evenari team is testing techniques used by ancient desert agriculturalists. Rain falling on the hillsides was collected by means of a series of long channels, each channel bringing water to a specific area of the wadi terraces. The Evenari team reconstructed two of these Nabatean farms and succeeded in obtaining excellent yields of grain, fruit, vegetables, pasture and other crops in an area whose rainfall is just 100 mm (3 inches) a year. The team also developed a system of individual microcatchments whereby a corner of each plot contains a single tree or bush, and the plot is graded so as to allow runoff water to accumulate around the plant itself.

The methods developed at the experimental farms (three are operated by the Institute of Desert Research at Sde Boker) have been successfully adopted by other countries. Requests from countries interested in applying these methods to their own land have been received at the Institute which holds courses for specialists from abroad.

Israel has spent considerable sums for research and development on desalination of brackish water. In the Negev, south of the 200 mm rainfall line, most underground aquifers are saline. Techniques experimented with include electrodialysis, reverse osmosis and ion exchange for underground water and various distillation processes for ocean water desalination.

Recent developments in agricultural technology have made the utilization of brackish water for modern agriculture possible. The introduction of trickle irrigation has lifted the salt tolerance levels of many crops which grew poorly with greater amounts of brackish water. Where possible, salt-resistant species such as cotton, wheat and sugar beet are being used.



The introduction and selection of salt and drought-resistant species for desert landscaping and agriculture is being carried out at Ben-Gurion University at Beer-Sheva where seeds collected from deserts throughout the world are tested. Plants can now be recommended for all regions of the Negev. In addition, a botanical garden containing samples of desert plants from all over

## In the Middle East . . .

**SAUDI ARABIA** has signed an agreement with the International Union for Conservation of Nature and Natural Resources under which IUCN will provide expert guidance on natural resource protection and management.

The one million Rial (\$300,000) Trust Fund Agreement is with the kingdom's Meteorology and Environmental Protection Agency (MEPA). The program will focus on wildlife management and training, developing a national conservation strategy and establishing a Department of Natural Resources.

**IN SAUDI ARABIA** two to three million trees a year will be produced by the new Jeddah Municipality Nursery, a \$4.5 million greenhouse project where heat, humidity and irrigation are controlled to suit a variety of local and foreign plants. Jeddah has traditionally relied on imports for its trees and shrubbery.

The nursery aims to meet this humid coastal city's target of 10 square meters of greenery per person, the international standard. Dr. Hassan Hajra, Jeddah's Deputy Mayor, estimates that there are now two square meters of green per person in the city. To foster civic pride along with the increase in shade, thousands of students will be involved in planting the trees.

**AN ANNUAL ISRAELI EVENT**, Nature Protection Week, focused this year on nature reserves. Revolving about the festival of Tu Bi-Shvat, the New Year of Trees, the week's activities were designed to strengthen public awareness of nature reserves and their importance from a social and environmental viewpoint.

Activities were sponsored and organized by Israel's major environmental organizations. Special coverage was given to all events in the media with numerous reports on nature protection activities.

**AN ENVIRONMENTAL QUALITY PATROL** is being set up by the Education Department of Israel's Ramat Gan municipality. The patrol will recruit students for special work designed to improve environmental quality in their neighborhoods and in areas adjacent to their schools. Student help in maintaining order and cleanliness in the city parks will also be part of the program.

## Renewable energy . . .

**AN ASIAN REGIONAL WORKSHOP** on solar energy was held recently in New Delhi, India. Attending the five-day meeting were delegates from Papua New Guinea, Sri Lanka, Pakistan, Bangladesh, Afghanistan, Malaysia, Nepal and India.

They explored the possibility of formulating a joint research and development program and demonstration programs within the region.

The regional network for solar energy in Asia was formed in 1978 with help from UNESCO, the Indian government and two Indian electronics firms.

**AUSTRALIA IS INVESTING \$100,000** in a two-year joint project with India to research solar cooling. The Indian government will allocate a slightly larger sum to the project, which is to be completed by mid-1982. The project will evaluate the performance of existing solar cooling plants and develop optimal designs for solar refrigeration and air-conditioning systems. If the design options prove feasible, scientists from the James Cook University of Northern Queensland in Townsville and the Indian Institute of Technology in Madras will consider constructing a pilot plant in India or Australia. The project is being supported by the Australian National Energy, Research, Development and Demonstration Council.

**SOLAR HEAT ENERGY ABSORPTION** is being studied at the National Institute for Higher Education in Limerick, Ireland, with the aid of a \$75,000 grant from the European Economic Community. The studies are being conducted by Dr. John Barnard, a senior lecturer in industrial chemistry.

Last year Dr. Barnard began a three-year \$200,000 project to find acceptable methods of burning low-grade coal for electrical power generation, also funded by the EEC. Abundant supplies of low-grade coal are available in Ireland, but are of no use because they cannot yet be burned cleanly.

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the world is being planned by the Desert Research Institute as a special project.

Finally, closed-system or greenhouse agriculture is researched at the Institute. This utilizes the desert's high radiation and provides much higher crop yields per unit of water applied than the return from conventional agriculture. A system is being developed whereby excess solar radiation collected during daylight hours will be released at night. A research contract recently signed between the Federal Republic of Germany's Ministry of Science and Technology and the Israeli National Council for Research and Development is expected to bring about major progress in this field.

In 1979, the Institute for Desert Research signed scientific cooperation contracts with universities in Germany and New Mexico, and preparations were made for possible scientific cooperation with Egyptian scientists.

The unique communal structure of agricultural settlements in Israel—facilitating efficient use of both material and human resources—along with government compensation for crop failures due to drought in addition to water subsidies for irrigation are key elements in the development of settlements in Israel's desert. As the adverse desert conditions are overcome, Israelis are learning to use the Negev's natural resources—wide open spaces, solar radiation, ground and flood water and mineral deposits—to make it both habitable and productive. SHOSHANA GABBAY

## India's environment agency to assess all development plans

**NEW DELHI**—The head of India's new Department of Environment (DOE) said that in the future all projects such as dams, power stations, mines and new industries will need clearance from his department before they can start construction.

Professor M.G.K. Menon said, "They will have to submit detailed reports . . . on the likely effect on the environment."

He said promoters of these projects will have to undertake the necessary surveys and research on their own, not using outside laboratories and consultants, so as to build up an environmental infrastructure within each project development firm.

Menon is planning to expand his department by setting up cells in each ministry and government department so that internal systems for supervision and monitoring are available for new projects. These cells would be in touch with the DOE's Department of Science and Technology, which will act as coordinator.

Other DOE activities will be to encourage environmental research on all levels, to study and suggest suitable environmental legislation for the conservation of ecosystems, and to have administrative responsibility for pollution monitoring.

R. MURALI MANOHAR



## In This Issue...

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## The polluter pays for fouling West Germany's waterways

**BONN**—Any community or industry that pollutes a West German waterway or body of water will be required to pay for pollution treatment under a new federal law that came into effect here January 1.

The assessment is based on an arbitrary unit, called the Unit of Damage, which is roughly equal to the pollution generated by one person in a year.

The law, designated the Waste Water Duty Law, was passed in January 1978, but payment of the assessment was deferred until January of this year, to permit communities and industrial establishments time to prepare for its administration and to install water treatment facilities. Although it is a federal law, payments are made to state authorities, which have the final responsibility for water pollution in their areas.

During the first year of the law's operation the assessment per Unit of Damage will be DM12 (about \$5.60) a year, rising in steps to DM40 (\$18.50) by 1986. In practice under this schedule, a city of 100,000 inhabitants would pay \$25,000 in 1986.

The Deutscher Industrie und Handelstag (Chamber of Industry and Commerce) estimates that 20 percent of all industrial plants and business establishments will be required to pay for the discharge of wastes into open bodies of water, while 80 percent will have to make payments for discharges into sewage systems. The chamber estimates that commercial and industrial establishments will pay between \$370 and \$415 million during the first year of the law's operation.

Federal Minister of the Interior Gerhart Baum, whose ministry is responsible for administration of the law, said he expected it to produce the following benefits:

- Polluters will build more waste water treatment plants.
- Waste water treatment technology will be advanced.
- Pollution-free or low-polluting manufacturing processes will be developed.
- There will be a reduction in the output of goods that are inherently polluting.

In addition to those benefits, the Waste Water Duty Law has the following virtues: It makes all communities and industrial establishments responsible for the pollution they generate at the source; it deprives them of the opportunity of passing their pollution on to neighboring or downstream communities; and it puts all generators of pollution under the same obligation to pay their proportionate share of the cost of prevention or correction.

J. M. BRADLEY

## In Europe ...

**TRASH REMOVAL AND DISPOSAL** have become serious problems in the city of Brussels. Daily garbage production amounts to some 1,400 tons, and the authorities cannot handle it all. One major dumping site has had to close its gates following repeated warnings that its excessive waste accumulation is a danger to health, while trash collection has been reduced to once a week. As a result, only half of the capital's waste is being properly removed; the other half is left to pile up on the sidewalks in ever-growing quantities.

The construction of a new city incinerator, which previously was postponed due to cost, is now being urgently reconsidered.

**OIL** from a Greek tanker in the North Sea killed an estimated 100,000 sea birds along the coast of Norway, Sweden and Denmark during the first week of 1981, zoologists said.

Volunteer hunters shot birds in acts of mercy along the southeastern coast of Norway. "This was no regular hunting job. It was our duty to kill all the polluted and suffering birds," said Egil Holt, chairman of the wildlife committee at Hvaler near the Norwegian town of Fredrikstad.

**IMPROVED CONTROLS** over products representing health hazards will be adopted in Norway early this year when new regulations are imposed and product control itself is transferred from the Ministry of Social Affairs to the Government's Anti-Pollution Agency (SFT).

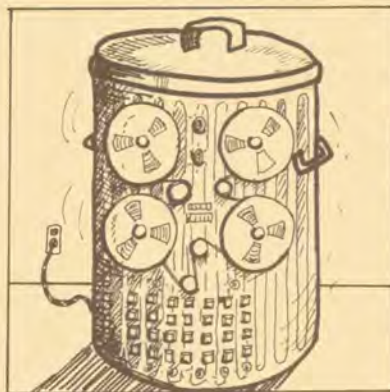
The new regulations require producers to clearly mark all dangerous products with special symbols, warnings and directions for storing and handling.

In general the Norwegian regulations will follow the same pattern as previously imposed by European Economic Community (EEC) countries. Norway is not an EEC member.

SFT spokesman Per A. Gulden said a special list of some 1,000 dangerous products requiring special marking will be issued initially. The list will be continuously supplemented.

**SUPERFLIES**, resistant to known insecticides, are on the increase in Britain and could spread infection throughout the country.

The Ministry of Agriculture research station at Slough, Buckinghamshire, has been studying the problem for three years. Scientists there believe the flies have been immunized unintentionally by the new chemical insecticides used in modern farming practice.



## The Germans find that garbage may be good for their country

**WEST BERLIN**—West German garbage men have been picking through the nation's domestic trash for the past 15 months in the first survey of its kind in the world.

Their goal has been to find out what households throw away that could be recycled. The findings of the probe—just completed—could save the country millions of dollars, and help the environment.

"Leave it to the Germans," said a housewife here, "to turn garbage into statistics."

The environment agency's survey was financed by the Interior Ministry—at an estimated cost of 3-4 million DM (about \$1.5-\$2 million). It was conducted by four regional laboratories covering a computer-selected cross section of the country as a whole. Samples were taken from household trash every six weeks, then weighed, measured and otherwise probed by scientists.

The garbage researchers found initially—the full results of the survey will not be known for some months—that the average household regularly discards an enormous quantity of organic waste that could be converted into compost. Also junked in large amounts were tin cans, glass and paper—major sources of raw material if recycled. Even more valuable objects, including car radios, telephones, watches and flashlights, were found. These items should have been segregated for collection at regular roadside pick-ups.

Officials at the environment agency here said certain categories of trash could be banned from the kitchen garbage can altogether. There may also be a ban on the manufacture of certain materials—non-returnable bottles, plastic bags and lavish packaging devices, for example. And industrialists are awaiting advice on whether or not the full-scale development of sorting and processing machinery for garbage recycling will pay.

Some thought is being given to extending the garbage probe to the other nine countries of the European Economic Community, according to EEC officials in Brussels.

The West German households whose trash has been under scrutiny ("garbage guinea pigs," as one reporter called them) were only notified of the fact when they were sent extensive questionnaires inquiring into the nature of their garbage and their sorting preferences. "Would you be prepared to collect certain categories of waste separately—or more separately than hitherto—if the appropriate containers were supplied?" was one query.

The 10,000 completed questionnaires are now being analyzed at the Berlin Technical University, and the results will be published



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next autumn.

Meanwhile, plans are being drawn up to establish a nationwide network of measuring stations to compile garbage data over a period of at least 10 years. Only then, or so say the garbage pundits, will West Germany know best how to run its refuse disposal program.

GARY YERKEY

## South Africa plans to grow algae food from wastewater

**JOHANNESBURG**—South Africans soon will be eating large quantities of fish fed on half-treated sewage. Durban and other areas along the country's east coast Natal province intend pumping sewage sludge out to sea to save treatment costs.

The high cost of turning industrial and domestic effluent into usable water can be partly offset by growing algae for food, not only for fish but for other consumers, said Dr. J.C. du Preez of the University of the Orange Free State.

He was a participant in a recent international conference on aquaculture held in this country. Delegates from Taiwan, the U.S., Germany and Kenya presented papers on the use of domestic and industrial effluents to produce food substances by cultivating algae to digest the wastes. The algae can then be used for enriching stock feed and also used in tablet form as health food.

South African scientists believe that effluent from the country's giant oil-from-coal plant, Sasol, could yield 36,000 tons of high-protein algae food a year worth \$16 million. And, scientists at the conference said the effluent from pineapple canneries could grow enough algae to produce four million liters of ethanol fuel a year.

MIKE NICOL

## Arab nations agree on a plan to protect their marine areas

**JEDDAH**—An international "Conference for the Protection of the Red Sea and the Gulf of Aden Environment" met in Saudi Arabia recently and recommended establishing a regional organization to protect the marine environment. The Jeddah-based organization will set up a system to monitor pollution, a secretariat to communicate with the governments involved and a legal committee to settle disputes.

A Marine Emergency Mutual Aid Center is to combat pollution by oil and other harmful substances caused by ship collisions, oil-well blowouts and accidents at industrial plants.

The delegates' plan of action, as well as the original draft agreement, have been sent to the states represented for approval within the coming six months. Proposals cover not only the Red Sea and the Gulf of Aden but also the Gulfs of Aqaba and Suez and the Suez Canal. Countries represented at the conference were Saudi Arabia, Jordan, Sudan, North Yemen, South Yemen and Somalia, with the UN, the World Organization for Marine Science, and the Palestine Liberation Organization involved as well.

JEAN GRANT

## Water quality...

**NITRATE-FREE BOTTLED WATER** will be provided to pregnant women and babies in 62 villages of West Hungary's Vas Country.

Radio Budapest said that in those villages the nitrate levels in well water exceeded ceiling values.

The report said that women will be entitled to receive the bottled nitrate-free water from the fifth month of pregnancy and babies will receive it until they reach the age of one year.

**VENEZUELA'S** Central University has developed a method to purify lakes and rivers contaminated by oil or mercury discharges with water hyacinths. Luis Benito Tugues, head of a UCV sanitary engineering research team, said that "water hyacinths are more effective and safer than chemicals for the purification of water, and they are more compatible with the environment." Also, he observed that the water hyacinth can serve as animal food, providing it was not in contact with toxic chemicals, and can also be used as fertilizer.

**A FEASIBILITY STUDY** for the recovery of Columbia's polluted Medellin River will be done by the U.S. firm Greeley and Hansen. The two-year, \$3 million study will be carried out in coordination with the National University at Medellin for water treatment plants, sewage systems and quality control laboratories.

**WASTE DISCHARGED BY SHIPS** calling at South Korean ports has aggravated the pollution of coastal seawater around the country. According to maritime police authorities, there were 140 cases of pollution in coastal waters in 1980, up 9 percent over the 1979 figure. An estimated 130 of the cases were caused by waste oil.

**THE UNIVERSITI SAINS MALAYSIA** is conducting research on the effects of naturally and chemically dispersed crude oil on the tropical environment. The research will increase understanding of the effects on marine life ecosystems, and the data will contribute toward the development of measures to protect Malaysia's marine environment, a university official said. Esso Malaysia Bhd is sponsoring the project with a \$184,162 grant, spread over three years.

**ONE THIRD OF JAPAN'S RIVERS**, lakes and coastal waters are still polluted above standards set by the government in April, 1970, according to a survey conducted by the Japanese Environment Agency during 1979. The Agency collected water samples from 2,236 river sites, 98 lake sites and 532 coastal sea sites. The survey revealed that only 66.7 percent of these samples met the government's water standards.

## Environment & Industry...

**INTERNATIONAL CHEMICAL REGULATION** compliance will be the subject of a two-day seminar held April 29-30 at the Mayflower Hotel in Washington. Sponsored by the U.S. chemical industry's International Affairs Group, it is intended to provide an overview and indicate sources of more detailed information on chemical laws and regulations in various countries. It will stress awareness of the growing number of regulations in the areas of health, safety and the environment in order to minimize barriers to trade.

For registration information: Mary A. Corbin, Chemical Manufacturers Association, 2501 M Street N.W., Washington, D.C. 20037, USA.

**A NATO-SPONSORED STUDY** has surveyed the technologies now being used in North Atlantic Treaty Organization countries and Japan to control the emission of sulphur oxide into the atmosphere.

The NATO study, made under the auspices of its Committee on the Challenges of Modern Society (CCMS), is available to any interested country or organization. Write: Dr. M. Sudarksi, NATO Scientific Affairs Division, NATO Headquarters, B-1110 Brussels, Belgium.

**A DELEGATION** from Japan's Ministry of International Trade and Industry was to be in Singapore in mid-February to conduct a comprehensive environmental impact study on a coal-fired power station. The station is to be built by the Public Utilities Board (PUB). PUB plans to appoint its own consultant to undertake a feasibility study within the next two months. Several consultancy firms from the U.S., U.K., West Germany, Australia and Canada have already sent their quotations in for the job.

**WITH THE NEAR-CERTAINTY** of at least one aluminum smelter being built in Western Australia by the middle of the decade, the battle lines are emerging for an intense environmental campaign.

The South-West Aluminum Inquiry Group has been formed because of concern about the effects of fluoride emissions from the proposed smelter and its adverse effects on area livestock and pasture production.

Environmental studies are being undertaken by the group and by the State Government Department of Conservation and Environment. The Environmental Protection Authority would call for public submissions as part of its report on the plan.

## Brazil's oil company refines a new water treatment system

**RIO DE JANEIRO**—Brazil's state oil monopoly, Petrobras, has undertaken a conservation campaign which includes a new system of water treatment and tree planting at refinery sites, sodding over pipeline routes and hiring a special oil skimming vessel for permanent work in Rio's Guanabara Bay.

The company says it has had "great success" in the campaign's pilot project, a new system of water treatment equipment at refineries. The UTDI (Treatment Unit for Industrial and Sanitary Effluents) was first installed in the Sao Jose dos Campos Refinery in the state of Sao Paulo. It has the capacity for processing about 450 cubic meters of effluent an hour. The water is cleansed to government sanitary purity levels and flows through eight kilometers of pipes and open channels to the Paraiba River.

The Petrobras experience at the Sao Jose refinery was so successful that the company is now implementing the same system in all of its refineries.

The effluents are put in storage tanks and discharged into a treatment unit by gravity. As the oil floats on top, it is skimmed off. In this manner not only is the water cleansed but oil is recovered for recycling.

The novel aspect of the UTDI system comes in the second stage of the process. Here the water, which still contains oil particles and pollutants, passes to the Flocculation Units where, with the stimulation of chemicals, the oil and pollutant particles are lumped together. Next the waste passes through Flotation Units, which separate these lumped pollutants with the aid of air bubbles. In the next step the floating, lumped pollutants are skimmed off forming a foaming solution which is again put through a water-oil separator and thus additional oil is recovered, the pollutants separated and the water passes on for further purification.

According to Petrobras officials, the water, even at this stage, still contains some organic compounds like sulphides, and these are then removed through a process of biological oxidation and transformed into non-polluting byproducts or buried. A part of the process is an aeration unit in which mechanical aerators stir up the water introducing oxygen which in turn eliminates most of the remaining pollutants. The soluble organic matter which still remains in the water is then broken down by micro-organisms and transformed into non-toxic compounds.

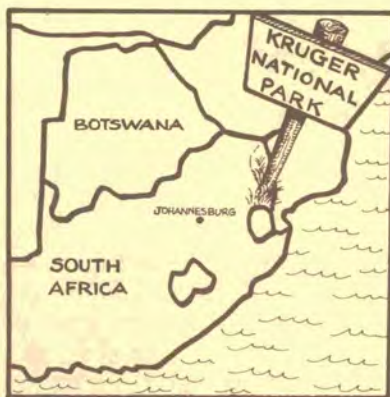
Officials say this is a man-made copy of the natural process of cleaning that takes place in rivers and other waterways.

Once more the water is separated from the biological mass in a stage called clarification and then it is clean enough to be pumped into a waterway.

The pollutants and other residue separated from the water go through one last process, the Mud Treatment. Petrobras officials call this leftover matter biological mud. It goes through a drying basin and after any useful mineral or other byproducts are removed for possible recycling, the residue is dumped into earthfills, thus completing the UTDI process.

GEORGE HAWRYLYSHYN





## Lobbyists mobilize to stop coal mining in Kruger Park

**JOHANNESBURG**—In an attempt to save the unique northern region of the Kruger National Park from being mined for coking coal, the Wildlife Society of Southern Africa recently published a special report on the area.

This report has been sent to all decision makers as part of an intensive public lobbying campaign to keep the park intact.

Compiled by the country's most influential ecologist, Dr. Ken Tinley, the report states that the area is biogeographically unique as it lies at the crossroads of nine major ecosystems of Africa.

There are several plant communities that exist only in this corner of South Africa as well as numerous fauna found nowhere else in the country.

Coking coal mining in this region would have serious consequences for the wildlife as the animals rely on a number of perennial fountains, including several hot springs, for water. The most important of these lie directly in the path of the proposed mines.

MIKE NICOL

## England to test windmills as a source of energy

**LONDON**—A program to test the economics, technology and environmental acceptability of windmills as a renewable energy source, was announced recently by Britain's Central Electricity Generating Board.

The first step is the construction of a medium-sized wind-powered generator, probably with traditional horizontal axis, alongside the coal-fired power station at Carmarthen Bay, Dyfed in Wales. It will generate between 50 and 200 watts of electricity and should be in service by next year.

Sites for a windmill "farm" of perhaps 10 giant generators up to 100 meters high and generating between one and four megawatts, are being considered for the next step. The choice of more ambitious and experimental designs, such as using vertical axis turbines, are likely on the "farm," which could be operational by 1985.

One possible site is that of the Bradwell nuclear power station on the Blackwater estuary in Essex. But the giant generators will be spread well apart across the countryside, partly for technological reasons, partly to test public reaction to their environmental impact.

BARBARA MASSAM

## Energy sources ...

**"FIREWOOD CROPS,"** a 237-page report published recently by the U.S. National Academy of Sciences is, in effect, an encyclopedia of 60 shrubs and trees, some little known, selected by an international panel of forestry experts. Each tree or shrub is thoroughly described, its attributes and environmental requirements discussed, and its alternative uses given.

The panel warns that if misunderstood, this book is potentially dangerous. The species selected are aggressive, quick-growing and potentially invasive; they are not for use in areas where no fuelwood shortages exist.

Their report includes several appendixes: on fuel-efficient stoves and research contacts, for example.

A free copy will be sent to persons in institutions affiliated with government, education or research. Write on letterhead to: Commission on International Relations (JH 215), National Academy of Sciences—National Research Council, 2101 Constitution Ave., Washington, D.C. 20418, USA.

**A CALL FOR PAPERS** has been issued for the 4th Miami International Conference on Alternative Energy Sources, to be held December 14-16, 1981.

It is open to all energy scientists, engineers, educators, architects, economists and planners from industry, universities, research organizations and government agencies.

Titles and abstracts (400 words) may be sent to: Dr. T. Nejat Veziroglu, Director, Clean Energy Research Institute, University of Miami, P.O. Box 248294, Coral Gables, Florida 33124, USA.

**BRITAIN'S FIRST** megawatt-sized wind-powered generator is to be built in the Scottish Orkney Islands at an estimated cost of £5.6 million (\$13.5 million).

It will have a steel blade 60 meters in diameter, with rotating tips to "feather" the wind. The machine is designed to produce full power of three megawatts at wind speeds of between 60 and 97 kilometers per hour. Above this speed the machine will be automatically stopped by a powerful disc brake.

It should be in operation and feeding into the local electricity grid by 1983-4.

A smaller 250 kilowatt machine will also be constructed on the same site, to be operational by October 1981. Data from this will be collected for its application to the larger generator.

## Agriculture . . .

**INDIAN FARMERS** have been advised by the government to make more effective use of rainwater.

R.V. Swamanathan, the Minister of State for Agriculture, told Parliament that because of prevalent drought conditions and erratic rainfall the need for more effective rainwater management has become acute. Strategies for increasing the utility of rainwater include storage, conservation, re-use of unavoidable runoff, restoration and development of degraded land.

Meanwhile, throughout India's 74 drought-prone districts, the government is considering 31 river-valley catchment projects and two federal government-sponsored soil propagation and moisture conservation projects for medium rainfall regions. Watershed management projects for the catchment areas of flood-prone rivers are under consideration as well.

**THE WOMEN WHO HUGGED TREES** in India to keep them from being cut down—the Chipko movement, started in 1972—are now launching a new program: planting fodder and fuel trees amongst conifers, which they consider harmful to the soil.

**THE DIBBLER** is holding up the release of 920 hectares of land slated for agricultural development in Western Australia.

The Dibbler is a rare marsupial, *Anthechinus apicalis*, thought extinct until 14 years ago when the first of nine now known living was seen.

The Minister for Lands has held up land clearing until it is established, with reasonable certainty, that it is a Dibbler habitat. If so, the Minister said, it would be considered an area worthy of permanent preservation.

**THE GOVERNMENT OF UPPER VOLTA** is to receive a \$16 million credit from the World Bank's International Development Association for a second five-year agricultural project in the Bougouriba area.

The purpose of the project, which will cost a total of \$17.5 million, is to spur production of cotton, livestock and foodcrops.

The project is also designed to encourage fruit and fuelwood tree planting and erosion control.

**THE USE AND MANAGEMENT** of U.S. pesticides internationally was the subject of a strategy conference held in Washington, D.C., in 1979. Participants were U.S. and international experts. The proceedings have just been published, and they include lists of critical issues and recommendations for U.S. policymakers.

For a copy of the proceedings and further information, contact: Robert J. Glickstein, Teknekron Research Inc., 2118 Milvia Street, Berkeley, CA 94704, USA, or telephone (415) 548-4100.

## SPECIAL REPORT: The greening of Israel's barren Negev desert

**JERUSALEM**—A popular Israeli song reiterates a prophecy made over 2500 years ago by Isaiah: "The wilderness and the parched land shall be glad and the desert shall rejoice and blossom as the rose." This prophecy is challenging modern-day Israel to transform the barren Negev desert into productive and fruitful land.

While all of Israel may be classified as arid or semi-arid, its southern half—60 percent of its pre-1967 borders—is characterized by rainfall levels decreasing from 300 millimeters annually in the northern Negev to 25 mm in the south. The process of desertification—in progress for many millenia—was largely man-induced. Overgrazing and the use of wild plants and trees for fodder, fuel and building materials exterminated natural plant communities. The neglect and destruction of terraces and dams resulted in soil erosion and further intensified desertification.

Since 1948, when Israel became a state, major effort has been expended on halting desertification and developing the Negev. David Ben-Gurion, Israel's first Prime Minister, considered the Negev "the testing ground for the people of Israel" whose efforts would be called upon to fulfill the "great goal of settling and greening this desolate land."



The major problem—lack of water—was tackled by a variety of means. The 1959 Water Law made water a national commodity, owned and regulated by the government in accordance with a centralized plan for its distribution and usage. In the mid-'60s, a National Water Carrier, carrying over 300 million cubic meters of water annually was constructed to bring fresh water from the north to the arid south. The efficient use of water in the Negev was encouraged through development of new irrigation techniques, efficient use of minimal rainfall, utilization of local brackish water resources and organization of agricultural management systems adapted to desert conditions.

While the major system of irrigation is sprinkling, the use of drip or trickle irrigation—an original Israeli development—has been expanded in recent years. Using plastic tubes with tricklers at desired intervals in the fields, the system reduces evaporation and results in exceptionally high yields per unit of water and of surface.

The collection of runoff water offers another water source. Rains in the Negev, as in other deserts, frequently occur as torrential downpours of relatively high intensity often resulting in floods. The Ministry of Agriculture makes long-term loans to settlements that build dams to catch these rains for use in irrigation. To avoid losses due to evaporation, leakage and infiltration resulting from storage, the water is frequently used

immediately as supplementary irrigation for winter crops in areas with marginal rainfall. This additional water has often raised yields by over 50 percent. In areas where natural underground storage is possible, runoff water is pumped into basins where it infiltrates and enriches subterranean aquifers. The water is then pumped out of shallow wells and used for irrigation of summer crops.



An especially interesting experiment conducted by Professor Evenari has been ongoing for some years at Avdat, the remains of an ancient Nabatean town whose inhabitants cultivated the low areas of the wadis (dry valleys) between 200 B.C. to 400 A.D. The Evenari team is testing techniques used by ancient desert agriculturalists. Rain falling on the hillsides was collected by means of a series of long channels, each channel bringing water to a specific area of the wadi terraces. The Evenari team reconstructed two of these Nabatean farms and succeeded in obtaining excellent yields of grain, fruit, vegetables, pasture and other crops in an area whose rainfall is just 100 mm (3 inches) a year. The team also developed a system of individual microcatchments whereby a corner of each plot contains a single tree or bush, and the plot is graded so as to allow runoff water to accumulate around the plant itself.

The methods developed at the experimental farms (three are operated by the Institute of Desert Research at Sde Boker) have been successfully adopted by other countries. Requests from countries interested in applying these methods to their own land have been received at the Institute which holds courses for specialists from abroad.

Israel has spent considerable sums for research and development on desalination of brackish water. In the Negev, south of the 200 mm rainfall line, most underground aquifers are saline. Techniques experimented with include electrodialysis, reverse osmosis and ion exchange for underground water and various distillation processes for ocean water desalination.

Recent developments in agricultural technology have made the utilization of brackish water for modern agriculture possible. The introduction of trickle irrigation has lifted the salt tolerance levels of many crops which grew poorly with greater amounts of brackish water. Where possible, salt-resistant species such as cotton, wheat and sugar beet are being used.



The introduction and selection of salt and drought-resistant species for desert landscaping and agriculture is being carried out at Ben-Gurion University at Beer-Sheva where seeds collected from deserts throughout the world are tested. Plants can now be recommended for all regions of the Negev. In addition, a botanical garden containing samples of desert plants from all over

## In the Middle East . . .

**SAUDI ARABIA** has signed an agreement with the International Union for Conservation of Nature and Natural Resources under which IUCN will provide expert guidance on natural resource protection and management.

The one million Rial (\$300,000) Trust Fund Agreement is with the kingdom's Meteorology and Environmental Protection Agency (MEPA). The program will focus on wildlife management and training, developing a national conservation strategy and establishing a Department of Natural Resources.

**IN SAUDI ARABIA** two to three million trees a year will be produced by the new Jeddah Municipality Nursery, a \$4.5 million greenhouse project where heat, humidity and irrigation are controlled to suit a variety of local and foreign plants. Jeddah has traditionally relied on imports for its trees and shrubbery.

The nursery aims to meet this humid coastal city's target of 10 square meters of greenery per person, the international standard. Dr. Hassan Hajra, Jeddah's Deputy Mayor, estimates that there are now two square meters of green per person in the city. To foster civic pride along with the increase in shade, thousands of students will be involved in planting the trees.

**AN ANNUAL ISRAELI EVENT**, Nature Protection Week, focused this year on nature reserves. Revolving about the festival of Tu Bi-Shvat, the New Year of Trees, the week's activities were designed to strengthen public awareness of nature reserves and their importance from a social and environmental viewpoint.

Activities were sponsored and organized by Israel's major environmental organizations. Special coverage was given to all events in the media with numerous reports on nature protection activities.

**AN ENVIRONMENTAL QUALITY PATROL** is being set up by the Education Department of Israel's Ramat Gan municipality. The patrol will recruit students for special work designed to improve environmental quality in their neighborhoods and in areas adjacent to their schools. Student help in maintaining order and cleanliness in the city parks will also be part of the program.

## Renewable energy...

**AN ASIAN REGIONAL WORKSHOP** on solar energy was held recently in New Delhi, India. Attending the five-day meeting were delegates from Papua New Guinea, Sri Lanka, Pakistan, Bangladesh, Afghanistan, Malaysia, Nepal and India.

They explored the possibility of formulating a joint research and development program and demonstration programs within the region.

The regional network for solar energy in Asia was formed in 1978 with help from UNESCO, the Indian government and two Indian electronics firms.

**AUSTRALIA IS INVESTING \$100,000** in a two-year joint project with India to research solar cooling. The Indian government will allocate a slightly larger sum to the project, which is to be completed by mid-1982. The project will evaluate the performance of existing solar cooling plants and develop optimal designs for solar refrigeration and air-conditioning systems. If the design options prove feasible, scientists from the James Cook University of Northern Queensland in Townsville and the Indian Institute of Technology in Madras will consider constructing a pilot plant in India or Australia. The project is being supported by the Australian National Energy, Research, Development and Demonstration Council.

**SOLAR HEAT ENERGY ABSORPTION** is being studied at the National Institute for Higher Education in Limerick, Ireland, with the aid of a \$75,000 grant from the European Economic Community. The studies are being conducted by Dr. John Barnard, a senior lecturer in industrial chemistry.

Last year Dr. Barnard began a three-year \$200,000 project to find acceptable methods of burning low-grade coal for electrical power generation, also funded by the EEC. Abundant supplies of low-grade coal are available in Ireland, but are of no use because they cannot yet be burned cleanly.

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the world is being planned by the Desert Research Institute as a special project.

Finally, closed-system or greenhouse agriculture is researched at the Institute. This utilizes the desert's high radiation and provides much higher crop yields per unit of water applied than the return from conventional agriculture. A system is being developed whereby excess solar radiation collected during daylight hours will be released at night. A research contract recently signed between the Federal Republic of Germany's Ministry of Science and Technology and the Israeli National Council for Research and Development is expected to bring about major progress in this field.

In 1979, the Institute for Desert Research signed scientific cooperation contracts with universities in Germany and New Mexico, and preparations were made for possible scientific cooperation with Egyptian scientists.

The unique communal structure of agricultural settlements in Israel—facilitating efficient use of both material and human resources—along with government compensation for crop failures due to drought in addition to water subsidies for irrigation are key elements in the development of settlements in Israel's desert. As the adverse desert conditions are overcome, Israelis are learning to use the Negev's natural resources—wide open spaces, solar radiation, ground and flood water and mineral deposits—to make it both habitable and productive. SHOSHANA GABBAY

## India's environment agency to assess all development plans

**NEW DELHI**—The head of India's new Department of Environment (DOE) said that in the future all projects such as dams, power stations, mines and new industries will need clearance from his department before they can start construction.

Professor M.G.K. Menon said, "They will have to submit detailed reports... on the likely effect on the environment."

He said promoters of these projects will have to undertake the necessary surveys and research on their own, not using outside laboratories and consultants, so as to build up an environmental infrastructure within each project development firm.

Menon is planning to expand his department by setting up cells in each ministry and government department so that internal systems for supervision and monitoring are available for new projects. These cells would be in touch with the DOE's Department of Science and Technology, which will act as coordinator.

Other DOE activities will be to encourage environmental research on all levels, to study and suggest suitable environmental legislation for the conservation of ecosystems, and to have administrative responsibility for pollution monitoring.

R. MURALI MANOHAR



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## Roman air pollution knocks a Caesar from his pedestal

**ROME**—Air pollution is forcing Marcus Aurelius, the "philosopher king" of Imperial Rome, to leave his pedestal in the Capitol Plaza and move under cover.

After 1680 years of exposure, the Caesar will spend a couple of years in an art restoration laboratory because the air pollution of modern Rome has badly pockmarked the bronze emperor and his horse. Legend has it that Rome will cease to exist when the gilding on Marcus Aurelius disappears; by now only traces of the original gold shine in the sun.

Rome has no heavy industry, but its population has grown to four million during the last few decades. Noxious fumes and hundreds of tons of sulphur dioxide and nitrogen oxides rain down annually from thousands of home chimneys and from cars and buses, suffocating the city center where the remains of ancient Rome stand unprotected.

To save the magnificent monuments of the imperial city, Roman city fathers are proposing a long and costly effort that would ban auto traffic from the archeological area.

This would include the widely debated dismantling of a broad avenue that runs over the Forum area. The busy road was built before World War II by Benito Mussolini, and it is lined by imperial ruins. The current idea is to remove the road, the Via dei Fori Imperiali, and, through excavations, reunite the Colosseum and the Capitol Hill through a series of three imperial forums in a car-free archeological park.

Experiments in re-routing the heavy center-city traffic are taking place on Sundays, beginning February 1, when cars were blocked from half the length of the avenue.

To clean up the city's air, the town government is programming the introduction of new electrical buses and is promoting the use of methane instead of oil for space heating.

VITTORIO PESCIALLO

## Nuclear power...

**RECONSTRUCTION WORK** has been completed on China's first atomic reactor, built in 1958. The Xinhua News Agency said that tests show the Chinese reactor can compete with heavy-water reactors in other countries. Built by the Atomic Research Institute for experimental purposes, in the early seventies erosion, leaks and cracks were discovered in the main body. Renovation involved replacement of its internal shell. During the 22 months of reconstruction, extra precautions were taken to prevent pollution of the environment and to protect the people engaged in the building project. Workers on the project received an annual average of less than one rem per person, while the national standard is set at five rems per person.

**TAIWAN** is planning to increase the number of its nuclear reactors from two to 26 by the turn of the century. According to official sources, four 1,000 megawatt nuclear reactors are now under construction and will be completed in 1985. Thereafter, Taiwan will construct one 1,000-megawatt reactor each year until the year 2000. By then nuclear plants will generate 40 percent of Taiwan's power consumption, with oil 27 percent, coal 26 percent and hydroelectricity 7 percent, officials said. At present, Taiwan has two 600 megawatt nuclear reactors which generate 16 percent of its total needs.

**POLAND WILL START BUILDING** its first nuclear power plant this April, the national news agency PAP reported.

The report said that the nuclear power plant would be a relatively small one, with two Soviet-built 440 megawatt power units. Construction is expected to take about seven years.

**INCREASING CONCERN** is being expressed in Britain about the transport of nuclear waste by train from power stations to the nuclear processing plant at Windscale in Cumbria. Waste from power stations in East Anglia, in particular, must pass through the center of London. Secretary of State for the Environment Michael Heseltine has been requested by several London boroughs, the Greater London Council and by local authorities from neighboring counties to consider re-routing. They also ask for a public enquiry into the whole subject of safety and nuclear waste transportation.

**THE POWERFUL AUSTRALIAN COUNCIL OF TRADE UNIONS** which has a membership of 2.5 million of the 5-million-strong workforce, will try to halt uranium mining in this country by seeking a ban on the movement of materials and equipment used in the industry.

## Atlantic nuclear waste dump plan gets Spanish veto

**MADRID**—The Spanish government has warned it will oppose the possible creation of an undersea radioactive waste cemetery in the Atlantic Ocean between the Portuguese Azores and the Spanish Canary Islands.

Spain's position, a spokesman says, would be "most definite opposition."

The government made its position known after the press reported that an oceanographic ship of the Dutch navy, the Tydeman, was undertaking a 20-year study in the eastern Atlantic as part of an ambitious program in conjunction with the Organization of Economic Cooperation and Development.

Experts say interest in the eastern Atlantic stems from the existence of thick layers of sediment on the seabed which appear ideal for cushioning radioactive wastes in an area believed to be geologically stable.

However, last year's Algerian earthquake has raised serious doubts in some quarters about the stability of the area for a radioactive cemetery.

Three other areas are also under consideration for radioactive dumping: the Antilles, the Pacific and the infamous "Bermuda Triangle" in the Caribbean.

A final decision will be taken by the United Nations, since the waters in these areas are international.

JULIE FLINT



### Portugal angered by Spanish nuclear project near border

**LISBON**—The Spanish government intends to go ahead and construct a nuclear power center at Sayago, just 15 kilometers from the Spanish-Portuguese border, without consulting Portugal.

Authorization to start building in March, 1981, was discovered by a Portuguese technician on an off-chance visit to Madrid recently. At the same time, he discovered that no impact study has been done on the Portuguese side of the border, although Spanish legislation requires an impact study within a 30-kilometer radius of the center's site. There is also an agreement between the two countries on border plants and nuclear safety.

When the nuclear plant was first proposed two years ago, the Portuguese Port Wine Institute warned government officials

about the possible dangers and multiple effects of such a nuclear center on the rich Douro River valley, home of the port wine industry. As it was never mentioned again even on official visits of Portuguese technicians to Spain, the Portuguese thought the Spanish had abandoned the Sayago idea.

The project, as it stands, will generate 900 megawatts of power using three steam generators. The water, after a simple cooling process, will be launched into the Douro at a temperature many degrees above the river's normal temperature. Port wine experts fear that the higher temperature will affect the micro-climate, especially in areas that use Douro water for irrigating vineyards. Besides the port wine industry, dominant east-west winds could affect a rich cattle raising area near the border. Permission has also been given for a fuel treatment factory on the River Tormes, a branch of the Douro. Wastes from the factory will pour into the Tormes.

Portuguese ecologists are urging the government to inquire into the nuclear center before it is too late. A refrigerator tower and a dam could considerably improve the cooling system according to experts. If the Spanish refuse, ecologists say, the Portuguese should take drastic action such as canceling Spanish fishing rights or air traffic.

MARY MILLS

## The EEC's reams of paperwork will be recycled—as paper

**BRUSSELS**—European Community environment ministers have agreed to initiate government policies to promote the increased use of recycled paper in their own countries.

The nine nations' highest decision-taking organ, the Council of Ministers, agreed to set an example for the private sector by using more recycled paper in government administration and the public sector.

Daniel Hymans of the environment office in EEC headquarters told *WER* that the nine EEC countries produce 17 million tons of waste paper annually, which account for 50 percent of the volume and about 20 percent of the weight of total urban waste in these countries.

The European Community imports half its paper and forest fibers, and the cost is second only to oil imports, according to official estimates.

Presently, EEC paper industries recycle about nine million tons of waste paper, or about one-third of the annual paper demand in the nine nations.

The EEC is also studying the technical problems of recycling waste paper, such as decontamination of used paper, removal of ink, use of fibers from urban waste and re-use of recycled waste. The nine jointly spend over \$4.6 million on these research programs.

This year, the EEC is expected to ask member countries to restrict the use of chemicals that create recycling problems in paper production processes, according to a proposal prepared in the EEC secretariat.

AHMED FAZL

## Recycling . . .

**A GOVERNMENT PLAN** to save South Africa millions of rands in foreign exchange by recycling used oil seems doomed to failure because of lack of public interest and because garages refuse to stock the oil.

At present South Africa has the capacity to recycle 130,000 tons of motor oil a year, or a third of the country's total requirements.

Colin Pote, managing director of an oil refinery, stated that if all the waste lubricating oil in South Africa were recycled, the country wouldn't have to import a drop.

If South Africa recycled to capacity, R7-million (\$9 million) a year could be saved in foreign exchange alone. Recycled oil is also at least 30 percent cheaper and would mean a gigantic saving to the consumer if the process became widely used.

**PAKISTAN'S** Federal Petroleum and Natural Resources Ministry plans to set up 1,200 biogas plants during the next three years. There are now about 100 biogas plants in the country and each family-sized biogas unit receives a government subsidy of 2,000 rupees (\$401). Some plants are capable of generating 125 kilowatts an hour, which is sufficient to provide electricity to a village of 100 to 500 houses.

**ALCOHOL FROM TAPIOCA** is being considered by India's Planning Commission. The Commission is examining a proposal to set up plants in Tamil Nadu and Kerala to produce ethyl alcohol from tapioca (or cassava) for use as gasohol. Already India has a plant producing alcohol from molasses. An advisor to the Commission said the states have responded favorably to the proposal, and that care would be taken to ensure that fuel crops would not compete with food crops. The tapioca used for fuel would be a high-yielding hybrid variety which is not eaten. The daily output of the proposed plant is 150,000 liters and the cost per liter would be about 30 cents.

**IN BARBADOS** the use of bagasse, or sugarcane waste, to produce electricity is under consideration following a successful series of tests, according to the Barbados Light & Power Company.

The tests, carried out with a local sugar company, involved using bagasse as a fuel for steam turbines. The electricity was then fed into the island's distribution system.

However, to use bagasse as fuel on a regular basis heavy capital investment would be needed by the sugar factories for setting up intricate control systems and to increase boilers to the required capacity.

## In Europe ...

**NORWAY'S NEW PRIME MINISTER**, Mrs. Gro Harlem Brundtland, was Minister of the Environment for five years, from 1974 to 1979. Under her enlightened leadership, Norwegian environmental protection activities became a model for other nations. Now 41, Mrs. Brundtland is the youngest woman to run a modern government and the first woman to hold that position in Norway.

**SIX HUNDRED NORWEGIAN POLICEMEN** mobilized from all over the country, removed and fined nearly 600 demonstrators who tried to prevent the start of road construction for a \$100 million hydroelectric scheme planned for northern Norway. The police meted out total fines of NOK1.5 million (\$288,000) to the demonstrators who had come to the Arctic region from all parts of Norway for the second time in 15 months. Neither police nor demonstrators used violence during the January operation, and no one was injured.

The majority of the local population, including many Lapps, staged counter-demonstrations in support of the electric power project, which had three times been approved by the National Assembly.

**SMALL HYDROELECTRIC PLANTS**, thought to be impractical for the past 50 years, may now be a practical energy alternative in the mountains of Wales.

Some 170 sites for plants with generating capacities of between 100 and 500 kilowatts have been identified. In a report by Salford University's Department of Engineering, Professor E.M. Wilson says output from the small hydro plants would be equivalent to 80,000 tons of oil-produced energy each year.

The report concluded by saying that such plants would be "cost-effective, suitable for private and small community development, have little impact on the environment and provide a secure local energy source which will save fossil fuels."

**NEARLY 50,000 ITALIAN CHILDREN** got a "degree in ecology" this year for their efforts in protecting the environment and local wildlife.

Through a campaign backed by a Turin daily newspaper and the Italian branch of the World Wildlife Fund, students and their parents learned about ecological problems and started a number of projects.

The degree is a card with the symbol of the campaign, a hedgehog.

Organizers expect thousands more classes will join the campaign in the coming months.

## Turkey is rationing electric power to conserve energy

**ISTANBUL**—A nationwide campaign to cut energy usage has been launched in Turkey, which currently spends over \$3 billion to import oil.

A three-hour electrical power cut has been imposed throughout the country. The cut, at different daylight hours, is expected to limit power consumption particularly during the winter season.

In Istanbul, Governor Nevzat Ayaz announced a series of additional measures, including turning off lights and illuminated advertisements in stores and office buildings after 10 p.m. Steps are also being taken to prevent the loss of heat in public buildings and private homes. Various energy-saving programs are being promoted through the news media and educational institutions as well.

Turkey produces less than one-third of its oil requirements, but it does possess large deposits of coal as well as hydropower resources. The new government is giving top priority to programs for expanded exploitation of these alternative sources of energy.

Only 15.4 percent of Turkey's population of 45 million use coal for heating. The use of fuel oil has rapidly increased in the last two decades. Now the trend is to use coal and wood, and agricultural wastes in rural areas.

SAM COHEN

## Romania recycles coal ash, making cementless concrete

**BUCHAREST**—Residual ash is usually heaped on dump sites that take up increasingly more ground, wasting land and creating a pollution threat for people living nearby.

A use for this waste ash has been found by Romanian researchers at the Institute of Construction here. Led by Nicolae Voinea, they have devised a way of manufacturing prefabs of ash concrete *without cement*.

The method, described as a world first, uses residual ash from coal-fueled thermo-electric stations. It has been patented in the United States, Great Britain, West Germany and France.

"The ash resulting from all stations in Romania last year could have filled an 80-kilometer-long train. By 1985, the ash-loaded Romanian train would be twice as long. Hence, we tried to turn such pollution-prone waste into useful substitutes for materials in short supply or manufactured at high costs with big energy consumption," Voinea said in an interview.

In his method, ash fully replaces the binder (cement) and the aggregate (gravel or sand) of which concrete is made.

"From the mining of the rock used as raw material to the injection of cement into concrete prefabs, there are some 30 intermediary stages, the entire process lasting about 20 days," Voinea said. "Our method reduces the operation to only four stages and



four days," he added.

The stages are: blending ash with other waste and active agents; extrusion to give the prefab the required shape and size; special treatment to give resistance and durability; and storage to let the prefab mature.

Among other advantages Voina mentioned were elimination of energy-consuming operations and materials (cement), thereby reducing the amount of energy incorporated in the product by 30 to 50 percent and the cutting down of production costs by 40 to 79 percent.

Another benefit is that dump-occupied land becomes available for other purposes.

Specialists calculated that up to 400,000 tons of cement are saved for one million cubic meters of products made by using this method.

Concrete without cement—having mark 250, which means high resistance—is used to make prefab panels for housing construction, bricks, heat-insulating plates, mine props, sewer pipes, road slabs and tiles, milestones, blocks and other parts for river bank strengthening and for water-proofing irrigation canals.

SPECIAL TO WER

## Brazil's paper industry plans to cut oil use by 87 percent

**RIO DE JANEIRO**—A Brazilian paper and cellulose producer claims to have set a national record for fuel economy, using only 60 kilograms of oil per ton of product compared with an industry average of 320 kg/t. This represents an 81.3 percent oil fuel saving.

This effort by Aracruz Cellulose is the forerunner of an industry-wide petroleum conservation program aimed at reducing consumption 87 percent by 1985. Spokesmen for the National Association of Paper and Cellulose Manufacturers say that between 1979 and 1980, they cut consumption by 17 percent.

The two-phase program includes energy conservation, i.e., recycling and better insulation to reduce heat wastage, and switching to alternative fuels that are national in origin and largely renewable. Most industry economies to date have been through conservation while Aracruz has moved into using alternative fuels.

Aracruz Executive Vice President Armando Vieira Netto said the company is increasingly using wood residues in its furnaces. Wood waste from its tree plantations, together with chip screening rejects, are used as fuel.

In the industry's switch to biomass fuels, most have opted for wood, but a few companies, mostly located near southern coal fields, will use coal or a mixture of wood and coal. Still fewer, in the northeast, will switch to bagasse, sugarcane pulp waste.

The industry as a whole is receiving considerable government credits through 1985 to finance the conversion of their furnaces. Conversions are expected to result by 1985 in the consumption of about 3 million tons of wood and 160,000 tons of coal, representing a saving of more than 1 million tons of fuel oil.

GEORGE HAWRYLYSHYN

## Environment & Industry...

**POLISH AUTHORITIES** have restricted the operation of an aluminum plant near Cracow on environmental grounds.

Radio Warsaw and western news agencies said the Mayor of Cracow, Jozef Gajewicz, first ordered the shutdown of half of the Skawina smelter's facilities to become effective January 31. The mayor said that fluorine pollution from the plant would be expected to drop by 60 percent after the partial shutdown.

Then Iron and Steel Industry Minister Zbigniew Szalajda announced the shutdown of the entire plant—which produces half the aluminum in Poland.

Szalajda said that Cracow residents wanted the Skawina plant closed because it was causing health problems and polluting recreation and tourist facilities.

In another move, the Polish Government Presidium halted the production of cellulose at a synthetic fiber plant in Jelenia Gora in southwest Poland on similar grounds.

**A GREEK COURT** found an industrialist guilty of polluting the atmosphere and sentenced him to two months imprisonment and a heavy fine.

Leonidas Aritzidis, owner of a factory manufacturing pharmaceuticals, was charged after inhabitants of a suburb in Salonica, northern Greece, complained that fumes from the unit were posing a threat to their health. The inhabitants were supported by private environmentalists who said that the factory owners had failed to take the necessary measures to prevent pollution.

**THE JAPANESE GOVERNMENT** has decided to introduce a tax cut for corporations investing in energy saving equipment and alternative energy development projects. Under the new system, corporations will be granted either an investment tax credit of 7 percent or 30 percent depreciation, a special tax measure permitting a much quicker write-off of equipment costs. The tax cuts will be granted for three years, beginning this April.

**MINIMUM STANDARDS** are being laid down by India's Board for Prevention and Control of Water Pollution for 20 types of polluting industries. According to a national survey, 3,500 large and medium industries should be subject to pollution control. Only one in seven of these have implemented control measures, or are in the process of doing so. According to Nilay Chaudhury, chairman of the board, the cost of curbing the careless disposal of effluents in these 3,500 units will work out to a staggering \$900 million.

## In Africa...

**AN ACTION PLAN** to protect West Africa from marine pollution, under discussion since 1976, is in its final stages of preparation. Twenty coastal states were represented at a recent meeting in Lome, Togo, and they approved the action plan that is due to be adopted and signed at a regional conference to be held in March.

Experts from the countries involved have already agreed that the UN Environment Program (UNEP) will act as the secretariat of the new convention, and that a small regional unit should be set up to coordinate implementation of the action plan.

The Lome meeting approved a convention for cooperation in the protection and development of the marine and coastal environment of the region, and a protocol for cooperation in combating pollution in case of emergency.

**THE GOVERNMENT OF MADAGASCAR** has received a \$2.3 million credit from the World Bank's International Development Association (IDA) to perform feasibility studies of an integrated flood control program and a development project for the Plain of Antananarivo. Expected to cost \$2.9 million in all, the studies are the first of their kind to be supported by the IDA.

One essential objective will be to increase the region's agricultural productivity, particularly that of rice and vegetables.

**SOUTH AFRICAN FARMERS** have suffered more than \$13 million worth of damage after their maize fields were sprayed with grass-killing chemicals.

Maize producers blame the Department of Agriculture for the huge losses, since the weed killers were meant to destroy only grass. They feel the way chemicals are being tested for safety before being officially registered leaves much to be desired.

**A MASSIVE DAM**—the wall could be 39 stories high—is part of a scheme to generate electricity in one of the most important floral wilderness areas of South Africa.

This smallest but richest of the world's six floristic kingdoms is already severely embattled with 1,244 of its 6,000 species threatened.

The proposed dam will flood a significant portion of the reserve and cause the extinction of one species of *Protea*. It will scar the hillsides with roads and begin the process of erosion.

The reserve is a pristine wilderness and has been closed to all but a handful of professional botanists. As a sop to conservationists, the Department of Water Affairs has agreed to set aside what is left of the reserve as a wilderness area once the dam and its attendant works have been built.

## Nigeria is committed to a clean environment by 1990

**ENUGU**—Will Nigeria achieve a clean environment before the close of the 1980s? It is a challenge to which Nigeria's Federal Government has committed itself.

The Minister of Housing and Environment Dr. Wahab Dosunmu listed the problems as follows:

- Inadequacy and poor quality of water supplies in the country's rural and urban centers.
- The indiscriminate dumping of refuse.
- Burning of toxic and non-toxic industrial and domestic wastes in open spaces which pollutes the land, the air, surface and underground water resources.
- The hazards of chemical pollution from untreated industrial waste.
- Air pollution, which causes yet undetected health risks especially in urban centers.
- Uncontrolled population growth, which must give rise to adequate land use planning, regulated and coordinated housing schemes or estates.

The minister called for a total war against environmental problems, not only by health personnel but also on the streets, in private homes and offices and through a drastic change in the habits and life-styles of the people.

The minister said a draft of an environmental protection law would be examined and, he expected, passed into law by the National Assembly. The proposed law will be extensive in its scope and require massive investment on programs designed to maintain or improve life in the country's urban and rural areas.

It is noteworthy that many states in the Nigerian federation have already taken up the challenge by creating special environmental ministries and by holding regular seminars on environmental studies.

JONATHAN N. OBINEGBO

## Apartheid makes South African conservation plan unworkable

**JOHANNESBURG**—South Africa's parks and reserves are becoming well-stocked larders surrounded by the hungry, said Robert Allen, senior policy advisor to IUCN, the International Union for the Conservation of Nature and Natural Resources.

"This situation is obviously untenable and unjustifiable," he said. "While it is necessary to conserve areas for the benefit of future generations, it must be done in ways that help present generations, especially the poor, to meet their immediate needs."

Allen was speaking at the recent launching of the South African Wildlife Society's national conservation strategy.

"In the black homelands," Allen said, "a third of the country's population is crammed into little more than a tenth of its land area. That third is one of the most rapidly growing segments of the population. And the land is itself broken up into fragments

making coherent planning, allocation and management of land use virtually impossible."

Many local conservationists have long pointed out that blacks see Africa's parks and reserves as playthings of the whites and have consequently dismissed conservation as a "fat cat" hobby.

Conservation will not succeed in South Africa, Allen said, until the policies of separate development and racial discrimination have been abandoned.

MIKE NICOL

## Residents help upgrade a shantytown in Mozambique

**MAPUTO**—Mozambique, with assistance from Habitat, the UN Center for Human Settlements, has had great success in upgrading a crowded shanty area of this capital city—with the enthusiastic participation of local residents. The system used in the Maxaquene project here is now to be used in other urban areas.

Mozambique won its independence from Portugal only in 1975, and this country has serious economic problems and a critical shortage of technically trained manpower because most skilled Portuguese fled the country. Maputo, with a population of about 750,000, has large shanty areas, known here as canico zones (because most of the houses are made from local canico reeds).

The Maxaquene area, with a population of about 45,000, was overcrowded and badly planned, with no real roads—in contrast to the nearby "cement city," formerly inhabited by Portuguese settlers, with its modern high-rise apartment blocks and tree-shaded avenues.

The political "cell" system of Marxist Mozambique was used to mobilize the residents of Maxaquene for planning their area, realigning the boundaries of small housing plots to create new roads, enabling piped water supplies to be provided to each group of about 12 houses, and making it possible to operate, for the first time, a system of refuse collection.

Public telephones have been installed, and schools and clinics have been developed.

By involving local residents in the planning process (they insisted, to the surprise of the Habitat planners, that the new roads must be straight, like those in the cement city) an enthusiastic system of volunteer labor was created. Local block committees themselves worked out the realignment of boundaries, and residents have been given a simplified system of land titles.

By local agreement, a standard plot size of 160 square meters per family is accepted for future settlers, and residents with plots much larger than this have accepted a reduction of their areas.

The Maxaquene project is less than three years old and another two years will be needed to complete it. Total cost over the five-year period is estimated at only \$1 million, or about \$430 per family.

There are only 25 architects and planners in the whole of Mozambique, and the Maxaquene project is being used to train skilled personnel to implement schemes elsewhere in the country.

CHARLES HARRISON

## Land Use . . .

**GREEDY DEVELOPERS**, who wanted their hotels right on the beach front, are costing Durban, South Africa's most famous holiday city, millions of dollars each year. The natural barrier of dunes and vegetation that once absorbed the sea's fury and prevented erosion has now been replaced by concrete embankments. The result: Each summer truckloads of sand have to be brought in to replace the beach that has been washed out to sea.

This year Durban's city council had to spend \$6.2 million on a sand-pumping scheme to restore the city's depleted beaches and maintain them during the season. On the two main beaches nearly 200,000 cubic meters of sand have to be pumped in annually.

**THE INDONESIAN AGRICULTURE MINISTRY** has worked out a new program aimed at solving the problem of migrant farmers in the country. And it could go a long way towards solving a major environmental problem.

Indonesia has more than one million migrant farmers who practice slash and burn agriculture on some 10 million hectares of land. It is estimated that this practice renders 400,000 hectares of land infertile every year.

Under the new scheme, attempts to resettle migrant farmers to more permanent locations will no longer be made. Instead, they will be encouraged to stay on the land they have opened. They will be provided with seedlings and a subsidy for two years. After four years, the plantations will be legally theirs. The estimated cost of supporting a migrant farmer family under the new scheme is \$240 a year; this compares with the present resettlement cost of \$1,600 a family.

**MEXICO'S AGRICULTURAL PRODUCTION** in rain-fed areas will soon be increased in a four-year project costing \$797 million.

The Rain-fed Agricultural Development Project will increase farm productivity in nine districts representative of the country's different ecological zones.

Soil and water conservation and forestry programs will reduce erosion losses in the project districts and will serve as a prototype for more extensive and effective conservation programs.

The World Bank is providing a \$280 million loan over 15 years; the balance of the money is Mexican.

## Briefly . . .

**CONSULTING FIRMS** that do business overseas are invited to a two-day conference on the environmental practices of consultants working on international development projects. It will be held in New York City on March 24-25. The World Environmental Center, WER's publisher, is sponsoring the conference in cooperation with The World Bank and the U.S. Agency for International Development.

Because project funders and recipients have begun requiring environmental assessments of development projects, consulting firms need to be aware of these changes on the environment and development front—and how their firms will be affected.

Fee for the conference is \$375 for the senior officer, \$325 for others from the same firm. For information, contact Libby Bassett, World Environment Center, 300 East 42nd Street, New York, N.Y. 10017, U.S.A. Telephone (212) 697-3232.

**DR. PETER G. BOURNE**, coordinator of the UN's International Drinking Water and Sanitation Decade, said the program will be low technology, relying largely on local materials and abilities.

Villages and rural areas will be the first targets, Dr. Bourne said recently in Copenhagen. Sprawling shantytowns and similar urban growths will come next.

"Rural areas are generally the most neglected," he said. "They're also the least political, which is why we aimed at them first. A new well in the middle of the village isn't a controversial issue."

Dr. Bourne has asked participating countries to formulate their drinking water goals during the next 15-18 months.

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## India gives top priority to safe drinking water for all

**NEW DELHI**—The Indian government has allocated over \$50 million to the states and union territories as a first installment for this year's accelerated rural water supply program.

The Minister for Works and Housing, Bisma Narain Singh, made this announcement recently in Parliament and added that top priority had been given to all "problem villages" in the country.

It is estimated there are over 250,000 "problem villages" that do not have safe drinking water. Of these, some 32,000 will be provided with potable water during the current year.

At the time of independence, only 16 percent of India's cities and towns had water facilities. Today, 31 years later, about 83 percent of the urban population is supplied with water.

Several UN agencies are working with the Indian government to provide safe drinking water nationwide. The UN Development Program has spent over \$1.2 million on studies for a plan to supply 400 million liters of water a day to the city of Madras, but by the year 2000 it is estimated the city's requirements would be 1.3 billion liters a day. The World Bank has signed an agreement with the government for a credit of \$80 million to provide safe water for 2000 villages in Rajasthan state. And UNICEF plans to install hundreds of thousands of handpumps in villages throughout India. All this is part of the concerted effort being taken worldwide by the UN as part of their international drinking water decade, which began this year.

R. MURALI MANOHAR



## India's forest conservation bill limits state powers

**NEW DELHI**—India's Parliament has passed a Forest Conservation Bill (1980) that limits the absolute powers of the states.

Agriculture Minister Rao Birenda Singh told Parliament that the new bill would not impede development, for "the state governments would be fully involved in any proposal before a final decision was taken in regard to the take-over of forest land for any development project."

The government also abolished the forest contract system by which private contractors had been felling trees indiscriminately with the connivance of forest officials. Another bill, to regulate trees on private lands, will be brought before Parliament soon. And the government will soon set up a forest management institute for training forest officers.

R. MURALI MANOHAR



10 FEB 1981

## In This Issue...

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*Solar experts from Asia and the Pacific met in Bangkok and said the only way to decrease oil use was for the public to demand investments in solar power 8*

## The Global 2000 team presents its program for U.S. policy

**WASHINGTON**—Determined to make hard recommendations out of the warnings of the Global 2000 report on world resources, the U.S. Council on Environmental Quality and the State Department have published a follow-up report that outlines a plan designed to turn the world away from its predicted headlong plunge into resource and environmental disaster.

Entitled "Global Future: Time to Act," their prescription calls for a permanent office within the White House, possibly called the "Federal Coordinating Unit," that would organize and coordinate the pastiche of world resource data collecting and modeling functions now in the federal government. With a staff of perhaps 30 people, this cadre of policymakers would galvanize U.S. programs now spread among at least 20 agencies and departments, said CEQ chairman Gus Speth. The purpose is to keep the President's attention attuned to worldwide resource, population and environmental problems.

Working side-by-side with the federal office would be a "hybrid" public-private institution, tentatively called the "Global Population, Resources and Environment Analysis Institute," that would supplement the government's work with global analyses and research by the private sector. In fact, a group not unlike that described by CEQ announced its formation several weeks ago. Called the "Committee on the Year 2000," it will lobby the new administration in Washington, D.C., to respond to the Global 2000 Report issued last year. Co-chairmen are Robert Anderson, chairman of ARCO, and Russell Train, president of World Wildlife Fund-U.S. Committee members include broadcaster Walter Cronkite; Adrian DeWind, chairman of the Natural Resources Defense Council; Cyrus Vance, former secretary of state; Marian Heiskell, director of special activities for *The New York Times*; and Elliot Richardson, most recently U.S. ambassador to the UN Law of the Sea Conference.

The CEQ-State Department report puts primary emphasis on a call for three new federal interagency task groups to tackle desertification and the disappearance of agricultural lands, global water shortages and loss of species diversity.

As the final part of its three-pronged offensive, the report recommends doubling the country's international assistance for contraception, family planning and maternal and child health care. Additionally, independently and through international organizations, the U.S. should provide more money and technical assistance to encourage the most efficient management of agricultural



## International cooperation...

**THE U.S. STATE DEPARTMENT** recently notified the Government of the Bahamas that an Alabama company, Ashvins U.S.A., is negotiating a contract with a Bahamian company to ship toxic wastes there for disposal.

A source at the State Department told *WER* that the Bahamian Government had not been aware of the plan, which would mark the first time that a developing country accepted hazardous wastes from the U.S. Harold Munnings, Permanent Secretary of the Bahamian Ministry of Health, expressed doubt that his government would allow the plan to be approved even if the two companies reach agreement. He noted that the Bahamas do not have any waste recycling facilities.

Ashvins U.S.A. handles chemical wastes from paint manufacturers, pesticide companies and metal-plating concerns. It has sought disposal sites abroad because domestic sites have been restricted by the Environmental Protection Agency in response to domestic controversy.

**THE U.S. PRESIDENT'S** Council on Environmental Quality recently released a 92-page report, "Global Energy Futures and the Carbon Dioxide Problem" which recommends that the CO<sub>2</sub> issue should now be given "full consideration" in the development of U.S. and global energy policies.

The report is available from the Council on Environmental Quality, 722 Jackson Place, N.W., Washington, D.C. 20006. Please enclose a self-addressed mailing label.

**NATO'S FOREIGN MINISTERS**, at their annual winter meeting, discussed a report prepared by environment ministers of NATO countries on the environmental management of chemicals.

Their report recommended that the foreign ministers, who constitute the North Atlantic Council—the highest NATO body, create arrangements for the exchange and acceptance of information on all chemicals.

This means that information on chemicals obtained from laboratory tests in one NATO country will be accepted for risk assessment in another NATO country.

The environment ministers also recommended that NATO member states establish mutually agreed pre-market data for testing of new chemicals.

A symposium on Technology Assessment and Hazardous Wastes will be held under NATO auspices next fall.

land, fuelwood planting and conservation, forest preservation, control of radioactive and other waste disposal, and protection of the atmosphere from ozone depletion and carbon dioxide buildup.

The ambitious plan, thought to cost up to \$1.5 billion yearly, has been forwarded to the administration, although no public response has been forthcoming. Shortly before announcing its report, CEQ sponsored a planning session with several vice presidents of major U.S. and multinational corporations on developing a "business community" constituency for a Global 2000 plan of action. Although no promises were made, CEQ staff said leaders were "responsive."

In releasing the report to the public, Speth stated: "Those of us who are leaving government know that we have done the easy part—raising the issues and presenting the options. The greater challenges, and the greater opportunity, lie ahead—with the new administration and the new Congress." CHRISTOPHER JOYCE



## It's official—a new U.S. policy on hazardous exports

**WASHINGTON**—On the eve of his return to being a plain citizen from Plains, Georgia, President Jimmy Carter enacted a national policy for limiting overseas export of hazardous products by American companies. Two years in the making, the exports policy satisfies few outside the government, with consumer groups arguing that it merely puts a new face on the status quo, and business groups bemoaning creation of yet another regulatory mechanism from Washington, D.C.

Carter's executive order essentially does four things: First, it creates a single "hazard notification" system, through which the State Department will notify foreign governments whether products they wish to import are restricted or banned in the U.S. Second, the government will augment this notice with a yearly publication describing all actions by U.S. agencies that ban or restrict domestic use of hazardous substances.

Third, the President's order directs U.S. agencies to encourage international cooperation in shaping a worldwide hazard alert system, hazard labeling, and an international notification system. Finally, in its most controversial provision, the order establishes a procedure through which a government task force, working with the State and Commerce Departments, would ban or restrict export of "a very small number of especially hazardous substances" from a "commodity control list."

Critics and advocates of the plan concede that no new ground is broken by the order. Government officials point out that controls

over exports of products by private companies exist but are fragmented among several federal agencies. Some substances like unregistered pesticides enjoy relatively free rein in foreign markets, while others—such as extremely toxic chemicals—are tightly controlled. What the order will do is bring control of hazardous exports under one regulatory umbrella and at the same time ensure that importing countries, many of them located in the Third World, are aware of both the risks and the benefits.

Carter tried to head off concern among chemical, pharmaceutical and other industries that profit from exports of potentially dangerous products by stressing that only a very small number of substances are likely to end up on the commodity control list. The list will consist only of "extremely hazardous" products or those under significant restriction. Such a list already exists, but the new order will bring an intergovernmental task force and the State and Commerce Departments into the list-making process. Should a product end up on the list, it still may be exported if the importing country acknowledges the product's dangers yet still wants to buy it.

Another criticism leveled at the order strikes at the loophole that allows American companies to continue to build factories overseas that manufacture products banned in the U.S., or that use manufacturing processes that are prohibited domestically. According to the Health Research Group and reports published in the press, these include asbestos textile plants, chemical plants making vinyl chloride, smelters and pesticide manufacturers.

Also exempt from coverage are products, such as certain types of infant formula, that are not hazardous per se, even though they require special handling (like clean water) that might not be commonly available in less developed countries. Nor do hazardous wastes come under the order's purview.

One government spokesman who is working on the exports issue at the Organization for Economic Cooperation and Development said that while Carter's policy may not change the status quo significantly, it serves a "symbolic" purpose.

Spokesmen for two major U.S. business groups, however, are dissatisfied with the outcome of the two-year policy project. Lewis Engman, president of the Pharmaceutical Manufacturers Association, said the order was an "11th hour act of arrogance." Chemical Manufacturers Association President Robert Roland added that the order "creates a new and unnecessary burden on industry and the nation" that will act as a "disincentive" to the export of chemicals by the U.S. companies.

The actual number of substances to be covered is not known, although a listing of those that sparked the policymaking effort in the first place serves as a guide to the types of products of concern. That list includes TRIS, the chemical flame-retardant in children's sleepwear that was found in 1977 to be carcinogenic. Exports of such garments continued for at least one year after they were banned in the U.S., according to government documents. Lep-tophos, a pesticide never registered for use in the U.S., was exported to 50 countries between 1971 and 1976, even though it was found in the early 1970s that Egyptian farmers exposed to it suffered hallucinations and impairment of vision, and that 1,200 water buffalo died from exposure to it.

CHRISTOPHER JOYCE

## Toxics...

**TOXIC SUBSTANCES CONTROL NEWSLETTER** is a new and extremely well-done publication issued jointly by National Audubon Society of the U.S. and Stichting Natuur en Milieu of The Netherlands. A limited number of its first two issues are available free to *WER* readers. They can be obtained from: Glenn Paulson, Vice President for Science, National Audubon Society, 950 Third Avenue, New York, N.Y. 10022, U.S.A. Att: TSCN

**WITH REGULATORY PRESSURES ON CADMIUM** use building worldwide, the Third International Cadmium Conference is being held February 3-5 at the Intercontinental Hotel in Miami, Florida. It will provide a forum for an exchange of information on the occupational and environmental aspects of the metal by experts from government, academia and industry.

**WORKERS** at Container Corporation's Barranquilla plant on Colombia's Caribbean coast have charged that lab analysis of the company's packaging materials revealed the presence of DDT particles in excess of world health limits.

Union spokesmen based their report on an analysis made by the company's Pennsylvania laboratories, copies of which were sent to Container's Cali headquarters and leaked to the Barranquilla unions by their U.S. counterparts. The workers expressed concern about possible contamination in food packaging.

The Barranquilla subsidiary also has had problems with the local health authorities, who have threatened to close the plant because of pollution.

**IN DENMARK,** Chemcontrol, an engineering company owned jointly by Kommunekemi (the central chemical waste disposal plant) and two Danish engineering companies, Kampsax International and I. Kruger, has signed an agreement with a partly state-owned Finnish company to design a system for chemical waste disposal in that country.

The contract with Oy Suomen Ongelmajate, the Finnish company, calls for Chemcontrol to work out the general outlines for the Finnish plant. Detailed design work for a contract that will be let late this year will be handled at a later date. Total costs for the Finnish plant are expected to reach \$35 million and take three years to build.

## In Latin America . . .

**VENEZUELA MAY HAVE TO IMPORT** more than \$1 billion worth of processed forest products in the year 2000, estimated German Uzcategui, director of the Environment Ministry. A quarter of this amount is being imported at present. In order to be self-sufficient in forest products, he said, Venezuela has to carry out large-scale commercial tree planting and forest management; in other words, develop a national forest industry.

The government is now making a National Plan for the Protection and Development of Forest Lands. Its first step requires training technical staff—researchers, forestry experts and rangers.

The Environment Ministry, seeking to counteract monopolies, is promoting small lumber companies. Venezuela is seeking strategies, Uzcategui said, to meet its future needs of an annual two million cubic meters of wood for saw mills and six million cubic meters of wood for pulp.

**THE VENEZUELAN ENVIRONMENT** Ministry's projected 1981 budget is \$500 million, half to be spent directly by the Ministry and the other half by public service institutions such as waterworks, garbage collection, national parks, etc.

The Ministry's budget will go mostly for activities related to natural resource planning and protection, and for environmental protection and improvement. These will include the master land-use plan for the nation, environmental education and new legislation. A special allocation is foreseen for research.

**THE MAGDALENA RIVER**, Colombia's major waterway, will be "dead" by the end of the century if emergency measures are not taken, according to a recent report by the Health Ministry.

Three-quarters of the population and 80 percent of agriculture and industry are concentrated within the river system, which covers one-quarter of Colombia's territory.

Of immediate concern is the Magdalena's pollution by the Bogota River, which has been shown to contain quantities of mercury, copper and arsenic residuals. The Chingaza hydroelectric project will connect the two rivers when inaugurated in March.

One culprit is the state sodium enterprise, also responsible for dumping mercury in the Bay of Cartagena, near the mouth of the Magdalena River. In addition, several cities together dump 700 tons of organic material into the Bogota river daily.

The Health Ministry is seeking a \$5 million emergency fund from the government.

## More Mexican industries sign anti-pollution agreements

**MEXICO CITY**—Four more major Mexican industries have signed anti-contamination agreements with the Department of Health, following the lead taken late last year by Petroleos Mexicanos, the government petroleum monopoly. As with the earlier Pemex agreement, President Jose Lopez Portillo was an official witness to the signing of accords.

Promising to control atmospheric and water emissions were the Federal Electricity Commission; Fertilizantes Mexicanos, the national fertilizer manufacturer; the National Sugar Commission and the nation's steel industry, in which the federal government plays a role. Accepting their agreements as co-signer was Dr. Mario Calles Lopez Negrete, Secretary of Health, who has overall authority over the Sub-secretariat of Environmental Improvement.

Specifically, the electricity commission will clean up its thermo-electric plants, especially those which burn coal, and will control chemical emissions from transformers. The sugar and steel industries said they will control emissions into rivers, streams and the Gulf of Mexico, while the fertilizer industry said it will focus first on eliminating emissions into the atmosphere as sulphur dioxide, sulphuric acid and nitric acid.

KATHERINE HATCH

## Venezuela's new economic plan stresses environmental action

**CARACAS**—The Environment Ministry has been given a primary role in Venezuela's 1981-1985 VI National Plan. Farming, forestry and fishing get primary billing, for at present 65 percent of the nation's food is supplied from abroad.

"There will come a moment in which petroleum cannot be exchanged for food as is now done," said the ministry's director German Uzcategui. He said they have been given specific directives to help the country's agricultural development by means of land-use planning, legal protection for farming areas, and construction of reservoirs for irrigation and dikes to stop flooding.

Government agencies cooperating in these programs include the Ministry of Agriculture, the Agrarian Institute, Health and Housing Ministries and the Farming Credit Institute.

By the year 2000, Venezuela will need 70 million hectares of farmland, Uzcategui said. About 40 million is available now for agriculture and stock raising.

"The scarcity of farming lands will lead to invasion of forest reserves and national parks and deterioration of water basins, if present tendencies of space occupation are not corrected," he said. Thirteen percent of Venezuela's land, or 12 million hectares, is now forested. Uzcategui said some forest reserves possess soils with high agricultural potential, but at the same time other areas being farmed unproductively might be more efficiently dedicated



to tree planting.

Productivity on Venezuelan farms has decreased sharply since 1974. At that time, each dollar in farming credits resulted in products worth \$3.24; by 1978 this figure dropped to \$1.23.

Domestic consumption relies on imports for 70 percent of Venezuela's milk, 80 percent of its fats, 65 percent of its maize, 52 percent of its sugar, and 100 percent of its black beans. Some \$10 billion will be needed to develop Venezuela's agriculture, say government experts. Under the VI National Plan, almost \$4 billion is slated for agricultural, forestry and farming plans, including mechanization, food processing, pulp mills, research and technical aid programs.

LILI STEINHEIL



## Brazil may use vegetable oils to reduce use of diesel fuel

**RIO DE JANEIRO**—Brazil has effectively halved the consumption of gasoline by private motorists and is reducing diesel consumption in trucks and buses, says the Transport Ministry.

The main reasons behind this stabilization of consumption is a hard pricing policy which has hiked gas prices more than three times what they were in 1974 and a successful fuel-alcohol substitution program which, the ministry estimates, will have the effect of reducing consumption of gas this year by 8.3 percent. All gasoline sold at the pumps is now 20 percent alcohol and as the pump price of clean, non-polluting alcohol now stands at 34 cents a liter, more and more of the motoring public is turning to all-alcohol burning cars.

Although the overall consumption of diesel has increased by some 70 percent since 1974 and the truck and bus fleet has more than doubled to 840,000 over the same period, the average monthly consumption per unit actually dropped.

Diesel consumption could further stabilize if a government plan goes ahead to replace up to 10 percent of all diesel used with vegetable oils. The Ministry of Industry and Commerce is working out details of a plan similar to the gasohol program and says that the best substitute is dende palm oil. As there are not enough dende palms presently planted and as they take at least five years to mature, short-term substitutes may be soybean and peanut oil. An addition of up to 30 percent of any of the three oils does not necessitate any major alterations to engines, says the ministry, although consumption is increased by 28 percent.

By 1985, some 25 billion liters of diesel a year will be consumed which would require 2.5 billion liters of vegetable oil substitute and a planted area of four million hectares of the chosen crop. The saving over imported oil in 1985 is estimated at \$8.5 billion a year.

GEORGE HAWRYLYSHYN

## Renewable energy...

**WATERPOWER '81**, an international conference on hydroelectric power, will be held in Washington, D.C. from June 22-24 at the Shoreham Hotel. Its purpose will be to bring together representatives of national agencies, the private sector, and the academic community to discuss current plans for hydroelectric development around the world.

**AS A FIRST STEP** toward exploitation of Morocco's inexhaustible sunshine, a local company, the Societe des Industries Mecaniques et Electroniques (SIMEF) of Fez, has signed a deal with the French firm Societe des Moteurs Leroy Semer for the production of solar energy motors.

Under the same accord the two companies will investigate the possibilities of producing power from small-scale hydroelectric dams and windmills, and the production of methane from biomass.

The U.S. Government has also agreed to assist Morocco. It will provide financial and technical assistance to create a center for renewable energy sources to be located in the southern city of Marrakesh.

**JAPAN'S KANSAI ELECTRIC** Company will build what it says is the world's largest windmill for electricity generation. The Darius-type windmill will be developed in cooperation with Mitsubishi Electric Corp. Capable of producing up to five kilowatts of electricity, it will be situated at Kushimoto, Wakayama Prefecture.

**"U.S. SOLAR ENERGY POLICY** for Less Developed Countries" is the subject of a recent study made for the U.S. Department of Energy. The 55-page report is drawn from interviews in the Middle East, India and the United States and an analysis of other reports. It concentrates on the political and sociological issues that will affect decisions on the use of solar energy in the LDCs. It can be obtained from the author, Prof. Bruce M. Russett, Yale University, Dept. of Political Science, 124 Prospect Street, P.O. Box 3532 Yale Station, New Haven, Conn. 06520, U.S.A.

**THE WORLD'S LONGEST SOLAR-POWERED** communications system, in northwest Australia, starts going up in March. The system will stretch 1,600 kilometers from Port Hedland to Wyndham and take almost three years to complete.

The Telecom Australia system, costing \$18.5 million, will bring modern microwave telephone links to residents in the northwest. The solar power units comprise a standard shipping container housing a bank of batteries to power each of 43 repeater stations. The batteries will be charged by a series of solar cells mounted on the roof. Because of extreme weather conditions in the area, the repeater equipment will be installed in underground shelters with stable temperatures.

## In Asia ...

**THE JAPANESE** Ministry of International Trade and Industry recently announced that the government will not approve the construction of new chlorofluorocarbon (CFC) plants in the near future. The chemical, used in hair spray, pesticide and other aerosol products, is believed to have a destructive effect on the ozone layer of the stratosphere. According to industry sources, as Japan's demand for CFCs is increasing annually and the industry is already operating at full capacity, the MITI decision will deal a hard blow not only to the industry but also to users.

**THE PRESIDENT** of Japan's Federation of Economic Organizations (Keidanren) told the government that business opposes the enactment of the proposed Environmental Impact Bill. The bill requires developers to assess the environmental impact of their projects according to stipulated procedures. The Environmental Agency plans to introduce the proposed bill in the present Diet (Parliament) session. It previously tried five times to present the bill at the Diet, but every time the attempt was thwarted by business opposition.

**JAPAN HAS AGREED** to conduct studies on the environmental effects of a proposed coal-fired power station in Singapore. Under the agreement, Japan will send two teams to Singapore to carry out the studies, probably in February. One team will spend about 40 days studying water pollution and the other, looking into air pollution, will be in Singapore for about one year. The proposed power station will be sited either on Pulau Seraya or on Pulau Tekong.

**S.T. SUNDRAM**, Director of the Environment Division of the Malaysian Science, Technology and Environment Ministry, said that the Government is drawing up an Environmental Impact Assessment Procedure. The Minister said the procedure will only be passed if it is approved by other government agencies. He urged the media to help increase public awareness of the need for environmental protection.

**THE FIRST NATIONAL SCIENCE SYMPOSIUM** since the founding of the People's Republic of China in 1949 was held in Hunan province recently. Its purpose: to discuss the development and ecological balance of the country's tropical and sub-tropical areas.

China's tropical and sub-tropical areas, representing 21 percent of the nation's land, total some two million square kilometers. Around 60 percent of the nation's grain output and 40 percent of its cotton are produced there. The areas, with a population of 500 million, also have over 1,400 species and sub-species of trees and 1,500 kinds of wildlife.

## Philippines requires impact statements for critical areas

**MANILA**—The Philippine government has classified 12 areas and 16 types of industrial projects as "environmentally critical," sources at the National Environmental Protection Council (NEPC) said.

The list, laid down in a presidential proclamation draft, has been submitted to President Ferdinand Marcos for approval.

If the proclamation is signed, all industrial projects classified as environmentally critical will be required to file environmental impact statements, which are subject to government approval. The setting up of industries will also be restricted in environmentally critical areas. NEPC sources said the proclamation will not affect projects which are either operational or nearing completion.

Environmentally critical areas include national parks, watershed reserves, wildlife preserves and sanctuaries, potential tourist spots, areas of historic and scientific interest, areas occupied by national tribes, areas prone to natural disasters, prime agricultural lands, areas containing drinking water sources, mangrove areas with younger growth, major river mouths, coral reefs with 50 percent or more live coralline, fry breeding grounds, etc.

Environmentally critical projects include non-ferrous metal industries, iron and steel mills, petroleum and petrochemical industries, mining and quarrying projects, forestry projects for logging and wood processing, power plants, major dams, major roads, and bridges.

SPECIAL TO WER

## Thailand has a long-term plan to provide water nationwide

**BANGKOK**—Thailand's first long-term master plan designed to provide adequate water for agriculture production, general public consumption, energy production and industrial consumption, was submitted for incorporation into the Fifth National Economic and Social Development Plan, which starts in 1982.

A primary objective is to provide adequate water supplies to poor areas in order to reduce social disparity. At present, only 15 percent of Thailand's area is covered by irrigation systems, while the remaining 85 percent has to rely on rainfall. Although the plan covers the whole country, the southern region will be given lower priority as it gets sufficient rain all year round.

The master plan outlines the broad guidelines and structure of the proposed water resource development program. As soon as it is approved, costs, schedules, evaluation procedures and follow-up measures will be worked out. At present some 40 government agencies in six ministries are involved in water development; the plan calls for the establishment of a central administration to implement projects in the master plan.

The private sector will be invited to participate in the water development projects, mainly in the area of maintenance, and the Government will call for public tenders for the right to operate projects.

TONY OLIVER

## An energy planning workshop set for developing countries

**PERTH**—Small, developing countries haven't the facilities or resources to adequately plan future energy needs—even though they may be keenly interested in setting up such an "energy planning unit."

In a unique cooperative effort between an industrialized nation and a developing one, Australia and Papua New Guinea are jointly hosting a world energy planning workshop for some 18 developing countries. It will be held in Lae, Papua New Guinea, in July 1981.

Papua New Guinea is providing the facilities and some expertise from its department of minerals and energy, as well as organization from its University of Technology. Australia is funding the workshop and providing most of the experts—from the Commonwealth Scientific and Industrial Research Organization, from the Australian National University and from the University of New South Wales.

The announcement about the workshop was made at the Commonwealth heads of government meeting in New Delhi last year. Sir Julius Chan, prime minister of Papua New Guinea, noted a lack of basic information needed to develop energy and, he said, there was not much understanding of how energy planning meshed with social and cultural development.

Among nations expected to participate in the conference are Bangladesh, Burma, Fiji, Indonesia, Kiribati, Malaysia, Nepal, Papua New Guinea, the Philippines, New Hebrides, Solomon Islands, Tonga, Tuvalu and Western Samoa.

JANE NACZYNSKI-PHILLIPS

## Biomass could be a major energy source, experts say

**LONDON**—Even in industrialized countries there is unexplored potential for energy from biomass. Local conditions of climate and cropping, such as in Brazil, could make it a significant energy source. In Asia and Africa, where biomass in the form of wood and dung has been the traditional and almost sole source of energy, management is needed to contain and diversify this within local ecosystems to prevent the denuding of the landscape, erosion and flooding.

These were some of the general conclusions to be gathered from the first International Conference on Energy from Biomass, organized in Brighton, England, late last year by the Commission of the European Communities in cooperation with Britain's Department of Energy.

Several conference papers discussed the importance of accurate cost-effectiveness. Included in cost, they considered, should be such things as transport, production and harvesting, plant construction, any outside fuel used in the distillation, fermenting and extraction techniques. Also any rival claims to the land and the crop itself, such as food or livestock fodder. BARBARA MASSAM

## Energy sources ...

**PAKISTAN** has received a \$5 million pledge from the World Bank for a three-year energy planning project to be completed in three phases.

The World Bank loan will be used to install computers and support equipment, and will provide funds to train energy planners.

**ENHANCED RECOVERY TECHNIQUES** for conventional and non-conventional forms of energy could double the yield of known conventional oil reserves, a UN Economic Commission for Europe seminar concluded.

The potential is large for every primary form of energy, the experts found. However, it appears of particular relevance with respect to oil. "Enhanced recovery techniques could double the yield of known conventional oil reserves and significantly raise the yield of discoveries still to be made," the seminar report said.

The recent Vienna meeting brought together 89 experts from the coal, oil and gas industries of 16 countries. They assessed the technological, economic and environmental difficulties experienced in the development and application of conventional and advanced extractive technologies.

**AN ENERGY-SAVING DEVICE** called the Demand Manager is being marketed in Britain, the United States and the Middle East.

It was developed by the Irish State Electricity Supply Board (ISESB), and consists of a micro-computer that regulates the flow of electricity to keep demand below a pre-set level. As part of an energy-saving campaign, the device is being installed at Ireland's three main airports, where demand can be regulated according to a pre-determined schedule.

The ISESB says its device can cut industrialists' power costs by an average of \$12,000 a year.

**ISRAEL** has developed special turbines—the first of their kind in the world—to generate electricity from the heat residues of industrial processes. Prior to this new development, it was difficult to utilize heat discharged in manufacturing processes at temperatures below 120°C, except for use in local heating or hot houses. The Ormat Turbines utilize low-temperature heat to boil a special organic liquid at temperatures below 90 degrees.

Two turbines—producing 300 kilowatts each and costing \$300,000 each—have recently been exported to the United States for installation at industrial plants. A survey prepared by the U.S. Department of Energy estimates that 2 million kilowatts of electricity may be produced in American industrial plants and refineries through utilization of "lost heat."

## Books & booklets . . .

**OIL IMPORTS** by members of the OECD's International Energy Agency (IEA) could be reduced by six million barrels a day by the year 2000 if the development of conservation and supply technologies can be accelerated.

That prediction was made in a report\* by the IEA based on a five-year study comparing two projected paths for energy research and development activities in the next two decades. Dr. Eric Willis of the IEA said, "This study is a milestone in energy R&D planning because for the first time priorities are established for all energy technologies based on their projected energy contributions over the next 40 years under various assumptions about the future."

The IEA report emphasizes coal and nuclear power and discusses their environmental shortcomings. It says that renewable technologies like geothermal heat, solar and biomass will be able to compete with oil imports before the year 2000.

\*"A Group Strategy for Energy Research, Development and Demonstration," IEA, Chateau de la Musette, 2 rue Andre Pascal, 75775 Paris, France.

**THE ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT** has published several environmental studies:

- Noise Abatement Policies (390 pp.)
- Siting Procedures for Major Energy Facilities: Some Major National Cases (92 pp.)
- Urban Environment and Economic Development (140 pp.)
- Long Term Futures for the Urban Environment (60 pp.)
- Improving the Management of Urban Public Services (60 pp.)

Copies of the publications may be obtained from OECD sales agents or from the OECD main office at 2 rue Andre Pascal, 75775 PARIS CEDEX 16, FRANCE.

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## Asian experts say solar power can reduce the use of oil

**BANGKOK**—Developing countries were urged to put less money into subsidizing oil and more into finding methods of harnessing the power of the sun.

This urgent recommendation came from the 127 solar scientists and energy experts from 18 countries who participated in a 10-day "Symposium on Solar Science and Technology," held here recently. It was organized by the UN Economic and Social Commission for Asia and the Pacific's Regional Center for Technology Transfer (Bangalore, India) in cooperation with the Asian Institute of Technology (AIT), located on the outskirts of Bangkok.

Representatives of nearly all the participating Asian countries said their governments were extending what assistance they could, but, they pointed out, if the public could be convinced of the potential and virtues of solar power, together with the growing urgency to find alternatives to oil, their governments would find it easier to finance use of solar energy more extensively.

The meeting called for the establishment of prototype development centers to perform a variety of functions, including testing solar equipment or the materials needed for its construction, and adapting imported technology to local needs and conditions. Other proposals covered the inclusion of solar energy courses in schools and colleges; government research efforts to be accompanied by tax incentives for commercial solar energy firms; and the convening of periodic meetings among experts to facilitate exchanges of ideas and information.

The symposium was also informed of efforts by the five-member Association of Southeast Asian Nations (ASEAN) in energy research cooperation.

This group, in two meetings, thrashed out a set of proposals that call for the use of solar energy for electricity production, drying, cooling, heating and cooking. A second priority was the more costly and less technologically advanced methods of extracting fuel from vegetable matter, coal conversion, geothermal and wind power.

To speed up research and avoid duplication of work, the experts decided to conduct studies on particular areas in different ASEAN countries; i.e., Thailand will study solar electricity generation and pumping; the Philippines, bioconversion; Malaysia, solar drying; Indonesia, coal conversion; and Singapore, solar air-conditioning and refrigeration.

Aid pledges have already been received for the ASEAN plan from the United States (\$1 million), the European Community, Australia and Japan. The coordinating center for the project will be India's AIT, where the United States has also offered to base an energy expert to supervise research efforts and to instruct the institute's Asian students in solar energy utilization.

TONY OLIVER



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## ANALYSIS<sup>28 JAN 1981</sup> Appraising the environmental effects of deepsea mining



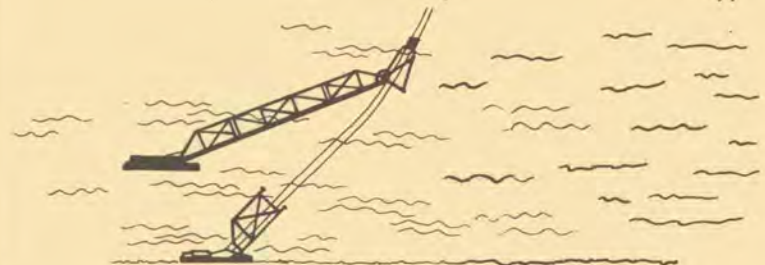
**NAIROBI**—The Law of the Sea Treaty, scheduled for 1981, will open the way to one of the largest mining operations ever to occur on the face of the earth—in the sea.

An article of the new Law specifies that “necessary measures should be taken to ensure effective protection for the marine environment, and to that end the International Sea-Bed Authority shall adopt appropriate rules, regulations and procedures... (Nations) have the obligation to protect and preserve the marine environment...and shall be committed to take all necessary measures to prevent, reduce and control pollution of a marine environment from any source.”

But what will the effects of deep-sea mining be? There is doubt and debate about it. The full potential implications are still in relatively early stages of investigation, on the part of the U.S. National Oceanic and Atmospheric Administration, the American Society for International Law, the International Union for Conservation of Nature and Natural Resources and commercial enterprises such as the Ocean Minerals Company of California.

The deep-sea environments in question are known as “benthic ecosystems,” located at depths of more than 4,000 meters (roughly 2¼ miles) and they cover approximately 40 percent of earth's surface. Preliminary projections suggest that even by the year 2000, deep-sea mining will affect only 0.003 percent of the deep-ocean environment. So no great areas are involved.

But the actual impact of mining is the subject of much controversy. Some scientists believe there will be only local disturbances of short duration. Others believe there will be very marked disruptions of the ocean floor. The localities actually mined plus an area of “border zone” on either side of the “ore collector track” (the area affected by the vacuum-cleaner type of



## Ocean management . . .

**TANZANIA'S INDIAN OCEAN COASTLINE** is rapidly becoming polluted with oil and other wastes indiscriminately dumped by Gulf-bound supertankers and ships calling at Tanzanian ports.

A World Bank financed aerial survey has revealed a black layer on top of the coastal waters. "If this situation continues there is every possibility that the environment in the area will be greatly affected," explained M.Y. Lumbanga, an official with the Ministry of Natural Resources.

He told *WER* that although the dumping occurs within Tanzania's territorial waters, "We are a poor country and the shipping companies know we cannot adequately patrol our coastline."

Lumbanga said Tanzania has decided, "It is not good to remain silent. We hope through publicity that we can discourage this sort of dumping before it does too much damage."

**OIL POLLUTION IN THE NORTH SEA** has doubled in five years says the Continental Shelf Institute (IKU).

This is stated in an IKU report on the basis of oil trawling in the North Sea in June 1979. Altogether 24 tests were made then and deposits of oil were found in 21 of them. Similar tests were made in 1975.

The report said that the increase may be due to increased activity on the continental shelf, increased oil transport in the area and increased ship traffic.

Reservations were made for the possibility that the increase in pollution is not indicative of general conditions, but that it may be due to special wind or current conditions, or to accidental circumstances at the time the tests were made. The increase may be due to a combination of several of these circumstances, the IKU report concluded.

**SCIENTISTS SHOULD BE CONCERNED** about the present lack of knowledge of the long-term effects of oil spillages in the sea—but existing information indicates that marine organisms have a "very high" tolerance of oil.

The point is made in a study of hydrocarbons and the marine environment, in the UN Environment Program's Industry and Environment series.

The paper also includes articles on the environmental impact of refinery effluents, oil spill contingency planning, and activities of the Inter-Governmental Maritime Consultative Organization (IMCO).

Another paper reviews the work of an expert workshop, held in Brest, France, in November 1979 on the application and environmental effects of oil spill chemicals.

extractor) could suffer severe and long-term environmental degradation. Sea-floor organisms that lie in the wake of the collector might not recover for long periods, primarily because they tend to feature very long generation intervals—a benthic clam has recently been found to take 200 years to reach sexual maturity.

The mining ship will need to discharge large quantities of waste material that is scooped up from the sea floor at the same time that the mineral nodules are collected. The discharge will cause a "surface plume," in the form of a cloud of turbid waste that extends with decreasing intensity downcurrent from the ship. This discharge will, according to preliminary investigations, cause no harmful effects to phytoplankton and other organisms that generate the oceans' primary productivity. But the discharge may impede penetration of sunlight into the euphotic zone, with possibly more serious consequences. Moreover, the sediment may filter down through the ocean at a rate as slow as 20 meters per year. It is not unrealistic to suppose that several hundred thousand square kilometers of the Pacific may, as early as 1990, feature a 100-meter layer of sediment-polluted water immediately beneath the surface.

As a final point for this tentative list of environmental problems that may arise, the mining concerns may find that as much as 70-80 percent of their mineral material will end up as processing waste. The waste will include heavy metals, which can be toxic to marine life. This will be all the more difficult to deal with if, as is likely, processing industries are set up along coasts, where natural environments feature some of the most productive and diverse ecosystems on earth.

NORMAN MYERS



## Persian Gulf oil spills show up lack of combat readiness

**BAHREIN**—The last few months have revealed just how vulnerable the Persian Gulf region is to massive oil pollution. In August, about 20,000 barrels of oil, thought to have originated from the Arabian American Company (ARAMCO) terminal at Ras Tanura on the Saudi coast, washed ashore on Bahrein (*WER*, Sept. 22, 1980, p. 1). The tiny island sheikhdom's northern and western shorelines were coated with an oily slime that required millions of dollars and the efforts of 1,000 men to eradicate.

Shortly afterwards, about 200 fishermen on the coast south of Bahrein complained of skin rashes, blisters on their hands and sore eyes. Some required hospitalization. Speculation that the "new disease" was caused by anti-pollutant chemicals was discounted, since Gulf currents could not have carried the chemicals that far in

so short a time. The commander of the UAE Coast Guard, Colonel Saif Shaffar, attributed the attack to poisonous fish whose activity had been heightened by an increase in the water temperature. Dr. Rifat Mustafa Ali, fisheries advisor to the Ministry of Agriculture and Fisheries in Dubai, suggested that plankton was a possible cause of the problem although it might also have been caused by chemicals used in oil exploration off the UAE coast. In any event, said Dr. Ali, the incident highlighted the United Arab Emirates' lack of preparedness for a marine disaster.

A month after the Bahrein incident, an explosion of the Ron Tapmeyer oil rig in the north central Gulf released 80,000 to 100,000 barrels of oil into the sea in what is widely regarded here as the Persian Gulf's worst pollution incident to date. Moving leisurely down the coast, the 167-kilometer-long slick aimed for Abu Dhabi's Das Island, collection point for the Lower Zakum and Umm Shaif Fields. The 3,000 men on the island, which is also a base for natural gas liquifaction and liquid petroleum gas plants, depend on a desalination plant for their drinking water. It was saved in the nick of time by a shift of wind and current. Nonetheless, beaches elsewhere were seriously damaged with Qatar's 322 kilometers of affected coastline the worst hit—the clean-up bill is estimated at \$7 million.

Dr. Ali Fakhro, Bahrein's Minister of Health, remarked that the Ron Tapmeyer spill was impossible to monitor from the air because the heavy oil floated under the surface of the water. "The Gulf must prepare itself once and for all or it will be too late," he said in urging that a Gulf-wide Marine Emergency Mutual Aid Center, as envisaged by the Kuwait Action Plan (KAP), be established immediately.

ROBERT FRAGA

## Japan delays plans to dump radioactive wastes at sea

**TOKYO**—The government has not dropped plans to dump between 5,000 and 10,000 barrels of low-level radioactive waste in the South Pacific, but Japan's participation in the 1975 London Dumping Convention has delayed the target date of summer-fall 1981, Minoru Honami of the Science and Technology Agency said in a recent interview.

Japan officially became a member of the London Convention restricting the dumping of industrial waste and other matter on November 15. The OECD Nuclear Energy Agency's one-year surveillance mechanism will mean that the earliest Japan could dump its wastes would be late November 1981, he said.

While Japan is planning to follow international accords and does not need to receive "Japanese or other people's permission" to dump the cement-encased drums 900 kilometers southeast of Japan in international waters, the government is anxious "to harmonize" with those opposing the dumping, Honami said.

Japanese fishermen on the Ogasawara (Bonin) Islands under Japanese jurisdiction and South Pacific islanders have formally protested that the dumping will endanger their fishing grounds, but the government contends that the project is safe.

SPECIAL TO WER

## Water quality...

**MORE THAN 3,500 BARRELS** of fuel oil were dumped in the bay of Cartagena recently, causing severe damage to surrounding beaches in the Colombian seaside resort.

The damage was caused by a faulty oil barge, which sank in front of the port facilities of the state oil enterprise Ecopetrol. The accident was not reported or noticed for 24 hours, as it occurred during Cartagena's annual carnival. Although Ecopetrol anchored barricades around the seepage and sprayed the area with an oil dispersion solvent, spokesmen for the government wildlife service INDERENA said the measures had come too late to protect the bay.

INDERENA has slapped a fine of \$10,000 a day on the transport company Transflumar, which owned the oil barge.

**THE TRAFFIC SEPARATION SCHEME (TSS)** in the Straits of Malacca and Singapore, proposed more than a decade ago to minimize tanker accidents, should be in force by mid-1981. The Technical Experts Group of Malaysia, Indonesia and Singapore drafted a report for Senior Officials, which will then be submitted to the Inter-Governmental Maritime Consultative Organization (IMCO). IMCO will need about four months to advise the maritime community of the new routing system before it is implemented. The littoral states, especially Malaysia, want a speedy implementation of the TSS to protect the marine environment.

**THE BRIGANTINE** Eye of the Wind tested water pollution in the Gulf of Genoa while a dirigible measured air pollution and photographed how pollutants mix in the sea below.

Both tests were carried out under the first UN regional anti-pollution treaty, signed by 18 Mediterranean nations in Athens last May.

The two-masted ship, which is finishing a round-the-world trip under the patronage of England's Prince Charles, collected samples of water off the Italian riviera, severely polluted by city waste and oil leakage from tankers.

**THE COMMITTEE ON WATER PROBLEMS** of the Economic Commission for Europe (ECE) recently endorsed a series of recommendations urging economic incentives to stimulate a more rational use of water and to protect it from pollution.

The Committee, which met in Geneva, suggested that fees, penalties, grants, subsidies, low-interest loans and tax relief, among other things, should not be considered mutually exclusive but should be applied in combination, depending upon the level of water resources development and on economic, social and historical conditions. A differentiated tariff system should be adopted that would be appropriate to reduce waste.

## Toxics ...

**DESPITE AN INTERNATIONAL ACID RAIN AGREEMENT** thousands of tons of sulphur still rain down over Norway—pollution originating from factory chimneys in Britain and on the European continent.

A Norwegian Institute for Air Research report says the worst effects, especially in lakes and rivers, are felt over southern Norway. This summer 100 kilograms of sulphur per square kilometer came down in this area, researcher Einer Joranger said.

Even as far north as the Finnmarksvidda mountain plateau north of the Arctic Circle there is now a high degree of pollution, in some places as much as in the inland regions of southeast Norway.

Ministry of Environment spokesman Erik Lykke said that he hopes a new OECD report on sulphur discharges will contribute to a quicker solution of the problems connected with industrial discharge.

**THE ENVIRONMENT AGENCY OF JAPAN** recently urged the Ministry of International Trade and Industry (MITI) to ban the use of dieldrin, an agricultural chemical used as an insecticide. Environmental pollution by dieldrin has already spread to all the coastal areas of the Inland Sea, the agency said. Meanwhile, the Health and Welfare Ministry notified 11 prefectural governments around the Inland Sea that the dieldrin concentration in hard-shelled mussels should not exceed 0.1 per million. The Ministry would also increase its checks on marine product markets to make sure that shellfish containing dieldrin concentrations higher than that would not be distributed.

**DR. NILAY CHAUDHURY**, Chairman of India's Central Board for the Prevention and Control of Water Pollution, estimates that about 180 tonnes of mercury are introduced into the Indian environment every year of which 166 tonnes come from the caustic soda industry.

According to the board, the mercury directly or indirectly released by these factories into water can enable over 16 million fish to carry the same risk dose of methylated mercury as was found in the Minimata cases in Japan a few years ago. Because of the danger involved in mercury production, the board has suggested that the government should not grant any new licenses for caustic soda plants that use the mercury-cell process.

Meanwhile, caustic soda manufacturers are trying to reduce their total mercury discharge. One manufacturer, Gujarat Alkali, claimed it has brought down its mercury losses to 50 grams per ton of caustic soda produced. Caustic soda can also be produced by another process in which mercury is not used.

## Health worries plague Seveso four years after gassing

**SEVESO, Italy**—Many millions of dollars in compensation to residents here and shipping 54 drums of trichlorophenol back to Switzerland officially put an end to Italy's worst ecologic disaster—the dioxin pollution that forced hundreds to evacuate this northern Italian town, near Milan, in 1976.

Even so, 50 hectares of the most polluted area, near the Icmesa firm, remain fenced off and barred pending further reclamation efforts while checks on the health of residents will be continued for years—which indicates the case is far from resolved.

The Love Canal evacuation in Niagara Falls, N.Y., earlier this year has triggered among Seveso residents fears that they also might be suffering long-term health effects from chemical pollution. Additional fears were recently caused by the death of nearly 200 sheep which had grazed in a banned area near Seveso. Laboratory tests found the epidemic was not caused by dioxin.

Health authorities, who have been checking 100,000 residents of Seveso and nearby areas on a regular basis since 1976, said recently that the average yearly death rate in the polluted zones has not been higher than regional rates since 1976, when a highly toxic cloud of dioxin leaked from the plants of Icmesa, a chemical firm controlled by the Swiss-based Givaudan. "Nothing indicates an increased evidence of cancer or birth defects in the Seveso area," said Luigi Noe, the special government commissioner dealing with Seveso reclamation. And Givaudan officials, during a recent news conference in Geneva, claimed that, following reclamation, there were no health hazards in Seveso.

However, many residents, citing predictions by experts of possible long-term effects on people exposed to dioxin, have been little reassured by recent statistics and reports by the authority and Givaudan.

"I live in fear that our health still is in danger," said Rosetta Cravera, who runs a shop in a reclaimed area of Seveso. Another resident told *WER* "I have always thought that dioxin will be a continuing threat to all of us."

Both receive compensation from Givaudan for the economic damage suffered following evacuation of their houses and shops. Temporary relocation of about 800 residents lasted six months to a year.

Givaudan, which is part of the Hoffman-La Roche group, recently agreed to pay \$114 million in compensation for the environmental disaster, including funds still to be used for completing reclamation.

The dioxin leakage killed hundreds of animals, withered vegetables and fruit and caused skin diseases in 187 residents two to 12 months after the incident. Cultivation of vegetables still is banned in large areas of Seveso. However, special commissioner Noe said the ban should be lifted soon since test crops in reclaimed areas showed no traces of dioxin.

"Most Seveso residents want a return to normality in the short term and to forget the nightmare of dioxin. But health checks will



be compulsorily continued for years while the most polluted Zone A will be kept fenced off for months because reclamation of the area in which dioxin piled up is turning extremely difficult. Dioxin does not degrade in large quantity," an environmental official of the Lombardy region stated.

As far as a parallel between Love Canal and Seveso was concerned, Noe said the July 1976 explosion at Icmesa leaked only a small amount of hazardous chemicals compared with the amount which was buried in Love Canal.

Several kilograms of trichlorinephenol, which was shipped back to Givaudan by sealed freight train for destruction in Swiss territory, were recovered from the reactor in which the explosion occurred triggering the dioxin cloud.

Since then Icmesa has remained closed and authorities said there was no immediate chance of its being reopened.

PIERO VALSECCHI

## Millions of trees and plants now green Ruhr mining dumps



**BONN**—Since the early days of the industrial revolution, hundreds of mines have been developed and worked in West Germany's Ruhr District, each one giving birth to its ugly hill of mixed rock, earth and coal debris—and all giving the Ruhr a bad name for environmental damage from industrial development. Many of the mine dumps cover an area of hundreds of hectares and rise 50 to 70 meters above the surrounding land. As recently as 1950, 160 mines were being worked in the District, though their number is now down to 30-odd.

To correct the accumulated damage of more than 150 years of abuse and neglect, the Municipal Association of the Ruhr District (KVR) is now midway through what it describes as "the largest recultivation program in Europe." In the last three years the KVR has planted over 1.5 million trees and shrubs on old mine dumps in and around the cities of Unna, Luenen, Hamm, Kamen and Gergkammen. By 1983, another 450,000 trees will be planted.

The recultivation work entails a certain amount of grading and covering the dumps with a layer of earth enriched with fertilizers. Once the trees and shrubs have taken root and a fair growth gets underway, the afforested areas are made available to the public, with widespread acceptance. In addition to those benefits to the inhabitants of the densely populated area, the transformed dumps take on an aesthetic value by breaking up an otherwise featureless landscape with wooded hills into which a variety of wildlife has moved.

J.M. BRADLEY

## Environment & Industry...

**IN INDIA**, a Supreme Court judgment upholding the rights of citizens against civic authorities could have wide impact on the control of slums and chemical pollution in Indian cities, reports R.R. Khan, a scientist in Lucknow's Industrial Toxicology Research Center.

Some citizens of Ratlam in the state of Madhya Pradesh sued municipal authorities, complaining of pollution from an alcohol manufacturer and unhygienic surroundings. They quoted the state's Municipalities Act which says it is the duty of the municipal council to clean streets, abate public nuisance and dispose of night soil and rubbish.

The Supreme Court found in their favor and asked the state government to provide loans or grants to implement the court-ordered improvement of the environment—six months to improve public hygiene, stop effluents from the alcohol plant and conduct a malaria eradication program.

**SHANGHAI HAS BECOME MUCH CLEANER** since the Chinese city introduced financial penalties for factories found polluting the air and water. Earlier this year, 431 enterprises would have faced more than 7 million yuan (\$4.6 million) in penalties, but the factories' clean-up efforts have resulted in their only having to pay 3.3 million yuan (\$2.2 million). In addition, 12 factories have sufficiently checked their pollution to avoid having to pay any penalties at all.

**IN PORTUGAL**, the government is offering generous incentives to industrial energy savers. Companies that install new equipment or energy saving devices can apply for subsidies worth 50 percent of the project. A savings time limit is stipulated for each type of equipment (e.g., six years for boilers).

The government has set aside \$14 million for schemes over the next September-to-September year. The energy board estimates a fuel loss of one million tons annually through waste in the country's badly equipped industries.

**UNDER A NEW CODE OF PRACTICE** to prevent exposure to lead at work, British employers are required to introduce non-toxic substitutes where possible, to modify processes so that lead dust and fumes are not created, or to provide protective clothing and respirators when the first two measures cannot be applied.

The code, published by the Government's Health & Safety Executive on October 30, also advises workers not to eat, drink or smoke in contaminated areas. Although not legally binding, the failure to comply can be used in criminal proceedings brought when lead safety regulations are breached.

## Forestry...

**THAILAND'S** Environment Research Institute of Chulalongkorn University says that the country's forests will disappear by 1987 if the present destruction rate of about eight million rai (1.28 million hectares) per year continues. Forested areas throughout Thailand at present have declined to only 25 percent, compared with 60 percent of the country's total area in 1961. The report is based on data collected from satellite surveys and statistics provided by the Forestry Department as well as the Forestry Faculty of Kasetsart University.

**A MAJOR REFORESTATION PROGRAM** to be started by the Thai Government next year has received agreement, in principle, from the World Bank for a \$140 million loan. Thanom Premrasmi, director-general of the Royal Forestry Department, broke the news of the impending loan on his recent return from Washington. Details of the interest rates and the loan repayment period have yet to be finalized, but it is expected that the agreement will be signed by April last year.

The ambitious program will cover a period of 14 years. The total area involved will be well over 160,000 hectares. At present, Thailand has an estimated 9.4 million hectares of seriously depleted forest land.

**600,000 HECTARES OF TREES** were planted across northern China last year, Xinhua News Agency reported, as part of the government's reforestation efforts.

**SOUTH KOREAN** President Chun Doo Hwan has instructed the government to implement a long-term afforestation plan. To encourage forest protection, government agencies will provide financial and tax incentives—including low-interest loans and exemption from inheritance taxes—to South Koreans who inherit forests.

**KENYA'S FIREWOOD** and charcoal needs, now and in the foreseeable future, are to be assessed in a countrywide study to be carried out by Sweden's Beijer Institute and financed (at a cost of \$1.5 million) by the Netherlands, West Germany and U.S. governments.

Kenyan Minister John Okwango said in Nairobi the study would assess also the development of alternative energy sources—including solar energy and biogas—in rural communities.

He said about 20 million tons of wood is used yearly in Kenya for fuel purposes; this reduces forest areas and produces soil erosion. No precise figures on firewood usage and future needs are now available.

## Tanzanian villagers get a crash course in forestry

**DAR ES SALAAM**—In mid-December Tanzania launched a six-month mass education campaign to teach villagers forest conservation and afforestation methods.

The campaign, financed with Swedish aid and jointly sponsored by the Ministry of Natural Resources and the Institute of Adult Education, is being conducted in the eight regions of central and western Tanzania most seriously affected by deforestation. Agricultural, forestry, adult education and cooperative officials have undergone two-month intensive training courses on how to educate villagers on the dangers of indiscriminate tree felling and how to reclaim land by planting fuelwood.

Half a million copies of a Swahili language booklet "Misitu Ni Mali" (Forests Are Wealth) are being distributed for use in village study groups. A series of 24 radio programs will be broadcast to supplement the booklets. In addition, posters, match boxes and "khangas" and "vitenges," the traditional printed cloth worn by women, will help advertise the campaign.

Tanzania's forests, which cover about 50 percent of the country, are facing rapid deforestation caused by a five-fold increase over the past five years in charcoal manufacturing, the extensive use of firewood for cooking and curing tobacco, indiscriminate land clearing for state and village farms, and accidental fires caused particularly by honey collectors. For instance in 1980 alone, 80 percent of the forests in Geita District near Lake Victoria were destroyed by bush fires.

On recent tours of the countryside President Julius Nyerere has encouraged peasants to plant trees around houses, farms, school compounds and along roads to help sustain soil fertility, prevent erosion and boost production. Nyerere said that the existing afforestation programs have not been successful because they were poorly implemented.

MARTHA HONEY

## Zimbabwe's latest war to stop plunder of land and wildlife

**SALISBURY**—The resettlement of nearly a million displaced tribespeople in Zimbabwe will be a monumental task for the Mugabe government for many months ahead.

And the former guerilla leader will also have to tackle big-business poaching, destruction of woodlands for fuel and hut building, abandoned and under-utilized land, and an environment ravaged by seven years of war.

In the midst of political uncertainties and the problems of internal security, Prime Minister Robert Mugabe has made it clear that the environment is nonetheless uppermost in his mind—though his people's immediate requirements must take precedence.

During a recent speech he said, "Those entrusted with the handling of the land or other assets of the country should not be denied the right to use it reasonably, but they should be regarded as trustees neither entitled to mistreat nor squander it regardless

of the consequences to future generations.”

Joseph Msika, Minister of Natural Resources and Water Development, said, “Our widened horizons, following admission to the United Nations, will make it possible to exchange information and benefit from the experience of other countries. Above all, in our drive to be self-sufficient in food production, we must ensure the soil is maintained in good condition.”

Prime Minister Mugabe ordered that December 7 was to be a day of tree planting throughout the country. At least three million trees were to be planted, mainly for future building and fuel use since Zibabwe's population growth is one of the fastest in the world at almost 4 percent.

The government is buying farms at current prices for resettling refugees and displaced people, not only to provide food but to bring the land back into use.

Mugabe has also sent the army out to deal with poachers who, after years of war, fight gun battles with the police and army who try to stop them.

In a speech to the new country's first Conservation Congress, the Prime Minister spoke of past civilizations which collapsed through upsetting the balance of nature: “History and modern research show that to this cause may be traced the decline and fall of Persia, Babylon, Assyria and others. It is obvious therefore that we must respect nature if we are to survive and prosper as a nation.”

JOHN KELLEY



## Once upon a time, hundreds in India died for a forest

**JODHPUR, India**—There is at least one part of the world where trees are no longer cut—Khehdali, in northwestern India. There the Bishnois believe trees are living beings and to this day they still commemorate the men and women who sacrificed their lives to save the sacred trees. The story is this:

About two centuries ago, an officer came to cut the Bishnois' trees to build a palace. When they objected, the officer demanded a bribe to leave the trees standing. The villagers refused, and the officer ordered his men to cut the trees down.

Word spread and thousands of men and women from 94 villages came to Khehdali and clung to the trees. The axmen swung, but as each man or woman fell with the tree, another took his or her place. In the end, the officer admitted defeat and ordered his men to stop. It is said that 363 Bishnois sacrificed their lives for their trees.

When the local king learned of the slaughter, he ordered that none should ever cut trees from that forest.

Today, the Bishnois are still saving trees in the three northwestern states of Punjab, Haryana and Rajasthan.

R. MURALI MANOHAR

## Agriculture . . .

**THE ROCKEFELLER FOUNDATION** has just published four reports from a conference it co-sponsored (with West Germany) on “Agricultural Production: Research and Development Strategies for the 1980s.” The reports cover agriculture and energy, soils, biological resources and the conclusions and recommendations of conference participants. The reports average about 75 pages and are not too technical. These conference reports are available from The Rockefeller Foundation, 1133 Avenue of the Americas, New York, N.Y. 10036, U.S.A.

**COTTON FARMERS** in the Soviet Central Asian republic of Tajikistan last year, for the first time, are said to have relied exclusively on biological pest controls to protect the crop.

According to reports from Dushanbe, capital of the republic, use of biological pest controls apparently improved both the crop and the environment and also produced considerable savings of funds normally spent on pesticides and crop-dusting.

**SOUTH AFRICAN SEWAGE SLUDGE** is either dumped offshore or buried, and Dr. Emil Adler thinks this is a waste of waste. He is chairman of the national committee to coordinate recycling, and he believes that in terms of its phosphorous, nitrogen and potassium content alone, this sludge is worth \$20 a ton. Johannesburg and Pretoria dump nearly \$1 million worth of sludge-fertilizer a year. He says, the U.S. and the European Community are re-using their wastes, “and so should South Africa.” He suggested research be directed at utilizing sludge as a soil conditioner in the vast poor-soil agricultural areas outside the cities.

**THEY MAY BE A DELICACY** in Europe, but in Western Australia they're just plain pests—and worse yet, they're reaching plague proportions.

A 90-kilometer strip of coast north of Dongara, Western Australia, has been infested with Italian white snails. They're everywhere—crusting fence posts, paving roads, covering buildings—and ruining crops in this farming area.

The state Department of Agriculture suggested chemicals and cultivation methods. However, chemicals are too expensive and cultivation won't protect new pastures; neither method would prevent re-infestation.

The farmers themselves favored introducing the bigger-snail-eats-smaller-snail method and wanted to import a predator snail from California. A zoologist has said the plan would be disastrous to the native snails and that similar experiments in the Pacific islands have failed.

## Environmental health . . .

**BOLIVIA'S** Ministry of Campesino Affairs is considering implementing a statute to "protect the ecology and environment" of the country, and says it may act this year.

Currently no government organization or office is charged with protection of the environment. There are no industrial or other controls on pollution in Bolivia. Recently it was reported that one out of every four miners is suffering from silicosis. There are no environmental or safety laws governing work inside the mines.

Water contamination is one of the major problems in the country, with the typhoid virus existing in epidemic proportions. Potable water is available only in parts of the major cities of La Paz, Santa Cruz and Cochabamba. Even with "potable" water, health officials and private medical sources warn against drinking it because of the risks of typhoid and hepatitis.

**THE SINGAPORE ENVIRONMENT MINISTRY** has accelerated its clean-up drive of the island's watercourses for the next few years. Reservoirs in Singapore receive their water from rivers, streams and canals. Pollution of these watercourses thus poses a serious threat to public health. The Ministry also pressed for stiffer penalties for pollution offenses.

**INDONESIA'S DEVELOPMENT AND ENVIRONMENT** minister Emil Salim has called for extensive control and counseling on the use of pesticides and other chemical products. The Minister stressed the potential dangers to health from their improper use. The Association of the Indonesian Pesticide Industry reported pesticide use in 1979 of: 2,200 tons of fungicide, 10,000 tons of insecticide, 5,200 tons of granular insecticide, 2,600 tons of herbicide and 200 tons of rodenticide.

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## 20,000 Danube River peasants are fatally ill—from erosion

**BUCHAREST**—European scientists are trying to discover why some 20,000 peasants along the Danube River in Eastern Europe are suffering from an incurable disease that may be linked to intoxication from heavy metals due to deforestation and erosion.

The afflicted villagers live in three Balkan countries, Romania, Bulgaria and Yugoslavia. They suffer from a chronic illness affecting the kidneys, which brings on renal failure and death within five years. The Danube affliction is called Balkan nephropathy, from nephros, the Greek word for kidney, and so far it is incurable. There is no association with known kidney poisons.

"Studies thus far have failed to discover the cause of illness and its treatment," said Stefan Mileu, chairman of the Man and the Biosphere Commission of the Romanian Academy.

Studies of patients' organs who died of this disease showed considerable concentrations of nickel, chromium, cobalt and aluminium, particularly in the kidneys.

Yugoslav specialists attribute the illness to specific mountainous regions composed of silicate magmatic rocks, which have been broken and crumbled by erosion. According to their theory, intense wood exploitation in the last 30 years may have created conditions for the fast spread of the disease. The eroded silicates, they theorize, penetrate through alluvial soil into drinking water during rainy periods and high water levels.

According to medical literature in the three countries, in some villages 9 to 31 percent of the population is affected and as many as 60 percent are suspected of developing the disease. Although not hereditary or infectious, entire families have died of it. But most curiously, the disease has not spread geographically, leaving nearby areas unaffected. It will progress, however, even after a person leaves the endangered zone.

In Bulgaria, the disease has spread along the Iskar river, in the northwestern part of the country. It affects about a dozen villages with some 12,000 population. In 1957 the disease was also reported along several rivers in northern Yugoslavia. A year later it was noticed in three Romanian villages along several Danube tributaries, in the southwest.

In Bulgaria, about 20 people die of it and its complications every year, or 28 percent of the total deaths in the affected villages, according to Bulgarian statistics.

British scientists have developed another theory for the illness: "We suspect the cause is a poisonous fungus that grows on stored foodstuffs, especially after high rainfall in the two previous harvest years," said John Greig, a British specialist on poisons. "The fungus looks blue, and it appears on cereals like maize, on vegetables, fruit, nuts and dried meat. The peasants pay no attention to the fungus. They brush it off and eat the food."

He added that his team is not yet totally sure that fungus is the cause, although rats treated with the fungus developed kidney damage.

SPECIAL TO WER



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## Editor's Note

*The critical problems that the Global 2000 Study foresees if present policies continue are truly frightening—so much so that some, unwilling to face the possibility that our future is in jeopardy, deny that it is already in sight.*

*Several prominent Americans, concerned about a possible U.S. change in direction, have just formed a Committee on the Year 2000 to press President Reagan and the new Congress for action on Global 2000 issues. Similar action groups are beginning to form elsewhere to effect needed changes in public policy.*

*For six years World Environment Report has been covering environmental issues as they develop: burgeoning populations straining a finite resource base and often destroying it. We have also reported an increasing awareness by governments everywhere that, to survive, they must protect the real wealth of their countries: the environments that supply natural resources.*

*In this special issue, WER correspondents in key countries were asked to report what their governments are doing about the crucial environmental problems raised by Global 2000. Their responses, compiled by Columbia graduate student Chris Kerrebrock, mirror the enormous variety of problems worldwide—and the various stages of preparedness for tackling them. This cannot be a comprehensive survey—that would take volumes—but it can and does give examples that explain the whole.*

L.B.

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## SPECIAL REPORT: Meeting the Challenges of the Global 2000 Report

### What's being done—in policy, in practice—to save our earth's ecosystems



What will the world be like in the year 2000? As population growth rates continue to increase, as food production falls further behind, and because of worsening energy problems, "serious stresses involving population, resources and environment are clearly visible ahead."

This warning comes from the Global 2000 Report to the President, produced last summer after three years of effort by several U.S. agencies. It said: "If present trends continue, the world in 2000 will be more crowded, more polluted, less stable ecologically, and more vulnerable to disruption than the world we live in now."

The Global 2000 Report predicted that virtually every aspect of the earth's ecosystems and resource base will be affected—including its agriculture, water resources, forests, atmosphere, climate and species—and that nuclear wastes have already posed significant new environmental problems.

What are the nations of the world doing about the environmental consequences of these projections? *World Environment Report* asked its correspondents in several key countries to report on what has been done in response to or in anticipation of these projections. Many countries share common environmental concerns—desertification, for example—and some have begun to address them. In the less developed countries, water resources are gravely threatened, and tropical nations share the critical problem of deforestation. As forests are lost, so are thousands of potentially useful plant and animal species. Pollution by motor vehicles and industry is largely responsible for atmospheric problems like acid rain and rising levels of carbon dioxide, while the use of chlorofluorocarbons threatens our protective ozone layer. No country has yet demonstrated that it can dispose safely of nuclear wastes, with half-lives longer than human history.

The purpose of this special issue of *WER* is to stimulate an awareness in the global community of the need for quick action on these issues, for international security and economic welfare are at stake.

## International cooperation...

**THE UN UNIVERSITY** and the Chinese Academy of Sciences are cooperating on four natural resource management projects: two major river studies, work on land reclamation and use, and proposals for an institute on agro-ecosystems in China.

**JAPAN AND THE U.S.** have agreed to study the feasibility of constructing a nuclear waste storage center on an unidentified small island in the South Pacific, *The Japan Times* reported. The study will cost about \$3 million and the expenses will be equally shared by the two countries. The agreement is to be formally approved by the Japan-U.S. Joint Adjustment Committee. Research will take two years, and the findings will be submitted to the Joint Adjustment Committee. The project involves six Pacific Basin nations—the U.S., Japan, South Korea, Taiwan, Canada and Mexico—and the storage center is scheduled to begin operation after 1985.

**A CONSULTATION SYSTEM** on the siting of nuclear power stations near European borders has been backed by a resolution passed by the European Parliament at its recent plenary session in Strasbourg.

The resolution was passed because Parliament felt strongly that nuclear plants built in border areas urgently require community safety standards. It calls on the European Commission and the Council of Ministers to plan for cases in which no agreement can be reached after consultation and expresses Parliament's hope that negotiations will be initiated with other bordering countries.

**THE INSTITUTE FOR EUROPEAN Environmental Policy**, with support from the German Marshall Fund, has a program of short-term internships for American environmentalists interested in gaining firsthand knowledge of European environmental policy. Interns will spend one to three months at the Institute's Bonn headquarters and in its London or Paris office studying specific issues of European environmental policy-making relevant to their work in the U.S. Up to five internships will be awarded in 1981. Application deadline is February 15. For further information: Marianne Lais Ginsburg at (202) 979-6430.

## International response



Thousands of copies of the Global 2000 Report have been sent around the world. Translations have been made into French, Spanish, Portuguese and Japanese. The purpose: to create an international awareness that all countries have a stake in saving themselves from the cataclysmic future so graphically outlined in the Global 2000 Study.

"The response in almost every country we've contacted—and that is about two-thirds of the countries of the world—has been positive," said Thomas R. Pickering, Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs. He is the man President Carter charged with coordinating international discussions on Global 2000.

Already the American government and its Summit partners have met to review Global 2000 issues. At the next economic Summit, in Ottawa this July, the leaders of the developed world will consider a report, for action by them, on food, energy, population—and the environment.

There have been discussions with the United Nations, and the specialized agencies will hold seminars in Geneva and New York this spring to discuss how best to respond to the problems.

In addition, several nations have suggested local or regional seminars: Mexico, Costa Rica and Panama, the Sudan and Japan.

A few, however, have questioned the Study's priorities. The Soviet Union, through its daily paper *Izvestia*, noted that the arms race was a major problem that Global 2000 had not addressed. Some Third World commentators complained that the Study failed to take into account the need for a New International Economic Order. And several asked how to find the necessary money and technologies to deal with the problems.

"Given the tight financial situation worldwide, it is hard to see how all the money necessary would be forthcoming," Pickering told *WER*. "But this is no reason not to work on the most urgent problems for the greatest effect. We need more cooperation, working together, to form idea-answers to these problems—ideas, for example, about technological and scientific answers."

What will happen, he thinks, is that "rather than seeing a universal plan of action, we'll see the beginnings of people coming together on tropical deforestation, water resources, agricultural research. While this may not be perfect, it is a big advance on where we are now.

"I think these issues and public interest seem to be ripe at this moment," he said. "This is true internationally and also true in the United States. It is one of the few times when the United States and the rest of the world are in tune on interests."

## The U.S. plan of action



Environment and resource planners in Washington continue to prepare a U.S. plan of action for responding to the ecological threats identified in the Global 2000 study, even in the shadow of a new administration that may not show much sympathy for environmental causes.

The Council on Environmental Quality, co-author of the study, is now sifting through responses to a letter CEQ Director Gus Speth sent to about 700 influential people, seeking comments on how to meet "the enormous challenges identified in the Global 2000 Report." At the same time, the President's "Task Force on Global Resources and the Environment," set up to muster support for action on Global 2000, is combing through data from U.S. agencies that will show what the federal government is and isn't doing to solve worldwide resource and ecology dilemmas, and how it can improve. Together with the task force's own thinking, these sources will provide the fodder for recommendations to President Carter.

How seriously will the Reagan administration take this follow-up to the Global 2000 Study? Skeptics in Washington predict that Reagan's policies, should they reflect his campaign rhetoric, will decidedly favor development. A source on the task force noted that Reagan's election probably would provoke a much more public campaign to support action on global resource issues, rather than the more personal working relationship with the White House that was originally envisioned. Indeed, last month a group of distinguished U.S. citizens formed the Committee on the Year 2000 to urge continued commitment by the government.

So far, developing policies to meet the challenge has not been easy. A task force member told *WER*, "It has been very difficult to impress upon people that we want to give this follow-up the same priority we gave the report." Letters responding to Speth's request for comments are by and large from "professional" environmental activists and their organizations; industrial or corporate organizations were pointedly unrepresented. While most praised the study and called for a "damn-the-torpedos" resolve, many were skeptical that the U.S. will break out of a business-as-usual attitude, as this comment from a professor of political science, Lynton Caldwell at the University of Indiana, bespeaks: "American credibility abroad is not very strong today, and a positive showing of commitment will be necessary to convince people that we are not merely asking other nations 'to do as we say, but not as we do.'"

A comment from the U.S. Chamber of Commerce shows there may not exist an ecumenical commitment for immediate action, or even agreement that the Global 2000 study is credible: "I urge you to take a reasoned approach, not the alarmist one your organization (CEQ) seems to relish. We cannot expect to make progress toward an improved environment if someone is always crying 'wolf.'"

Or, as Philip Abelson, editor of the weekly journal *Science of*



## In Europe ...

**ENVIRONMENTAL CONSIDERATIONS** will play a big—perhaps a dominant—role in Greenland's coming development, says Jonathan Motzfeldt, leader of the Greenland home rule government. Greenlanders are particularly critical about talk of exploiting west Greenland's large (though low-grade) uranium reserves for western Europe's nuclear reactors. Motzfeldt is also dead set against any more offshore oil exploration, such as the non-productive search off western Greenland in the mid-70s. Greenland has, however, taken a favorable view of a joint U.S.-Danish-Greenland oil exploration project in the Jameson Land area of eastern Greenland. For one thing, ARCO, the U.S. participant, has a good environmental record in Arctic regions. Also, says Motzfeldt, it's easier to control environmental accidents ashore than in the highly sensitive waters around Greenland.

**IN SPAIN**, 24 ecological associations, grouped into the Federation of Friends of the Earth, are preparing a "black book" of criticism of ICONA, the National Institute for the Preservation of Nature run by the Ministry of Agriculture.

ICONA, declared a "public enemy" by the ecologists, has the job of protecting Spain's mountains, parks and lakes, with their flora and fauna. Officials say it is notoriously short of funds.

**THE FIRST ITALIAN DESALINATION PLANT** powered by solar energy has been completed by the state-controlled electric power company (ENEL). It produces 5,000 liters of water a day.

The plant, near Crotona in southern Italy, is operated by a photovoltaic system of 3 kilowatts.

**LEADING ENERGY EXPERTS** from the industrial world met at the Julich Nuclear Research Center in West Germany to exchange national experiences on technologies related to new energy sources.

The seminar was sponsored by the UN Economic Commission for Europe (ECE). An ECE spokesman said that the seminar was looking, in particular, at solar, wind and geothermal possibilities as well as at problems associated with the integration of new energy sources into existing power systems.

In addition to serving the interests of ECE member countries, the seminar was a contribution to preparations for the UN Conference on New and Renewable Sources of Energy to be held in Nairobi, Kenya, next August.

## Agriculture . . .

**THREE PHILIPPINE FIRMS** have recently been granted approval by the Board of Investments to build alcohols (gasohol) plants.

Each of the three firms plans a distillery with a daily capacity of 120,000 liters using cassava as raw material for the fuel. Financing will come from foreign sources and long-term loans from the Development Bank of the Philippines.

Meanwhile, the Philippine government has chosen Bacolod City as the country's "laboratory" for studies of gasohol consumption. Current daily requirements for Bacolod City run about 30,000 liters.

**THE GOVERNMENT OF NEPAL** and the Asian Development Bank (ADB) recently discussed funding for a project that would control flooding of the Rapti River, which runs north to south and cuts the country in two.

ADB officials visited the area in central Nepal where flooding has caused extensive erosion and has ruined hundreds of hectares of farmland. One of the benefits of flood control would be the irrigation of an additional 41,000 hectares of land.

Technical assistance is expected to be provided by the UN Environment Program.

**THE NUMBERS OF SALMON AND TROUT** grown on Norwegian fish farms can be expected to more than treble during the coming four years, Minister of Fisheries Eivind Bolle told the Storting (Parliament) recently. Bolle said such production probably will increase from 7,500 tons to some 25,000 tons by 1985.

Norway presently has about 640 fish farms, but only half of them were in operation last year due to lack of young fish. At present about 700 applications for concessions to open new farms are waiting to be dealt with by the Ministry of Fisheries.

**MALAYSIA'S** Director of the Environment, S.T. Sundram said that sewage, oil palm and rubber industries daily dump an estimated one million kilos of biochemical oxygen demand (BOD) into rivers. Tapioca, pineapple and sugar industries are also responsible for water pollution in peninsular Malaysia. According to Sundram, the opening up of new land for agricultural purposes, urbanization and mining has also caused widespread soil erosion in the country. During the last ten years, about 340,000 hectares of jungle has been cleared. This has aggravated the erosion of top soil and the silting of rivers. Sundram said that Malaysia is going to tackle its environmental problems by using both preventive and restorative methods, which include environmental planning and pollution control.

the American Association for the Advancement of Science, wrote bluntly to CEQ: "At the heart of the somber projections outlined in the Global 2000 Report are problems that are really not the responsibility of the U.S. For example, the peoples of many of the lesser developed countries insist on breeding like rabbits. They are not so stupid that they don't know how babies are made.

"We have enough problems of our own without asking to share those of people who refuse to be responsible."

Participants in the widespread opinion-gathering that has been going on the past several months are more sanguine about the future of a cohesive U.S. response, however. Two areas that consistently have cropped up throughout are the need for a U.S. policy for restricting export of hazardous materials and adequate environmental assessment to accompany U.S. aid projects overseas.

## Tackling the problems: Alarming agricultural impacts



Global 2000's warnings about the world's agricultural resources are among its most alarming. The loss of cropland now runs to six million hectares a year, an area nearly as big as Ireland. According to the study, that area will increase by 2000. By then the world's total desert area may be 20 percent greater than it is today.

Overgrazing, improper irrigation, reduced fallow periods, the cultivation of steep and marginal lands, and the use of all types of woody plants as fuel are some of the reasons for the loss of arable land, but there are other culprits. Urban encroachment is one serious problem; in some countries farmland is lost to urban expansion as fast as it is developed.

Dependence on artificial fertilizers, pesticides and herbicides and on massive irrigation works gradually saps the soil of its fertility. Over-salinity and resistant pest populations are some of the unintended side-effects of such yield-enhancing products.

**LOSS OF ARABLE LAND**—The UN Plan of Action to Combat Desertification, produced after the 1977 Conference in Nairobi, has made slow progress so far. However, the UN Sahelian office in WEST AFRICA, with the UN Environment Program's help, is assisting the 16 Sudano-Sahelian countries in completing a Plan of Action. In other parts of Africa, efforts to recover desert areas and restore damaged land range from non-existent to promising. Civil war in CHAD has prevented once-active conservationists from continuing programs there, but KENYA's President Daniel Arap Moi has appointed a special Presidential Commission to make policy on soil conservation and reforestation.

More substantial progress has been made in MEXICO. Under



President Jose Lopez Portillo the country's 24 million hectares of farmland will be increased almost 20 percent by 1982. Rainfall cultivation, land conversion and the rehabilitation of existing irrigation systems are some of the techniques being used to push the desert back.

Desertification is only one reason for the loss of cropland. Agriculture-intensive economies tend to overwork their land, sacrificing its long-term fertility for higher short-term yields. EGYPT is a good example—over the last 10 years the country has seen an alarming reduction in the fertility of its land. Recent studies show that over half is of medium to poor quality, while only 6 percent is in excellent condition.

Egyptian experts now know that the loss of fertility is due to a rise in soil salinity, which they attribute to excessive irrigation and inadequate drainage. The government has begun installing tile drains to prevent the waterlogging of fields, and about 700,000 hectares are now properly drained. Millions more still need attention though.

At one time MEXICO had a similar problem caused by the excessive salinity of the Colorado River, which runs southward out of the United States. Cooperation between the U.S. and Mexican governments has eased the problem in recent years.

**URBAN ENCROACHMENT**—Most countries have experienced urban encroachment to some degree. Some industrialized countries like SWEDEN and DENMARK have managed to control their urban growth and are minimally threatened, but ENGLAND, the most densely populated major country in the world, is losing 30,000 hectares of land a year to urban development. CZECHOSLOVAKIA has only 31 hectares of farmland for every citizen—and between 1976 and 1979, 12,300 hectares of arable land were lost every year to housing, highways and industry. Last year, the government tightened laws governing the conversion of farmland to other uses.

Since 1970, JAPAN has had a similar statute called the Agricultural Land Law, which prohibits the transfer of land ownership without special permission of the government. It has resulted in a 50 percent reduction in such conversions.

In much of the Third World urban encroachment is running almost out of control. In EGYPT, for instance, for every hectare of arable land reclaimed from the desert more than a hectare has been engulfed by urban expansion. However, the Sadat government has enacted a new law that prevents industry from building on arable land, and it is building seven new cities in the desert.

**FUEL FOR AGRICULTURE**—A major problem with modern agricultural technology is that it is heavily dependent on fossil fuels. Already, increasing fuel costs are inhibiting the ability of some agricultural countries to increase their production of food. TANZANIA and INDIA, for example, are pushing pedal power and animal power as replacements for fossil fuels.

In MEXICO, however, just the opposite is true. Recent finds of oil and natural gas have enabled the government to invest heavily in a new Mexican Food System to fund agricultural productivity.

**PESTICIDES**—Chemicals have long been used in agriculture to control pests and unwanted vegetation. They have also long been known to have side-effects—sometimes more severe than the

## Land Use . . .

**SWISS ECOLOGISTS** have launched a campaign to save the country's largest swampland from superhighways and land developers.

The swamp, the Grande Caricaie, flanks the southeast shores of Lake Neuchatel and for years has been a protected wildlife reserve. But now the government plans to extend the highway will cost the Swiss taxpayers \$600 a

across part of the 14-square-kilometer swamp. Organizers of the protest claim that the highway will cost the Swiss taxpayers \$66 a square meter, while it would cost only 30 cents to continue protecting the same meter of swampland.

**BULGARIA'S ENVIRONMENTAL PROTECTION** cadres are poorly prepared, Radio Sofia reported. The criticism came at a joint session of the Environmental Protection Commissions of the National Assembly and the State Council.

Furthermore, the struggle against erosion had still not been coordinated, the report added. The preparation of anti-erosion equipment was lagging, and therefore the session recommended that ministries and authorities improve the work against erosion.

**REGULATIONS TO ISRAEL'S ANTI-BILLBOARD** law were issued last year by the Minister of Housing and Development and the Interior Minister. There are only two categories of permitted billboards: business signs and warning, announcement or instruction signs.

The 1974 legislation, one of the most advanced of its type in the world, replaces the original 1966 law which prohibited the construction of billboards 100 meters from inter-urban highways.

**ISRAEL'S** Ministries of the Interior and Housing have a three-level land use system, which was discussed at the recent 35th World Congress of the International Federation for Housing and Planning (IFHP) in Jerusalem.

National, regional and local schemes for land use, and masterplans for population distribution, national parks and nature reserves, roads, tourism, coasts, power plants and polluting industries were outlined.

Of particular interest at the congress were special sessions on the socio-economic development of rural areas, solar energy and energy conservation in urban planning.

## Wildlife...

**CHINESE ZOOLOGISTS** warned that reckless killing has caused the near extinction of half of the 130 species of rare birds and animals in China. The warning was issued at a recent national forum on vertebrates in Dalian, north-east China. The scientists charged some of China's trade corporations with freely exporting rare birds and animals, without any thought of preservation, to bring in foreign currency. They said forestry workers and rangers in some reserves went game-hunting "as if they were in their own private hunting grounds." The scientists urged strong measures to stop the trend including a preservation law and the setting up of a national preservation committee of senior government officials and scientists.

**FISH ARE DYING** in Canberra's sparkling Lake Burley Griffin—named for the American who designed this city—and no one knows why.

Puzzled officials of the Australian Capital Territory are appealing for help around the country to discover why the perch—introduced 17 years ago along with birdlife, water rats and the platypus—are dying.

Canberra, a totally-designed city and the capital of Australia, was designed by Walter Burley Griffin at the turn of the century and continues to expand today. The 704-hectare lake is in the heart of the political center and is a popular recreational facility and showplace.

**THE NORWEGIAN GOVERNMENT** has proposed new wildlife legislation that will protect all forms of animal life. Hunting will be subject to special permission only.

The proposed act will be put before the spring session of the Storting (Parliament).

The act requires that prospective hunters must take a compulsory test of knowledge prior to hunting approval. Substantially higher hunting fees are proposed in the future for Norway's 130,000 registered hunters.

The act's protection principle will embrace the entire range of Norwegian fauna. Under the present laws the protection of species requires a special resolution.

**SEA OTTERS**, once nearly extinct along the east coast of the Soviet Union, have reportedly been saved. The populations on Kurile, Komandorski and Kamchatka islands have swelled from a "pitiful few" to over 6000 since armed guards were deployed to protect the fish-eating mammals from poachers.

problems they were designed to solve.

In **EGYPT**, for example, pesticides are used extensively in the cultivation of cotton, the country's largest export crop, and often farmers become ill after being inadvertently exposed.

Experts say, however, that the most damaging long-term effect of spraying may be the loss of natural predators and the appearance of pesticide-resistant predators.

In **ARGENTINA**, the National Institute for Agricultural Technology (INTA) has had some success in cutting back on pesticide use, especially in the cotton fields of Chaco province. Farm families are taught to calculate the ratio between destructive insects and insect predators. The farmers, who spray only when there is an imbalance in the ratio, have been able to greatly restrict pesticide use.

The government of **NEW ZEALAND** has grappled for 20 years with the grass-grub, a tenacious pest whose larva feeds on grass roots. For some time DDT was used to control it, but resistant strains developed and its use was abandoned. Since that time the emphasis has been on implementing natural pest management techniques. Scientists recently discovered that controlled livestock can clear land of unwanted vegetation as fast as chemicals can, so New Zealand is now putting its traditional livestock management expertise to work.

In countries that do use pesticides—and the list is long—their production supports large, powerful industries. In **MALAYSIA**, sales of agricultural chemicals amount to \$130 million a year, and there have been many reports that the products are adulterated. **INDIAN** agriculture minister Rao Birendra Singh took action recently to ensure that in the future substandard pesticides are not produced in pursuit of quick profits.

## Mass species extinctions



If all the earth's resources, the most plentiful in terms of number and diversity are its plant and animal species. Between five and ten million different types of organisms inhabit the planet, but according to an estimate prepared for the Global 2000 Report, in just 20 years half a million to two million could become extinct. Such a loss would be without precedent in human history, and scientists say its main causes would be man-made: pollution and the loss of wild habitats.

In the tropics, forest plants represent a replenishable and sustainable source of new foods, pharmaceutical products, natural pest predators, building materials, specialty woods, fuel and other resources. However, the Global 2000 Report says that if present trends continue "not even careful husbandry of the remaining biotic resources of the tropics will be able to compensate for the swift, massive losses that are to be expected."

Among the most critical of those losses will be subspecies and varieties of cereal grains. Fully 80 percent of the world's food supplies are now gleaned from fewer than two dozen species of plants and animals, and the increasing practice of monoculture could expose future crops to catastrophic disease epidemics or plagues of pests.

In ARGENTINA, scientists are concerned that the wheat crop may be in trouble because very few paternal strains are now in use. To offset possible genetic losses, the government has set up experimental stations where a variety of lines are being preserved. Argentine farmers have traditionally preferred to plant a variety of seed corns rather than hybrids. While this practice generally results in lower yields, evidence suggests it may be safer genetically.

NEW ZEALAND's rapid transition from a forestry-based economy to one founded on livestock resulted in the loss of many forest species. The remaining forests are unique, resembling those of prehistoric times. Scientists are puzzled about the best way to preserve endangered life in such an environment, especially since insect species are virtually undocumented.

Protection of endangered animal species is becoming a higher priority in some countries. EGYPT and SAUDI ARABIA are setting up protected reserves for several desert animals in danger of extinction at the hands of uncontrolled poaching. Most AFRICAN countries already have national parks designed to protect and conserve their wildlife. Increasing population pressure is a constant threat to these parks. To protect them from further encroachment, world conservation groups continually pressure governments to protect species like the elephant and white rhino.

Since 1972, INDIA has had the Wildlife Protection Act, seen as the country's first realistic attempt at a national policy of conservation. Various game preserves were set up under the Act, and a number of species near extinction, like crocodiles and tigers, appear to have been saved. However, a vast selection of species unique to India still remain in danger.

By the end of 1977, the JAPANESE Environment Agency had designated 2,816 wildlife protection areas totalling 2.8 million hectares. And the World Wildlife Fund of Japan last year allocated \$131,000 for 37 national projects.

PORTUGAL is heavily dependent on its coastal marine species, and now the first steps toward protecting some of those organisms have been taken. Six areas, each covering 40 square kilometers, have been designated as protected zones. Two full-time research ships, one donated by the NORWEGIAN government, are stationed off the Portuguese coast, studying pollution in the area of the Tagus River delta and its effects on marine crustacea.

In HAITI, the "Silent Spring" envisioned by naturalist Rachel Carson has already arrived. Their habitats nearly destroyed, bird and animal life on the island is now rare.

To save the rest of the world from a similar fate, the World Wildlife Fund-U.S. is sponsoring a project to determine which endangered species must be saved. Already a quarter of the world's forests—their primary habitat—have been destroyed. Norman Myers, WER's environmental analyst, is heading the project to develop a systematic methodology to evaluate which species can and should be saved—in effect, a triage strategy for life on earth.

## In Asia ...

**TANKERS DISCHARGING OIL IN MALAYSIAN** waters are required to pay for the cost of cleaning the oil spill, the Malaysian Minister of Science, Technology and Environment Tan Sri Ong Kee Hui said. The amount will depend on the costs involved. The government has purchased two workboats worth \$1.9 million each for cleaning oil spills. They use sophisticated equipment to absorb the spilled oil into tanks and bring it ashore. Fast patrol craft are now under construction to check on passing ships. The final cost of the equipment for the oil detection and control project will be \$10 million, the Minister said.

**POLLUTION IN HONG KONG'S** Tolo Harbor has been increasing for the past 10 years and the government has as yet taken no major steps to halt it, according to Environmental Protection Officer David Mackay. In an investigative report, Mackay said that at present the harbor receives uncontrolled quantities of human and animal waste and industrial effluent, thus disrupting the ecological balance of the harbor.

Other factors also have harmful effects on the harbor water: diverting fresh water from streams to a reservoir and massive reclamation projects. Mackay suggests restricting the input of agricultural wastes to streams, holding up reclamation projects until their effect on pollution has been studied and that the 60,000 residents living in the area be connected to sewage treatment works.

**SOUTH KOREA HAS STARTED** a feasibility study for the large-scale use of waste heat from thermal power stations for heating apartment blocks. Energy experts from the state-run Korea Energy Research Institute and Bruun & Sorenson, a Danish firm specializing in regional heating systems, have completed the preliminary stage of the study, officials at the Ministry of Energy and Resources said.

**RENEWABLE ENERGY PROJECTS** and a plan to develop a compact biogas system—being financed by the UN Development Program—were reviewed at a meeting recently in Islamabad, Pakistan. UNDP is expected to provide \$1.36 million for this project.

President General Ziaul Haq has directed all Pakistani agencies to exploit renewable energy sources in efforts to meet the energy demands of rural areas and to reduce foreign energy imports. Since 1979, the national consumption of kerosene has been reduced by 16 percent and by 1984 it is anticipated that biogas systems will be made available to 160 villages.

## Forestry...

**THE INTERNATIONAL CIVIL DEFENSE** Organization (ICDO), headquartered in Geneva, has called for three-way action to combat forest fires, pointing out that they have "incalculable effects on the economic and ecological balance in the stricken regions."

"It is in the threefold area of prevention, preparedness and operations that an effort must be undertaken," said the ICDO *Bulletin*. Such prevention, it added, must focus both on human causes and on the environment.

ICDO urged world-wide public information campaigns and repressive action supported by regulations. "A recent study shows that negligence and malevolence are the main causes of fire," it commented. "It is therefore important to reinforce the security provided by regulations and to ensure their rigorous application."

ICDO is the international group for national civil defense organizations and, as such, attempts to coordinate action on a world-wide basis.

**THE GOVERNMENT OF KERALA** State at the southernmost tip of India has ordered a survey of Idukki district to detect "forest blanks" — barren patches—near a large dam and hydroelectric project. Using remote sensing technology from the Space Applications Center in Gujarat State, the survey will help identify areas susceptible to erosion and silting which can adversely affect the life of the dam.

The site is not far from the controversial Silent Valley, a tropical rain-forest which is endangered by a proposed new hydroelectric project.

**THE YALE SCHOOL OF FORESTRY** and Environmental Studies is establishing fellowships especially for professionals in nonprofit natural resources and environmental organizations. A stipend of up to \$15,000 will be awarded each Fellow to help pay tuition and other expenses at Yale. Applications should be in by February 15. For further information: The Richard King Mellon Fellowship Program, Yale School of Forestry and Environmental Studies, 205 Prospect Street, New Haven, Conn. 06511, U.S.A.

## The results of deforestation



In the time it takes to read this sentence, three hectares of forest will disappear. That grim statistic, published a few weeks ago by *Newsweek*, dramatizes the plight of the world's forests. Widespread loss of forest land, especially severe in the tropics, is expected to accelerate in the coming decades. In the LDCs, where increasing numbers of the desperately poor forage endlessly for wood to burn and land to farm, forests are shrinking fast, and as they do the environment steadily deteriorates. Streams and hydroelectric projects become clogged with silt washing off the eroded land. Rainfall patterns are disrupted, nutrient balances upset and temperatures changed. Even the shapes of landmasses are slowly altered by the gradual loss of their forest cover.

"If present trends continue," says the Global 2000 Report, "forests in South and Southeast Asia and in the Latin American tropics will be reduced by half in 2000, and erosion, siltation and erratic stream flows will seriously affect food production."

HAITI is probably beyond help. Completely forested when Columbus visited it in 1492, the island was at one time France's richest overseas colony. Today it is the poorest nation in the western hemisphere, and a U.S. government study concluded that Haiti is suffering from a degree of environmental degradation almost without equal in the entire world.

HAITI's biggest problem is erosion, the direct result of tree cutting by farmers desperate for farm land, even on the steepest slopes. What little wood remains is burned for fuel: 98 percent of all Haitians use wood or charcoal for their stoves and heaters.

Last year the UN Environment Program sponsored a meeting of world forestry experts. By the end of 1980, governments were asked to apprise UNEP of any gaps they found in the conference findings, what progress they have made on their own, and what programs they are prepared to implement. This will lead to another conference and a detailed plan for controlling tropical deforestation.

In parts of West Africa, it already costs more to heat a cookpot than it does to fill it, and experts now estimate that 90 percent of all wood consumed in AFRICA is used for cooking and heating—although much of that is dead wood or forest thinnings which would not be otherwise used. Professor Kwesi Darkoh of Dar es Salaam University says that in the last 50 years tree-cutting in TANZANIA has doubled, but no effort has been made to reforest the logged-over land. In KENYA, President Daniel Arap Moi has proposed a new era of reforestation and scientific conservation of forest areas.

In an effort to reduce Kenya's consumption of charcoal, the Geneva-based Bellerive Corporation, founded by Prince Sadruddin Aga Khan, has produced a prototype charcoal stove which uses less than a third as much charcoal as traditional stoves do.

In RWANDA, the World Bank's International Development Association (IDA) recently approved a \$21 million credit for a long-term plan to develop forestry and livestock resources. The plan will establish 8,000 hectares of fuelwood plantations to supply charcoal and firewood to urban populations, and the IDA will finance studies of more efficient charcoal production and more economical cookstoves.

In the foothills of the Himalayas in northern INDIA, forest land is dwindling rapidly. As tree cover disappears, seasonal rains bring often-catastrophic landslides, burying entire villages and blocking roads. Although Indian officials now admit that these calamities are largely man-made—and they agree that a minimum of 33 percent of the country needs to be forested to prevent them (the figure is now 24 percent)—trees are still being taken down faster than they are being replaced. And the demand for forest products has doubled in the last five years.

Official Indian policy now protects existing forests and recent proposals would provide for increasing the forest area of the country for "productive and protective purposes." The government is actively promoting social forestry schemes; even school children are being taught to plant quick-growing trees as the social forestry movement gains momentum. And Prime Minister Indira Gandhi has said, "For every tree cut, plant a tree."

Most European countries so far have been spared the severe deforestation experienced in the tropics, but many still carefully protect their forests. DENMARK's are closely managed for maximum utilization, and in AUSTRIA, where forestry is an important part of the economy, tree-cutting is strictly controlled. ENGLAND is losing more trees every year than are planted, in spite of the efforts of the Forestry Commission and public tree-planting campaigns over the past five years.

CZECHOSLOVAKIA's forests in northern Bohemia are being devastated by industrial air pollution. According to official figures 14,000 hectares of trees were lost in 1948; by 1975 89,000 hectares of forest were affected. Today more than 690,000 hectares are threatened by toxic emissions.

In PORTUGAL, wood processing and fires consume about 40,000 hectares of forest annually, and only about 15,000 hectares are replaced each year. To make matters worse, the country's wild forests are being replaced by quick-growing trees for the paper and pulp industries. The eucalyptus plantations in particular have ruined the soil and have aggravated water shortages in vast regions.

NEW ZEALAND's European settlers cleared huge swaths of forest to create pastures for its now thriving milk, meat and wool export industries. But they also left the land eroded and so bare that New Zealanders remain sensitive to any further moves to interfere with stands of native trees—now only 23 percent of the total land area. Today, indigenous forest may be cleared only after studies of the social, environmental and economic factors have demonstrated that national and regional welfare would be enhanced—and after public examination of the proposals.

In MEXICO, illegal deforestation is still a problem even though heavy fines are now levied against known offenders and planned reforestation projects are getting underway. In the south, these

## In Africa...

**THE GOVERNMENTS OF WEST AFRICA** recently convened in Lome, Togo, to approve a dual program designed to protect and clean up their common coastal waters.

Two documents, one a convention for cooperation in the development and protection of the coastal environment and the other a protocol concerning cooperative plans for pollution emergencies, were drawn up. Thirteen West African nations attended the four-day conference, which was sponsored by the UN Environment Program and other UN agencies, including the Inter-Governmental Maritime Consultative Organization (IMCO).

**THE NATURAL RESOURCES PROGRAM** of UN University has been investigating ways to develop alternative energy sources for villages around Tanzania's new capital, Dodoma. Increased population pressures in these villages have led to a growing demand for firewood and charcoal—and growing environmental destruction. UNU's first step was to work with the village *fundi* or artisans, to train them in new energy technologies. An energy survey of each village was undertaken, and now UNU scientists and villagers together are designing renewable energy systems to each village's specifications.

**TANZANIA, WITH CHINESE ASSISTANCE**, has begun a large coal mining project which will have the capability of providing 300,000 tons of coal annually, thereby reducing the country's dependence on foreign oil. This year Tanzania will spend a staggering 58 percent of its export earnings to import oil.

Chinese experts have completed a geological survey and exploration report of the estimated 50 million tons of coal and are now designing a thermal power plant and other infrastructure facilities for the mine.

The coal fields at Kiwira-Songwe in the southwestern region of Mbeya are conveniently near the Chinese-built Tanzania-Zambia railway as well as close to iron ore deposits. Tanzania hopes the coal will eventually provide the necessary energy supply with which to develop a steel industry.

The coal project was conceived in 1964 by President Julius Nyerere and the late Chinese Prime Minister Chou En Lai when the latter visited Tanzania.

## Air quality ...

**OWNERS OF MEXICO CITY BUS LINES** have been told to clean up or get out in an ultimatum from city authorities. The owners say they cannot comply with the city's demands unless they raise fares above their present 4½-cent level.

Cuauhtemoc Santana, director of works and services in this capital of 14 million inhabitants, announced cancellation of 448 bus-line routes unless owners agree to six demands. He said 76 better-planned bus routes would suffice. The action came in a continuing power struggle between the bus owners association and the government.

A major demand is the modification of motors to eliminate bus noise and smoke—ingredients which make this city one of the noisiest and smoggiest in the world. Bus motors should be modified at the rate of 150 weekly, Santana ordered.

**THE RAPID INDUSTRIAL GROWTH** of Papua New Guinea has led to pollution problems, its Environment and Conservation Minister Ibne Kor told the Australian Environment Council (AEC) on a visit to Australia.

In the North Solomons and Morobe Provinces, copper, gold and silver are being mined, and they are causing air, river and sea pollution detrimental to human, plant and animal life, he said.

The PNG team was visiting the AEC meeting as an observer-member and the only Pacific nation represented there; it also made a two-week tour of Australian environment establishments.

**THE SWEDISH GOVERNMENT** is planning an international conference on the problem of acidification of soil and water in June, 1982, the tenth anniversary of the UN Conference on Environment, held in Stockholm.

Minister of Agriculture Anders Dahlgren told the Swedish press: "It is of the greatest importance that other countries become alive to the major difficulties that the discharge of sulphur and other air pollutants cause."

Sweden claims that the main source of its acid rain, which is causing lakes and trees to die, is abroad, but Sweden also is making a continuing effort to reduce harmful discharges from its own power stations and factories. This is in conjunction with the convention to restrict pollution of the air recently agreed by European countries.

projects face strong competition from cattle-ranching developers, who want to clear the land to make way for their herds.

**ARGENTINA's** Cordoba province has been seriously deforested, but projects to correct the situation have begun. Several new development projects threaten forests in other parts of the country, however; in the Chaco region a huge agricultural and cattle ranching project will chop down vast areas of heavily wooded land.

**BRAZIL's** tropical forests are the biggest in the world, about three times greater in area than the next two largest forests combined—in Indonesia and Zaire. There is no question a major cause of deforestation is cattle ranching—Brazil has hopes of becoming the world's biggest exporter of beef. The migration of smallholders into the interior has also had an impact. Government officials envisage that eventually 800,000 more square kilometers of forest will be cleared for agriculture and other purposes.

## Atmospheric deterioration



Although the causes are not always clearly understood, some signs of atmospheric deterioration are unmistakable. Global 2000 reported that, "Even now, observations in scattered LDC cities show levels of sulphur dioxide, particulates, nitrogen dioxide and carbon monoxide far above levels considered safe by the World Health Organization." Particularly in the world's industrialized cities, motor vehicles contribute to industrial air pollution, and this situation is expected to worsen.

Acid rain, rising carbon dioxide levels and depletion of the planet's ozone layer are among the man-made atmospheric phenomena considered to be serious threats to future life on earth. Most countries have barely begun to cope with these problems.

**AIR QUALITY**—Tokyo used to be heavily polluted, but since 1967 **JAPAN** has succeeded in lowering the city's sulphur dioxide level substantially—from .057 parts per million to .016. In the same period, carbon monoxide levels fell by a factor of five. By 1982, stiff nitrogen dioxide regulations will be in effect for all of the country's small cars and trucks, now major polluters. Motor vehicles are only one cause of urban air pollution: Japan's industry is largely responsible for the sulphur dioxide levels in its cities. As those industries move away from oil dependency toward the use of coal, stricter controls are planned.

Cars and diesel-powered trucks are EGYPT's greatest source of air pollution, now monitored in most Egyptian cities even though there are no emission standards.

Cement factories south of Cairo emit 20 tons of particulate matter a day, raising levels far above those considered safe. But, because funding is short, little is being done to correct the situation.

Although AFRICA has little heavy industry, most African nations do have pollution control laws. For example, KENYA's only integrated paper mill must obey strict air purification regulations.

In INDIA, where factories have been built near cities air pollution is becoming a serious concern. Power generation plants in Delhi continually emit dark fly ash, the product of low-grade high-sulphur coal. However, scientists at the Department of Science and Technology told *WER* that a far more serious problem was smoke from home cookfires, which accounts for nearly 40 percent of India's total air pollution.

Confirming what many already suspected, in 1979 a group of international air quality experts found that "air pollution in the Valley of MEXICO is potentially one of the most serious in the world." The group suggested that emission standards be set and enforced on all vehicles, that local industry be converted to natural gas, and that some existing plants be relocated elsewhere.

**ACID RAIN**—One truly international air pollution problem is acid rain, which is of particular concern to the industrialized countries of Western Europe. Prevailing winds tend to blow sulphur dioxide and nitrogen dioxide from industrial smokestacks over the Scandinavian nations, where it comes down as acid rain.

ENGLAND is criticized internationally for its production of sulphur dioxide from coal-burning power stations and the brick manufacturing industry. The government has been quick to respond to this criticism, saying it is promoting research in cooperation with other European nations, and that there is no proof that Scandinavia's acid rain is due specifically to British pollution.

Ironically, DENMARK values acid rain to some extent, because it helps neutralize its heavily alkaline soil, made up largely of limestone. Still, since 1976 the government has restricted the sulphur content of its light fuel oils and has placed limits on industrial emissions. As Denmark begins to produce more natural gas from fields in the North Sea, by 1984 those standards will become attainable.

Although acid rain is not a serious worry in PORTUGAL, in four cities—Lisbon, Oporto, Estarreja and Sines—experts are concerned that burgeoning industry will soon produce such a problem. Members of the Environmental Research Commission are watching the actions of other European nations closely, in the hope of avoiding acid rain problems. They are also monitoring levels of carbon dioxide and ozone depletion, two serious international atmospheric concerns.

**CARBON DIOXIDE**—BRITISH scientists consider the phenomenon of carbon dioxide increases to be one of their most serious environmental problems, but research into its causes is in its infancy.

Municipal officials in Milan, Rome and other ITALIAN cities are

## Environmental health . . .

**BRITAIN'S NATIONAL HEALTH SERVICE** hopes soon to have the world's first low-energy hospital, using only 50 percent or perhaps less, of the energy consumed in a typical district general hospital.

Possible sites are being discussed with Regional Health Authorities. The EEC, through the Directorate for Energy, has offered financial support equivalent to just over \$1.5 million toward the costs of specific designs.

**HONG KONG'S HARBOR** has become a giant, clogged sewer with many areas like "cesspools," according to a report based on a six-month study by the Biology Department of the Chinese University of Hong Kong. As a result of rapid growth in population in the last few years, an enormous amount of raw sewage is being dumped each day into the harbor. The harbor's natural tidal flushing action can no longer effectively remove the sewage. The university research team found faecal coliform bacteria in dangerously high levels over wide areas of the harbor.

**THE SCIENCE COUNCIL OF JAPAN** reports that the noise level in Japan is equal to the sound of 800,000 people talking in one square kilometer of land—and has warned that people will need ear plugs when they go outdoors in the late 1980s.

The Council pointed out that counter-measures such as double-glazed windows and anti-noise walls along roads have not solved the problem, and urged that the level of noise be reduced before hearing is impaired nationwide.

The Environment Agency has said that noise and vibration pollution are among the greatest issues facing Japan. "Neighborhood noise," such as pianos and playing children, and vehicular noise are among the most common complaints. Other frequent disturbers of the peace are loudspeaker-equipped trucks which hawk everything from politicians to old newspaper pickup.

**INDIA'S INSTITUTE OF ENGINEERS (IOE)** in Jaipur has recommended the creation of an All-India Noise Control Board so that noise control legislation can be enacted.

The IOE wants legislation passed at the federal and state levels and an effective administration to go with it. The engineers think that noise from industry is reaching the crisis stage, and they want requirements imposed on manufacturers to lower the noise output of their machinery and their products.

## Water quality ...

**NIGERIA'S PRESIDENT**, Alhaji Shehu Shagari, said he would send a bill to the National Assembly that would make oil companies pay compensation to people affected by spills, if the companies were found negligent.

Nigeria's Senate also is initiating legislation to regulate all aspects of the oil business—exploration, exploitation and marketing—to safeguard lives and property in oil producing areas.

**A NEW INSTRUMENT** capable of detecting oil slicks is reported to have been developed by scientists in Leningrad. The Soviet news agency Tass says the instrument reacts to changes in the amount of light reflected in the water, sending out an alarm when oil is detected. Soviet scientists previously relied upon chemical analyses of water samples to determine when oil slicks were present.

**THE JAPANESE ENVIRONMENT AGENCY** is drafting a bill to preserve the environment of lakes and marshes in the country. Under the proposed bill, governors of prefectures would be required to draw up preservation plans, the reclamation of lakes and marshes would be banned in principle, and establishment or expansion of business facilities which would affect the environment should have the permission of the prefectural governor concerned. In addition, the total volume of pollutants flowing into lakes and marshes considered particularly contaminated would be restricted. At present, pollution of lakes and marshes is controlled only if their water is publicly used or if they are close to industrial facilities and large population centers. The draft is expected to be completed by next March, agency sources said.

**CORAL REEFS** along the coast of the island of Bali, an important tourist resort, are facing extinction, an engineer warned at a meeting on coastal conservation organized by the Life Environmental Study Center of the Institute of Technology at Bandung in Indonesia. The danger comes from the use of coral in limestone production. Nearly 400 limestone kilns—using coral as raw material—are situated in the area. The finished limestone is used for building material and for making statues.

considering banning city traffic, which would save fuel and reduce the rate of urban carbon dioxide production.

**DENMARK** is also watching the carbon dioxide situation warily, but so far the official consensus is that there is not enough evidence of a problem to warrant extensive research.

Although no **AFRICAN** nation has seriously considered the significance of carbon dioxide pollution, the issue is being given attention by the Earthwatch service of the UN Environment Program, which monitors the situation worldwide.

**OZONE DEPLETION**—The Environment Agency of **JAPAN**, along with the Ministry of International Trade and Industry, the Ministry of Health and Welfare and others, is studying the problem of ozone depletion by chlorofluorocarbons (CFCs), but no formal opinion on the matter has been given by the Japanese government.

The nine **EUROPEAN** Common Market nations will reduce CFC production by 30 percent. The use of aerosols is limited by law in Denmark, as it is elsewhere in Scandinavia, to prevent depletion of the ozone layer.

## Water: Problem of the '90s



"If energy is the problem for the 80s, water may well be the problem for the 90s," predicted Thomas Pickering, the U.S. Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs. In nearly all parts of the world, water quality and availability are expected to decline, and for this dire prediction there are a multitude of reasons.

The increased use of pesticides in agriculture will mean more pollution of local water resources and the loss of edible fish in canals, ponds and lakes. Salinization and siltation caused by over-irrigation will decrease world food production. The World Health Organization's Director predicted that 13 million children would die in developing countries in 1980 because of contaminated water, and supplies of safe drinking water will dwindle to even more dangerous levels by the year 2000, a fact already recognized by the UN, which has designated the next 10 years as the International Drinking Water Supply and Sanitation Decade.

Still another effect of water pollution may be felt in the irreparable destruction of fragile coastal ecosystems, which are especially vulnerable to industry, energy systems and waste dumping.



**PESTICIDES**—Detecting the causes of water pollution is a complicated science, and many countries have barely begun to learn it. In response to *WER's* questions about the effects of pesticides on water resources, many countries said it "was no problem yet" or that they would not know until present studies are completed. Others have already identified problems and have made some tentative progress toward solving them.

**JAPAN**, for instance, has strictly controlled the use of pesticides since the Agricultural Chemicals Law was amended in 1971, and pesticide pollution since then has fallen considerably.

**PORTUGAL's** government is currently studying the effects of pesticides on its water resources, so their full impact has yet to be determined. But dead fish are commonly seen floating in rice-growing areas, and "autopsies" have revealed high concentrations of dieldrin, an insecticide long banned by the U.S. Environmental Protection Agency.

**URBAN AND INDUSTRIAL WASTE**—In **CZECHOSLOVAKIA** a constant uphill fight is being waged against industrial sewage and waste dumping. Since 1976 about \$10.6 million has been spent on the construction of 11 water purification plants, yet 300 kilometers of waterways remain heavily polluted by industry. Because the government has begun imposing heavy fines on polluters, the situation is expected to improve.

A few of **PORTUGAL's** rivers are so polluted that they are considered beyond help, while others are merely in critical condition. The Tagus River, lined by nearly 600 industries in the Lisbon area alone, is now the target of a UN Development Program study.

In 1970 **JAPAN** adopted water quality standards for cadmium, cyanide, organic phosphorus, lead, arsenic and mercury, and 10 years later their levels have declined markedly.

Even one industrial pollutant can destroy a country's rivers. In **MALAYSIA** palm oil effluent is the country's biggest polluter—after sewage. It has seriously affected riverine fishing and farming communities. Although the government declared in 1977 that the palm oil pollution level must be cut 95 percent by 1980, so far the regulations have been ineffective.

In **INDIA** the problem is worse. Most of the country's rivers have been polluted to some extent by industry. Worst hit is the sacred Ganges. In addition to being fouled by industrial effluents, humans foul the river too, both in life and afterwards, since partially cremated human corpses are thrown into the water.

Only on the Jamuna River, which supplies Delhi with a billion liters of water a day, have any sophisticated purification efforts begun. One municipal corporation recently appropriated \$60 million to build a new treatment facility, but when complete it will handle only 60 percent of the city's daily requirement.

By contrast, **EGYPTIAN** factories are severely regulated. In fact, Egypt's laws have been too strict; compliance has often simply been beyond the technical capacity of most industries. To alleviate that problem, President Sadat recently proposed new legislation considered much more realistic and readily enforceable.

A massive Egyptian-British-American project was started recently in Cairo to install water and sewage treatment facilities throughout the city. At the same time, pollution devices for Egypt's industries are being provided by a \$16 million grant from

## Waterwise...

**THE GOVERNMENT OF VENEZUELA** recently gave the country's detergent industry a deadline of July 1, 1982 by which time their products must be made biodegradable.

The Ministry of Environment blames phosphate-based detergents for the current polluted state of Venezuela's rivers and the eutrophication of its lakes. But a secondary cause of pollution in Caracas' Guaire River is waste dumping by the city's principal water treatment facility, for which the Ministry itself is responsible.

Detergent producers are worried by the recent edict; they say the raw materials for biodegradable detergents are not available domestically.

**VENEZUELAN INDIANS** living in 52 communities on the arid Guajira Peninsula near the Colombian border are getting 165 windmills to help pump water.

The windmills were installed by the Environment Ministry under an agreement with the communities to provide government maintenance if the villagers—8000 in all—dig the wells.

**LAGUNA DE BAY** in the Philippines, Southeast Asia's largest freshwater lake, has been found to be seriously polluted by human, agricultural and industrial wastes.

The findings were reported in a joint study by the UN Development Program and the World Health Organization. The two UN agencies proposed regional and sub-regional interceptor systems to control wastes discharged into the water.

Laguna de Bay is a shallow lake with an average depth of 2.8 meters and a mean volume of 3 billion cubic meters. Besides being a major source of drinking water, it could also provide irrigation for more than 18,000 hectares of land.

**WATER MANAGEMENT** in Industrialized Areas is the subject of a UN-sponsored symposium to be held in Lisbon, Portugal, from September 7 to 11. It is being organized by the Portuguese Water Resources Association with the cooperation of the International Water Resources Association. For further information contact: Deputy Director, Water Resources Branch, Dept. of Technical Cooperation for Development, United Nations, New York, N.Y. 10017, U.S.A.

## Renewable energy...

**THE LARGEST SOLAR ENERGY PLANT** in the world, producing 1.5 megawatts, will be built in the Puglia region of southern Italy and will start production in 1985, stated the Italian state-controlled electric power company (ENEL).

Silicon cells will cover an area of 10,000 square meters. The plant will supply power to the Italian electric network and to a nearby village of 800 residents.

The plant is a joint venture of ENEL and the National Center for Nuclear Energy (CNEN). A 30 percent stake in the enterprise was held by U.S. contractors.

Italy also has under construction a one-megawatt solar energy plant in Sicily, near Catania. The Sicilian plant, called Eureka, will be completed by 1981.

**TEN PEDAL-POWERED RADIOS** are being installed in remote villages in Dodoma Region, central Tanzania, to enable villagers to communicate with their district headquarters. The radios, which require neither batteries nor an external power source, can transmit up to 1000 kilometers.

The pilot project is jointly financed by the Tearfund in Britain and the Evangelical Christian Church and Flying Doctors Service in Tanzania. If successful, it will serve as a model for rural communication in other parts of the country. Loans will be made available so that villagers can purchase radio sets which cost Shs.15,000 (\$1,875) apiece.

Pedal powered radios are already being used in Canada, Nigeria, the Philippines and Falkland Islands.

**SAUDI ARABIA** will begin installing three solar-powered water desalination plants in 1981 under the direction of the Saudi Arabian-United States Program for Cooperation in Solar Energy (SOLERAS). Five American companies won design contracts for the plants, the largest of which will have a purification capacity of 6,000 cubic meters a day. Two pilot plants with a capacity of 100-400 cubic meters a day will treat seawater and brackish water respectively. Scheduled for completion by the end of 1982, the desalination plants will resemble Jordan's Dornier project at Aqaba which is powered by a series of five-meter-long solar cell modules. The cost of such installations is thought to be exceeded in the long run by savings in fuel bills.

**PAKISTAN'S** first solar village will be commissioned by the end of April. The village, Chakwal, is 60 kilometers from Islamabad.

the U.S. Agency for International Development.

In the last year or so the municipal and provincial governments of ARGENTINA have begun to take belated steps to clean up their rivers. Around Buenos Aires the rivers are so badly polluted that they are considered virtually dead: Tanneries and other industries have dumped their wastes and untreated sewage into the rivers for years.

**IMPACT OF DAMS AND IRRIGATION PROJECTS**—River basin development that combines flood control, electricity and irrigation is likely to increase, particularly in the LDCs, Global 2000 predicts. While providing many benefits, these projects can cause adverse changes in both freshwater and coastal ecosystems, creating health problems, inundating valuable lands and displacing people.

The UN Environment Program is currently sponsoring studies of the effects of dam projects in KENYA, TANZANIA and several other countries where concern has arisen over possible problems stemming from their construction.

Scientists have discovered that hydroelectric reservoirs are filling with silt much faster than expected, reducing their effective lifetimes. Dredging provides a possible solution but is costly and only temporarily effective. Last June, President Daniel Arap Moi of KENYA announced that he would appoint a Presidential Commission to advise him on these problems, but so far no action has been taken.

Several years ago a group of Egyptian scientists and their foreign colleagues claimed that the Aswan High Dam had increased the prevalence of schistosomiasis, or bilharzia, a parasitic disease that is the country's biggest health problem. Their argument was that by providing vast amounts of irrigation water year-round the dam was creating a permanent habitat for the disease-bearing snail. However, a recent survey of 20,000 Egyptians from Alexandria to Aswan actually revealed a decreased prevalence of the disease. The reasons: improvements in rural health care, those who farm the reclaimed land are farmers who already had bilharzia, and increasing migration of people to urban areas.

**COASTAL ECOSYSTEMS**—Almost all the Global 2000 projections point to increasing destruction or pollution of coastal ecosystems, essential to most saltwater fish and crustacea. They are threatened by expanding cities and industry, and pollution from a number of sources.

Coastal erosion at Raschid, one of EGYPT's two major Nile delta openings to the Mediterranean, averages about 20 to 30 meters a year and scientists fear that gradual encroachment of the Mediterranean will raise the salinity of remaining fertile land. The report of a recent Egyptian-UNESCO survey of the coastline between Alexandria and Port Said recommends the establishment of a permanent construction and engineering company to monitor changes in the coastline and to erect protective barriers where needed.

A number of scientists think, however, that Egypt's chief coastal problem is not erosion but industrial pollution of the large saltwater lakes along the coast. The lakes contributed significantly to the nation's annual fish catch, but they have become dumping grounds for untreated industrial waste.

On the other side of the Mediterranean, "so little has been done over the past 50 years to protect coastal ecosystems and the environment that the situation can only improve in the year 2000." So says Carlo Enrico Bravi, a top official of the Milan-based Italian Association of Geologists. Italy's coastal environment has suffered for five decades at the hands of unbridled construction, coastal erosion and a steady migration of farmers to higher paying jobs along the coast. In some places the rate of coastal erosion is as high as six meters a year, and for the most part nothing is being done although some small efforts to build retaining walls and dikes along the river banks have begun.

## Nuclear waste proliferation



No nation now engaged in the production of nuclear power plants has yet demonstrated the ability to adequately dispose of its radioactive wastes or to safeguard against catastrophic accidents. According to the Global 2000 report, until they do, "the risk of radioactive contamination of the environment will be increased, as will the potential for proliferation of nuclear weapons."

Over the lifetimes of the nuclear plants expected to be completed by 2000, "several hundred thousand tons of highly radioactive spent nuclear fuel will be generated," along with millions of cubic meters of low-level wastes and tailings from the mining of uranium. The half-lives of some of those wastes are five times as long as recorded history.

Nuclear power is one of ENGLAND's most controversial environmental issues. Plans to attempt the burial of nuclear wastes in holes bored deep into the earth's crust have met with stiff opposition, and environmental groups have protested schemes to dump radioactive wastes at sea. SWEDEN's plan to bore test holes into Kynne mountain on its west coast is also meeting storms of protest. According to the state's Program Council for Radioactive Waste (RAV), storage of nuclear waste in rock at least 500 meters deep is the best option available to the country at the present time, but no final decision will be made until the 1990s.

In DENMARK, Elsam, a power company that operates out of Jutland, is drilling into salt deposits to try to find suitable disposal sites. Elsam's work will be completed by next spring, after which the Environmental Protection Board of Denmark will evaluate its application.

The most advanced experiments in burial possibilities have

## Nuclear power...

**THE CHINESE** news agency Xinhua reported that some 100 scientists and experts had recommended the construction of six nuclear power stations in areas of China where acute power shortages exist.

The experts suggested that six stations of the million kilowatt class be built between 1988 and 1991.

The recommendation followed the recent Sino-French agreement in principle for China to purchase two complete sets of nuclear power station equipment from France.

China, which is developing its own atomic weapons including hydrogen bombs, has not yet built any commercial nuclear power stations.

**A CZECH NUCLEAR POWER STATION** has been criticized by that country's Committee of Peoples Control for lax management standards, Radio Prague reported.

The Committee alleges that standards at the Jaslovske Bohunice plant are still not up to original requirements. At least two incidents in the past five years have been attributed to malfunctions or "disturbances" in the plant's reactor. The Czech human rights group Charter 77 claims that as a result of the second incident two lives were lost and radiation leakage occurred. The Czech government denied the allegations.

Neighboring Austria is concerned: the Jaslovske plant is only 60 kilometers away and others near the border are planned. Austria banned nuclear plants in 1978 and has been holding bilateral talks with the Czechs about their plants. At a UN Nuclear Security Conference in Stockholm this fall, Austrian Foreign Minister Willibald Pahr was to propose strict regulatory guidelines for the construction of nuclear plants near international borders.

**THE COMMUNIST PARTY** newspaper Pravda reports that the Soviet Union is building the world's first large nuclear power plant designed to heat cities.

It said that the plant is located outside of Gorky, an industrial city about 250 miles east of Moscow. The one-million-kilowatt power plant will produce enough hot water to warm the homes of 350,000 people, the article said. Experts claim the Gorky plant will replace dozens of conventional heating plants.

The article assured its readers that the Gorky plant will be a "highly reliable system that will be protected against radioactive pollution and radiation."

## Energy sources ...

**THE USE OF WINDMILLS** to generate electricity is at present not economically feasible, says a report by Japan's Science and Technology Agency. It's based on two years of study involving tests with small windmills developed by electric machinery manufacturers and universities at a budget of \$108,000. Agency tests showed that many technical problems have to be solved before wind energy can be used on a commercial scale.

**IRELAND'S** State Electricity Supply Board is going back to the use of windmills in power generation.

Patrick Moriarty, the Board's chairman, announced that three windmills have been ordered and will be installed at Portlaoise in the Irish midlands in February or March. Two more windmills are scheduled to be installed on the country's west coast at some time in the future.

**THE IRISH GOVERNMENT** is launching a test program for electrically-driven vehicles.

Twenty prototypes will be used by State departments and semi-State companies and most of the construction work will be done in Ireland.

The EEC is to help fund the four-year project which will save 16 tonnes of diesel oil per vehicle per year.

**AN ITALIAN INDUSTRIALIST**, Alejandro de Tomaso, announced his company, Nuova Innocenti, will assemble a new energy-saving automobile in 1981. It will cover 32 kilometers with a single liter of gasoline, at an average speed of 65 kph, he said.

De Tomaso, who took over Nuova Innocenti from British Leyland a few years ago, said the new car will be powered by a 650-cc engine. He did not give further details or the number of cars which will be produced and marketed by the Milan-based company.

De Tomaso also is the president of Moto Guzzi and Benelli, two leading Italian motorbike manufacturers.

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been underway since 1979 near Gorleben, in WEST GERMANY, where subterranean salt deposits are thought to be the most stable in Europe. But results of these tests are not expected before 1990, and it would be 20 years more for the necessary excavations to be completed. Meanwhile the problem of what to do with the accumulating wastes remains.

By 1990, the nine member countries of the EUROPEAN COMMUNITY should have a nuclear power generating capacity more than four times their 1979 installed capacity. And in 1979 the EC produced 725 tons of radioactive wastes in spent fuel rods alone. Wastes so far have been stored in temporary facilities, and they will remain temporary and increasingly crowded until 2010—that is if all goes smoothly.

CZECHOSLOVAKIA apparently considers nuclear power the lesser of two environmental evils: the risks of radioactive contamination are outweighed by the prospects of devastation caused by large-scale lignite use. However, it is no doubt also significant that the country's nuclear wastes are now being stored outside of its national boundaries.

In 1976 it became known that President Anwar Sadat of EGYPT was negotiating with AUSTRIA to store Austrian nuclear waste. Prominent Egyptians banded together to object. Caught by surprise, the Sadat government was forced to reconsider, so Austria once again is confronted with the fact that not one local authority has agreed to store wastes on its own territory.

Meanwhile, the JAPANESE government is planning the experimental dumping of low-grade wastes in the Pacific to determine the feasibility of large-scale dumping, but strong protests have been heard from the fishermen of Ogasawara Island and other residents of the proposed dumping area. Japan signed the London Dumping Convention last November 15, and under its provisions is required to give one year's notice before it can begin dumping its nuclear wastes, now stored in about 300,000 200-liter drums.

## AFTERWORD

As this international survey shows, the problems foreseen by the Global 2000 Report are already with us. But what this special issue of WER also illustrates is that people and their governments, non-governmental institutions and international organizations have begun grappling with the problems—and coming up with solutions. Today, almost every country in the world has an environmental agency of some sort, but all too often they are submerged in day-to-day politics and economic problems. Very little will be done to resolve these serious problems until there is a far greater awareness that our world's development is based on wise use of our ecosystems, for they are crucial to economic growth. Additional copies of this special issue of WER are available on request. For rates please contact the World Environment Center, 300 East 42 nd Street, New York, N.Y. 10017, U.S.A.



20 AUG 1980

## In This Issue...

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### SPECIAL SUPPLEMENT:

*Plans to banish starvation from the face of the earth by 1984 are failing, particularly in Africa which is on "a collision course with disaster." A report from analyst Norman Myers*

## The cost of a "Big Mac"? Latin America's forests

**NAIROBI**—To feed the fast-growing appetite of the fast-food chains, huge swathes of Latin American forests are being cut down to grow cattle for hamburgers and frankfurters.

Since the early 1960s, fast-food chains in the United States have boomed. During the mid-1970s, they were growing by 20 percent a year, or 2.5 times as fast as the restaurant industry overall. Over half of all sales are accounted for by only eight firms, notably the major hamburger corporations. The largest, McDonalds, sells 3 billion hamburgers every year, accounting in the process for the equivalent of 300,000 head of cattle.

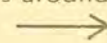
To keep business booming, the fast-food trade has been looking for additional supplies of meat, finding a source of cheap beef in Central America and Amazonia. But the beef is "cheap" only in relation to supplies within the United States. The price of a U.S. hamburger does not reflect the environmental costs of this production in Central America.



Since 1950, the area of man-established pasturelands and the number of beef cattle in Central America have more than doubled. During that time, beef consumption by Central Americans has been declining. This rangeland expansion has occurred almost entirely at the expense of natural forests—two-thirds have now been cleared. At the present rate of clearing, all remaining virgin forests will have disappeared by 1990.

During recent years, the cost of U.S.-grown beef has been climbing far faster than the overall cost of living, with price increases of as much as 35 percent within a six-month period. Faced with these calamitous price surges, the U.S. government has repeatedly stepped up beef imports—initiatives which, the government claims, can trim one nickel off the price of a hamburger, representing a more substantive measure than any other available to dam the tide of inflation.

Similarly, in Brazilian Amazonia, several hundred ranching enterprises have accounted for large tracts of rainforest, at least 78,000 square kilometers, in the past few years. An increasing number of ranching enterprises are foreign-owned. A U.S. consortium of Brescan-Swift-Armour-King Ranch holds around



## Forestry . . .

**"THE WORLD'S TROPICAL FORESTS: A Policy, Strategy, and Program for the United States"** has just been published. It is a report to the President by an Interagency Task Force on Tropical Forests which "confirms that the world's tropical forests are indeed in jeopardy." However, the "Task Force firmly believes that U.S. efforts, meshed efficiently with those of other nations and international organizations, can make a difference."

The report is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 044-000-01769-5.

**BANGLADESH WILL PLANT** more than 40,000 hectares of mangrove trees over the next five years, as a continuation and expansion of the government's mangrove plantation program in the coastal districts.

Besides preserving the coastal ecology, Bangladesh hopes to replace about 124,000 tons of imported kerosene by locally marketing fuelwood, pulpwood and logs.

The \$17.2 million project will get a \$11 million loan from the World Bank's International Development Association.

**INDIA'S UTTAR PRADESH** government has set up a committee to supervise the planting of 30 million fruit trees in the state before the end of this year.

**THE CATCHMENT AND WATERSHED** areas of the Philippines' two largest multipurpose dams are to be reforested in a \$75 million project—the government's first major attempt to solve the problems of rapid erosion there.

Some 380,000 hectares of denuded land are located in these catchment areas in central and northern Luzon. The project provides not only for reforestation, but also for forest protection, charcoal centers and a fire control system.

Pilot programs in range management and small-holder agro-forestry will be implemented in the Magat area to assess ways of solving problems in the watersheds.

About half the cost will come from the World Bank in a 20-year loan.

**TWO SURVEYS** by Chinese scientists, one during 1971-75 and the other from 1977 onward, have shown an alarming decline in China's forest areas, said the official People's Daily. The scientists said the problem is so serious "it effects the vital interests of the nation, the present generation and succeeding generations." They asked for strict enforcement of the forestry law and a substantial increase in the government funds for tree-planting and raising saplings.

780 square kilometers in the eastern part of Amazonia, with an investment of \$6 million. Other multinational corporations include Heublein, Sifco Industries and Twin Agricultural and Industrial Developers from the United States, Mitsui from Japan, Liquigas from Italy and George Markho from Austria, among many more from industrialized nations. Investment on the part of the 12 largest enterprises totals \$21 million, except for Volkswagen with \$85 million. Volkswagen believes that although people may come to purchase fewer cars in the wake of oil price hikes, they will hardly be inclined to eat less beef. Volkswagen holds a concession of 1,554 square kilometers in eastern Amazonia, of which half is to be converted into pastureland.

To this extent, the growing appetite for imported beef in the United States, Western Europe and Japan at prices that are "cheap" in part because they do not reflect environmental costs in beef-exporting countries, contributes to the decline of rainforests in Latin America. The developed-world consumer, seeking best-quality hamburger at lowest price, is unaware of the spillover consequences of his action, that he is stimulating the expansion of the beef industry in Latin America at the cost of remaining rainforests.

Ironically, the disappearance of these rainforests—widely predicted for Central America by the year 1990, and for much of Amazonia by the year 2000—will cause developed world citizens to suffer. The forests in question are believed to offer potential source materials for anti-cancer drugs and other advanced medicines, together with genetic resources for modern agriculture and raw materials for industry.

NORMAN MYERS

## Oil-sufficient Argentina goes all-out for nuclear power

**BUENOS AIRES**—Argentina produces almost 90 percent of its oil and has many potential alternative energy sources—in its rivers, winds and sun—but the military government is going all out in its nuclear energy program.

Although Argentina has not ratified the Tlatelolco treaty for non-proliferation of nuclear weapons in Latin America, it has had no difficulty buying nuclear facilities and the transfer of technology from Canadian, German and Swiss firms.

With one nuclear plant already in operation (sometimes) and another almost completed, four are planned to be in operation by 1991. Construction is also to start this year on a \$300 million Swiss heavy water plant to be constructed in the Andean foothills. Moreover, Argentina has signed agreements with Peru and Brazil for developing the nuclear industry in those countries.

While many people privately wonder as to the safety and economic advisability of these nuclear power plants, there is almost no public opposition in this country where political activity is forbidden.

There was talk last year of a scheme whereby Swiss nuclear waste would be buried in Argentina in return for nuclear technology, but the deal seems to have fallen through.

BARBARA SCHAFFER



# World Environment Report

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## ANALYSIS:

### Why the fight against hunger 20 AUG 1987 is failing all across Africa

**Famine has hit 23 countries  
and 70 million people**

**NAIROBI**—In 1974, after one quarter of a million people died of hunger in West Africa's Sahel, the World Food Council laid strategies for banishing starvation from the face of the earth within 10 years.

While there has been some progress in Asia and even more progress in Latin America, much of black Africa appears to be sliding backwards. According to the Food and Agriculture Organization, 29 countries of the developing world are in the grip of "abnormal food shortages"—this being a polite term for broad-scale famine—and 23 of these countries are in Africa. FAO also estimates that 70 million people, or almost one quarter of black Africa's population, do not have enough to eat; they are not only malnourished, they are undernourished.

Moreover, the problem seems to be extending further south and east. According to the World Bank, most of eastern Africa, some 10-13 countries, is characterized by "unfavorable crop conditions." The upshot, according to Robert Kitchen of the United Nations Development Program in Nairobi, is that "the area is on a collision course with disaster," with several million people facing starvation.

**Causes: natural and  
man-made disasters**

The famine stems from several causes. There are natural disasters, such as the locust outbreak that hit the Horn of Africa in 1978 before spreading westward. There is civil disorder, such as the wars in Ethiopia, Somalia and Uganda, all of which have led to the breakdown of administrative machinery: The anti-locust campaign was suspended in the Horn of Africa due to the military upheavals. There is adverse weather, such as too little rain or too much: In Senegal, sparse rainfall has left rivers so depleted that only 14 percent of normally irrigated areas could be cultivated in late 1979, leaving the country with only half the food it needs. In neighboring Mauritania, an excess of rain has caused cereal seeds to sprout too fast, leaving the subsequent crop to rot. There is also a growing horde of refugees: In the Horn of Africa, more than 1.7 million people now subsist in relief camps where, according to private aid agencies such as Oxfam, there is not half enough food to meet minimum requirements—and in Somalia, where 21 camps

**Relief efforts respond  
to symptoms, not causes**

hold 600,000 refugees, at least 500 infants are believed to die of hunger-related diseases each week. Finally, there are bureaucratic snarl-ups: In Kenya, faulty distribution systems have exacerbated the failure of recent rains, leaving much of the country short of maize meal, milk and other dairy products.

Little wonder that FAO's Director-General Edouard Saouma asserted at the April economic summit of the Organization of African Unity in Lagos that "Today the average African has 10 percent less food than 10 years ago. Average dietary standards have fallen below essential requirements. Hunger and malnutrition afflict more and more Africans every year."

Some efforts are being made to relieve the situation. During the past two years, the World Food Program has allocated over one-third of its total emergency food funds, \$73 million, to relieve starvation in Africa. But this gesture goes only a short way to put enough food into enough stomachs and, worse still, it responds to symptoms rather than causes of the problem. With every year that goes by, it becomes plainer that Africa is becoming less capable of feeding itself. During the past 10 years, Africa's food production increased by 1.4 percent a year, but the number of mouths has been increasing by almost 3 percent a year. Result: Food output per head has declined during the decade by 5 percent. Africa's food production is to be compared with 2.8 percent for developing Asia and 3.2 percent for Latin America—Africa is falling further and further behind the bulk of the Third World. And that is not all the bad news. According to FAO's major strategy document, "Agriculture: Toward 2000," for Africa to keep up with growing human numbers and growing expectations, food production should increase by 4.1 percent a year, a good way above the 3.5 percent postulated for the other two developing regions.

**As populations expand,  
croplands contract**

Not only are human populations expanding, but croplands are actually contracting as desertification spreads. In Sudan, the Sahara seems to have extended southward some 100-130 kilometers since 1960, and is now reputed to be expanding by at least 8 kilometers a year. Similar figures can be cited for other sectors of the Sahara border zone in eastern Africa, while in western Africa the desert is reckoned to be advancing even more rapidly.

The phenomenon of desertification may lie with natural conditions; the region may simply be reverting to "normally" dry conditions. Between 1920 and 1960, the Sahel appears to have been unusually moist, allowing cultivators to migrate northward as population pressures built up in Nigeria, Ghana, Liberia and other coastal countries. But to assert that the region is definitely drying out is premature; we just do not have enough detail right now to say. What we can be certain about is that man's overloading of semi-arid environments in the past is now levying its toll. Decades of too many people trying to scratch too many crops from too many lands, and trying to graze too many herds on sparse savannahs, have left a region where life-support systems have run out of steam. So whereas nature may have set up the conditions where desertification could occur, it seems clear that man has precipitated a sudden breakdown of fragile ecosystems.

NORMAN MYERS



## Venezuelan scrubland is now a forest for industrial use

**CARACAS**—In 10 years Venezuela has transformed 49,000 hectares of uninhabited scrubland into a forest of pines and eucalyptus supplying raw materials for pulp, paper and lumber mills, as well as the steel and chemical industries.

In a program pioneered by the Corporacion Venezolana de Guayana (CVG), the government agency charged with developing the nation's resource-rich, underpopulated east, a team of agronomists headed by J. J. Cabrera Malo established an experimental station in Uverito, southern Monagas State, in 1965. Selecting the Honduras pine as the species most suited to local conditions, CVG in its first year of production, 1969, planted 972,000 seedlings. Cabrera Malo designed a planting machine now capable of sowing 3,500 seedlings per hour. Last year, 3,153,000 pines and eucalyptus were planted, bringing the 10-year total to 93.5 million trees.

Cabrera Malo, who now heads CONARE, the National Reforestation Council, will use his special techniques in the reforestation of a further 90,000 hectares.

CVG and CONARE are studying the creation of a research institute to unify studies of forestry and maintenance of the young trees under cultivation, with their attendant problems of pests and disease.

LILI DE STEINHEIL

## Acapulco's hilltop slums become a national park



**ACAPULCO**—An explosive situation was partially defused when a Presidential decree transformed an urban slum on the hills overlooking this Mexican resort into a national park and green space. While it will take more than the stroke of a pen to move 125,000 slum dwellers, President Jose Lopez Portillo's official action has cooled tempers.

Tourism is the biggest business in Acapulco where hotels, restaurants, shops and all-night discotheques line the half-moon bay on the Pacific Ocean. Its hillside residents are as far from that Acapulco as humans can be, living in home-made shacks without lights or water, streets or sidewalks, sanitation facilities or any other municipal services.

The city claims it is not economically feasible to provide services that high in the hills. Squatters began moving to the high ground in 1958 and now, almost one-fourth of the city's population resides there.

## Land Use . . .

**THE PHILIPPINE MINISTRY OF NATURAL RESOURCES (MNR)** recently issued rules for the lease of public lands for agro-forest activities in the country. Under the rules, only Filipino citizens who are at least 21 years of age, and corporations and partnerships which are at least 60 percent owned by Filipinos are allowed to file applications for industrial tree plantation lease agreements. The minimum area that may be leased to an applicant is 100 hectares which should be fully developed in seven years. All industrial tree plantation lease holders have to submit an industrial tree plantation management plan which should include a definite program and schedule for the complete development and utilization of the leased area. The rules also state that holders of industrial tree plantation lease agreements are allowed to hire the services of foreign firms, including financial, technical and managerial services.

**IF THE PRESENT RATE** of illegal tree-felling and agricultural trespassing in Thailand continues, the country's forests will have vanished within the next two or three decades, Royal Forestry Department Director-General Thanom Premratsami has warned.

According to Thanom, the present rate of destruction is some three million rai (480,000 hectares) a year. Forest land currently covers only 35 percent of the country's total area; this is in sharp contrast to the target of 40 percent set in the 1962-1967 National Economic and Social Development Plan.

One major problem is that some one million farmers are occupying several million rai of forest land designated as national reserve areas. To combat this problem, the department has been running a program allocating 15 rai of land to each of these farming families on a permanent basis, with the requirement that each family develop forest land adjacent to their cultivated land. So far, 4,000 families have joined the program.

**CHINA'S STATE COUNCIL** (Cabinet) has approved the 1980-1981 tree-planting program for a shelter-belt project in North China and the setting up of natural protection zones within the shelterbelt area. Planting of the shelterbelt, stretching from northeast China to Xinjiang Province in the northwest, was started in 1979. The project is aimed at countering sandstorms and improving climatic and ecological conditions. The 1980-1981 target involves the extension of the tree belt to 660,000 hectares, and the setting up of 200,000 hectares of tree nurseries to provide saplings.

## Environmental management . . .

"IF PRESENT TRENDS CONTINUE, the world in 2000 will be more crowded, more polluted, less stable ecologically and more vulnerable to disruptions than the world today. Barring revolutionary advances in technology, life for most people on earth will be more precarious in 2000 than it is now—unless the nations of the world act decisively to alter current trends." These are the words of U.S. Secretary of State Edmund S. Muskie after the Global 2000 Study (WER, April 7, p.1) was presented to President Carter. Muskie said that even though the U.S. is the largest contributor, in overall dollar terms, to international programs, the amount is still "pitifully small." He stated: "Our commitment ought to be a national embarrassment, whatever the motive of the opponents. Global 2000 demonstrates, I think, just how important our investment in the welfare of our neighbors can be, and just how great are the human costs of shortsighted policies."

Responding to the report's findings, President Carter named an Interagency Task Force on Global Resources and Environment to give priority to these problems and to find effective solutions.

A summary of the Global 2000 Study is available from the U.S. Government Printing Office, Washington, D.C. 20402 for \$3.50. Its stock number is S/N 041-011-00037-8.

**TO MORE EFFICIENTLY USE** its dwindling supply of irrigation water, the Sudan is rehabilitating its New Halfa irrigation scheme, the second largest in the country. It was originally constructed in the mid-1960s with funds received from Egypt as compensation for lands flooded by the Aswan High Dam. The \$105 million rehabilitation project provides the means to increase and sustain agricultural production through the efficient use of available resources—land, water and manpower. The canal and road systems will be improved, equipment bought, a training center established and health programs financed. On completion, in about six years, it is expected to bring about 72,660 hectares of currently uncropped irrigable land into production, growing cotton and groundnuts for export.

**SOUTH KOREA'S OFFICE OF ENVIRONMENT** announced that a large-scale pollution survey will be conducted in the country during October and November. The survey will focus on determining the degree of pollution by oil, heavy metals and other pollutants discharged by industrial complex factories.

Saying the shantytowns are causing pollution that runs down the hills into the bay, government authorities announced the squatters would start moving this past June 15th. A new city was being built to accommodate them, Governor Ruben Figueroa promised, but the date came and passed as hillside residents organized against the government intention to move them.

Rumors that the land would be sold for housing projects or more luxury hotels fueled the residents' determination to stay. Governor Figueroa, who frequently appears in public with a pistol in his belt and surrounded by armed bodyguards, did little to soothe tempers when he declared that if force were needed to effect the move, then force would be used.

With his official decree in July, President Lopez Portillo calmed the situation and paved the way for the first 500 residents to move to their new city—a few miles inland.

KATHERINE HATCH

## Brazil has a model mine in the middle of the Amazon

**NEW YORK**—Mining can be one of the most environmentally appropriate forms of development in Amazonia, says a report written recently for The Foundation for Environmental Conservation.

According to Robert Goodland, the World Bank ecologist who wrote the report, a case in point is a bauxite project on the Trombetas River in Brazil. The reserve, located about 80 kilometers above the river's confluence with the Amazon, contains an estimated 600 million tonnes of ore. Mining, which began in 1979, should continue for about 65 years, and the bauxite will all be extracted by opencast mining.

The Brazilian company, Mineracao Rio do Norte (MCN), aware of the potential for significant environmental impact, immediately engaged the full-time services of an experienced Amazonian ecologist. Inventories (botanical, zoological, archaeological and forestry) were made and scientific collecting done on site in the forest before commercial timber was extracted. Unusable cut trees were arranged in contours on the slopes to reduce erosion.

Goodland observed that wherever the bauxite is covered by a layer of recoverable soil, this is being carefully removed and stockpiled. As each area is quarried, the overburden will be replaced, covered with the stockpiled topsoil and replanted as soon as practicable. Eventually, the reforested tract will become long-rotation tree plantations.

Effluent disposal was considered in detail long before the washing plant was constructed, Goodland reported. The comparatively innocuous chemical composition of the effluent will be filtered, sent along a "riprap" of stones to a 10-meter long slope which enters a seasonally dry creek. Any effluent remaining seeps another 3,500 meters to a very large and deep lake that contains no special organisms and which is uninhabited by humans.

Governmental and non-governmental agencies and groups collaborated on this project from the start to make it a model project. The federal environmental agency, SEMA, has screened all proposals, regularly inspects the site and has even set aside more than 37,000 hectares as preservation areas.

LIBBY BASSETT

## The European countryside suffers from suburban sprawl

**WASHINGTON**—Western Europeans are busily transforming their landscape, both in the cities and in the countryside.

The twin pressures of a dispersing population and intensified farming practices are placing increasingly heavy pressures on the countryside of Western Europe.

Some of these changes in land use are the consequence of carefully planned government priorities, such as the new towns in France. Other government-supported actions such as intensified farming may bring marginal lands into production but they also destroy plant and wildlife habitats, creating an increasingly monochromatic countryside. In addition, the proliferation of automobiles and single family homes in the suburbs have combined to bring great pressures to bear on Europe's glory, her cities.

Having conceded to expressways, peripheriques and autobahns, governments are now fighting to take back a little ground for the pedestrian, to exclude the automobile from certain places or at certain hours. Pedestrian plazas and malls are profoundly softening the experience of walking in Europe's cities.

Europe's middle classes are behaving like Americans as they acquire automobiles and affluence.

Recent census reports from Germany, England and the Netherlands all disclose an upturn in the dispersion of city residents to new suburbs, smaller towns and even to the countryside. In France, the outlying areas of medium-sized cities are receiving new residents.

Even countries with the most attractive cities and the most restrictive controls on outlying development have not been able to prevent the piecemeal growth of outlying areas, rural subdivisions, vacation home development and long-distance commuting. Gasoline prices of \$2 per gallon and automobile excise taxes of over \$1,000 per car appear to have had little impact.

As a result, Dutch and West German city planners are experimenting with innovative townhouse designs featuring noise-resistant windows, larger rooms, more plentiful bedrooms and baths—even gardens. The Dutch and German governments provide grants and loans for restoring old buildings.

Both West Germany and France have enacted measures designed to discourage large suburban shopping malls or "consumer markets." Aware that consumer markets in Germany have increased, while 5,000 small communities have lost their neighborhood shops, Germany's regional planners moved aggressively by establishing special criteria for new stores. If a proposed store is larger than 1,500 square meters, or if it is judged to have more than a minimal effect on an area's transportation, food supply, local landscape or ecological balance, then it can be built only in specially set aside zones. Similar concerns in France have led to the creation of regional boards empowered to disapprove new suburban or rural shopping centers.

WILLIAM K. REILLY, President  
The Conservation Foundation

## Environment & Development . . .

**NON-GOVERNMENT ORGANIZATIONS** want the New International Development Strategy—due to be adopted at a special session of the UN General Assembly in New York between August 25 and September 5—to be "a truly new and workable instrument for achieving equitable and sustainable development which is environmentally sound."

It must not be "just another flutter of words," and governments must not be allowed to avoid some of the basic issues concerned, says the Environment Liaison Center, the Nairobi-based organization which links NGOs throughout the world on environmental matters.

The ELC is making a big presentation to the General Assembly on this occasion, with the object of hammering home the aspirations of people all over the world who want to see more done to ensure the preservation of the environment.

**INTERNATIONAL COOPERATION** in the fields of human settlements and the environment was reviewed by the United Nations Economic and Social Council (ECOSOC) recently in Geneva.

One committee reviewed the UN Commission on Human Settlements (HABITAT) report recommending that ECOSOC adopt a resolution to include human settlement development in the new international development strategy. It also reviewed a UNEP report urging governments to ensure protective measures for the handling, international transfer and disposal of hazardous chemical wastes.

The committee review was expected to get automatic plenary approval.

**WOMEN'S ROLE** in the environment was featured by the UN Environment Program (UNEP) in a series of leaflets produced for the world conference of the UN Decade for Women, held in Copenhagen from July 14 to 30.

The leaflets, centering on women's role in environment and health, food, work, development and water listed some of UNEP's own suggestions (for example, don't waste water, don't contaminate water, don't destroy water resources) and described some of the UNEP-sponsored projects related to these subjects.

Copies of the leaflets can be obtained from UNEP's Division of Information, P.O. Box 30552, Nairobi, Kenya.

**INDONESIAN** Minister for Development Supervision and Environment Emil Salim recently said that environmental conservation and development are parts of Islamic ritual duties. He therefore urged Islamic educational institutions to include environmental studies in their curricula.

## In Europe ...

**SWEDEN IS INVESTING HEAVILY** in research on environmental problems. Some 250 researchers are participating in a shareout of 38 million crowns (\$9.2 million) during the coming year.

Topping the list of projects is further investigation into the acidification of Sweden's lakes, probably the country's most worrying problem at present. Twenty thousand Swedish lakes are said to be dying as a result of "acid rain" moving in from industrial areas on the continent. So far liming has been the main answer.

Among other research projects are air pollution in the cities, the effects of noise on human beings, wildlife and a practical testing system to measure the poison levels of chemical preparations.

**A WOOD-BURNING STOVE** which extracts the gas from the wood and then burns it without any pollution is being worked on by Norwegian researchers.

The Joetul concern, the Institute of Technology and the Norwegian Defense Research Establishment are jointly searching for a new system that produces an intense flame even when the stove is burning very small quantities of wood, said Erling Johansen, head of development at stove producer Joetul Fabriker A/S.

The researchers are also working on an automatic heating installation using charcoal and compressed briquettes.

In their opinion a clear alternative to fuel oil should be worked out within two years' time.

**IRELAND'S FIRST EXPERIMENTAL WINDMILL** to generate electricity has received government approval. It will be erected on Inisheer in the Aran Islands, thirty miles off Galway on the West Coast, to provide one-third of the island's electricity requirements.

**THE WEST GERMAN ENVIRONMENTAL PARTY**—the "Greens"—held its fourth Congress in eight months in Dortmund recently in an unsuccessful effort to reforge unity. Its failure has buoyed the ruling Socialist-Free Democratic coalition's hopes for victory in nationwide elections this Fall.

Despite efforts to display unity, the "Greens" remained divided between basically conservative environmentalists concerned over the countryside and leftists seeking to capture the movement for their own social and economic aims.

The "Greens," if united, could have created a serious problem for the coalition government. However, the disarray at Dortmund has diminished this threat.

## Sweden will toughen penalties for environmental-law breakers

**STOCKHOLM**—A proposal sharpening penalties for violation of environmental laws is to be put before Sweden's parliament soon.

For the most serious offences, punishment of up to six years in prison as against the present one year is proposed in the new law, according to the Swedish press. The statute of limitations, the time within which a prosecution can be raised, would be extended from the present two years to ten.

A special environmental protection or sanctions fee also would be introduced based on the profits a company realized through damaging the environment. The aim is to stop pollution caused, for example, by poisons stored in barrels that leak or a factory which ignores the limitations on discharges of pollutants. In short, it would become unprofitable to ignore or violate regulatory measures.

The legislation is the result of a study made by a government commission which completed its work last year. At the time, the National Environment Protection Agency commented: "No one should be able to exploit the environment free of charge."

Under the legislation, the public also is to receive better information about a new industry in its community before it is established.

SPECIAL TO WER

## The iceberg cometh—soon—to provide drinking water

**OSLO**—A few years from now giant icebergs may be moved from the Antarctic to areas with little fresh water—with the aid of Norwegian experts.

Norwegian expertise is considered of considerable significance in this connection as about 90 percent of all research into Antarctic icebergs has been carried out by Norwegians.

Plans for such projects are now being studied by Iceberg Transport International Ltd., whose president is Saudi Arabia's Prince Muhammed Al Faisal.

Norwegian researcher Olav Orheim believes that in a few years an attempt may be made to move an iceberg from the Antarctic to Perth, Australia, in order to supplement the town's scant water supply. Orheim said the intention is to transport an iceberg in the magnitude of 0.5 X 1 kilometer to Perth in six months. During that time it is estimated that about half the iceberg would melt; still it will hold about 50 million tons of water upon arrival, which is sufficient to supply Perth's one million people with water for about one year.

It has been estimated that an iceberg of such dimensions will be worth about \$10 million delivered to Australia and about \$50 million delivered to Saudi Arabia.

The cooling affects of such icebergs may also be exploited.

SPECIAL TO WER

## Australia's No. 1 energy priority is still petroleum

**PERTH**—Australia's highest energy priority is still petroleum, despite innovative research into other fields.

This is apparent in a new media campaign, part of a \$2 million publicity effort, that features cartoon-style characters who demonstrate ways to save gasoline—such as Secretary Sal picking up a pal. Australians are being urged that “this one’s for Australia.”

It's just one small aspect of what the Liberal federal government has been doing since 1977 to maintain reasonable self-sufficiency in Australia's crude oil supplies. Though it has encouraged development of such alternative energies as solar and coal, the highest priority remains fixed on the continued indigenous supply of petroleum. Currently Bass Strait, between Tasmania and the southeastern mainland, supplies some 90 percent of domestic crude oil and plays a large part in Australia's 70 percent self-sufficiency.

Drastic disincentives and talk of nationalizing Australia's oil industry by the previous Labor government brought petroleum exploration in Australia to a virtual halt in the mid-seventies, and the Liberals have since been picking up the pieces. In 1977 it announced government policy which would gradually remove levies on crude and move toward pricing on a par with that received for imported oil. These incentives, plus tax concessions and allowances for exploration and development have redoubled efforts.



Australia may find itself a forerunner in the production of oil from shale. The Rundle deposits near Gladstone, Queensland, presage the world's biggest oil shale project when this \$2 billion production gets underway. The promise of high prices has already sparked a major rush to discover new oil shale areas.

Natural gas is also emerging as a significant energy source. Most notable is the production and sale in South Australia of Cooper Basin natural gas. As natural gas world prices climb toward parity with its crude oil equivalent, the outlook is bright for the North West Shelf natural gas project on the other side of the continent. The first field to be developed, North Rankin, consists of 8.6 tril-



## Energy Sources...

**TURKEY PLANS TO HARNESS** the Euphrates River to reduce its dependence on more expensive energy sources and to benefit irrigation projects downstream. However, the nearly \$1.2 billion project will involve resettling 17,000 people living in 34 villages. The project will add 1800 megawatts of electricity to the Turkish power system. *Outside funding comes from the World Bank, European Investment Bank, Swiss financing, Italy and Abu Dhabi.*

**THE FIJI ELECTRICITY AUTHORITY** has embarked on a \$50 million project to increase the island's hydroelectric power and decrease its dependence on imported oil. The project involves increasing the height of the existing Monasavu dam so as to double its storage capacity, diverting the flow from two streams into the reservoir and installing two power generating sets. By 1985, Fiji expects to save \$9 million a year in foreign exchange.

**BURMA WILL BUILD** a dam at Nyaunggyat in the central dry zone of the country to help control floods, irrigate 81,000 hectares of land and provide up to 56 megawatts of electricity. Part of the \$235 million for the project will be used to rehabilitate the existing irrigation and drainage facilities. The World Bank and the Burma government will share three-quarters of the cost with West Germany, Japan and Norway providing the rest. When completed in 1986, the irrigation project will provide year-round irrigation capability for double-cropping.

**INDIAN SCIENTISTS MAY "PUNCTURE"** the bank of a mountain lake near Srinagar, creating a 1,433 meter waterfall to help power the upper Sindh hydroelectric scheme. A team of experts was to survey the site in June.

**THE FEASIBILITY** of a tidal power scheme along South Korea's western coast is being studied by Sogreah Consulting Engineering Co., a French firm specializing in tidal power construction. The study will cost \$3 million and be completed in the next 15 months. The site, Karolin Bay, has a tidal range of 7.9 meters and a tidal basin of some 120 square kilometers. If the 400,000 kilowatt scheme proves viable, the state-owned Korea Electric Co. will start constructing the tidal power station in 1981 for completion in 1988.

**PRODUCTION OF SOLAR HEATERS** in Japan has increased sharply in recent years. According to figures released by the Japanese Ministry of International Trade and Industry (MITI), the total production of solar heaters in Japan reached some 300,000 units in 1979, compared with 100,000 units in 1976. Solar heaters installed in 10 million homes would mean an annual saving of 2.25 million kiloliters of oil, MITI said.

## Down under . . .

**NEW ZEALAND**, a country rich in natural forms of energy, currently imports oil to fulfill 46 percent of its energy needs—primarily for transportation. Government plans to develop its natural gas field at Maui should halve this dependence by 1987.

Central to the project is a new process developed by Mobil Oil Corp. In a \$500 million plant to be built near New Plymouth, natural gas will be converted into methanol and then into gasoline. The plant, to be completed in 1985, should produce one-third of New Zealand's gasoline needs less expensively than imported fuel at projected prices. The plant will also produce liquid petroleum gas and compressed natural gas to be used in transportation and industry.

The rest of the Maui output will be converted to methanol for use in a new petrochemical complex at Kapuni or for export.



**A COLONY OF KOALA BEARS** is ailing, and an oil company has donated \$2,000 towards tracking equipment which will help take their temperatures.

About 90 percent of the female breeding koala population on Phillip Island, a holiday island some 45-kilometers southeast of Melbourne, Australia, are infertile. The cuddly koalas have ovarian and uterine cysts. A research team from Monash University believes the cause of the infertility may be the hormone imbalances in the koalas' eucalyptus diet.

The Shell Company of Australia donated the money for radio equipment to replace the presently used short-range detectors now monitoring temperature changes in the koalas.

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lion cubic feet of gas, and a consortium of petroleum companies has recently engineered possibly the world's biggest energy loan of its type from eight international banks for the \$4 billion project. The end result will be the export of 6 million tonnes annually of liquified natural gas to Japanese markets, plus a 20-year contract to supply natural gas to the heavily-industrialized south of Western Australia.

While natural gas is being increasingly used as a domestic and industrial energy source, Australia has abundant reserves of coal. The government is anxious to have industry utilize these reserves and is allowing substantial monetary incentives for companies making the switch from oil to coal-generated energy. Research is increasing into coal technology, use and gasification. Interestingly, of \$25.7 million granted by Australia's National Energy Research, Development and Demonstration Council (NERDDS) in 1979-80, \$17.5 million is devoted to coal technology, utilization, and the making of synthetic fuels from coal, biomass and oil shale. Projects focusing on conservation (mainly of liquid fuels) and nuclear energy research each received almost equal amounts of about \$2 million; solar energy projects got \$1.5 million; transportation systems (i.e., electric cars) and assessment technology of fossil fuels resources got about \$1 million each.

NERDDS, a brainchild of the present Liberal government, began in 1978. Applications for grants are considered on a basis of priorities: high on the list are conservation of liquid fuels, technology, liquid fuel alternatives, substitution of other fuels and energy resources, coal, electric vehicles, small-scale use of solar and wind power systems, and enrichment of uranium. On a lower level of priority would be projects involving magneto-hydro dynamics, coal gasification, nuclear power and fusion, large-scale solar energy for electricity, wind/wave/tidal/ocean/thermal/geothermal energy systems, alternative storage of electrical energy (excluding transport) and production and use of hydrogen.

Australia has been criticized for its low level of public spending in energy research, but Kevin Newman, then Minister for National Development, said in 1979: "In any country energy research must be related to the energy resource endowment and outlook. Australia is an energy-rich country. We do not have to match the research expenditure levels of energy-deficient countries." He also noted that crude oil self-sufficiency in Australia, once predicted to drop to as low as 25 percent by the mid-1980s, had improved so "that by 1985 we will be producing 50 percent of our crude oil requirements" due to the government's encouragement of exploration and its pricing policies for domestic crude.

Motor vehicles are big users of petroleum products and the federal government has focused its \$2 million advertising campaign on "the man in the street," asking him to conserve fuel. "If a publicity campaign results in reducing our oil consumption by only 2 percent, that annual saving would be equivalent to discovering a field the size of the Tuna field in Bass Strait," said Mr. Newman. The Tuna field cost \$100 million to explore and develop.

Prime Minister Malcolm Fraser foresees that "ultimately 10-15 percent of Australia's motor vehicles could be powered by LPG" (liquid petroleum gas), and 450 federal government vehicles are being switched over to LPG at a cost of \$450,000.

JANE NACZYNSKI-PHILLIPS



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## An ecological assassination is "retribution" for Seveso

**MONZA**—What may be the first "ecological assassination" in history was carried out in this northern Italian town in February. A guerrilla commando group ambushed and shot to death Paolo Paoletti, an executive of the Swiss-owned Icmesa chemical firm, known around the world for the dioxin leakage which caused the entire town of Seveso to be evacuated in 1976.

Paoletti, 39, the firm's industrial director, was gunned down by two men and a woman as he prepared to drive to work. Within hours, Front Line, which has often struck industrial officials and magistrates in recent years, claimed responsibility for the assassination. In leaflets circulated in an outdoor market in Turin a few days later, Front Line underlined Paoletti's role in the Seveso leakage—considered Italy's worst environmental disaster—and implied he was "punished" because he was responsible for the accident "which caused severe damage and pain to proletarians in Seveso."

The dioxin leakage forced the evacuation of 800 residents, caused skin diseases in dozens, many of them children, and killed hundreds of animals.

A large area in Seveso, the so-called Zone A, still is fenced and barred pending reclamation works being financed by Givaudan, the Swiss company which is part of the Hoffman-La Roche group and which controlled Icmesa.

Italian officials dealing with Seveso reclamation condemned Paoletti's murder, saying the terrorists shot a man "who was actively cooperating to overcome damage caused by the leakage."

Paoletti was arrested soon after the 1976 accident. He was jailed for five months and then released on bail pending a trial which has not yet been fixed.

PIERO VALSECCHI

## Norway invents a device to stop oil blowout pollution

**OSLO**—Alarmed by the giant Ixtoc-1 oil well blowout in Mexico, two Norwegian engineers have designed an Oil Well Arrester (OWA).

Its purpose is not to prevent blowouts but to arrest them and prevent disastrous oil pollution while relief wells are drilled.→

## In Europe...

**THE DANISH COURTS** have been instructed to be tougher with firms and individuals who break environmental laws.

The Environment Ministry said in an announcement that fines were too small and that there appeared to be reluctance to prosecute.

The matter was investigated by the Justice Ministry, and the Attorney General issued an instruction that in all cases of infringement of laws protecting food and the environment the current practice should be sharpened.

He said that fines should be calculated on the seriousness of the offense, taking regard for the economic advantage gained—or attempted to be gained—by breaking the law.

He recommended that breaches of the law should be brought to court and that the prosecution should cooperate more closely with the authorities responsible for protection of food and the environment.

**SWEDEN'S STRAINED ECONOMIC SITUATION** could delay decisions on important environmental improvements, the Minister of Agriculture, Anders Dahlgren, predicted recently.

In an interview with the Swedish national news agency, Dahlgren said that the date for introducing lead-free gasoline into Sweden, for example, could be postponed for economic reasons.

"In a constantly more austere economic situation, that perhaps is not the first (improvement) we can undertake," he said.

He also said that economic considerations were involved in the government's decision whether to ban chemical spraying of the forests from the air even though regard for the environment must be decisive. He hoped for a decision before summer.

**WORKERS IN RAVENNA, ITALY**, world-known for its mosaics, its cathedral and Dante Alighieri's tomb, struck one hour recently for state funds to help stop the town from sinking an average of nine centimeters a year.

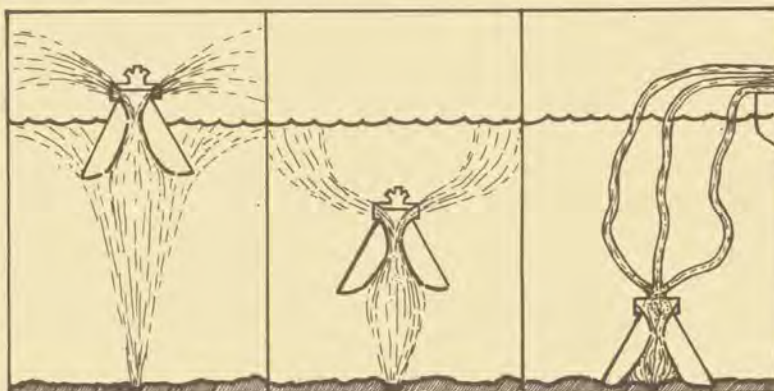
Ravenna's subsidence is due to massive pumping of water by refineries and the chemical industry.

Aristide Canosani, the mayor, told residents at a rally after the strike that the town needed 100 billion lire or \$120 million to halt the flooding that has damaged the town. On December 1979, nearly 500 hectares of cultivated land around Ravenna, which has sunk more than one meter in the past 20 years, were flooded by sea waters.

The Italian government recently allotted 9 trillion lire or \$10.8 billion for soil conservation, and Ravenna authorities hoped to get a share quickly to start reclamation.

It has already been presented to the Ministry of Petroleum and Energy, the Ministry of Environment and several firms operating offshore in the North Sea. The concept has been thoroughly discussed with foreign experts and the conclusions reached have been favorable.

Preliminary tests were carried out in a model tank and later the system will undergo full-scale tests in order to confirm the principles on which it was built.



While drilling with semisubmersible rigs or drillships is in progress, an OWA is stationed nearby with all valves closed. If a blowout occurs, the drill rig is withdrawn and the OWA placed above the center of the leakage with the aid of tugs. The ballast valves are then opened and the OWA sinks slowly.

As soon as the OWA lands on the seabed, the column of gas and oil will be approximately in the center of the arrester. The blowout location will thus be enveloped by a double-walled truncated cone. At its bottom, around the site of the blowout, a partial vacuum will develop and that is exactly the intention of the system. This will be of major significance in limiting the formation of a crater. It will also have the effect of sending the column of gas and oil in the right direction.

The OWA was designed by West Engineering and Research Co., Gemlehaugen 27, 5000 Bergen, Norway. SPECIAL TO WER

## WER interviews the Greek Minister of Industry & Energy

**ATHENS**—Like every industrially developing country, Greece is facing pollution problems, but the situation is not out of hand, according to Miltiadis Evert, Minister of Industry and Energy.

"We have already adopted certain measures against industrial pollution and in four to five years we believe that we will be in a position to say that we are fully in control of the situation," Evert told WER.

Evert's ministry, in the absence of a central environmental agency, is responsible for combatting pollution that comes from industry. The minister said that Athens and its surroundings and the city of Salonica in northern Greece are the areas most affected by industrial pollution since over 50 percent of the country's industry is concentrated in them.



Almost 80 percent of the capital's pollution comes from 15-20 big industries located around it, Evert said.

An important measure taken by the government to reduce industrial pollution is the ban on investment in new industries in big cities, particularly Athens. At the same time relocation of high-polluting factories outside cities is being encouraged. One such industry is the state-owned electric power unit.

In addition, the Minister said the government is offering big incentives to private industries to leave the areas, in some cases paying up to 45 percent of the expenses. "The alternative is the installation of complete pollution equipment, which is often costly and inconvenient." If they fail to comply with the measure, industries may face heavy fines and, ultimately, temporary or permanent closure.

Evert said that relocated industries and new factories will go into industrial zones where pollution control and waste disposal facilities are available. There are 22 such areas all over the country. In addition to pollution prevention, the creation of these zones is aimed at redistributing industry in Greece.

"Environmental protection generally can be combined with industrial development," Evert believes, adding that pollution control measures in Greece will not be detrimental to foreign investment in this country. "It is easier for an investor to know from the beginning what measures he has to take. What investors do not want is constantly changing measures," the Minister said.

Evert, who had no particular knowledge of environmental issues before being appointed to his post in 1977, said that the government is making available all necessary funds to fight industrial pollution. The Minister failed to give the exact amount provided by the government for the purpose but admitted that environmental problems tend to be pushed aside by other "more important" demands on the budget.

"The environmental problem is not too bad at the moment. We can handle it if we act now, but if we leave it we are going to face a really difficult situation."

KYRIACOS CONDOULIS

## Ireland's rivers are close to choking on effluents

**DUBLIN**—The capacity of Ireland's rivers to assimilate the increasing amount of effluents being discharged by industry is worrying environmentalists.

A conference on effluent problems in Cork disclosed that urbanization, the upsurge in industrialization, the intensification of agriculture and allied developments had placed an intolerable burden on the assimilative capacities of the country's receiving waters.

More efforts are to be made to get local authorities to process licenses for the discharge of effluents. Some sources say the level of licensing is close to zero.

TOM MacSWEENEY

## More on Europe . .

**A FEW YEARS AGO** experimental cultivation of grape vines began on reconstituted mine dumps in Czechoslovak Bohemia. Today, those 85 hectares yield excellent wine, said farm director, Pavel Simecek. The Bilina farm also has 550 hectares of orchards on reclaimed land. The experiment has been so successful, even in the relatively rough climatic conditions of north Bohemia, that the farm plans to have 860 hectares of orchards by 1985 and 150 hectares of vineyards by 1990.

**A REPORT** issued in Bonn, West Germany, shows that an incredible one-third of federally owned land is under nature protection law.

The Agricultural Report of 1980 shows that: 25 percent of federal land is under nature protection statutes; another 2 percent falls under environment protection regulations; 5.6 percent is protected under nature conservation laws; and 3.4 percent is set aside for leisure time use.

**DUCK HUNTERS** and skeet shooters have been accused by Danish environment authorities of causing serious pollution by their heavy use of ammunition in rural areas. Experts have found that more than 750 tons of lead are pumped annually into the fields, forests, lakes and fjords.

Experts of the Museum of Natural History reported that the wetlands of West Jutland—an important natural area—were found to hold an average of 37 duck-shot pellets per square meter. That was more than five times the danger limit set by U.S. environmental authorities, the experts said.

Inspectors of the government's Environmental Agency reported that an enormous quantity of pellets were found in a North Zealand lake where marksmen practice skeet shooting. The city of Copenhagen draws part of its water supply from this lake.

"The marksmen fire at least 10 tons of lead into this lake annually," an agency spokesman said. He added that the agency was considering a ban on skeet shooting in this and other lakes.

**STRICT CONTROLS** on the handling and transport of dangerous substances will be introduced in the Irish Republic. Twenty-five more substances, including Sodium Chlorate, Nitroglycerine and others, are to be added to existing lists under the Dangerous Substances Act.

The effect of naming these substances is to make their transportation, storage, loading, unloading, sale and distribution, subject to strict government agency regulatory control.

## Energy Sources. . .

**ELECTRIC POWER** for a population of 10 million can be produced with domestic wastes in Japan, according to a report by the Resources Council of the Japanese Science and Technology Agency. Any city with a population of 150,000 or more has enough household wastes to create electricity, the report said.

At present, there are about 25 waste disposal plants in Japan. The Katsushika waste disposal plant in Tokyo, the largest, is equipped with a system capable of producing 12,000 kilowatts. One-third of the power the plant generates is used by the plant and the rest is sold to the Tokyo Electric Power Co.

**AS RAPIDLY SPIRALING OIL** prices push Thailand's fuel bill higher and higher, the cement industry is making the first move towards possible conversion to coal as an alternative energy source.

Experts and technicians have been sent to study conversion methods already being used in countries such as Japan and Australia. If these investigations show that such an undertaking is feasible in Thailand, the cement industry is expected to take the lead in at least partial conversion by national industries to coal.

**AN HUNGARIAN NUCLEAR SCIENTIST** claims that his country has developed a new disposal system for nuclear waste so safe that people could live in a house constructed upon it without any danger.

The claim, published in Budapest's "Hetfoei Hirek," quoted Arpad Veres, Director of the Hungarian Academy of Sciences Isotope Laboratory.

In an interview Veres declared that the new depot was built to take nuclear waste from the country's first atomic power station under construction at Paks in the south. However Veres said that the depot, described as a "multiple-secured bunker," will also accept waste from 300 institutions that use radioactive isotopes.

Veres described the system as one that handles "waste materials condensed in bitumen or stainless steel pipes that are then buried in concrete and then, in turn, encased in steel barrels or sunk in reservoirs."

Veres told the publication that "it will all be so safe that a house could be built and lived in right on top of the installation."

## Sweden holds a referendum on future energy sources

**STOCKHOLM**—Swedes cast their votes March 23 in a national referendum on whether to advance further into the nuclear power age or to pull out in favor of renewable alternative energy sources such as the sun, wind, water and forests.

Voters have a choice among three proposals.

The first, backed by the moderate party, calls for full expansion of nuclear power. That would mean not only continued operation of the present six installations but activation of four plants now standing idle and completion of two still under construction.

The second proposition, supported by the Social Democrats and the Liberals, also favors 12 nuclear power plants. However, it carries a rider looking toward nationalization of all power sources "of importance" and an intensification of research and development into alternative power under state leadership. It also emphasizes improved safety controls.

The third line is a pronounced "no" to nuclear power. Pushed by the Center party and the Communists, this proposal would scrap within the next ten years the six nuclear plants now operating and the four installations waiting to start up. The proposition also would couple an intensified energy conservation program with an all-out production of alternative energy.

A fourth option, open to voters, is to cast a blank or "don't know" ballot.

Exactly what will happen after the referendum still is unclear. The outcome of the ballot is only an advisory to Parliament, but the five party leaders have all said that they will abide by the results. One question is whether the votes for the two pro-nuclear proposals may be thrown together if neither wins a majority. Various commentators have emphasized that in the end Parliament will have to interpret the result.

SPECIAL TO WER

## Egypt's new nuclear reactor is a volatile public issue

**CAIRO**—Egypt's plans to build a nuclear reactor have at last become a volatile public issue. The local council in Alexandria has objected to a proposal that the 600 megawatt power station be situated just 30 kilometers west of the city on the Mediterranean coast.

As a result, the Egyptian Parliament, which has yet to approve either the site or the reactor itself, will debate the planned facility in its current session.

The reactor has been the subject of negotiations between Egypt and the United States for nearly five years. A contract with Westinghouse Corporation to design and build the plant is reportedly ready for signature, but the project has been held up while Egypt and the US work out details of a bilateral nuclear cooperation agreement.

Initially, there was no obvious resistance to the government's plans to locate the water-pressurized reactor at Sidi Kreer, west of Alexandria. But, in the opinion of one official in the Ministry of Health, the Three-Mile Island accident changed all that.

According to Cairo press reports, Alexandria city officials are not against the idea of nuclear power. What they object to is its location on the outskirts of Egypt's second largest city (population 4 million) and one of its premier tourist attractions.

The Minister of Electricity believes that Egypt's power needs will increase seven times by the year 2000, a demand that can only effectively be met by nuclear power. At the moment, popular resistance appears to be confined to the proposed site and not to the idea of nuclear power itself.

Western scientific advisors, furthermore, speculate that the major constraints to Egypt's nuclear plans will be financial and not ideological or ecological—that is, where to find the \$600 million to \$1 billion the reactor may cost.

NATHANIEL HARRISON



## More than one in ten Israelis heat with solar energy units

**JERUSALEM**—Israel, which apparently leads the world by a wide margin in the use of solar energy, has seen the number of its operational solar heating units increase in the past 21 months by 100,000 to a total of 400,000. This nation of 3.5 million people is the first to have the sun directly providing one percent of its total energy needs. The number of solar heating units is expected to increase to 650,000 in the next 10 years, according to the Ministry of Energy.

The investment in such units in apartment houses, estimated at about \$4,000 an apartment, should be amortized within four-and-a-half years given the price of fuel oil in Israel (about 25 cents a liter) and Israel's climate.

To encourage wider use of solar units, the Ministry of Energy has decided to award a grant of 10 percent of their cost, including planning and installation, to any public or apartment building undertaking to install them. Since May 1978, all new public buildings are obliged to incorporate solar water-heating systems rather than the traditional electric water heaters.

Israel is also devoting considerable research into the use of solar energy for creating electricity. The world's largest solar power station has been functioning since last December on the shores of the Dead Sea. The 150-kilowatt pilot plant was built by two firms in cooperation with the government and several universities. A plant with a five megawatt capacity is to begin operating in two years. In addition, a solar pond producing 2,000 megawatts is planned for the area.

ABE RABINOVICH

## Renewable Energy...

**SPAIN'S GIANT** state holding company, Instituto Nacional de Industria, is to create a 50 million peseta (\$757,000) company for the investigation, production and sale of solar energy.

The new company will be called Insolar, and its immediate aims include the manufacture of solar energy collectors, quality controls and development of the use of solar energy at low temperatures.

**NON-CONVENTIONAL ENERGY** technologies, such as biogas, wood, wind and solar heating, are to become part of the curriculum in Philippine secondary schools.

The Ministry of Education and Culture and the Ministry of Energy have agreed to cooperate in the preparation of books and manuals for school children. Also, the construction of a number of demonstration models of biogas digesters, solar dryers and copra dryers will be undertaken.

The program will be phased in over a two-year period. Beginning in July, seminars will be held in the twelve provincial regions to train teachers in non-conventional energy technology. After that the course will be introduced first in the country's 390 agricultural schools and eventually taught in all secondary schools.

**INDONESIA** is in the process of building what officials said will be the biggest solar power project in the world.

The solar villages project, built with West German assistance in the form of grants, is the biggest known so far in the world, according to the officials. While the project at Picon will provide electricity to farmers, the Cituis village project will help fishermen now dependent on outside sources for drinking water and for ice for their fish, and it will meet their electrical needs as well.

**SOLAR ENERGY** is being used in Zhejiang province in eastern China for heating water, refrigeration and other purposes. More than 20 cities and counties in the province use devices equipped with light-absorbing installations to heat water for baths, restaurants and barber shops. The largest such installation has 90 square meters of light-absorbing panels and can warm 10 tons of water every day up to anywhere between 45 to 60 degrees centigrade.

The province also has developed silicon cells which convert solar energy into electricity to power transistor radios, automatic precipitation measuring devices and black-light lamps.

A special commission was set up last year to coordinate the efforts to make use of solar energy.

## In Africa . . .

**AN ALARM WAS SOUNDED** recently in Cairo when Egypt's Minister of Agriculture, Mahmud Dawud, reported that over the next ten years Egypt could lose over two million feddans of fertile agricultural land to the desert (a feddan is slightly less than half a hectare).

Healthy Egyptian topsoil has a high content of clay which is the main ingredient used to make bricks here. Brick manufacturers offer farmers good prices for permission to strip the top layer of their land—offers many farmers can't refuse.

The Egyptian government is starting to take action. It is looking for an alternative to clay bricks, perhaps bricks made from desert sand. Also, there's a bill before the People's Assembly which would provide more agricultural services to farmers. It is hoped that by increasing crop yields—and thereby profits—there will not be as much financial incentive for farmers to turn their land over for topsoil stripping.

**THEY DON'T LOOK LIKE MUCH NOW:** about nine feet tall, spindly with not even a single leaf. But given a few years and a little attention each of them might help Cairo look less like the parched, concrete jungle that it is and more like the fertile Nile River valley it's supposed to be. The city of Cairo has embarked on a tree planting campaign that the city fathers hope will repair some of the damage caused by urban development. Some 15,000 trees are being planted throughout the city and in its ten public gardens at a cost of \$143,000.

**THE U.N. DEVELOPMENT PROGRAM** (UNDP) is funding an ambitious development project among Dinka tribesmen in the Jonglei Canal region of the Sudan. The development project is under the direction of the Jonglei Canal Authority and reflects a tendency of international agencies to edge closer to the controversial canal project as environmental questions are slowly overcome. Recently the Sudanese announced their intention to re-route the canal—at considerable expense—for environmental reasons.

UNDP is to contribute just under \$5 million to the \$8.5 million cost of a development program for the village of Kongor in southern Sudan. The project proposes—over the long term—to upgrade and modernize livestock, farming and fishing techniques of the Dinka as well as to improve their educational, health and social services. Kongor will become a model village where new ideas will be tested for use in other districts.



## East Africa's desert areas spread at an "alarming" rate

**DAR ES SALAAM**—East Africa is threatened with an "alarming" rate of desertification approaching the magnitude of that in the Sahel, according to Professor M.B. Kwezi Darkoh of the University of Dar es Salaam in Tanzania. Both Kenya and Tanzania are affected by high to moderate degrees of desertification, while Uganda appears so far to be the least affected country in the region.

The reasons for desertification are numerous. In Kenya, where less than 3 percent of the land is covered with forest, the symptoms are most conspicuously revealed by soil erosion. This is caused by overcultivation and overgrazing; burning grasslands for agriculture and grazing; excessive wood collecting and charcoal making for personal, industrial and export purposes; and unscientific clearing of new lands. In addition, inappropriate irrigation methods are causing waterlogging and salinization which leads to desertification.

In certain areas, problems such as overstocking and overcultivation started during the colonial period when white settlers pushed Africans off the best grazing and farming lands. But the process of desertification has greatly accelerated in recent years. Professor Darkoh estimates that there has been a three- to four-fold increase in the erosion rate of Kenya's rangelands over the last 10 to 15 years.

In Tanzania similar factors are leading to desertification. Here the main semi-arid areas are in the central part of the country, including the region surrounding the new capital of Dodoma, and in the northwestern parts of the country stretching to the Kenyan border. In central Tanzania the number of people and cattle have increased dramatically and quasi-static agricultural methods have been adopted without proper irrigation systems for this low-rainfall area. The vegetation has been mauled and the land, Professor Darkoh states, "rendered completely barren and useless to man and beast."

In the northwestern parts of the country the principal cause of desertification appears to be overgrazing. And, for Tanzania as a whole, it is estimated that the rate of tree felling has doubled in the past 50 years, while little reforestation has been undertaken.

In Uganda the problem of desertification seems to be confined to the remote northeastern Karamoja area and the western Ankole region.

Professor Darkoh concludes that not enough is known about the actual extent and rate of desertification in Kenya and Tanzania, but a number of important studies are currently underway.

MARTHA HONEY

## Laos bans timber exports to save its land

**BANGKOK**—An immediate ban on timber exports and smuggling has been ordered by the Laotian Cabinet as part of a five-point plan to halt what the government of Prime Minister Kaysone Phomvihane calls a serious mismanagement of natural resources.

The order, announced on 25 February, has caused concern in Thailand. The timber industry in the north and northeast of the country may suffer the consequences, as it is in those areas that much of the black market timber from Laos is received.

The Laotian Cabinet communique, released by the official news agency Khaosane Pathet Lao (KPL), stated: "The mismanagement (of natural resources), if not changed, will directly affect the livelihood of our people. Forest replanting work is still slow and considerable damage is caused by the slash-and-burn method of cultivation."

Other points of the plan include: encouragement of an end to slash-and-burn agriculture, with more rice fields being sown; the launching of an education program against burning forests; implementation of a national tree-planting campaign, with 1 June designated as "National Tree-planting Day"; and the launching of a conservation program for rational forest use while protecting the flora and fauna of Laos.

The announcement said that forest areas in Laos have dropped from 91 million hectares to only 11 million hectares and "if we do not improve the situation, grave consequences, particularly to our flora and fauna, will occur in a very short period of time."

TONY OLIVER

## Saline land is reclaimed economically in Pakistan

**ISLAMABAD**—Scientists at the Nuclear Institute for Agriculture and Biology (NIAB) in Faisalabad, Pakistan, have developed a method to economically use saline lands. The process is of immense value for a country where salinity has laid waste thousands of acres of land.

"Kallar" grass, which is resistant to salt, is grown in the first phase of a succession of plantings devised by NIAB scientists. This grass and others planted subsequently can be used as fodder and for composting. The latter operation sets in motion a series of chemical changes in the soil enabling the growth of the grasses.

The scientists also use saline water for crop production by lining the water channel with gypsum stone to "amend" the water. Crops have been grown successfully in experiments with such "amended" water.

Another avenue of research into the problem of salinity uses radioisotopes. The scientists have found three kinds of fungi that can enhance the decomposition process of fresh organic matter to stimulate biological activity in saline soil. Studies are continuing on carbon and nitrogen mineralization with the help of stable radioisotopes.

MOHAMMAD AFTAB

## In Asia . .

**CHINA'S** military high command has called on every person in the armed forces—four million people—to plant at least 20 trees this year.

The high command also called on all armed forces personnel to help civilians in a national drive initiated by the State Bureau of Urban Construction to plant more trees and greenery.

A notice issued by the bureau in connection with National Tree Planting Day on March 12 urged all city dwellers to make special efforts to plant and cultivate more flowers, grass, trees and other soil covers.

**SINCE THE DESTRUCTION** of Thailand's forests continues at a serious rate, the Ministry of Agriculture and Co-operatives is planning to spend over \$4.9 million on a nation-wide survey to determine the amount of destruction and the level of human settlement in the affected areas.

The aim of the survey is to prevent the spread of deforestation and to find ways of implementing the government's policy of increasing the forest area from the present 20 percent of the country's area to 40 percent. One expected move will be to designate new areas as forest reserves.

Those forestry areas which have already been completely destroyed will be developed as village communities and cooperatives. A title deed for 2.5 hectares will be issued to each family. Where a family is occupying more than 2.5 hectares, they will be required to replant trees on the excess area as part of the government's reforestation program.

**THE THAI GOVERNMENT** has designated some 562 hectares of fruit orchards in Samut Prakarn province, on the outskirts of Bangkok, as the country's first "Green Area."

The action is the result of a four-year study by the National Environment Board. The study was ordered by the Cabinet, in an effort to save the only intense-cultivation area in the heavily industrialized province.

**THE PHILIPPINES'** fuel-from-wood program is underway. In the next three years it's expected to save the country at least \$30 million in oil bills.

The National Electrification Administration (NEA) has launched a nation-wide "wood for oil" substitution campaign which it intends to introduce into its 111 rural electric cooperatives.

At present, almost all the cooperatives use oil-fired generators and so the annual energy saving will be the equivalent of 6,000 barrels of oil, or more than \$10 million a year. The program will be concentrated initially on the main island of Luzon where tree plantation facilities have been fully assessed. Six thousand hectares of fast-growing "Ipil Ipil" trees will provide a continuous supply of wood fuel.

## In Latin America . . .

**THREE CEMENT FACTORIES** near Mexico City have been closed by the federal Sub-Secretariat of Environmental Improvement because their owners failed to install the necessary anti-contamination devices (WER, Feb. 11, p. 7). All had been warned before they were closed, a spokesman for the sub-secretariat said. Items recommended by authorities ranged from venting systems to trap cement dust to gauze masks for workers. Owners of eight other cement factories in the same area have agreed to comply with anticontamination regulations.

**VENEZUELA'S** Vice Minister of Environment German Uzcatequi announced that regulations controlling vehicle emissions will be enacted within four to five months—a first for Venezuela.

The installation of filtering devices will be obligatory for all new automobiles, buses and trucks. Old vehicles will be required to install them progressively, or to modify their carburetors so as to function within set limits. Violators of the law will be fined.

**HAITI**, one of the world's poorest nations, will be used as a "proving ground" for appropriate technology, according to an agreement signed between the Denver Research Institute (U.S.A.) and the Haitian government.

The Institute has committed \$1,423,000 toward the project, which will try to use appropriate technology for the solution of four problems—the relief of hunger, access to potable water, alternative sources of energy and increasing rural income.

Among the projects to be investigated are improved fishing techniques, storage and reservation facilities, solar cookers and solar-powered water distillation units, desalination of sea water, methane gas production, the conservation and distribution of water, and the fabrication of fuel briquettes, all using simple learned techniques and readily available and fabricated materials.

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The Center is a non-profit, non-advocacy, educational organization which seeks to foster public understanding of global environmental issues. Established in 1974 by the UN Association of the USA with the support of the UN Environment Program (UNEP), the Center alone is responsible for WER's contents.

## Environmental contamination causes many deaths in Mexico

**MEXICO CITY**—Reports linking a high incidence of deaths with environmental contamination have been issued by the nation's chief environmental officer and by the head of a team of medical investigators at the National University. Reports by Dr. Eleuterio Gonzalez, director of the university's department of social and preventive medicine and public health, and Humberto Romero Alvarez, federal sub-secretary for environmental improvement, were separate but complementary.

The principal causes of death in Mexico are "closely related" to the contamination of drinking water and air, Dr. Gonzalez and his researchers found. The most common fatal illnesses are pneumonia, diarrhea and bronchitis, he said, and all are related to poor sanitation and unclean air.

About one-half of the housing in Mexico lacks drainage and piped water. Mosquitos also remain a health hazard in some areas. Dr. Gonzalez said air contamination is caused by vehicles, industrial and power plants, oil refineries, mining and metal plants, construction, the open burning of trash and erosion.

Romero Alvarez said 30 percent of the food crops produced in Mexico are lost through contamination by pesticides, herbicides and fertilizers. The entire chain of food handling—from field to table—lacks the proper sanitary controls, he said.

KATHERINE HATCH



## A "supertree" takes root in blighted Haiti

**PORT-AU-PRINCE**—It has many local names, but scientifically it's the *Leucaena leucocephala*, and it appears to be an answer to tropical and semi-tropical timber depletion.

In Haiti, the tree has exceeded all expectations and has taken to the environment in great style. Introduced into the country by foreign aid specialists, the trees were planted experimentally along roadsides as seedlings in black plastic containers. The trees, outside of the initial planting and watering, received no additional care.

The trees appear to have many uses. Michael D. Bengé, a forestry expert for the U.S. Agency for International Development says, "The tree can, in five years, reach a height of 65 feet and become 11 inches thick. Its wood is excellent for pulp, building or furniture, firewood, charcoal, fencing. It's a preventative of soil erosion, the leaves make a nitrogen-rich mulch, it's a fine cattle feed and bees make delicate honey from its small, white flowers. Seed pods can be eaten raw, dried and ground into flour, made into coffee substitutes, dyes—the gum is a fine commercial thickener for foods like ice cream, mayonnaise, even for cosmetics."

Bengé says that one *Leucaena* at maturity produces about 20,000 seeds annually.

ART CANDELL



# World Environment Report

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JANUARY 1, 1980

## Editor's Note . . .

*The Decade of the Environment is over. What will the '80s be called? The Decade of Energy, of Development, of Alternatives? The environmental movement of the '70s has not been eclipsed. In fact, environmental awareness has never been higher: In 1972, at the time of the Stockholm Conference, only 11 developing countries had agencies that dealt in some fashion with environmental issues; today, our Center has found, that number is 87.*

*There is a growing understanding that environmental issues cross sectoral and geographical boundaries. Whatever this decade becomes, environmental planning and practice will be part and parcel of the way we mold our future.*

*This Special Issue examines how the environment impacts on major areas of our lives. In interviews with, or articles by, some of the experts who make policy and pursue alternatives it becomes clear that international cooperation is increasingly necessary. Local problems have become national, and national ones international.*

*For five years World Environment Report has sought to share information on environmental issues and trends. Now, at this crossroads, it is time to look back at what we in the field have accomplished and, especially, what we must do now to safeguard our future.*

*Inside this special issue, we discuss the inter-relationships between environment and:*

*development, p. 1*

*industry, p. 2*

*appropriate technology, p. 3*

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## SPECIAL REPORT:

### Environment Into the Eighties: Where Do We Go From Here?

Thoughts on major issues  
by experts with answers

## Development Wassif Y. Boutros-Ghali



It is important that the governments of developing countries realize, through as many palpable examples as possible, the issue of the environment. Policy makers need to be convinced to plan beyond their short political lifetimes, for development within an environmental context is a long-term issue.

A weakness in the approach of environmentalists to date is that in their effort to create public opinion, almost all dealt with catastrophes but few focused on how to deal with an aspect that might eventually be a catastrophe. If they cannot come up with positive alternatives and remedial action, they are just prophets of doom. All the efforts that have gone into sensitizing the public to environmental dangers has done its work. Any additional efforts along this line become counterproductive as far as the developing countries are concerned.

The developing countries can't just do nothing. Governments can be convinced something must be done, but what? And there the silence is shattering! So they tackle the most evident problems, like pollution—a western problem with western solutions. What should be dealt with now are alternatives couched in simple economic terms to show they are viable and appropriate. If we don't come up with answers, they will think there are none and so will go ahead and emulate the western model.

Today, research in the developed countries deals rightly with the problems of developed countries. Take river blindness, for example. There's been no research on that in the developed world because it is not their problem. It started being taken over by international organizations, WHO, UNDP and the World Bank. International organizations have a role in doing environmental research for developing countries. →

L.B.

## Environmental management . . .

**NICARAGUA'S** four-month-old Reconstruction Government has recently formed an Institute of Natural Resources and the Environment (IRENA) in Managua. It is in the process of developing a center for documentation and information and would appreciate materials "relevant to a tropical country."

**AN ENVIRONMENTAL IMPACT STATEMENT** will be required of anyone changing the environment in Mexico if a proposed law is passed. Gerardo Cruickshank, planning sub-director in the Secretariat of Agriculture and Water Resources, said the legislation would require that anyone proposing any construction, activity, operation or process that implies change or transformation of the environment must present authorities with details of the environmental impact of the proposed project.

**THE HUNGARIAN** news agency MTI has reported that Budapest has set up a metropolitan environmental and nature protection committee to police compliance with existing regulations.

The Committee will survey urban, regional and industrial development plans, as well as major industrial projects and construction that threaten to pollute the Budapest area air.

**MALAYSIA AND SINGAPORE** have agreed to set up a joint committee to deal with pollution affecting the two countries. The committee will meet at least once a year to discuss common environmental problems. According to Malaysian Minister of Science, Technology and the Environment, Tan Sri Ong Kee Hui, environmental issues were previously discussed by a joint border health committee.

**THE PHILIPPINES'** first live-in ecological training complex has recently been completed. Called the Eco-Tech Center, it is situated amidst a 12-hectare lot inside a government-owned college in Cebu City.

The center is a project of the Ministry of Human Settlements with the cooperation of the Ministry of Education and Culture.

**THE HONG KONG** government is expanding its Environmental Protection Advisory Committee (EPCOM) in order to maintain a balance between the commercial and industrial sectors and the protection of the environment.

EPCOM will include five special committees dealing with water, air and noise pollution, waste disposal and landscaping, and legislation of anti-pollution bills.

We should try to think in terms of poor man's solutions. They may not have the excellent result of the rich man's, perhaps 50 percent of that, but for the cost-benefit ratio that would be enough. As an example, if it costs \$10 to stop 90 percent of a car's emissions, and only \$2 to reduce emissions 50 percent, I prefer that. For me, the poor man, it is a better solution.

Today, cities in developing countries have problems of solid waste. The only answers they have are western, but physically their problems are different. There could be other solutions, but few are thinking about them.

The UNDP is administering a new fund for research and technology (they hope to raise \$250 million for a two-year interim program). Finding solutions to the solid waste problem is an activity such a fund could do. The principle of TCDC (technological cooperation between developing countries) is important because the problems of Third World countries are often unique.

There has been enormous progress in scientific and technical development in the Third World. But all too often government organizations and ministries act autonomously and do not cooperate. Environment is a horizontal link, and effective environmental assessments and controls can only be implemented at the policy-making level.

It is possible to overcome sectoral opposition to environmental issues if they become part and parcel of sectoral activities and not an addition to them. If the environmental aspect is introduced into technology as a part of the technology itself, then you have done the trick. But you have to think in those terms. It is not easy, for there are many vested interests.

First, we must fight lack of knowledge and after that, like any other issue, we must present positive alternatives that are convincing as political actions.

*Wassif Y. Boutros-Ghali is senior technical advisor to the United Nations Development Program.*

## Industry H. Stanley Dempsey



The decade of the environment has just ended. While the decade of the '80s could become known as a decade of development, it is totally unlikely that development will occur at the expense of the environment. Responsible resource developers will continue to recognize the value in maintaining the practical environmental standards as a cost of doing business, if not the only way to be allowed new development.

At the same time, responsible environmental activists will recognize the need for harmonization between industry and the environmental movement. At the end of the '70s we were already seeing efforts to refine and use such techniques as mediation to settle disputes in development. We also have seen a lessening of support for environmental litigation.



Early in the '70s there was a rush to study everything. Today, this approach is wearing thin not only with taxpayers, but with the true environmental professional who finds that the preparation of taxonomic lists for environmental impact studies really doesn't show much academic achievement or professional accomplishment, let alone contribute significantly to protecting the environment.

About a year ago, Meg Greenfield, writing in Newsweek said: "How is it that we have all this information and never seem to know anything?" Her conclusion was that if we know something we can take action. If we never know enough, we can't act. There is a need to decide the implications of what we know, to act, and realize that mistakes will be made, that mistakes can be corrected and that we don't have to be repeating them. Study for study's sake has proven impractical and expensive to society, industry and the economy.

In the '70s we saw exponential growth in regulatory agencies in the United States. Many other countries followed this example. Some are likely to do so in the years ahead. Others, such as England, chose more efficient but no less effective methods of managing growth while protecting the environment. The '80s will require that counterproductive and conflicting policy and regulation be eliminated. Responsible governmental, environmental and industrial representatives in all countries must address themselves to resolving differences among national environmental, economic, mineral and energy policies in order to maintain and continue to improve our world standard of living, and avoid resource blackmail.

Industry must be careful to distinguish between what we would like to have happen and what is likely to happen. We have learned that following the principles of ecology and using common sense are two of our greatest assets and are in part responsible for our continued strength.

It is within our interest—and the interest of all industry—to seek to balance conservation and development, growth and the environment. These interests are shared by similarly responsible environmentalists world-wide.

*H. Stanley Dempsey is environmental director and vice president of AMAX Inc., a mining and milling company with operations world-wide. He was recently named deputy director of the new corporate department of communications and public affairs.*

## Appropriate Technology

### William N. Ellis



here are hundreds of appropriate technology (A.T.) centers around the world; their roots are very different. In the Third World poverty has been the motive for developing A.T. In Europe it has been a concern for human rights, "power to the people," sparked by a belief that industrial society is tied into dehumanizing technologies. And in the United

## Environmental investments . . .

**WEST GERMANY AND THE PHILIPPINES** were expected to sign in December an agreement to install the world's first large-scale photovoltaic solar power plant in Bulacan. Construction of the solar plant should start this month.

It has an expected output of 10 kilowatts, enough for the entire Bulacan area. An estimated \$2.27 million will be provided by West Germany in the form of a grant to finance the design, construction and installation of the plant. The grant also covers the acquisition of the necessary instruments and auxiliary equipment as well as the training of Filipino personnel in West Germany.

**THE SOUTH KOREAN GOVERNMENT** has decided to invest \$2.34 billion between now and 1996 to construct sewage disposal facilities.

Officials said waste water treatment systems in cities with populations of more than 300,000 will be financed by foreign loans and completed by 1986. Those in cities with lesser populations will be financed by domestic funds and completed by 1996.

**HONG KONG** will allocate more than \$2 million in fiscal 1980/81 for environmental protection in the colony.

According to a spokesman for the Environmental Protection Unit, part of the fund will be used to buy equipment to monitor environmental pollution control.

New legislation designed to protect the environment will be put before the Legislative Council in April next year. The Labor Department will be put in charge of enforcing the new laws generally, but the Environment Protection Unit will still continue to monitor air pollution.

**MEXICO CITY'S FLEET** of trash trucks is being augmented to double the capacity of vehicles now in use. Three trash incineration plants are being built, and there are plans to create, where feasible, sanitary landfills and increased production of fertilizer for industrial use.

**VENEZUELA'S ENVIRONMENT MINISTRY** will invest \$233 million this year in programs of research, planning, conservation and protection of natural resources, announced Minister Carlos Febres.

Top priority is being given to construction and maintenance of dams, dikes, flood control and water works in general because, vice-minister German Uzcategui said, "There may be water shortages in the regions of greatest socio-economic development by the year 2000."

## Down under . . .

**A STATE REGISTER** has been set up in Western Australia that acts as a liaising agent between companies wishing to dispose of waste materials and companies that can use them.

The register is free and has already exchanged such materials as cocoa bean husks (incorporated into potting mix); wood offcuts (for barbecue briquettes); waste lubricating oil (blended into fuel oils); caustics and acids (used for neutralization or fertilizer manufacturing). Materials that already have uses, such as scrap metals, secondhand equipment, and domestic waste, are not included in the register.

A similar operation was set up with success in Hamburg, West Germany, six years ago, and about 3 percent of the city's total waste was exchanged.

**A METHOD OF STORAGE** only slightly updated since pharaonic times was used by Australian scientists to keep wheat in good condition for two years.

Two thousand tons of wheat were stored in earthen bunkers at Boggabri in New South Wales. The two bunkers were lined with plastic sheets, wheat was poured in 6 meters deep, covered with plastic, a thick layer of sand and a meter of soil.

The trial was a success and after a bumper harvest last year, bunker-type facilities were set up in the states of Queensland and Victoria as well.

**AUSTRALIA'S NATIONAL ENERGY** Advisory Committee has recommended in a report to the government that taxes, registration and other charges related to cars should be graduated according to the vehicles' fuel consumption. The committee report said this would be a tangible incentive to people to buy fuel-efficient cars.

**AN INDEPENDENT COMMISSION** for the Future, established two years ago to clarify options for New Zealand's future, has issued the first of three reports for public discussion. It is "Resources and Technology," to be followed by papers on "Societies in Change" and "International Relations."

The Commission emphasizes that although the country has few mineral resources, it is rich in fossil fuels: Within 10 years New Zealand could be producing its own gasoline from coal or natural gas. At the sacrifice of agricultural land it could produce alcohol as a fuel. And since there is a small population, it is unlikely New Zealand will deplete its resources.

States, A.T. has grown primarily from the environmental movement. It is the coming together of all of these roots into a common re-definition of technology which is the A.T. movement.

The professionalism in A.T. is something that is now being recognized rather than something that is new. Many A.T. groups in the U.S. were started in the 1960s by high-level scientists and engineers, and they are still working with little of the financial support or recognition which goes to universities and industrial research laboratories. The growth in the A.T. movement has been more in its acceptance than in its change.

A.T. America may have something to learn from A.T. Third World. Waste paper is used in Ghana to make egg cartons; the Indians invented a low-cost way to remove tin from tin cans; in the Philippines (and elsewhere) old tires are made into shoe soles and sandals; in Ethiopia, a windmill system meets the agricultural needs of the Omo Valley; the Village Technology Unit in Indonesia developed twine from coconut husks and water pipes from bamboo. The Third World has been living on limited energy and resources for many years. We in the West are now learning from the Chinese, for example, how to recycle city organic wastes onto agricultural land.

To say that "small is beautiful" is not saying that "big is ugly." I can certainly conceive of a system in which a large output is needed in order to produce enough of some by-product so that it can be useful and not become a pollutant. It is also possible that large-scale production of some item, say photovoltaic cells or wood-burning stoves, is needed to make it economically feasible. But we should keep in mind that the important characteristic for A.T. is not the size but the degree to which it increases the individual's control of his own life, has an impact on the environment, and benefits future generations.

As the industrialized nations recognize the failures of past industrial technologies to equitably meet basic human needs, Third World nations are beginning to see that the transfer of these technologies all too often has prevented rather than assisted their economic development. Even when GNP increased, more and more people starved. A Basic Needs Approach, which gives support directly to the poorest people in the poorest countries is now the accepted development strategy. This requires new technologies so that people can become self-reliant locally and live in harmony with their environment.

A less obvious impact of large-scale industrialization is its impact on the production of knowledge—research and development. The direction in which a society moves depends on the state of knowledge. An important concern is in the system which determines research, development and education. These have been governed by the military-industrial complexes. Large-scale technologies tend to breed even larger-scale technologies with even more wastes which cannot be absorbed by the environment. The individual, the end user, has had little control, though he is now regaining it.

Perhaps a homey circumstance would highlight the issue. Here in the small town of Rangeley, Maine, the town laws forbid me to keep a cow on my land because of the odor. But the pulp and paper mill in nearby Rumford has a nauseating odor. To add another dimension, Federal laws threaten to close our open dump

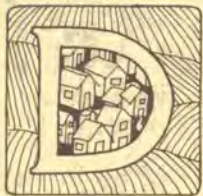
which is so small it has almost no environmental impact. Neither big industry nor big government can take a holistic approach to local needs.

Today there are many small awakenings in many spots around the globe. Technology is being humanized and centers are solving local problems with local solutions employing local resources. However, overextension of this self-help principle can lead to much waste and frustration rather than progress. The concept of networking stimulates bilateral exchanges and cooperative arrangements by keeping individuals and groups aware of relevant activities—without affecting their autonomy or destroying local initiative.

As the 1980s dawn, we see that A.T. not only is being endorsed by society but also is drawing together into an integrated movement that could well become the controlling factor of the decade because it provides technological choices and can bring communities once again into harmony with their environments.

*William N. Ellis is coordinator of TRANET, the Transnational Network for Appropriate/Alternative Technologies.*

## Land Use Phyllis Myers



Developing countries can benefit, on their own terms, from the experience of countries that have already trod the development path. Although they may not wholly accept the warnings of the west, they can see the adverse impacts of untrammled development policies, especially when evidence appears within their borders, and devise policies to balance development needs with land-use strategies.

On the world scale of development, Mexico and Israel are considerably less wealthy than the European countries. Israel is the more affluent of the two, while Mexico—for both political and economic reasons—is more closely aligned with the Third World.

Despite their many differences, Israel and Mexico share certain characteristics relevant to a discussion of changing land-use policies among less developed countries. Both are engaged in economic expansion, have rapidly growing populations, wide gaps in social, political and economic equity, and suffer from rapid inflation and heavy foreign indebtedness. People are concentrated on ecologically fragile lands. There is complicated land tenure—the result of a succession of different dominant cultures—and fragmented, powerful bureaucracies that make it difficult

## Land use . . .

**SOVIET SCIENTISTS** have found that dispersing major industrial plants to the outskirts of big cities actually may make air pollution problems worse.

During recent years, Soviet environmental officials have encouraged efforts—particularly in the Moscow area—to relocate large factories in peripheral zones, under the assumption that pollution hazards would be reduced.

But Professor Nikita N. Moiseyev said he and his colleagues at the Soviet Academy of Science Computer Center had come across an “unexpected effect” when utilizing mathematical methods to model biosphere processes: Atmospheric convection currents generated by warm air rising over big cities, displace colder air. “Cold air masses rush toward the center from the periphery, transporting industrial pollutants,” Moiseyev said. “The city, as it were, attracts to itself atmospheric pollution from a significant territory.”

**A PROPOSAL TO PIPE** crude oil across the Costa Rican isthmus (WER, Nov. 5, 1979, p. 1) was laid to rest last month as the National Legislative Assembly repealed the enabling decree which would have permitted the executive branch to contract and license pipeline construction. The issue was front page news in Costa Rica for several weeks, but public opposition was so overwhelming that proponents of the project were defeated.

**MEXICO CITY** is going to start growing up, not out. A new regulation by Mayor Carlos Hank Gonzalez decrees that wherever possible, new construction must be vertical, rather than horizontal. The ruling is part of the mayor's newly announced project to maintain 55 percent of this city of 14 million persons as forests and green spaces, with neither industry nor homes permitted.

**VENEZUELAN PIG RAISERS** have been given 12 months to move away from Lake Valencia's shores and demolish all buildings, according to a recent resolution by the Environment Ministry. The resolution aims to regulate the use, conservation and environmental improvement of the 350-square-meter lake, which has been declared a “priority critical area.”

The resolution also bans industrial development and rubbish disposal around the lake. The land may be used for truck farming, recreation, parks, tourism, hotels, educational and scientific activities concerning the conservation of the lake, and, lastly, public roadworks.

Lake Valencia has no outlet and most of the rivers that traditionally fed it have dried up due to fires, deforestation and the industrial and urban growth of the city of Maracay.

## Conservation . . .

**THE WORLD WILDLIFE FUND (WWF)** announced in Geneva that it had reached agreement with the People's Republic of China for cooperation in the worldwide conservation effort.

It said that the new agreement calls for immediate establishment of a WWF-China Committee of six members—three from WWF and three from the recently formed Association for Environmental Sciences of China.

The WWF announced two other key conservation decisions by the Chinese government: China agreed to become a member of the International Union for Conservation of Nature and Natural Resources (IUCN); and secondly, China agreed to accede immediately to the Convention on International Trade in Endangered Species of Wild Fauna and Flora. This move is of particular significance, the WWF noted, since China is one of the major trading nations in wild plants and animal products.

**CHINESE BIOLOGISTS** have completed a 12-day survey of east China's largest leading nature conservation zone. This survey was organized by Fujian provincial scientific organizations and participated in by more than 100 biologists.

This zone, with an area of 570 square kilometers is located in the Wuyi mountains, which border on Chongan, Guangze and Jianyang in Fujian province.

Specimens collected during the survey include 123 tree specimens, more than 110 fungi types, 23 varieties of snakes, 45 varieties of birds, 17 varieties of fresh water fish and 31 orders of insects.

This large number of specimens will provide valuable scientific data for research into species distribution.

**A NEW CZECH NATURE** conservation organization has been founded.

The objective of the "Czech Union of Protectors of Nature" will be to develop "broad civic activities to protect nature, which is an important part of care for a healthy and harmonious living environment."

Czech Culture Minister Milan Klusak told a meeting of the new body that its foundation was proof of its care for the environment. Professor Frantisek Hron of the Prague Agricultural College is chairman of the new union.

to implement domestic policies despite apparently strong central governments. Finally both share enormous confidence in the power of technology to increase the capacity of natural resources to serve human needs.

In an age of international travel, Mexico has decided to exploit its underdeveloped coastline to create jobs, develop its hinterlands and increase foreign earnings. In so doing, it was aware that tourism has, in many countries, ruined the qualities that brought tourists there in the first place. Acapulco has been a source of social, political and environmental embarrassment with its fetid waters, squatter hovels, congested roads and faltering vegetation.

These examples guided Mexico to promote a new kind of tourism development that would retain the special qualities of the area.

Development of the new tourist areas of Cancun in the Yucatan and Zihuatenejo up the coast from Acapulco were overseen by FONATUR, a public entity established to package the multi-million dollar public and private investments. It developed the overall physical concept, from hotels to open spaces to social services and community development, using tourism to help the local population.

Environmentalists may quarrel with some FONATUR actions: a massive dam to divert a river for a golf course, scattered wildlife and mangrove destruction. But as a Conservation Foundation study found: "Although the impact of development on Cancun's natural environment has been significant, it could have been much worse."

In Israel, a fierce struggle for land is underway—not the one in the headlines, but rather a competition between urban development and agriculture in a country the size of Massachusetts.

Policies dating back to the earliest Zionist settlements grant a high priority to agriculture. The government set up a central committee to review and approve (or reject) all proposed changes of agricultural land. The experience of other countries in losing their farmlands to unplanned urban development has further influenced Israeli policies to preserve agricultural land in the face of strong urban pressures.

A new force may help save Israel's agricultural land. As in other parts of the world, older cities are being rediscovered as interesting places to live. Private and public attention is being devoted to enhancing these cities. To the extent this new trend provides housing choices in the older cities, it lessens pressures for development on fringe lands needed for other purposes, including agriculture.

In Mexico too, the rediscovery of the cultural riches in cities and rural towns is spurring prideful rehabilitation policies focused not only on the Indian past, but also on more recent colonial architecture.

In both countries, which of necessity have emphasized development and must continue to do so, this interest in rehabilitation poses new challenges and opportunities for officials and residents.

*Phyllis Myers is a senior associate of The Conservation Foundation, a non-profit environmental research and communications organization based in Washington, D.C.*

## Deserts

### Farouk El-Baz



think it is a fallacy that deserts are man-made. Some say, "If man made the desert, man can fix it." We cannot fix it; we have to learn to live with it. A third of our earth mass is arid lands; 20 percent of it is barren desert. It is huge and unutilized, and that is very important. I am a proponent of settlements in the desert to lessen population pressures on the cities. But we must live with the desert and within its resources and not plant rice as they did in the Kharga Oasis of Egypt, where each pound of rice requires the equivalent of 6,000 pounds of water. We can make small areas green for settlements, tourism and industry. Many oases can be rangelands; if date and fruit trees are planted, grass will grow under them. For that you need very little water.

There is historic evidence in the desert—rainfall, lakes, valleys wider than the Nile Valley, and animal remains—that tell us our weather was completely different 6,000 years ago. Long before intensive farming or industries, a whole belt about 30 degrees north and another 30 degrees south of the equator started drying up. Meteorologists say it is a natural process of change. The desert today is part of the natural environment of the earth and has been for at least tens of thousands of years.

If we are going to do anything about it, we have to better understand it: why it expands and the rates of expansion.

The desert is a natural phenomenon, but our misuse of it can have a disastrous effect in increasing the desert area. We abuse the land with over-irrigation which leads to salinization; we interfere with the natural contours of the land, exposing soil to wind; the removal of trees for use as firewood exposes the ground; and too often we plant the wrong crops. This puts many areas in peril.

Our awareness of this problem has grown phenomenally over the past decade. The layman now knows about desertification, and international programs have begun. But some local specialists are not aware of the dimensions of the problem, for if they consider it only locally and not regionally significant, the results can be disastrous.

The missing link is a good basic understanding of the terrain itself and the geological processes that act on the terrain. By a freak of luck, the planet Mars is providing some answers. It is all desert and has the same kinds of features as Earth. As the photos of Mars are interpreted, it suggests what may happen to us in the future.

Even so, not enough research is being done. There should be more experimentation on making the desert habitable. The knowledge just is not there to tell us which way to go. I think lots of small local programs can be instituted right away like the Israeli settlements. They are successful because they are small and use all the natural resources of a given region. The Australians have done even more, a small piece at a time.

## Agriculture . . .

**IN PAKISTAN**, remote sensing technology using satellites will be applied to desert locust surveys and control in a joint project with the UN's Food and Agriculture Organization.

FAO is embarking on a large-scale project under which technical and financial assistance will be provided to regional and national entities to prevent another upsurge of locust activity and thus prevent the loss of food crops.

**THE DAY OF THE LOCUST** is almost at hand in Australia, where 1 million liters of insecticides are being stockpiled for the annual plague. Although Queensland, Victoria and South Australia are on the alert, it is New South Wales that will probably bear the brunt of what is expected to be the worst plague of locusts in 25 years.

In 1953, thousands of locusts stripped grain fields, orchards and market gardens. This year, there has been an extremely high locust hatch in some areas due to highly favorable seasonal conditions.

About 15,000 rural properties in New South Wales' north and west will be under siege for six to eight weeks. NSW Agriculture Minister Mr. Dau said that his department, bushfire brigades, pastures protection boards and the Australian Plague Locust Commission will all be involved in the battle. Some 380,000 hectares of locust bands and swarms can be wiped out by the insecticide now ready for spraying in NSW.

**AUSTRALIA IS IN NEED** of a national soil conservation policy.

The federal government will meet with the various states (which have independent programs for preventing soil erosion) in an attempt to thrash out a cohesive policy.

The federal-state Joint Standing Commission on Soil Erosion reports that more than a third of Australia has serious soil erosion problem needing urgent treatment. Its 1978 soil conservation study showed 5 million square kilometers is used for agriculture and of that, 1.48 million square kilometers have severe erosion problems. Restoration will cost in excess of \$675 million.

A national policy would aid in coordinating research and prevention programs and avoid duplication of efforts.

**GREEN REVOLUTION** strains of soy bean, up to three times as productive and containing 25 percent more protein, have been developed by a Colombian priest, Father Jose Bernal Restrepo at the University of Vale do Rio dos Sinos in Porto Alegre, Brazil.

## Forestry . . .

**THE STATE OF TAMIL NADU**, south India, will introduce a law taking over all private forests to prevent large-scale tree felling. The state forests minister admitted that department of forests staff have also been guilty of cutting down trees in collusion with timber contractors.

Some experts believe that while state control of forests is better than allowing their exploitation by private interests, officials will have to keep a closer watch on rangers and other staff and, if necessary, transfer them to other areas every two or three years.

**IN NEW DELHI**, the International Union for Child Welfare has launched a unique project, "For every child, a tree."

In two residential areas, children and parents have planted hundreds of trees on both sides of the roads. The purpose is to make school children "tree-conscious."

Dr. M.S. Swaminathan, an eminent scientist, said that since 1952 five million hectares of land had been denuded. If each child in the 6 to 16 age group planted a tree, the country would be richer by 120 million trees. He suggested a "people's forestry movement" to put an end to the present trend towards indiscriminate destruction of forests.

**TROPICAL FORESTS** throughout the world are decreasing at an alarming rate and quick solutions are needed to save them from disappearing completely. Malaysian Forestry Director-General Encik Mohamad bin Jabil said recently. He said \$308 billion will be needed in the next 20 years to replace the world's lost forests.

To remedy the situation in Malaysia, the government intends to reduce the felling of timber in the country from 364,500 hectares a year to 133,650 hectares annually, said Encik Abdul Rahin, Parliamentary Secretary to the Primary Industries Ministry.

**TWO HUNDRED THOUSAND HECTARES** of trees in Venezuela's San Camilo Forest Reserve have been destroyed as a result of private exploitation and the negligence of the Environment Ministry, charged Senator Pompeyo Marquez.

Since the reserve's creation in 1961, some 500 peasant families—mostly of Colombian origin—have moved into it. "These families are backed by ranchers who through the purchase of peasant houses, have taken over large tracts of land"—two-thirds of the reserve, the senator said.

Research projects must be initiated in all desert countries. International agencies can make sure the flow of information and experience is provided to everybody—on unsuccessful as well as successful programs. I would like to see just once a UN report say a \$2 million project is down the drain and should never be done again. At UNEP conferences what government representative will say, "We messed up."

What we need is a real Desert Information System with a central computer that has everything everybody has ever done. Along with it we need a network of automated meteorological data collection centers in the open desert, not in the cities. They would transmit information to satellites to make it available to the whole world. These stations could be relatively cheap—maybe \$10,000—solar powered and wholly automatic. The first and only one so far is in Flagstaff, Arizona. As people become more aware of the desert environment and its uniqueness and the scanty information we have, the better chances are that this network will work out.

We can project the desert's growth only if we are able to say how it expanded and contracted in the past. It is a matter of scientific honesty. Do we really know what we are talking about? The answer is no. We need more research and information so we can make the right choices.

*Farouk El-Baz is research director of the Smithsonian Institution's Center for Earth and Planetary Studies. He is also science advisor to President Anwar El-Sadat of Egypt.*

## Forestry & Firewood

### Erik P. Eckholm



In the last decade forestry has come into its own as an international environment and development issue. The firewood crisis in particular was largely ignored by energy planners until about five years ago when it began to be recognized that for one-third of the human race firewood was the principal energy source, and it was disappearing at an alarming rate.

In developing countries, the problems of deforestation and reforestation now are being integrated into energy analysis and development planning. There still are problems of priority and bureaucratic structure, but there has been a major shift and major progress.

Sometimes it is hard to know whether things are going in a positive or negative direction. Almost every government expresses concern, and most countries affected have initiated some sort of program. But whether they can confront the vested interests and put their resources into it is hard to tell.

On an international level the World Bank gave considerable attention in its 1978 forestry sector paper not only to the effects of deforestation on economic development, but also to environmental and social effects as well, implicitly admitting their previous emphasis on large-scale timber production had been too narrow. FAO has begun a program with the Swedish government, "Forestry for Local Community Development." And the U.S. government, encouraged by a coalition of interested non-governmental organizations, is completing an interagency report on the problems of tropical deforestation and the potential for U.S. public and private response. At the same time, USAID is just beginning to plan projects to deal with the issue.

Over the next five years we will see a blossoming of projects. Then we will be able to evaluate the effectiveness of various approaches and learn from our mistakes.

With the new interest in meeting village firewood needs, there has been a shift in foresters' thinking. They have a new role. No longer policemen and businessmen geographically restricted to the reserves, now they are helping people grow trees in the community. At the same time, foresters have to be concerned with more than just the timber value of their reserves because of mounting environmental concerns.

The problem cannot be solved by forestry alone. There has been a failure to intensify agricultural production in proven farmlands, a failure to reform the land tenure system, a failure to provide employment, and so an ever-increasing population is moving into forest areas, either illegally or on government-sponsored projects. We have to provide economic opportunities and adequate food outside the forested areas and intensify forest production.

The firewood crisis is acute in many areas and getting worse. If woodlot planting is not increased many, many times, millions more people will have to switch to dung and crop residues for fuel. People will be spending a higher proportion of their income on charcoal and wood—now 40 percent in some countries—and because women and children will spend more of their time searching for fuel, there may be serious social consequences.

The price of timber and wood products has already increased. It is a factor in world-wide inflation. For the poor this means they cannot afford products they could otherwise—even school materials are more expensive. Continual forest losses will mean a long, slow deterioration of development prospects and a worsening of the quality of life for the poor.

Many countries have never had a good forest inventory, nor do they monitor forest trends. Moreover, the evidence of environmental destruction—increased flooding, desertification, landslides in mountainous areas, siltation—is expected to worsen if we do not reverse the prevailing trend. The environmental consequences of deforestation and the economic role forests play need much better documentation.

*As a senior researcher with Worldwatch Institute, Erik P. Eckholm wrote their first paper, "The Other Energy Crisis: Firewood," and the book, "Losing Ground: Environmental Stress and World Food Prospects." He recently joined the policy planning staff of the U.S. State Department.*

## Water Quality . . .

**FOUR MEXICAN INDIAN TRIBES** have protested to the government over industrial contamination of a river they hold sacred: the Lerma River in western Mexico.

For the last two decades, growing industrialization of an area between the city of Toluca and the river has caused the disappearance of native trees and animals, the Indians say. Twenty years of industry has destroyed more life than did 5,000 years of Indian habitation, they claim.

In urging national and international support for an end to what they call "eco-cide," Indian leaders have asked the government to enforce ecological protection laws.

**THE LAGOON OF OBIDOS**, where Portuguese kings once hunted water hens and wild duck and feasted on eels "as big around as a man's arm," will be condemned unless urgent measures are taken.

Over two tons of waste from growing industrial and urban centers pour into it daily. Soil erosion has almost filled one area of the 22-kilometer-long lagoon, and it is increasing at alarming rates due to the transition from hand plowing to tractors. The lagoon—about 100 kilometers north of Lisbon—is closed off from the sea for part of the year because of sand dunes.

The Portuguese environmental state secretariat urges immediate dredging of the closed area as well as widening the sea outlet. Fishing zones must be studied so other areas can be dredged without endangering the flora and fauna while farmers must be taught techniques to avoid soil erosion.

**THE PREVENTION OF WATER POLLUTION BOARD** in Maharashtra state in western India has started legal proceedings against owners of 3,000 industries for polluting rivers in their vicinity, says its chairman, G.H. Lalvani.

However, penalties have been no deterrent in the past. In all Indian states, the few existing anti-pollution laws are toothless. If factory owners—either private or government—are found guilty of defiling the water or atmosphere, they are let off with extremely small fines.

Lalvani said that of 3,000 towns and cities in India (presumably those with more than 100,000 people), only half have potable water, while just 200 towns have sewage treatment and disposal facilities.

## In Europe . . .

**THE NETHERLANDS HAS RECALLED** its Paris ambassador for consultations following a French government decision to withdraw from Parliament a bill aimed at cleaning up the Rhine (WER, July 2, 1979, p. 6). France has promised to repay the \$10 million which the Netherlands had advanced as its share of the multi-national clean-up program.

**AN INDEPENDENT "ENVIRONMENTAL COURT"** to investigate and control existing and new technologies has been proposed by a leading West German official.

State Secretary in the Federal Interior Ministry Gunter Hartkopf told an assembly of managers from German industry the court should be free from all political, economic and scientific pressure groups.

He said such an institution, with guaranteed judicial independence, would serve the principle of precaution instead of the "fireman's principle"—putting out a blaze after it had started—in the field of environmental protection.

**IN A TEST CASE** brought by the widow of a Windscale nuclear plant worker, Malcolm Patinson, who died of leukemia in 1971, British Nuclear Fuels Limited (BNFL), his employers, were ordered to pay damages of £67,000 (\$145,000). During the course of the case, held in November, BNFL made it clear that admission of their liability was not to be considered a precedent. However, the widow of another worker, Stanley Higgins, who died in 1973 after an unexplained illness, has already placed a claim for damages in the hands of solicitors.

**THE TURKISH ENVIRONMENT** Protection Foundation's Secretary-General, Engin Ural, said the major causes of environmental problems in Turkey were the high birth rate (2.5 percent), migration from rural areas to urban centers, industrialization and neglect.

He criticized the government for not taking appropriate and energetic measures. "The political parties must have a definite view, a policy on these matters. Environmental problems are related to each other. Their solution needs drastic measures, coordination, responsibility," Ural said.

Recently, the Minister of State in charge of environmental problems, Dr. Faruk Sukan, urged Turks in a nationwide radio-TV speech to take these problems more seriously and work for environmental protection. And for the first time, the Turkish media have prominently covered environmental discussions.

## Food Lester R. Brown



amine returned in the 1970s after a quarter-century absence and claimed hundreds of thousands of lives in Bangladesh, Ethiopia and the Sahelian zone of Africa. The food shortages that led to these deaths were initially blamed on poor weather, but weather was often the triggering event that brought into focus a more fundamental problem, the growing pressure on croplands.

The worldwide food shortages and soaring prices of the seventies should be regarded not as an aberration, but rather as a signal that the pressures on croplands are in some ways becoming excessive.

Cropland is the foundation not only of agriculture but of civilization itself. The deterioration and loss of cropland are not new problems. What is new is the scale of loss and deterioration, a problem that affects rich and poor alike. Natural soil fertility is now declining on an estimated one-fifth of the world's croplands because of accelerating soil erosion, the spread of deserts, water-logging and salinization of irrigated land, and the loss of land to non-farm uses.

Thirty years ago, in 1950, there were 2.5 billion people in the world. In 1975, there were 4 billion. By the end of the century, our world will have to support 6.3 billion of us if current projections materialize.

The doubling of demand for food over the past generation has forced farmers onto land that is either too dry or too steep to cultivate and is therefore highly vulnerable to erosion.

Nepal's "most precious export" is the estimated 240 million cubic meters of soil its rivers carry to India every year. In Ethiopia, a USAID mission reported that "there is an environmental nightmare unfolding before our eyes. . . . It is the result of the acts of millions of Ethiopians struggling for survival: scratching the surface of eroded land and eroding it further; cutting down the trees for warmth and fuel and leaving the country denuded. Over one billion—one billion—tons of topsoil flow from Ethiopia's highlands each year."

This erosion and loss of topsoil is essentially irreversible in the short term. Using good agricultural practices, creating an inch of new topsoil can take 100 years; if left to nature, it may take many centuries.

Agricultural land can no longer be treated as an inexhaustible reservoir for industry, urbanization and the energy sector. It must be viewed as an irreplaceable resource, one that is taken out of production only under the most pressing circumstances and as a result of conscious public policy.



Wherever national data are available, they usually show the growth of cities to be the major reason for the loss of agricultural land. In the United States, the Department of Agriculture found that more than 2.5 million hectares of prime cropland were converted to urban and built-up uses during the eight years between 1967 and 1975. Cities in many Third World countries are growing far more rapidly.

There is no easy solution to the dilemma of the rising cost of producing food and the rising number of the world's poor. The key to the distribution of food is the redistribution of land. A Johns Hopkins University medical team found that in Bangladesh death rates differed profoundly according to the victims' land-owning status. In 1975 in the Companiganj area, the death rate was 36 for those who were landless and 12 for those who owned three acres or more—a death rate similar to that of western industrialized nations.

As we enter the '80s, we need a world conference on what is happening to our soil. But the future balance between people and their agricultural land is likely to be affected more by population policy than by any other single factor. The equilibrium between people and land eventually will be reestablished. If the deterioration is not arrested by man, then nature will ultimately intervene with its own checks.

*Lester R. Brown is president of and a senior researcher with Worldwatch Institute.*

## Health

### Frank A. Butrico



With all our technological advances, many of the world's poor are still suffering from disease and malnutrition. World Bank president Robert McNamara described the situation as "800 million individuals in the developing world who are trapped in absolute poverty, a condition of life so limited by malnutrition, illiteracy, disease, high infant-mortality and low life-expectancy as to be below any national definition of human decency."

Latin America and the Caribbean are, in many ways, a cross section of the world: more than 500 million people with different cultural and social patterns and vastly different levels of economic development.

Population growth in Latin America is among the highest in the world, 2.9 percent a year, and urban growth is especially high, about 5 to 8 percent annually. Today, there are 20 cities in the region with over a million inhabitants. By the end of the century, Mexico City may be the largest in the world with a projected population of 32 million. →

## Water wise...

**A PROGRAM TO PREVENT** and check oil pollution in the Straits of Malacca will be implemented in Malaysia by the end of 1980, the Malaysian Science, Technology and Environment Minister Tan Sri Ong Kee Hui told the Parliament recently.

Tan Sri Ong did not disclose details of the program.

**AT ALMOST THE SAME TIME** as the 200 mile Australian fishing zone was proclaimed, the federal government announced it was chartering a 42-meter trawler to study fish resources for the next five years. The charter and crew will cost almost \$6 million.

The national Commonwealth Scientific and Industrial Research Organization's Division of Fisheries and Oceanography will be responsible, with the Department of Primary Industry, for management of the studies.

**A STUDY OF 15 MAJOR MEXICAN** rivers by a team of biologists at the National Polytechnic Institute disclosed that contamination has made the rivers unfit for agriculture, fishing, recreation or use by cities. Chief contamination sources, besides municipal wastes, are 40 petroleum processing plants, 100 sugar cane processing mills and drainage from agricultural zones, according to the study by Francisco de Lachica Bonilla and Rodolfo Ramirez of the school of biological sciences.

**POLLUTION AROUND THE CHINESE COASTS** has been a matter of concern for some time and although various measures have been taken to ensure that adequate precautions are taken while discharging oil, they have not completely eliminated the problem. The government has decided to take further steps before the problem becomes too serious and therefore a project to assist China is being organized by the UN's Inter-Governmental Maritime Consultative Organization with financial support from the United Nations Development Program.

In 1980 two teams of Chinese engineers and scientists will visit centers in Japan, North America and Europe to study methods of preventing and dealing with oil pollution. Later in the year, Chinese specialists will go abroad for intensive anti-pollution courses.

A third part of the project will involve the purchase of specialized laboratory and other equipment which is not available in China itself.

## Toxics . . .

**WORKERS** who make writing slates in Mand-saur, in the central Indian state of Madhya Pradesh, inhale huge quantities of silica and contract silicosis, according to a first-hand report. Estimates say that 2,000 workers have already died in the last four years from silicosis and up to 150 contract the disease every year. Many of the 10,000 workers in the area are children.

**APPROXIMATELY 60 WEST GERMAN SCIENTISTS** and experts on environmental protection have issued an appeal for greater controls over the "flood of chemicals" inundating mankind.

The appeal was made at the seventh annual "Environmental Forum" held in Wiesbaden.

Speaking for the chemical industry, Hans Georg Peine said that the present law covering chemicals was viewed favorably by manufacturers. He noted that it would have cost about \$8.5 billion over the past ten years for industry to prevent 90 percent of all noxious substances from going into the air or water. For the remaining 10 percent, he added, the cost would have been \$12.9 billion.

**AIRBORNE LEAD** may be affecting children's marks at school, a British scientist said at the International Conference on Air Pollution held in Pretoria, South Africa.

The effects of lead absorbed from the environment were most obvious in children. In the British Midlands and in Los Angeles, children after treatment for lead absorption (one can excrete it) showed markedly better classroom performances.

**SCIENTISTS AND WILDLIFE** experts are locked in battle over the continued use of DDT in Zimbabwe Rhodesia. Arguments for and against were presented at a public meeting called by the Rhodesia Scientific Association.

The country's principal entomologist, Dr. Barry Blair, said DDT is cheap and effective for controlling a range of insects. Its lifesaving qualities for controlling diseases ravaging Africa such as malaria were considerable. "And nobody has died in this country from its effects" he said. But he admitted it also kills non-target insects.

Wildlife expert Ronald Thomson said many insects built up resistance, while birds and fish suffered. He warned that DDT builds up in their fat reserves and its long-term effects could be seriously damaging.

He said, "I believe the banning of DDT to be the single most important ecological challenge facing this country. And it would improve our standing in the eyes of the world conservationists if we put an immediate end to its use."

It is difficult for a developing country to improve its standard of living without a reduction in the birth rate; lower rates have proven difficult to achieve without economic growth. This means that social problems of importance in developing countries must be solved by the process of economic growth and development itself.

But economic development often brings additional problems of air, water and soil pollution which cause increased susceptibility to disease. In some countries, large-scale development projects have a profound effect on regional ecology and on the health of workers and displaced persons.

Throughout the region occupational accidents are increasing at a phenomenal rate, particularly among agricultural workers. Respiratory occupational diseases are 6 to 10 times higher in the developing than in the developed countries.

A related problem in developing countries is the importation of hazardous industries. It is essential that each government develop siting guidelines, safety regulations and environmental quality standards. Governments must encourage industries to control environmental pollution.

Environmental health is not given a high priority in many countries where financial resources are limited. Only a few Latin American governments have created environmental entities. Unless people are trained and institutions developed, Third World countries will continue to be influenced by the technology of the developed nations, which cannot be completely aware of or responsive to local needs.

Regional and international programs are trying to answer some of these needs. At the Pan American Center for Environmental Sciences and Engineering (CEPIS) in Lima, we are designing and implementing a regional environment information network. In addition, CEPIS researchers are studying the problems of wastewater treatment and contaminants in the environment.

One of the most cost-effective development programs governments should undertake is the extension of water supply and sanitation services. Water-borne or related diseases are among the world's three major causes of sickness and death.

But providing adequate drinking water and sanitation systems—or any other environmental health system—will require major commitments from government and international development assistance agencies. Better coordination is needed among agencies, and national manpower training systems must be instituted. Economic and financing problems will have to be overcome. Over the next 10 years \$35 billion is needed just for water and sewerage projects in Latin America, which means present investments must be tripled.

*Frank A. Butrico is chief of the Division of Environmental Health Protection of the Pan American Health Organization.*

## Transnational Air Pollution

### Gus Speth



It's ironic that we are just beginning to address some of our most significant air pollution problems. There have been regulations and controversies over the past decade, but we are just beginning to deal with the problem of long-range deposition—pollutants that can travel thousands of miles. It's been a problem in Europe; it's increasingly a problem here.

In response to the problem, President Carter established a program here in the Council on Environmental Quality, with the Agriculture Department and EPA co-chairing it, to improve our understanding of the sources of acid rain and other polluting deposits, their consequences and the measures we should take. We think of a regulatory response—and that's going to be necessary—but we forget the most immediate way to address the problem is to conserve energy. If we can restrain our appetite for fossil fuels, we can make a big impact.

In Canada and the U.S., we are fouling our own and each other's nests with emissions of sulphur oxides and nitrogen oxides. The solution has got to be cooperation. We have made a pledge to work together, and both countries would like to go beyond the European agreement (WER, Nov. 19, 1979, p. 1) and be more specific about the measures to be taken. I expect it will take a year for us to reach an agreement.

Carbon dioxide is an entirely different but related problem. If anything, it is more disturbing because the long-term environmental risks are greater and because it is going to be more difficult to control carbon dioxide emissions from fossil fuel combustion. It is thought by a number of good ecologists that large-scale deforestation may lead to increasing amounts of carbon dioxide in the atmosphere (trees absorb carbon dioxide). If carbon dioxide concentrations in the atmosphere double, it could lead to temperatures two to three degrees warmer at the equator and several times warmer at the poles. At current rates of world fossil fuel use, there will be a doubling of carbon dioxide by the 2030s, but I think current use won't be sustained. Shifting weather patterns would have severe economic consequences and create global problems of unprecedented scope. There is a chance our concerns will prove unwarranted, but the weight of scientific opinion today is that they are warranted. The best way to address the problem is to be more efficient with the energy we have, by conservation and co-generation.

Globally, this whole air pollution question is one of a series of very depressing problems we are addressing. We can't help but be impressed by the magnitude of environmental problems that cross boundaries and need international solutions. The developed countries will have to put domestic preoccupations behind them; otherwise these problems will overwhelm us all. All over the world, the problems related to productive capabilities are going to be front and center in the 1980s. There is only so much land and fish and forests. Over a wide spectrum of activity, economic and

## Air Quality...

**SOVIET AND SWEDISH** scientists will carry out joint research on the global distribution of pollutants in the atmosphere, Tass reported.

The Soviet news agency said the 120-day project would be conducted on board the Soviet research ship Akademik Korolev during a cruise through areas of the Indian and Pacific oceans.

Scientists from the two countries previously made joint environmental studies in the Baltic.

**A SOVIET SCIENTIST** predicts that during the next half-century average air temperatures in higher-latitude areas of the globe will increase by 10 to 20 degrees Celsius.

The Soviet news agency Tass said meteorologist Mikhail I. Budyko voiced the forecast at a U.S.-Soviet symposium on modelling the climate, held recently in Tbilisi, capital of Soviet Georgia.

Budyko said that the temperature rise—due to increasing carbon dioxide in the atmosphere—“will considerably affect natural conditions over vast areas of the globe.”

**EXISTING AIR POLLUTION** poses a far greater danger to the Taj Mahal than the fumes from a proposed oil refinery, 40 kilometers away, says one Indian expert.

Already, the atmosphere around the priceless monument has 60 to 70 micrograms of sulphur dioxide per cubic meter, according to B.B. Sundaresan, director of the National Environmental Engineering Research Institute in Nagpur.

The Mathura refinery, which is due to open in a year, would only add one or two micrograms and this could be eliminated by adequate pollution control devices.

Not all ecologists will be convinced that the refinery will only cause minimal damage. Even UNESCO experts have warned otherwise (WER, Nov. 20, 1978, p. 1 and July 16, 1979, p. 8).

**KEEPING TABS** on just two species of birds can determine the extent of air and water pollution in India's capital, Delhi, over a period of time.

Zafar Futehally, a well-known ornithologist, said that the Indian Pratincole and the Skimmer, two birds that breed beside the Jamuna River, are reliable barometers for checking Delhi's water and air pollution levels.

The Pratincole hops in the air feeding on hovering insects. Polluted air leads to fewer insects, and the bird then migrates to other areas. The Skimmer, a fish-eating bird, also goes off when water pollution diminishes fish stocks.

## Energy Sources . . .

**THE SOVIET GOVERNMENT'S** top science official has openly clashed with a Soviet academician who forecast that the "ecological capacity" of European Russia to cope with new nuclear power plants may soon be exhausted (WER, Nov. 19, 1979, p. 7)

Vladimir A. Kirillin, chairman of the State Committee for Science and Technology, contended that atomic stations are environmentally preferable because they operate "several thousand times cleaner" than conventional fossil-fueled plants. Also, he insisted that nuclear stations pose only "minimal" safety hazards as long as "necessary conditions for the design, manufacture and functioning" of such plants are rigorously followed.

The defensive tone of Kirillin's comments appeared to reflect continuing high-level disagreement within the Soviet scientific establishment over the scope, safety and environmental consequences of this country's ambitious atomic power program.

**AUSTRALIA'S NEW FEDERAL BUDGET** encourages energy conservation. Two tax concessions designed to conserve scarce oil resources were introduced. Companies now using oil-fired industrial equipment have been given the incentive to switch to other energy sources by taking advantage of a tax deduction on the cost of conversion. A 40 percent deduction will apply for each replacement installed. This second deduction replaces the usual 20 percent investment allowance already granted—but the plant is also eligible for normal depreciation deductions as well. The new equipment must be in use by June 30, 1982.

**OFF-SHORE NATURAL GAS** will be processed to replace more than half of New Zealand's imported oil by 1987, the government here has decided, ending a long period of uncertainty on the best use for the gas. New Zealand is strong in hydro-resources but all its oil is imported. The new plans include development of a methanol plant equal to the world's biggest. The methanol will be used as gasoline is now, or will be exported if another process is developed to produce synthetic gasoline.

**CHINA IS USING SOLAR ENERGY** to electrify fences used to control and protect cattle. The method is used by a 420-hectare cattle and sheep ranch in Inner Mongolia and a 60-hectare deer farm in northeastern Jilin (Kirin) province.

environmental issues are going to be the same, and we are all going to have a stake in keeping the problems from getting worse.

*Gus Speth is chairman of the United States President's Council on Environmental Quality.*

## Traditional Energy Douglas M. Costle



We are in transition. It seems increasingly clear we must evolve toward more environmentally benign energy systems because of the global impact of acid rain and carbon dioxide. We don't understand all the changes taking place. We do understand, as we didn't 10 years ago, the exponential quality of these changes.

But during the 40 to 50 years it will take to evolve benign systems we have to rely on traditional technologies. The problem is how to utilize them in the most environmentally sound way.

For some countries, conservation will have to play a larger role: use less and make it go further. A lot of it is motivated by geopolitics. We have to reduce our dependence on oil because we get it from an unstable and unregulated cartel. There is a lot of pressure here for conservation and alternative technologies, such as solar, and for greater reliance on our own energy resources, like coal. The future of nuclear energy in the United States is cloudy at best.

In Europe, these same geo-political pressures are spurring nuclear power with the exception of Germany, which has coal, and the North Sea countries which have oil.

South Africa is turning coal to oil and gas. It's expensive but it has become increasingly competitive. However, there has been no leap forward in that technology because oil was so cheap.

It means the United States is going to have to use more coal and, in the long term, synthetic fuels from coal. We will also be exploiting heavy oils and tar sands because rapidly inflating prices are opening these up. We are grappling now with incentives so as to develop these sources.

We think we can use coal in environmentally safe ways. We set standards in June for new coal-fired power plants. They are a significant toughening of the old standards—seven times cleaner. The new coal-fired plants will be as clean as oil-fired. And as old plants are retired, there will be a general decline in overall emissions meaning air quality will be better. We will build 350 coal-fired plants within the next 20 years. It may turn out to be more economic to convert oil plants to burn coal—a cheaper alternative because of rising prices even with the cost of complying with the tough new standard.

We know that in the process of converting coal to gas and oil, there are nasty carcinogenic by-products. We have to control the process to protect workers and the community. It is a matter of designing a chemical plant that is a closed system, but we are not dealing with frontier knowledge. It will add expense, but today I don't think anyone would consciously build a cancer-causing plant.

At the same time, at each step of the synthetic fuel process, there is a higher release of carbon dioxide than in the use of conventional fuels. Increased carbon dioxide emissions may lead to the so-called greenhouse effect, a gradual warming of the earth because carbon dioxide reflects heat back to earth. It is not imminent, and our answer is that we won't build that many synthetic fuel plants to make a substantial dent in the next 15 years. In the meantime, we will be working on the carbon dioxide problem and getting experience with various technologies.

But the bottom line is that it is not so much a matter of technology—it's there or will be—it's a matter of national will, and the economics are now working in our favor.

I think that by keeping standards strict, it will help us solve the energy problem. We are still getting a lot of flak from industries. Most agree in principle, but when it comes out of their pocketbook, they yell. Even so, a utility company president said to me, "Your tough standard is helping us build (energy efficient plants)."

The problem of mobilizing the international community to make needed changes is hard. Nevertheless, we can only rationalize the problems for so long, whatever they may be, carbon dioxide or halogens (which are depleting the ozone layer). We can dramatize the problem, take specific steps and try to persuade other countries. Then we must sit down and figure out what the relative emission contribution of each country is—and reduce them proportionately.

*Douglas M. Costle is administrator of the United States Environmental Protection Agency.*

## Alternative Energy

### Philippe de Seynes



The key word is diversification. We must explore a great diversity of sources because energy can be too expensive if we focus on just one. It was very clear during the first days of our conference on long-term energy resources (held Nov. 26-Dec. 7 in Montreal) that the OPEC countries, who want to conserve oil, also are pushing for greater diversity.

This conference was a summation of five earlier ones on the development of energy and natural resources. Its purpose was to find out the state of knowledge on all known sources of energy. Our list is close to 50.

Venezuela reported at the conference that it has an estimated 500 billion barrels of recoverable heavy crude in the Orinoco region alone, produceable at a cost below \$13 a barrel. This is almost as much oil as the proven conventional reserves world-wide. Heavy crude is left after conventional exploitation, or it can exist without light oil. Heavy crudes and tar sands are the two sources of hydrocarbons which we consider most promising in the medium

## Renewable Energy . . .

**THE FRENCH GOVERNMENT** has started an 18-month experiment with a wind-powered generator. The state-owned national power company, EDF, has installed a \$350,000 windmill with twin 60-foot blades on Ouessant, a windswept island off France's Atlantic Coast. It is a 100-kilowatt plant that is expected to produce 10 percent of the electricity consumed by the 1,500 inhabitants. An on-site computer is monitoring the windmill's performance and if it works as well as forecast, the EDF, which has a national monopoly on electricity generation, intends to install similar windmills in many isolated localities.

**THE PHILIPPINE'S NATURAL ENERGY** System, Inc. (NES), which markets solar energy products in the country, is tying up with three American firms to form a new company to be called International Solar Energy Corp. (ISEC). ISEC will put up an assembly and manufacturing plant in a bid to make the Philippines the distribution center for solar energy products in Southeast Asia. The three US-based firms are Solid-state Solar Controls; Sunburst Solar Energy; and Arco Solar, Inc.

**PAPUA NEW GUINEA'S** federal government is setting up a company to develop alternative energy resources. The Energy Development Company is private with no government guarantee or underwriting.

The program's main objective is to put development into the villages, by setting up small-scale energy-producing projects.

Papua New Guinea will import fuel oil costing more than 100 million kinas (\$134 million) this year. A National Energy Planning Council was established in August.

**IN THE EARLY '60s**, the El Salvador Geological Service discovered geothermal fields in Costa Rica's mountainous northwestern province, Guanacaste. Over the years, studies were made but not implemented until the oil crisis reactivated government interest. Finally, on August 25th of this year, the Instituto Costarricense de Electricidad (ICE), which generates practically all the electricity used in Costa Rica, completed a 1300-meter well which spouted enormous quantities of steam and super-heated water with a constant temperature of 235 degrees centigrade.

ICE is planning to install a generating facility there by 1984. It should produce 40,000 kilowatts an hour and cost approximately \$3.5 million.

This new energy source is expected to last between 30-40 years and production costs are expected to be comparable to present hydro-electrically produced energy.

## Transportation . . .

**JAPANESE RESEARCHERS** have unveiled what they claim is the world's first car powered by wind-generated electricity. During a recent test run in the northern city of Annaka, the 550-cc mini-van successfully travelled 30 kilometers. The wind generator, which has a propellor four meters long, can produce 1.2 kilowatts of electricity at a wind velocity of 18 mph. The car has two batteries. While one is being used in the car, another can be charged with wind-generated electricity.

**IN SRI LANKA**, as part of a fuel conservation effort, there is now a six hour ban on private motoring on Sundays. Only public transportation and commercial vehicles are allowed on the roads during the restricted hours.

Special permits for private cars are only issued by police for what they consider emergencies or "most essential purposes."

Police and military vehicles and two-wheelers including scooters, motorbikes and mopeds are allowed during the restricted hours.

**VENEZUELA'S TRANSPORT MINISTER** Vinicio Carrera has announced a ban prohibiting private cars from circulating in the capital one working day a week, according to their license plate numbers. This will keep one fifth of the total vehicles in Caracas at home every working day. Infractions cost motorists \$45.

Traffic is one of the major causes of atmospheric pollution in Venezuela, which has the highest rate of vehicles per inhabitant in Latin America.

The measure, which has been in operation on a voluntary basis for the past six months, has met with general approval. Taxis have long been subject to this restriction. Exempted are ambulances, trucks, buses, and public services.

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term. There are vast amounts of tar sands around the world, and we think that in five years they will start to be more widely exploited. But they are not best from an environmental point of view.

The conference also discussed 14 types of gas. There is gas dissolved in water under the deserts; there is gas in tight sandstones; China has more than 20 million biodigesters; and Brazil has large-scale plans for ethanol and methanol.

And for the future there are, among others, magma energy from volcanoes and electricity from magnetic fields.

We have an imbalance in research and development between the amount invested in conventional energy—oil, gas and coal—and the rest of our energy sources. We must diversify our research and development so we don't find ourselves in the same situation again—dependent on only a few sources.

The problem worries me enormously. Only two countries have all the resources, all the technology and all the funds to develop what they want to. What they decide shapes energy policies in the whole world, and it doesn't necessarily correspond to world needs. Their choices have been influenced by military needs. We must start from national needs. The U.S. is desirous to help technologically, but here you have the principle of confidentiality with the enormous stakes involved in energy, and so we don't get full information.

But since what has served in the past 25 years will not serve over the next 25 years, cooperation has emerged. International cooperation is important—to divide the risks, labor and research. The 1981 UN conference on new and renewable sources of energy will focus on international policies and programs of cooperation. It cannot fail to give a real boost to renewable energy sources.

We know we will be in a state of uncertainty about energy for decades to come, but we are trying to throw light on the possibilities and narrow the range of uncertainties. We are trying to help governments and international organizations make choices and set priorities for research and development.

Research money should go into photovoltaic cells, which are a most promising energy source. In tropical countries, simpler devices should receive attention. Windmills and geothermal energy are little utilized. If there is intensive research and development into these and other sources for 10 years, we would have a much better view. We should put a lot of emphasis on those energy sources which won't increase in cost, such as renewable energy.

And there has to be a degree of reversibility at a certain stage. For example, people are looking at the questions and costs of nuclear energy—they were hidden in previous calculations—costs of waste disposal, utilization of land, insurance premiums, maintenance and incapacitation of plants.

I cannot fail to be optimistic about our energy future because of the inventiveness and ingenuity of man. What people invent is mind-boggling. But the next 15 years will be difficult because of the lag in research and development.

*Philippe de Seynes is director of the Program of Future Studies at UNITAR, the United Nations Institute for Training and Research.*



## In This Issue ...

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## Tanzania cuts oil consumption in half

**DAR ES SALAAM**—Tanzania, currently in the midst of its worst economic crisis, is cutting back drastically on oil consumption. Today the country consumes less than half as much oil as in 1972; yet with skyrocketing OPEC prices, the bill is nine times greater for this oil. Further, despite these conservation measures, Tanzania will have to spend half of its foreign exchange earnings to import oil this year.

Tanzanian President Julius Nyerere has warned that as long as oil prices continue to rise, the economies of Third World countries will continue to suffer most. Tanzania, he says, is caught in a squeeze where imports of both oil and manufactured goods cost much more while the prices Tanzania receives for its agricultural exports fluctuate widely depending on the needs of the industrialized countries.

Over the past decade Tanzania has been able to reduce oil consumption in large part by shifting to hydroelectric power. In 1972 the country's entire electricity supply was run by diesel fuel. Today, hydroelectric plants such as that at Kidatu outside Dar es Salaam supply a large portion of the country's needs. Other small hydroelectric dams are currently under construction.

Despite the increased number of private and commercial vehicles, a combination of steeply rising gasoline prices (\$3.90 a gallon), a weekend driving ban and limited gas sales are helping to curb automobile fuel consumption. In addition, the government has imposed much tighter controls on government and parastatal vehicles to insure that they are only used for official business.

Voluntary measures are proving less successful. Last month, President Nyerere appealed to government officials to ride bicycles to work, arguing it would both trim down fuel consumption and the size of many bureaucrats' bellies. A local reporter, seeking to photograph officials cycling to their offices, was unable to find even one. It seems that as long as the option remains between bicycles and chauffeur driven cars, government leaders are likely to choose the latter.

More successful have been efforts to convince peasants to move away from their dependence on fuel and petroleum products. For several years now there has been a campaign to encourage the use of ox-plows instead of tractors and ox or donkey carts and bicycles instead of trucks. This campaign has been intensified recently with the opening of the country's first bicycle factory.

In addition, there are presently a number of experiments in the use of windmills instead of diesel engines to pump water. The Arusha Appropriate Technology Project, which is funded by Swedish aid, has perfected a simple portable windmill now being demonstrated to villagers around Mt. Kilimanjaro. →

## In Africa . . .

**THE CITY OF ALEXANDRIA** is home to one third of Egypt's industries. Despite the constraints on Egyptian spending, a new Occupational Research Center has been established at Alexandria University. The Center was established in collaboration with the National Institute for Occupational Safety and Health in the U.S. Taking advantage of its special location, it will study environmental pollution and ways of overcoming occupational safety problems. Of special concern: the effects of exposure to chemicals used in the textile, mining, porcelain and cement industries.

**GREATER JOHANNESBURG'S** four million people, including those in the sprawling black township of Soweto, are being consulted on a 20-year plan to stop urban sprawl and the greatly increased use of the automobile for travelling to work. This is the first time in South Africa's history that the public has been invited to give its views on a long-term regional planning proposal.

**SOUTH AFRICA RAISED** its national urban speed limit from 70 kilometers an hour to 90 k/h at the end of September figuring that the little extra fuel this would cost would be offset by more productivity (faster deliveries, etc.)

Under the old limit, fuel savings of about 30 percent were achieved and road deaths plummeted. But the Minister of Economic Affairs, Dr. Schalk van der Merwe warned that the 90 k/h would remain "a way of life."

**WITH GASOLINE** at nearly \$2.50 a gallon, South Africa's cities are now filled with the sound of motorcycles. Sales soared 60 percent in the first six months of the year.

While this is relieving motor car congestion, it has caused renewed pleas for noise pollution controls in cities by the South African Acoustics Institute.

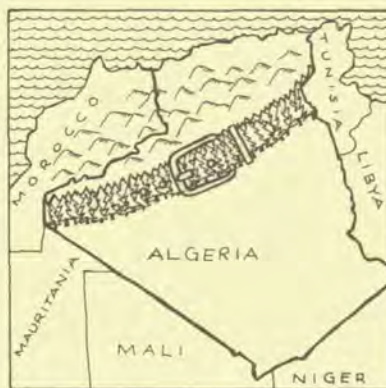
The institute points out there are no noise pollution laws in South Africa, and yet city noise pollution—notably in Johannesburg—is rising a decibel a year.

**SOON AFTER THE UNITED STATES** officially complained about the USSR "plundering" fish resources off the Namibia coast (the pilchard catch is down 90 percent from 1960s levels), the Namibian administration announced its intention of establishing a 200 nautical mile fishing zone off Namibia, although it recognizes the difficulties of patrolling such a huge expanse of sea.

In a recent tour of the countryside, President Nyerere urged villagers to prepare compost manure from crop and animal waste rather than rely on the inadequate supplies of chemical fertilizer from the country's single fertilizer factory. The President has instructed agricultural officers to teach peasant farmers how to properly prepare compost heaps and to assist them in building carts to ferry manure to the farms.

For the past several years Tanzania, with World Bank assistance and in partnership with multinational oil companies, has been exploring for oil. Last month it was announced that oil has been discovered at Songo Songo Island off the southern coast and that drilling is about to begin to determine the quantity. But President Nyerere immediately warned Tanzanians against being overly optimistic because actual exploration will take a long time. "Let us," he stated, "not give ourselves false hopes that we have oil. We have a long way to go and we must continue to work hard."

MARTHA HONEY



## A nation-wide green belt is planted in Algeria

**ALGIERS**—The recently-completed Trans-Sahara Highway, stretching from Algiers to Lagos, has yielded a dividend: a green belt that will stretch across Algeria. The green-belt project is two and a half years old (WER, Feb. 17, 1975, p. 5) and so far only 10,000 hectares show any real sign of afforestation. But a massive infusion of labor, 300,000 teenagers, should provide the needed impetus to make a visible difference.

Both the highway and the green belt used national service draftees, young men aged 17 to 19. Now that the road is complete, many more conscripts are being assigned to tree planting.

The great Sahara is only 250 miles from Algeria's Mediterranean coastline. Poor farming and grazing methods, among other reasons, have contributed to the northward spread of the desert at an alarming pace—half a mile a year.

When finished, the belt should be 1,600 kilometers long from east to west and up to 25 kilometers deep. It is being planted with pine trees of a desert-resistant Anatolian strain as well as Eucalyptus which is universally favored for such projects.

The going has been rough, a real test of national patience. It will take about 20 years to plant a forest that size. One year before each planting, the soil has to be completely turned. The planting season is limited to the months between April and October. Once the young trees are in, they must get constant attention: adequate water and protection from the desert's harsh winds and unyielding sun. The first two and a half years are crucial. In that time nearly half the crop succumbs to natural causes. →



Algeria's draft was started in 1973 in order to fight growing unemployment among the country's youth. China's army was the inspiration that led to their being used for road and forestry projects. The young men are divided into six units. Each group is responsible for a 10,000-hectare block of land along the edge of the desert.

The project is not without its critics. Some say the trees are being planted too far south where rainfall is inadequate. Supporters of the scheme say efforts should be geared not only to stopping desert crawl but to pushing it back. In Algeria, where almost 80 percent of the land is desert, that would be quite an accomplishment.

MILAGROS ARDIN

## Smallpox wiped out, world scientists declare

**NAIROBI**—A 12-year world-wide campaign to eradicate smallpox ended—successfully—when a “jury” of scientists and health experts from 16 countries declared the Horn of Africa free from smallpox. This was the last region in the world with smallpox—a Somalian hospital cook who contracted the disease in October, 1977.

Over the last two years, a massive search was undertaken throughout Somalia, Ethiopia, Djibouti and Kenya by health workers from these countries and experts from the World Health Organization. At the Nairobi meeting on October 26, WHO Director-General Halfdan Mahler announced they had confirmed the results of two years of searching—completely negative.

WHO officials estimate that smallpox precautions, vaccinations, quarantines, etc., have been costing the world \$1 billion a year—money that can now be diverted to other uses.

CHARLES HARRISON

## UNEP's report on eco-impact of nuclear power released

**NAIROBI**—More analysis and research are needed to establish how low radiation levels around nuclear plants affect the health of people living or working nearby. This is a conclusion of the lengthy United Nations Environment Program (UNEP) report on the environmental impacts of the production and use of nuclear energy.

Executive Director Mostafa K. Tolba denied that UNEP had “toned down” its nuclear energy report under pressure from the pro-nuclear lobby, but said that UNEP could not side completely with anti-nuclear groups who he thought were “over-enthusiastic.”

This report, and another on fossil fuels, are the first to be issued in a UNEP energy report series.

Between them, they total over 70,000 words and both deal in detail with scientific and technical aspects. CHARLES HARRISON

## Land use . . .

**INDIA'S PRIME MINISTER**, Charan Singh, has asked the Kerala government to call off the Silent Valley hydro-electric project in view of its ecological hazards (*WER*, Sept. 10, 1979, p.6). He has offered the state all the assistance it needs to build a thermal or even a nuclear plant to supply power, which Kerala desperately needs.

This may not end the months-long controversy because Kerala authorities are bound to argue that the Charan Singh ministry in Delhi is only a caretaker till the National Parliamentary elections in January and cannot take a major decision to call off a \$70-million scheme.

The previous central government headed by Morarji Desai, cleared the project.

**THE SPANISH GOVERNMENT'S** inter-ministerial environment commission has decided not to permit oil drilling in Donana Park, Europe's biggest bird reserve in the southern province of Andalusia (*WER*, Nov. 6, 1978, p. 1)

The decision comes almost a year after ENIEPSA, a company owned by the state holding giant INI, and Texaco-Chevron first petitioned for permission to explore for oil in the southwestern edges of the Coto de Donana, home of such rare species as the Spanish lynx and imperial eagle.

**VENEZUELAN PRESIDENT** Luis Herrera Campins recently signed a decree creating a work team to study and recommend the outline of a master plan for the “use, conservation and improvement of all beaches in the country.”

Venezuelan law provides for a 500-meter strip of public land along all coastlines. The inter-ministerial team will draft a policy for putting these “idle” lands to work for recreation and tourism. It is expected that the team's report will lead to a new law on use of beaches which should put a stop to abuses by private developers.

**“LESS THAN ONE PERCENT** of Britain's land surface has been set aside as nature reserves,” said Sir Arthur Norman, chairman of the UK's World Wildlife Fund. He launched an appeal for £2 million (\$4.3 million) at the London Stock Exchange in order to “ask the business world to increase its stake in the fight for our future” by funding land for reserves.

He said that Britain was in danger of losing many wild areas—such as woodlands, estuaries, wetlands and coastal areas—and that legislation did not always prevent conservation areas from being “developed” by farming or construction industries.

## In Europe . . .

**THE CANTON** (state) of Geneva has just set up a special committee charged with coordinating inter-departmental efforts to protect the environment.

This committee will have a threefold mission: complete legislation for better protection of the environment and for increased enforcement of compliance; advise the Geneva State Council on scientific problems; prepare an annual report to the State Council on achievements in the field of environment.

**MORE THAN 2,000 DEAD** and dying sea birds have been washed ashore during high tides in Britain's Mersey estuary, an internationally important wintering shelter for wildfowl. A total of 25 different species have been affected.

Efforts to discover the cause of death since the first incident was reported September 16th have so far produced no conclusive results, although high lead levels have been found in the birds.

**WITH GOVERNMENTAL BLESSINGS** a nationwide drive is being organized in The Netherlands to collect used mercury oxide batteries. The initiative was taken by importers and retailers of the batteries. Dr. L. Ginjaar, minister for public health and environmental hygiene, praised them saying the polluter is not only paying but actually taking up a dustpan and brush to get rid of the dirt. The initiative could be a model for similar future actions, for instance the separate collecting of other damaging components of household refuse.

**THE TURKISH GOVERNMENT'S** efforts to reduce air pollution in Ankara, the capital city, will be assisted with a \$6 million World Bank loan, more than half the total \$11.25 million budgeted for the project.

Air pollution in Ankara is serious. Reports of experts from the United Nations Development Program and World Health Organization have stated that sulphur dioxide levels between 1974-77 were unusually high and exceeded air quality standards in all countries where standards exist.

The air in Ankara is polluted largely because the fuel oil burned is highly sulphurous and the lignite mined locally is of poor quality. The problem is made worse by the location of Ankara at the bottom of a shallow bowl surrounded by hills. Location and climate combine to reduce air flow and make the winter air pollution problem far more serious than it is in other cities using the same fuels for domestic heating.

## West German eco-groups form a nationwide political party

**MUNICH**—West German environmental groups, meeting at Offenbach near Frankfurt in early November, decided to form a unified political party—"The Greens"—to participate in the 1980 legislative elections.

The delegates voted to hold a founding congress January 13 and to establish a platform broad enough to be shared by an extremely wide spectrum of political thought. As one of the "Greens" leaders, former Christian Democrat Herbert Gruhl, put it: "We stand neither to the left nor to the right, but out in front." A motion that would have prohibited cooperation of the West German Communist Party or other leftist groups was defeated 348 to 311.

The "Greens," it was decided, will have four principles: protection of the environment, defense of social interests, community democracy and anti-violence.

The decision to set up a party followed the success of an environmental party in Bremen last month which brought environmentalists into a West German legislature for the first time—and after spectacular showings in local elections in Baden-Wuerttemberg, where environmentalists won seats in six of the seven races they entered.

Political observers see the movement as a serious threat to the present ruling coalition of Socialists and Free Democrats. "The Greens," it is believed, could pull enough votes away from the coalition to permit a victory for the Christian Democrats and their Bavarian partners, the Christian Socialist Union.

WILLIAM G. MAHONEY



## First world congress held on alternatives and environment

**VIENNA**—The First World Congress on Alternatives and Environment which met here from October 29 to 31 came within a hair's breadth of holding a public demonstration by its participants, including three Nobel Prize winners, outside the gates of the brand new UNO-city.

A sit-down demonstration was announced after the International Atomic Energy Agency staff refused to make available the

text of a new convention on the Physical Protection of Nuclear Material, which had been agreed to by experts on October 26. IAEA said the text could not be released until it had been translated into all necessary languages and issued to all governments. When the IAEA agreed to receive a Congress delegation, the demonstration was called off. But their talk did little to allay fears among the conference members that the new convention will attempt to make peaceful protests against atomic energy illegal.

The conference, attended by over 100 scientists and environmentalists from around the world, was held under the auspices of Austrian President Dr. Rudolf Kirchschlager. It was attended also by some 1500 visitors. Participants were split into six work-groups, each debating twenty papers on environment issues. Solar energy was the theme that attracted the most attention. In his opening speech, Nobel Prize winner Dr. Konrad Lorenz said that it was the only legitimate and inexhaustible source available to mankind in the long run.

Organizers said this conference, the first of its kind, had succeeded in its basic aim—the exchange and debate of often highly specialized information among experts in the environmental field.

SUE MASTERMAN

## Spain is hampered in efforts to clean up polluted Bilbao

**MADRID**—The Spanish government is making a serious effort to clean up what it says is Europe's most polluted city, Bilbao. This capital of the Basque province of Vizcaya is the only city in Spain where anti-pollution demonstrations led to deaths—Franco's police clashed with protestors a decade ago, leaving three dead.

Bilbao is the first city in Spain to be declared an "atmospherically contaminated zone," and officials say it is caused by "promiscuous" intermingling of homes and industries—steel mills, chemical and non-ferrous metal works. At the same time, they admit that this unhealthy cohabitation is virtually irreversible. Although a four-year Clean Air Plan dedicates its final year to relocation of the most polluting industries, there is very little space to move to without crossing the mountain ranges on either side of the Nervion River—a river into which industry dumps a million tons of toxic solids annually yet which has not a single purifying plant.

Every year, more than 120,000 tons of sulphur dioxide and 52,000 tons of particulates fall on the million inhabitants of Bilbao. Spain is considerably less rigorous in air pollution controls than other Western nations. For example, Spain permits an annual average of 150 micrograms of SO<sub>2</sub> per square meter; the U.S. permits only 80.

Bilbao's four-year plan, successor to a pilot plan that achieved very little, provides for the control by mid-1980 of the 143 industrial plants which cause more than 95 percent of Bilbao's industrial pollution. If these industries do not improve their pollution standards to comply with Spanish law, the plan provides for production cutbacks and even the closure of certain plants—notably a number of antiquated sulphuric acid plants.

JULIE FLINT

## Air Quality...

**THIRTY-FIVE COUNTRIES** have signed the international convention to reduce long-range trans-boundary air pollution (WER, Nov. 19, p.1).

The signing came at the conclusion of a three-day, ministerial-level meeting on the protection of the environment held by the United Nations Economic Commission for Europe (ECE).

Only three of the 34 member ECE governments failed to sign: Albania, Malta and Cyprus. Albania, as is customary, did not participate in the meeting. Malta's delegate pointed out that his country is not affected by long-range air pollution; Cyprus gave no reason but is in the same situation as Malta.

Non-member states signing—permitted under Article 8—were Lichtenstein, San Marino and the Vatican.

The ECE membership is composed of all states of East and West Europe and the U.S. and Canada. There were no abstentions by East European countries.

**JAPAN AND AUSTRALIA** will cooperate in the use of Japanese weather satellites over Australia in the 1980s.

Japan's Geostationary Meteorological Satellite, which has been transmitting since February 1978, has transmitted 6000 high-quality photographs of cloud patterns plus other data above Australia every three hours and is due to be replaced in 1981.

**OZONE IN THE STRATOSPHERE** is being depleted twice as fast as they thought, say scientists of the U.S. National Research Council. The Council, in a new study, said that continued worldwide use of halocarbons in aerosol cans, refrigerators, air conditioners, plastic foams, solvents and elsewhere will result in ozone depletion calculated to reach 16.5 percent—half of which will occur in the next 30 years. Their 1976 report estimated a 7.5 percent reduction. The revised estimate is based on improved computer models and better atmospheric and laboratory measurements, the Council said.

British models, using the same data, show slightly lower depletion rates, and British researchers believe the impact on people may be less than previously thought. Ozone depletion would allow more ultraviolet rays through our atmosphere which may damage almost all forms of life, including man.

## In Eastern Europe . . .

**THE TATRA MOUNTAINS**, the highest range of the Polish Carpathians, are being cleaned up. At the appeal of the International Union of Alpine Societies, some 3,000 tourists work every Sunday to bring down garbage found on the mountain trails. They collect about 25 tons every week.

Other Polish mountains are to undergo a similar operation. Polish experts said nature needs 10 years to absorb or destroy paper, 30 years to completely corrode food cans and 50 years to destroy plastic bags and packages. Broken glass will stay in the footpaths forever.

**THE SOVIET UNION** is planning major increases in its capacity for extracting petroleum from shale rock. Soviet technicians said at the 10th World Petroleum Congress in Bucharest. Experts said large-scale shale processing units capable of handling 1,000 to 3,000 tons of rock every day were either under construction or on the drawing boards.

The Soviets extract shale rock in open pit mines and then restore the surface by planting trees or crops, their report said. Opponents of shale development in the United States have argued that strip mines would damage the environment and ruin the beauty of the countryside.

**SARAJEVO**, capital of the Yugoslav federal republic of Bosnia-Herzegovina and host to the 1984 Olympic Games, is difficult to reach at the best of times. For the past few months the city has been in total chaos. Authorities admit the fact with pride because it is evidence that the World Bank sponsored environmental program is well underway, turning Sarajevo from a smog-ridden city with a bad water pollution problem into a clean, healthy city.

At the end of August the signal was given for the simultaneous renewal of all pipelines in the city. Gas, water and drainage have all been tackled. Authorities say the renewal should be complete before the national day at the end of November.

It was high time that Sarajevo's pipelines were renewed. In the older part of the city wooden drainage pipes dating back from the Turkish occupation up to 500 years ago were still in use.

It's estimated that the Bank's part of the air and water cleanup will be completed in 1981, but the government program will continue.

## Tough asbestos-use controls planned for British industry

**LONDON**—Tough new controls suggested for the use of asbestos in British industry are not tough enough in the opinion of trade unions trying to protect the health of their members.

Recommendations in a report published October 24th by the Advisory Committee on Asbestos of the Health and Safety Executive would give Britain the strictest controls in the world: a halving of the present legal exposure levels to white and brown asbestos dust, and a total ban on the use and import of blue asbestos. This would bring white asbestos exposure levels down to one million fibers per cubic meter, and brown to half of this. The levels are those which industry says it could afford without closure of plants.

Among 41 safety recommendations are bans on the use of asbestos sprays and on any insulation materials containing asbestos except where no suitable substitutes are available.

A record of all workers exposed to asbestos and of any asbestos-related diseases or deaths is suggested. Also recommended are further investigations into the link between asbestos and gastrointestinal cancers and into possible asbestos contamination in food and drink, particularly as approximately one-third of pressure piping in Britain's water supply system is made of asbestos cement.

The committee was set up in 1976 following the discovery that more than 200 workers at the Cape Asbestos plant in Hebden Bridge, Yorkshire, and their families were affected by cancer and other asbestos-related diseases.

Trade unions believe exposure controls of one-fifth the present levels are essential and accuse the committee of responding to industrial pressure.

An environmental group, the Society for the Prevention of Asbestos and Industrial Diseases, says the dangers to the general public have not been sufficiently explored.

The Asbestos Information Center, representing industry, challenges the limits on brown asbestos, the pressure to find substitutes and the implementation date of December 1980, saying they need at least 18 months. BARBARA MASSAM

## Romanians burn and recycle garbage for energy and iron

**BUCHAREST**—Romanian specialists have been turning domestic waste into energy—partially in response to disposal problems. The official news agency Agerpres, reported that domestic waste from 19 Romanian cities totaled almost 2 million tons annually. Dumps were expanding 2-3 hectares every year and truck routes grew longer as new sites were opened.

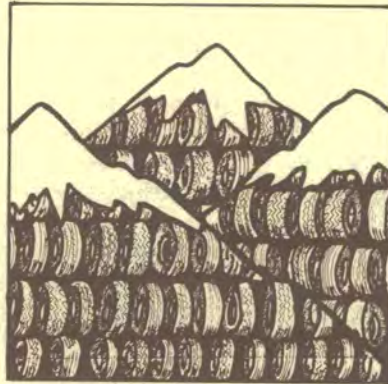
Recently, a waste-burning pilot plant began operation in Bucharest. Simultaneously, construction was begun on the first

Romanian industrial facility for processing domestic wastes in Iasi county, northeastern Romania. The facility will heat some 300 apartments, saving up to 2000 tons of fossil fuel a year. It will ensure the recovery of 1800 tons of scrap iron, Agerpres said.

Building materials will be made from the fly-ash so that even the waste will be recycled. This is a non-polluting system, permitting construction of waste-burning plants in urban centers, the agency said.

SPECIAL TO WER

## Swiss burn used tires for fuel



**GENEVA**—An enterprising Swiss firm has converted a major environmental problem—growing mountains of used tires—into a solution to the problem of soaring energy costs.

Statistics show that every year in Switzerland some 30,000 tons of tires are discarded. Normally about 8,000 tons go to firms for recapping, and another 8,000 tons are sold abroad where regulations are not so strict. This leaves 14,000 tons of unusable tires, piled in ugly dump heaps, sometimes burned in incinerators and sometimes out in the open, fouling the air and the scenery with dense smoke.

But back in 1974 a Swiss textile factory at Muenchwilten, perturbed by the high cost of fuel even then, cast about for a substitute. A resourceful researcher noted that one ton of tires, in caloric energy potential, equalled 860 kilos of heating oil. In 1975 it signed a contract with a special heating firm in Liechtenstein to develop a heating plant to utilize old tires. The effort eventually was successful and the firm now uses old tires as a fuel substitute.

There were problems in early tests and use—especially with the exhaust of toxic and noxious gases. These problems have now been solved and today the plant burns about 250 kilos of tires an hour for 10 hours daily, corresponding to an annual consumption of 675 tons. This equals—and saves—485,000 liters of oil a year.

The pyrolytic system functions on two levels with a thermo-reactor and the heat from the combustion of the tires, through use of a temperature exchanger, permits production of vapor for the machines and hot water for heating.

The complete installation cost about \$375,000, of which about half went for eliminating exhaust gases. At the present price of oil, the installation will be amortized in from three to four years.

One problem remains: huge gobs of muck are recovered from the process and these are toxic, containing sulphuric acid and zinc oxide. Some 25 kilos of this waste are produced daily and this is stock-piled while researchers seek an industrial use that would permit selling and recycling the waste.

WILLIAM G. MAHONEY

## New Fuels . . .

**A PHILIPPINE GOVERNMENT** corporation will be formed soon to manufacture and sell "alcotipid," a new device which enables motor vehicles to use a cheaper mixture of alcohol and gasoline as fuel. The new firm, to be initially funded by the government, will be a subsidiary of the Philippine National Oil Company. The "alcotipid" eliminates the problem of water in alcohol. It is installed under the carburetor of a car.

**NEW ZEALAND** will produce synthetic fuel from methanol using a new process developed by Mobil Oil Company. The project is expected to be commissioned by 1985 and to produce 530,000 tons annually, as part of a plan to make the country more than 50 percent self-sufficient by 1987.

Studies by a Liquid Fuels Trust Board showed that the Mobil proposal was the most economic synthetic fuel choice for gas allocations from the Maui off-shore natural gas field.

Though the Mobil process has been used with different catalysts to make other products commercially, the New Zealand plant will be the first to produce synthetic gasoline.

**IN MOSCOW**, cars and buses are being converted to operate on liquified natural gas to reduce the city's air pollution.

According to Tass, all buses will be running on natural gas by 1987. Trucks are also being converted to natural gas and Tass said that two firms—Gorky and Zil—have produced models.

There have been repeated calls from Soviet authorities for energy conservation. Nevertheless, a spokesman for the Auto Industry Ministry declared that the only goal of the conversion was to cut down on air pollution.

**AUSTRALIA'S GRADUAL ACCEPTANCE** of liquid petroleum gas-driven cars received a setback in October when an LPG-powered taxi exploded. Soon after, two more such explosions were reported. All similar cars were ordered off the road by several state governments. The manufacturing company, Rheen Australia Limited, ordered an Australia-wide recall of 5,500 LPG tanks.

Victoria, the state which has the most LPG-powered vehicles, refused to order 10,000 cars off the road but advised motorists to have the tanks checked for leaks.

## Briefly . . .

**WORLD ENVIRONMENT DAY (WED)**, June 5, 1980, will have a theme: A new challenge for a new decade—development without destruction.

This carries forward the 1979 WED theme of "Only one future for our children—development without destruction."

The Nairobi-based Environment Liaison Center, which links non-government organizations throughout the world, is again coordinating plans to celebrate WED.

**LEADING SWISS ECOLOGIST** Franz Weber announced in Geneva the founding of the United Animal Nations to further the protection of fauna throughout the world.

Established with the support of the Foundation Franz Weber, its backers include philosopher Denis de Rougemont and former UN High Commissioner for Refugees Prince Sadruddin Aga Khan.

**THE U.S. GOVERNMENT** has more than 170 16mm films and slide/tape presentations for rent or sale in the areas of pollution, ecology, conservation, alternative energy sources and many others. An "Environment/Energy Conservation List" will be sent without charge by writing the National Audiovisual Center, Reference Section/RE, Washington, DC 20409, or by phoning (301) 763-1896.

Rentals are available only in the U.S. and Canada. Buying could be expensive—a half-hour film runs over \$168, which does not include shipping charges. A suggestion is that overseas readers write for the list, then ask the local U.S. Embassy's International Communications Agency or AID to help buy the films.

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## Mexico's air quality program gets a presidential boost

**MEXICO CITY**—A program to improve the quality of air in the populous Valley of Mexico has received a needed push toward implementation. President Jose Lopez Portillo signed a decree the first week of November making the program a part of Mexico's constitutional responsibilities in the conservation of natural resources.

Noting Mexico has contamination "of the two extremes, the poor health of the subdeveloped and the wastes of the developed," the president said steps must be taken "without hysteria" to correct environmental contamination.

"We must be sure the control of contamination does not inhibit development and affect the productive processes," he said. "A realistic line must be maintained. All hysterical exaggeration is a form of contamination to our development."

President Lopez Portillo said attempts to combat environmental contamination "are not the responsibility of one entity, but of all public administration." All federal secretariats will participate in the new clean-air program.



The three-stage program already is underway. Its first phase is to develop a specific plan for cleaning up the smoggy, smoky air. Phase two, expected to last three years, is aimed at halting pollution and taking preventive measures while the third and final step, estimated to last 15 years, will attempt to establish and permanently maintain safe pollution and noise levels in the Valley of Mexico, the heavily-industrialized population center around Mexico City.

Some 10,000 taxis and government vehicles will be converted from gasoline to liquid petroleum gas; high-sulphur industries will be relocated and landscaping and planting will reduce the 60 tons of dust which now daily blow from the dry lakebed of Lake Texcoco on the city's east side. Other details of the program include environmental protection training for teachers, primary and secondary school children and a massive reforestation project throughout the Valley of Mexico.

KATHERINE HATCH

## Pakistan will soon enact anti-pollution legislation

**ISLAMABAD**—Pakistan's Minister for Housing and Works said comprehensive draft legislation covering all aspects of pollution in Pakistan was being processed for enactment soon.

However, the Minister, Air Marshal Inamul Haq, emphasized that as the country's economy is currently hard-pressed, it may not be possible for the government to set up a new agency to enforce the legislation. The government would like to use existing institutions at this stage.

MOHAMMAD AFTAB