UNEP in 2002

UNEP Governing Structure

The UNEP Governing Council was established in accordance with UN General Assembly resolution 2997 (XXVII) of 15 December 1975 (Institutional and financial arrangements for international environmental cooperation). The Governing Council reports to the General Assembly through the Economic and Social Council. Its 58 members are elected by the General Assembly for four-year terms, taking into account the principle of equitable regional representation. Full information on the composition, functions and responsibilities of the UNEP Governing Council and the Committee of Permanent Representatives, formally established and strengthened as a subsidiary organ to the Governing Council by decision 19/32 of 4 April 1997, is available at *www.unep.org/governingbodies.*

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Message from the United Nations Secretary-General

M. Grant / UN Photo

Kofi Annan
United Nations Secretary-General

At the World Summit on Sustainable Development held in Johannesburg from 26 August to 4 September 2002, world leaders reaffirmed their commitment to securing a better future for all people, in all countries, for all generations. Ten years after the Earth Summit in Rio de Janeiro, there was general recognition that the impetus for implementing Agenda 21 had slowed, that new challenges faced humanity, that the state of the global environment remained distressingly fragile, and that the world needed to restore the momentum for sustainable development.

The negotiations that produced the Johannesburg Declaration and WSSD Plan of Implementation were intense and detailed, reflecting the complexity of the questions being asked. But the outcome was a step forward for sustainable development. Agreement was reached on a wide range of actions with real potential to improve the lives of current and future generations, and many partnerships were established that will further weave the principles of sustainability into the fabric of everyday life.

Johannesburg also made clear, as never before, that environmental protection, rather than detracting from social progress and economic growth, is essential for it. And as one of the Millennium Development Goals, ensuring environmental sustainability is not only an end in its own right, it is also a crucial factor in achieving the other goals, such as reducing poverty and hunger.

This report reviews UNEP's efforts over the past year to raise awareness, to promote coherent environmental governance, to carry out assessments of environmental conditions and threats, and to keep environmental protection firmly established on the international development agenda. A single thread connects this broad spectrum of activities: the global quest for sustainable development. Judging by the events and trends documented in this report, the role of UNEP—the UN system's voice for the environment, and a key collaborator with governments, civil society, the private sector—will grow even more important in the years ahead as the world wrestles with the increasingly urgent challenge of doing more to protect the environmental foundations on which all humankind depends.

2002: A step towards a sustainable future

Klaus Toepfer began his second four-year term as UNEP Executive Director in February 2002.

How will 2002 be viewed by future generations? It is my hope that when historians weigh the impact of the year's whirlwind of environment-related meetings, conferences and summits, they may record that the second year of the new millennium and UNEP's thirtieth anniversary was a defining moment in the long march towards a more environmentally sound, sustainable, healthier and fairer world.

It is too easy to view events such as the World Summit on Sustainable Development (WSSD) in Johannesburg or the Finance for Development meeting in Monterrey, Mexico, as just more high-level political talking shops that are merely prolonging the agony of the planet and the poor. I believe we have, as a result of the negotiations and agreements that preoccupied much of 2002 and culminated in WSSD, witnessed some real stirrings of intent and some clear routes of progress that can transform the fine words of previous years and decades into genuine action.

UNEP came to WSSD with a motto: Environment for Development. Lasting development needs a healthy environment. People living with a degraded environment stand little chance of rising from the cycles of poverty and despair which are at least partly responsible for the many tensions we see around us in today's world. The Johannesburg Plan of Implementation has targets and timetables on issues such as fisheries and wildlife to ones on drinking water and sanitation that will, I believe, make a significant impact on global patterns of development. WSSD is already adding focus to the work of UNEP along with many other organisations and groups across the whole spectrum of society. Indeed, when environment ministers from across the globe meet at UNEP's headquarters in Nairobi, Kenya, in early February 2003, the WSSD Plan and the challenge of taking it forward, of delivering real and meaningful results, will be at the centre of the talks and decisions.

In the lead-up to WSSD, Kofi Annan, the United Nations Secretary-General identified five areas where he hoped to see new initiatives and specific commitments to change—water, energy, health, agriculture and biodiversity (WEHAB). The second part of this report details how UNEP is working with its partners to achieve progress in these five priority areas. WSSD delivered progress in all these areas, both in the form of concrete commitments in the Plan of Implementation, and through new partnership and funding initiatives that will achieve substantial progress on the path to sustainable development.

There are other reasons for optimism. Canada ratified the Kyoto Protocol in December 2002, and there is every reason to believe that Russia will follow suit in 2003, bringing the Kyoto Protocol and its mechanisms for addressing climate change into force.

In Africa, a new spirit of cooperation and a new vision, espoused by African leaders in the guise of the New Partnership for African Development (NEPAD), gives this most wondrous of continents, from where the human race took its first unsteady steps towards the diversity of civilisations and cultures we see today, a chance for a new start. Optimism is also engendered by the recognition explicit in NEPAD that developed nations who commit funds to assist developing ones need assurance that the cash will be wisely and effectively spent.

WSSD may have been a milestone but should not be seen in isolation from events such as the Doha, Qatar, trade talks and the Monterrey, Mexico, Finance for Development meeting, which also saw environmental considerations gain a firmer foothold on the development agenda. I am also particularly delighted over the outcome of the UNEP Global Judges Symposium held just prior to WSSD. Strengthening the use, development and awareness of laws is central to sustainable development.

What of the other highlights of 2002? The International Year of Mountains, which ended in the Global Mountain Summit in Bishkek, successfully advanced work worldwide to address mountain issues and highlighted the crucial importance of mountain ecosystems to people and wildlife living downstream of the world's 'water towers'. The International Year of Ecotourism, with its summit in Quebec, gave us some good pointers as to how we can match the modern enthusiasm for tourism and leisure with conserving nature and generating income for local people. However we clearly need to urgently re-visit this issue to chart a more robust and effective course.

UNEP also published two landmark publications—the third in the Global Environment Outlook series, *GEO-3* and the *Africa Environment Outlook*. These have not only contributed to our understanding of the threats and improvements humankind is creating for life on Earth, but are also building strong networks of researchers and centres in developing countries where environmental and developmental science is flourishing.

Working closely with the Global Environment Facility, the multi-billion dollar environment fund, UNEP has launched important new projects to restore damaged and degraded drylands in Africa. UNEP is also a partner in the largest project ever undertaken to build the skills of developing nations in the area of genetically modified crops and foods.

These are just some of the highlights of UNEP's year. The body of this report provides more detail about the wide variety of sectoral and cross-sectoral projects in which UNEP is involved. Yet, even this is only a snapshot. Behind each entry lies a hive of activity. All over the globe, meetings, symposia, workshops and any number of other training activities organised by and through UNEP's regional offices and its growing family of partners, are enhancing the capacity of countries and institutions, especially those in the developing world, to understand and address the environmental issues that we will have to face together over the coming decades.

This success of this dynamic network of partnerships was reflected at the Global Ministerial Environment Forum in Cartagena, Columbia, when countries agreed on a new, strengthened UNEP. It is gratifying to see that the organisation's funding is on the rise from a wider group of nations. This is a vote for the environment and a vote for UNEP's improved ability to deliver. We have every intention to live up to our new and increasing responsibilities, not only in this thirtieth year of UNEP's birth but in the months, years and decades to come.

Leadership for a sustainable future

The Johannesburg Plan of Implementation states that "good governance, within each country and at the international level, is essential for sustainable development." UNEP supports the development of a coherent governance infrastructure for the protection of the Earth's environment by, amongst others, helping to establish international agreements such as the successful Montreal Protocol on Substances that Deplete the Ozone Layer, and providing policy advice to governments and institutions. For instance, UNEP is advising on the environmental component of the New Partnership for Africa's Development (NEPAD). UNEP also provides resources and training at the national level. Since the 1992 Earth Summit UNEP has helped nearly 100 developing countries and countries with economies in transition to develop environmental legislation and institutions.

The context for much of UNEP's work in environmental governance is the Montevideo Programme for the Development and Periodic Review of Environmental Law, initially adopted by the UNEP Governing Council in 1982 and approved for a third ten-year programme in 2001. UNEP's work to support a coherent international environmental governance architecture has also been greatly enhanced by the Global Ministerial Environment Forum (GMEF). The GMEF is convened annually to review important and emerging policy issues in the field of the environment, with the UNEP Governing Council constituting the forum in its regular and special sessions.

Since its inaugural meeting in May 2000 the GMEF has been driving a process for examining and strengthening international environmental governance. To that end it created an Open-ended Intergovernmental Group of Ministers whose 2002 report on improving coherence in international environmental policy making, improving the effectiveness of multilateral environmental agreements, and enhancing the role of UNEP was endorsed at WSSD, and subsequently by the UN General Assembly.

© Evan Schneider / UN/DPI

"The environmental crises we confront have many causes. They include poverty, negligence and greed—but above all, failures of governance."

Kofi Annan, Millennium Report

Among the most important roles for UNEP in the context of international environmental governance is promoting increased coherence among environmental conventions—especially the growing family of biodiversity-related conventions and those dealing with chemicals and hazardous waste—and assisting developing countries and those with economies in transition to comply with their obligations under international and regional treaties. Promoting effective environmental governance at national level is therefore a UNEP priority. As part of its provision of training and resources for the development and implementation of national environmental legislation, UNEP organised a Global Judges Symposium which met in Johannesburg in August 2002, prior to WSSD. The resulting Johannesburg Principles on the Role of Law and Sustainable Development emphasise that an independent judiciary committed to implementing environmental laws is essential for sustainable development.

United Nations Secretary-General Kofi Annan with his wife Nane and Dr. Jane Goodall at the Children's Earth Summit, Soweto, South Africa, during the World Summit for Sustainable Development, 26 August to 4 September 2002. Dr. Goodall is one of the world's leading primatologists and a special envoy for the UNEP Great Apes Survival Project (GRASP). World leaders at WSSD reaffirmed their commitment to securing a better future for all people, in all countries, for all generations.

LAW AND SUSTAINABLE DEVELOPMENT

Just prior to WSSD, UNEP organised a symposium of 100 senior judges from around the world to discuss the effective national level implementation of environmental law. At the meeting Klaus Toepfer, UNEP Executive Director said: " We have over 500 international and regional agreements, treaties and deals covering everything from the protection of the ozone layer to the conservation of the oceans and seas. Almost all, if not all, countries have national environmental laws too. But unless these are complied with, unless they are enforced, then they are little more than symbols".

Experts are convinced that the worldwide effort to crack down on pollution, challenge environmentally damaging developments, and comply with agreements covering issues such as hazardous wastes to the trade in endangered species is being undermined—partly as a result of weaknesses in many countries' legal systems, but mainly as a result of the lax way in which these laws are being implemented and enforced. These weaknesses are particularly acute in many developing countries and in the nations of the former Soviet Union where lack of resources, the difficulties of turning international treaties into national laws, and lack of awareness, if not apathy, as a result of difficult economic conditions make it harder for cases to reach or succeed in the courts.

The Global Judges Symposium followed a series of six regional symposia designed to enhance the role of the judiciary in promoting the implementation of environmental law. The outcome of the symposium was the Johannesburg Principles on the Role of Law and Sustainable Development. In agreeing to strengthen the application of existing laws to protect the environment and the rights of people to pursue a sustainable future, the judges declared: "We emphasise that the fragile state of the global environment requires the judiciary, as the guardian of the rule of law, to boldly and fearlessly implement and enforce applicable international laws which… will assist in alleviating poverty and sustaining an enduring civilisation."

The Johannesburg Principles on the Role of Law and Sustainable Development can be downloaded from www.unep.org/dpdl/symposium. Further information about international environmental governance is available at www.unep.org/ieg.

UNEP SUPPORT FOR AFRICA

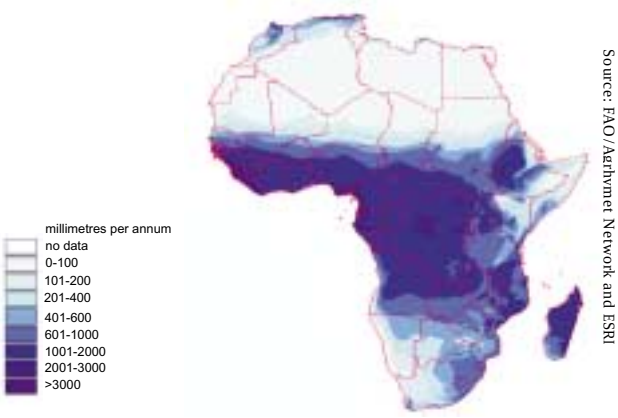
UNEP places great emphasis on building national capacity for sustainable development. This includes helping countries to participate fully in the development of international environmental policy and in negotiations for multilateral agreements, and helping countries upon their request to develop and implement environmental laws. UNEP is active in all regions of the world—examples include its work in support of the Forum of Ministers of the Environment of Latin America and the Caribbean and recent assistance to Afghanistan to establish an environmental affairs ministry—but accords priority to Africa, in line with the United Nations Special Initiative for Africa.

Africa faces the greatest environmental, health and poverty challenges and it has the fewest technological, human, institutional and financial resources with which to deal with them. UNEP is supporting African governments to achieve sustainable development in a number of ways. It hosts the secretariat for the African Ministerial Conference on the Environment (AMCEN) and is actively involved in helping establish mechanisms for the implementation of the environmental component of the New Partnership for Africa's Development (NEPAD). UNEP also supported the organisation of the second Africa Round Table on Cleaner Production, which has given further momentum to promoting and implementing the concept of cleaner production in Africa. There are already eight UNIDO/UNEP National Cleaner Production Centres established in eight countries in Africa.

"Since the United Nations Conference on Environment and Development, sustainable development has remained elusive for many African countries. Poverty remains a major challenge and most countries on the continent have not benefited fully from the opportunities of globalisation, further exacerbating the continent's marginalisation. Africa's efforts to achieve sustainable development have been hindered by conflicts, insufficient investment, limited market access opportunities and supply side constraints, unsustainable debt burdens, historically declining overseas development assistance levels and the impact of HIV/AIDS."

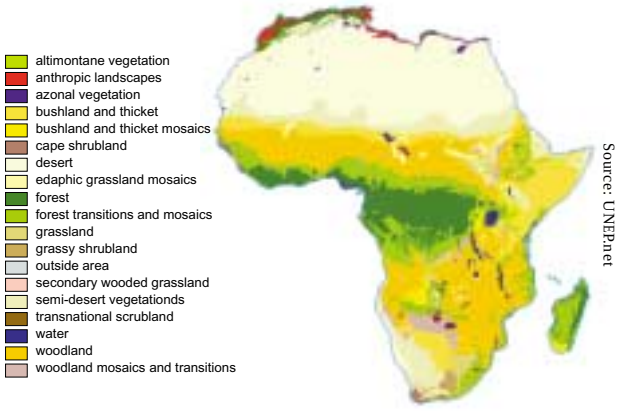
WSSD Plan of Implementation, paragraph 56.

Underlying these initiatives is UNEP's long-standing support to governments and national legal institutions in the development and implementation of national environmental laws. An example is the Partnership for the Development of Environmental Law and Institutions in Africa (PADELIA) project (www.unep.org/padelia), which is working with seven countries to develop laws and fill gaps in existing legal structures for sustainable development.



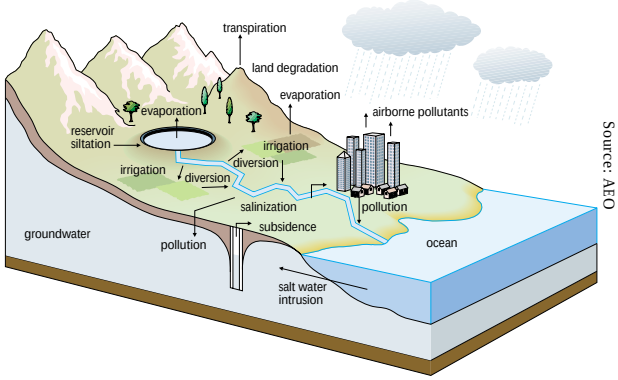
Source: FAO/Agrhymet Network and ESRI

Map of rainfall variability in Africa



Source: UNEPnet

Map of land cover and use in Africa



Source: AEO

Interlinked stresses on land and water resources

REGIONAL INITIATIVES FOR SUSTAINABLE DEVELOPMENT

If global environmental policies and strategies are to be successful, local and regional realities must be reflected and integrated in their development and implementation. Tailoring sustainable development initiatives to local conditions fosters a sense of ownership and supports capacity development. This is why the WSSD Plan of Implementation emphasises the importance of regional initiatives, experiences and institutions in promoting sustainable development and supports the emergence of stronger regional groupings for improving regional and international cooperation.

UNEP continued working in 2002 to integrate emerging regional and subregional priorities into global environmental policy and to increase regional policy dialogue and cooperation. Crucial to this process are the six UNEP regional offices (page 62). They play a leading role in identifying, defining, developing and implementing regional strategies and policies that are integral to UNEP's overall vision and mandate, and they provide a link between policy and programme development and actual concerns in the regions.

UNEP works very closely with regional environment ministers' forums such as, among others, the Forum of Ministers of the Environment of Latin America and the Caribbean, the Ministerial Conference on Environment and Development in Asia, the Environment for Europe process and its constituent bodies, the League of Arab States, and the African Ministerial Conference on the Environment (AMCEN). UNEP also supports the development and implementation of regional and subregional initiatives and alliances such as the New Partnership for Africa's Development (NEPAD), the Latin American and Caribbean Initiative on Sustainable Development, the Arab Initiative for Sustainable Development, and the Central Asia Action Plan. UNEP has also enhanced the regional nature of its Governing Council process. The Global Ministerial Environment Forum (GMEF) features regional issues prominently on its agenda and its venue moves from region to region (Malmö, Sweden, 1999; Cartagena, Colombia, 2001; Nairobi, Kenya, 2003).

To further respond to the emphasis on regional focus emanating from WSSD and the Global Ministerial Environment Forum, UNEP is also forging regional alliances of United Nations organisations, economic commissions and other regional intergovernmental institutions, for instance the Ministerial Councils of the Regional Seas Conventions. It is also developing various regional and subregional partnerships among development banks, civil society, the private sector, and other major stakeholders such as parliamentarians and the judiciary. These initiatives provide many opportunities to further strengthen UNEP's effectiveness and impact. In the coming years UNEP will continue to reinforce the regional scope of the development and execution of its policies and programmes for sustainable development.

POVERTY AND ENVIRONMENT

In 2001, the twenty-first UNEP Governing Council/GMEF asked UNEP to develop and promote understanding of the links between poverty and the environment, and recommend appropriate policy options for governments to make people's livelihoods more productive and environmentally sustainable. A UNEP concept paper on poverty and the environment has been prepared for presentation at the twenty-second UNEP Governing Council/GMEF in February 2003.

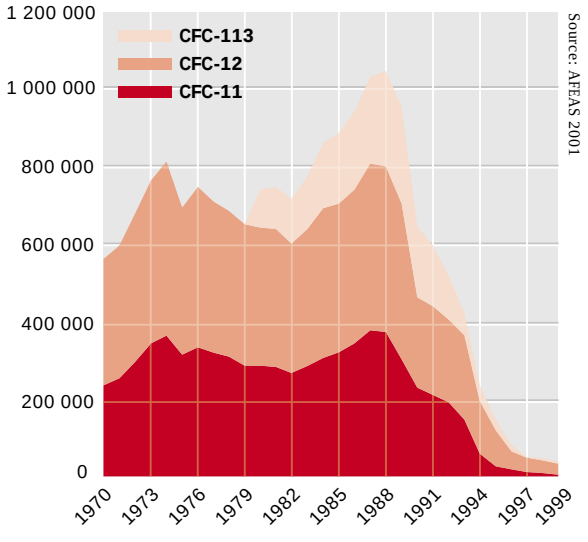
The paper highlights the ecosystem approach to poverty—which looks at the conditions of ecosystems and the consequences of ecosystem change on social and economic processes—and analyses options for policy and implementation responses. The ecosystem approach is used in combination with the capability approach work on poverty done by Amartya Sen, Nobel Laureate in Economics, and also draws on participatory natural resource management. UNEP will begin to test its approach to poverty and environment in March 2003 in five selected African countries. The three-year project will culminate in a poverty-environment strategy, and guidelines designed by each country, integrated with other poverty alleviation measures.

PROTECTING THE OZONE LAYER

Perhaps the most successful multilateral environmental treaty is the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer. Following alerts in the 1970s by the scientific community—including UNEP—about the deterioration of the Earth's protective ozone shield, international agreement to address the problem was reached in 1985 with the non-binding Vienna Convention for the Protection of the Ozone Layer, followed two years later by the Montreal Protocol.

Halogenated and brominated industrial and agricultural chemicals collectively known as ozone depleting substances cause ozone depletion. The production and consumption of ozone depleting substances, for instance chlorofluorocarbons (CFCs), halons and methyl bromide, are being phased out under the Montreal Protocol. Whereas developed countries phased out virtually all their CFCs by 1996, developing countries have only recently begun the crucial compliance stage of the phase-out process. Developing countries have until 2005 to cut CFCs and halons by 50 per cent, the fumigant methyl bromide by 20 per cent, and the solvents carbon tetrachloride and methyl chloroform by 85 per cent and 30 per cent respectively.

World production of major chlorofluorocarbons (tonnes/year)

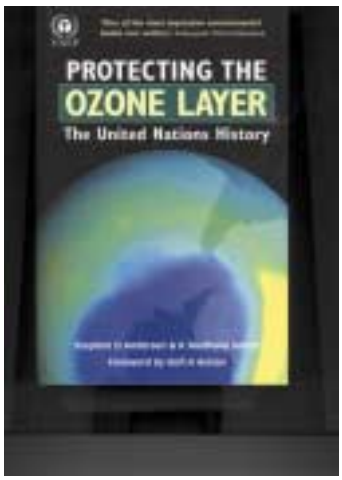


World production of the three major CFCs peaked in about 1988 and has since declined to very low amounts

An essential tool for enabling compliance with these targets is the Montreal Protocol's Multilateral Fund. The main objective of the Multilateral Fund is to assist developing country parties to the Montreal Protocol to comply with the control measures of the Protocol—an example of the principle of common but differentiated responsibility, enshrined in Principle 7 of the 1992 Rio Declaration and reaffirmed at WSSD. The Fund has dispersed some $1.5 billion of the $1.6 billion approved in previous replenishments on projects and activities in developing countries since 1991.

In November 2002, Parties to the Montreal Protocol agreed to replenish the fund by another $573 million, which is expected to halve the consumption and production in developing countries of CFCs—the leading destroyer of the stratospheric ozone layer—by the year 2005 (relative to a baseline of average 1995–1997 levels). Due to the achievements of the Multilateral Fund, the majority of developing countries are currently in compliance with their phase-out obligations under the Montreal Protocol. The additional funding will help ensure that they are able to continue to honour their commitments in the coming years.

UNEP hosts the secretariats of the Vienna Convention and the Montreal Protocol and the Multilateral Fund. The agency also acts as the Treasurer of the Fund and, through the DTIE OzonAction Programme, is also one of the Fund's implementing agencies.



At the Sixth Conference of Parties to the Vienna Convention, held in Rome in November 2002, UNEP launched a new book *Protecting the Ozone Layer: The United Nations History*. The book details the history of the Montreal Protocol—the science, the diplomacy, and the commitment shown by so many in addressing one of the gravest risks yet seen to human and environmental health. By showing what made the treaty a success the book also provides a blueprint for other endeavours to tackle global environmental problems.

Also released in 2002 was a report by UNEP and the World Meteorological Organisation which revealed that though levels of ozone harmful gases in the stratosphere have peaked countries need to maintain their commitment to phasing out the production and consumption of ozone depleting substances if the ozone layer is to recover.

OZONACTION: COMPLIANCE ASSISTANCE FOR DEVELOPING COUNTRIES

UNEP is one of the four implementing agencies of the Multilateral Fund of the Montreal Protocol, along with UNDP, UNIDO and the World Bank. The UNEP OzonAction Programme provides capacity building services that assist developing countries and countries with economies in transition to achieve compliance with the Montreal Protocol. UNEP empowers National Ozone Units to take informed action on ozone through the provision of an information clearing-house, training, regional networking and national/sectoral strategy development assistance. Primarily funded by the Multilateral Fund, the programme also receives support from the Global Environment Facility, the Government of Sweden and the Government of Finland.

In response to the changing needs and priorities of Article 5 countries during the Montreal Protocol's compliance period, UNEP significantly reoriented its programme strategy and delivery mechanisms in 2002 by transforming its overall work strategy into the Compliance Assistance Programme. Under this approach, UNEP moved from a project management approach to direct implementation, using a team of professionals with appropriate skills and expertise who directly assist countries to support and sustain compliance with the Protocol. The majority of the Compliance Assistance Programme team is based in UNEP Regional Offices where they work closely with the countries on the delivery of projects and services. UNEP believes that this innovative approach may set a trend in supporting compliance with multilateral environmental agreements.

Information for decision making

Policy making for sustainable development depends on timely and credible information. UNEP assessments and information delivery systems are increasingly influential. At the heart of UNEP's assessment, monitoring and early warning strategy is the Global Environment Outlook (GEO) integrated environmental assessment process. The third report of the GEO series, *GEO-3*, which was published in May 2002, helped focus world attention on the environmental component of sustainable development in advance of WSSD by looking at environmental developments since the 1972 United Nations Conference on the Human Environment, and outlining scenarios for the next 30 years according to how world leaders and consumers respond to current environmental trends and challenges.

The GEO process benefits from a worldwide network of GEO Collaborating Centres, resource centres such as the Global and Regional Integrated Data (GRID) centres, and a variety of national and regional partner institutions. UNEP provides capacity building support and guidance to many of its partners so they can provide relevant and compatible information that can be incorporated into sectoral, global, regional or national assessments. This family of assessment partners generated several new products in 2002 including the *Africa Environment Outlook*, the Internet-based *UN Atlas of the Oceans* (page 35), and the *World Atlas of Biodiversity* (page 58).

A growing tool for the sharing and provision of environmental information is the Internet. UNEP provides a wide range of information through its web site www.unep.org. Decision makers, scientists and other interested parties can also get on-line access to targeted regional and sectoral environmental data and information through the UNEP.Net network. Access to information for decision making and early warning of potential environmental disasters is growing in importance as the pressure on the Earth's resource base increases. This is especially true for climate change. UNEP reports in 2002 on the haze over much of South Asia and the threats posed by glacial meltwaters have helped to highlight human vulnerability to environmental changes brought about by global warming.

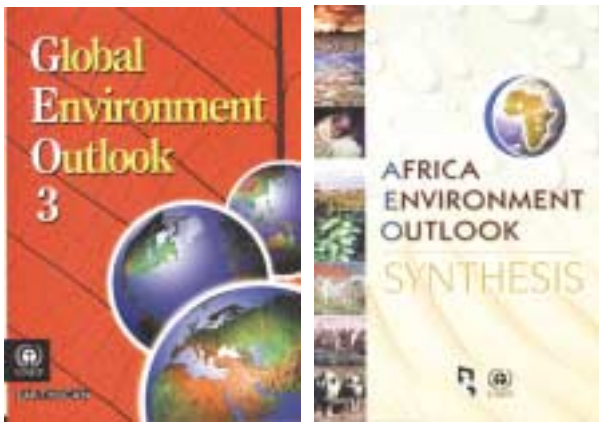
As environmental awareness grows, UNEP is also increasingly being asked to assess and provide guidance on ongoing and emerging environmental threats and the prevention of environmental emergencies. Examples include an assessment of the threats to human health and the environment of mercury (page 46), UNEP's longstanding activities in preventing, preparing for and responding to environmental emergencies, and UNEP's growing involvement in post-conflict environmental assessment.

Community members using Global Positioning System technology to map the boundary of their forest reserve in Sumatra, Indonesia, to prevent illegal logging.

The *World Atlas of Biodiversity*, produced by UNEP in 2002, highlighted the worldwide loss of forests and the biodiversity they contain.

GLOBAL ENVIRONMENT OUTLOOK

GEO-3, the third Global Environment Outlook report published by UNEP, was launched in May 2002 in the six official United Nations languages. Like its predecessors, *GEO-3* commanded considerable media attention worldwide. At its launch, UNEP Executive Director Klaus Toepfer stated: "*GEO-3* is neither a document of doom and gloom, nor a gloss over the acute challenges facing us all. It is the most authoritative assessment of where we have been, where we have reached, and where we are likely to go." Designed to provide a major input to the WSSD process, *GEO-3* looked back over 30 years of environmental change and human development and presented four scenarios for the next 30 years giving the likely environmental and socio-economic impacts of various development policies.



GEO-3 and other UNEP assessment products are available from the UNEP on-line bookshop www.earthprint.com.

Up-to-date information on UNEP assessments is available at www.unep.org/dewa.

The data sets used in the GEO reports and other UNEP assessments can be found at geodata.grid.unep.ch.

The Global Environment Outlook reports are the culmination of a cross-sectoral, participatory and consultative assessment process involving a worldwide network of collaborating centres. A major challenge of producing such comprehensive integrated reports is making sure that the information being fed in is compatible and complementary. To achieve this UNEP has undertaken considerable capacity strengthening at national and regional level. The result has been a series of credible and influential assessment products. As well as the main GEO reports, GEO-related outputs include *GEO-Active*, a CD-ROM environmental education tool for teachers and youth, and various regional and national environmental outlooks, for instance for Africa, North America, the Caucasus and Brazil.

With the publication of *GEO-3*, the GEO process is heading into a new phase. It is proposed that UNEP will continue to produce a comprehensive Global Environment Outlook as the major authoritative United Nations environment assessment, but on a five-yearly basis. This will allow for clear identification of changes, trends and issues related to the global environment. In the intervening years UNEP will produce annual statements on the environment highlighting significant events and achievements and drawing attention to emerging issues. UNEP will continue producing thematic and cross-sectoral assessments and early warning reports, as well as regional, sub-regional and national assessments, which will also provide the foundation for each comprehensive five-yearly Global Environment Outlook. UNEP and its assessment partners will also contribute to other environmental assessments, for instance work commissioned by the Intergovernmental Panel on Climate Change (IPCC), the Millennium Ecosystem Assessment, and the Global International Waters Assessment (GIWA).

July 2002 also saw the launch of the Africa Environment Outlook (AEO), one of the growing number of products being generated by the GEO process. The report was compiled by UNEP for the African Ministerial Conference on the Environment (AMCEN). Six collaborating centres and hundreds of experts were involved in producing the most comprehensive and authoritative assessment of Africa's environment ever seen.

AEO's combination of state of the environment reporting and policy analysis will be an invaluable resource for African governments as they prepare to tackle the root causes of the continent's environmental and socio-economic problems through the New African Partnership for Development (NEPAD) initiative.

SHARING AND PROVIDING ENVIRONMENTAL INFORMATION

Knowledge is power. UNEP is empowering governments, institutions and communities worldwide by enhancing access to environmental information in accordance with Chapter 40 of Agenda 21 and Principle 10 of the 1992 Rio Declaration. An increasingly important tool for achieving this is the Internet. The UNEP web site www.unep.org contains comprehensive information about UNEP activities, access to data and information on environmental and cross-sectoral issues, and links to a wide variety of partner institutions operating in the environmental arena. Visits to the UNEP web site www.unep.org have grown 400 per cent in five years, the most popular areas of interest being media releases, ozone, the UNEP GEO reports, and biodiversity and ecosystems information, which is hosted at www.unep-wcmc.org

Access to and exchange of environmental information is also provided through UNEP's Infoterra global information network, which operates in 177 countries, and through the Internet-based UNEP.Net network (www.unep.net). UNEP.Net provides an interactive Web portal for sharing scientific data, information and knowledge about the environment. It has been growing in strength and scope since its launch at the twenty-first Session of the UNEP Governing Council in 2001. Environmental organisations worldwide contribute information to UNEP.Net and benefit from the services it provides. UNEP.Net thematic sub-portals now include information on climate change, freshwater, protected areas, socio-economic issues and environmental law. Various regional portals are also available, with more under development, and there are environmental profiles for over 100 countries.

In Europe, access to environmental information has been enhanced by the Aarhus Convention. At the convention's first Meeting of Parties (Lucca, Italy, October 2002), UNEP, in partnership with the United Nations Economic Commission for Europe, was given a central role in the convention's implementation. A Task Force on Electronic Tools was established to identify and mobilise best practices in modern information and communication technologies, while a capacity building service and information clearing-house will assist the countries of Central and Eastern Europe, the Caucasus and Central Asia to meet their obligations under the convention.

COPING WITH CLIMATE CHANGE

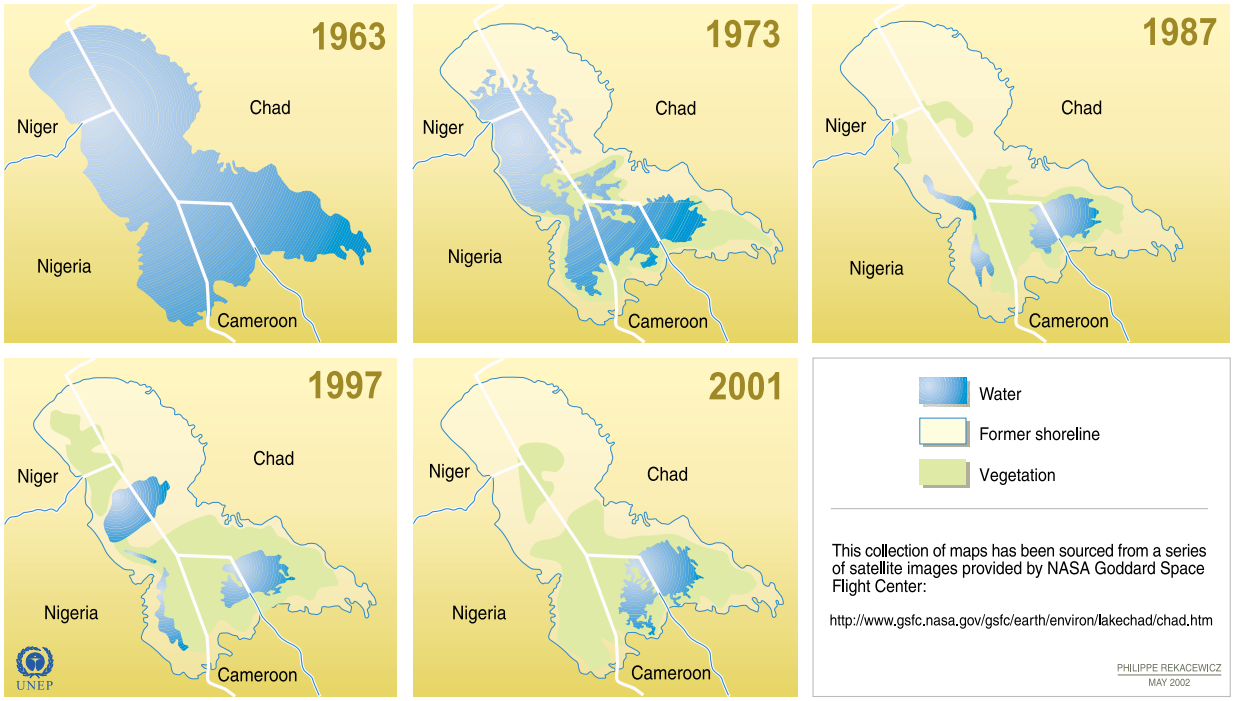
The threat posed by global warming lies behind nearly all the assessments and forecasts in *GEO-3*. The potential consequences of climate change include loss of life and livelihoods, the displacement of communities, the depletion of food and water resources, and outbreaks of disease. Evidence compiled by the Intergovernmental Panel on Climate Change (IPCC), jointly administered by UNEP and the World Meteorological Organisation (WMO), clearly shows that most of the warming of the past 50 years is due to human activity. An IPCC technical paper published in April 2002 highlights the increasing damage to biodiversity, which is already under pressure from human activities like soil, water and air pollution, land use change and habitat fragmentation (see page 55).

Among the most visible manifestations of global warming are the acceleration of polar ice loss and the steady retreat of glaciers worldwide. A UNEP report released in April 2002 warned of the dangers of flooding caused by glacial meltwaters filling Himalayan lakes to bursting point. Glacial Lake Outburst Floods are not a new phenomenon, but

Potential climate change impact

Source: United States Environmental Protection Agency (EPA)

Natural and anthropogenic factors affecting Lake Chad



Since 1963, Lake Chad in Africa has shrunk to almost a twentieth of its original size, due to climatic changes and unsustainable diversion of river waters for agriculture. The effects of climate change are expected to worsen the already threatened arid zones of Africa.

appear to be becoming more frequent. Their impact is considerable, posing a threat to human lives, property and infrastructure, such as hydro-electric schemes.

While developing countries stand to be worst affected by climate change, the developed world is by no means immune. A UNEP Financial Initiatives report (page 21), warns that global warming could bankrupt the insurance industry and wreak havoc among the world's stock markets and financial centres. The mounting evidence of human-induced global warming is increasing momentum for change. Investment by the private sector in renewable energy (page 40) is growing, as is acceptance by developed countries of the need to ratify the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC), which provides mechanisms for reducing greenhouse gas emissions worldwide. The Kyoto Protocol will become law when a minimum of 55 countries responsible for at least 55 per cent of 1990 greenhouse gas emissions have ratified it. Among the most recent countries to ratify is Canada, in December 2002. The total of ratifying countries by mid-January 2003 was 102, accounting for 43.9 per cent of 1990 greenhouse gas emissions. When Russia, which represents 17.4 per cent of 1990 emissions, ratifies the Kyoto Protocol, it will enter into force.

One of the tools of the Kyoto Protocol is the Clean Development Mechanism (CDM), where developed countries can offset their emissions by investing in, amongst others, forestry or clean energy projects. In anticipation of the Protocol's coming into force, UNEP is working with 12 developing countries to build their capacity to participate in the CDM. A four-year project, funded by the Netherlands and implemented by the UNEP Collaborating Centre on Energy and the Environment (UCCEE), will generate understanding of the opportunities offered by the CDM in the energy sector and develop capacity to formulate and implement projects.

Even if the Kyoto Protocol comes into force, the impacts of climate change will remain a pressing and long-term issue. UNEP, largely through its involvement in the Global Environment Facility (GEF), is therefore placing increased emphasis on helping countries assess and reduce their vulnerability to climate change. Workshops have been organised to help countries improve climate monitoring under the Global Climate Observing System (GCOS), scientists from developing countries have been trained in climate change scenario development, and governments are being helped to prepare and implement national programmes for adapting to climate change.

AIR POLLUTION IN ASIA

In August 2002, a UNEP-sponsored report highlighted the potential economic and health effects of the vast haze cloud which periodically gathers over South Asia. *Asian Brown Cloud: Climate and Other Environmental Impacts* says that the blanket of pollution caused by forest fires, inefficient cookers that use biomass such as dung and wood, and the burning of fossil fuels in vehicles and power stations is affecting regional weather patterns including the monsoon on which so many people in Asia depend.

Over the next three decades Asia's population is projected to reach 5 billion. It is therefore imperative that cleaner technologies and more sustainable land management policies are introduced to reduce the effects of airborne pollution. UNEP is pursuing a number of strategies to promote the use of clean and renewable energy in the developing world as well as in developed countries. One example (see page 40) is support for micro-finance schemes for village-level solar technology in southern India.

While the Asian Brown Cloud study focuses on the impacts of haze in South Asia, the problem is comparable in South East Asia and China. In June 2002, environment ministers of the Association of South East Asian Nations (ASEAN) signed an agreement on Transboundary Haze Pollution. The agreement, drafted with UNEP assistance, addresses policy and technical matters related to air pollution. Haze from fires which destroyed about 10 million hectares of Indonesia's forests in 1997–8 exposed more than 20 million people in the region to long-term health risks and caused nearly $10 billion worth of economic losses.

UNEP is also working in China, Indonesia, Mongolia, Philippines, Sri Lanka, Thailand and Vietnam on a three-year project: Greenhouse Gas Emission Reduction from Industry in Asia-Pacific. Targeting the chemicals, iron and steel, pulp and paper, and cement and lime industries, the project includes capacity building, the implementation of 40 pilot projects, and a review of government policies and approaches to energy use.

ENVIRONMENTAL EMERGENCIES

Disasters with environmental consequences are striking with increasing magnitude, complexity and frequency, and taking an increasing toll on human populations. The list of potential disasters is long and varied, ranging from natural disasters such as earthquakes, floods and volcanic eruptions, to man-made and technological accidents such as oil and chemical spills. While not all these events can be prevented, many can be foreseen and their effects mitigated. UNEP is increasingly being asked to look at the environmental implications of disasters, before and after the event, and to recommend strategies for reducing human vulnerability. This includes its vulnerability assessment work on floods in the Yangtze River Basin in China and a growing series of Awareness and Preparedness for Emergencies at Local Level (APELL) guidelines for industry.

In 2002, UNEP provided environmental expertise to the United Nations Disaster Assessment and Coordination Team and, in collaboration with OCHA, helped mobilise and coordinate urgent international assistance for a variety of environmental emergencies. Examples include the volcanic eruption in Democratic Republic of Congo (January), a munitions dump explosion in Nigeria (January), a chemical spill in the port of Djibouti (February) and a dam collapse in Syria (June). A report on the analysis of the emergencies UNEP has worked on and the possible policy implications for national governments and the international community will be presented to the UNEP Governing Council in February 2003.

An expanding field of UNEP expertise lies in the field of post-conflict environmental assessment. Building on foundations laid by the Balkans Task Force, when UNEP was asked to assess the environmental consequences of the wars in the former Republic of Yugoslavia, UNEP has since gone on to assess the extent of contamination caused by the use of depleted uranium ammunition in Kosovo, Serbia and Montenegro. UNEP also undertook missions in 2002 to assess the environmental impacts of the conflicts in Afghanistan and in the Occupied Palestinian Territories. Both reports will be presented to the UNEP Governing Council in February 2003.

The business of sustainable development

One of the contrasts between the 1992 Earth Summit and WSSD was the greater participation of the private sector in forging partnerships and influencing policy. This reflects the recognition among governments and multilateral institutions, as well as by business itself, that the private sector has a crucial role to play in sustainable development. With its history of innovation the private sector can find solutions to many of the development issues that need to be faced over the coming decades, for instance by finding new approaches to supplying sanitation, fresh water, and clean, affordable energy.

UNEP's strong relationships with industry are helping to incorporate environmentally responsible thinking throughout the sector. Examples include the Tour Operators Initiative for sustainable tourism, the Global e-Sustainability Initiative involving key tele-communications companies, a wide range of cleaner production initiatives, the Partnership for Clean Fuels and Vehicles, and a growing portfolio of projects to promote financing for sustainable development. Private sector operations are increasingly realising that social and environmental responsibility can provide both short and long-term rewards, and that ignoring the triple bottom line of sustainable development will ultimately be detrimental to their own business. That is why companies are signing up to programmes such as the United Nations Secretary-General's Global Compact and UNEP's Global Reporting Initiative.

Attention to the bottom line also drives the UNEP Finance Initiatives (FI), which are helping raise awareness worldwide of the financial—as well as societal—costs of failing to tackle global climate change. Combined with UNEP's authoritative assessments like GEO and the IPCC Assessment Reports (page 15), programmes like the FI are not only helping encourage governmental commitment to the Kyoto Protocol, but are promoting investment in clean and renewable energy (page 39) by financial institutions and other investors.

Anti-globalisation protesters, Washington DC, USA, September 2002. The challenge of sustainable development is to make globalisation work for all members of society and the environment.

GLOBALISATION, TRADE, ENVIRONMENT AND DEVELOPMENT

The process of globalisation has enormous potential to improve the lives of billions of people worldwide, and to also spread the means and ability to protect the environment and sustainably manage natural resources. However, so far, enhanced trade and investment flows have benefited few, and have sometimes damaged the environment and the natural resource base. The challenge of sustainable development, recognised at WSSD, is to make trade, finance and globalisation work for all members of society and the environment. To this end, UNEP activities include research, capacity building, and policy design to ensure that the objectives of environmental protection and equitable development are integrated into trade and other economic policies at national, regional and international levels.

UNEP is enhancing countries' abilities to assess the environmental as well as developmental impacts of trade, to integrate environmental considerations into macroeconomic policies more generally, and to design and use efficient economic instruments for environmental policy. The UNEP-UNCTAD Capacity Building Task Force on Trade, Environment and Development (www.unep-unctad.org/cbtf) has moved into an expanded second phase following increased financial support secured at WSSD. UNEP's capacity building activities are designed to enhance the effective participation of developing countries in international negotiations on these issues, particularly in the World Trade Organisation (WTO).

At the centre of UNEP's work on trade are its country projects on integrated assessment (see www.unep.ch/etu). These projects use a learn-by-doing method that helps national experts to identify the environmental and developmental impacts of economic and trade policies, and the measures to address them. UNEP ensures strong involvement of national experts and institutions in these projects (which also builds capacity) and has developed a reference manual on integrated assessment of trade-related policies and a training resource manual on Environmental Impact Assessment. Poverty eradication is now being given a higher priority in UNEP's work, to assist governments in integrating trade, poverty alleviation and environmental protection objectives.

UNEP also continues to develop and promote its multi-stakeholder dialogue process aimed at building synergies between multilateral environmental agreements and the WTO. Thematic research projects have examined critical trade-related policy measures with significant environmental implications such as energy and fisheries subsidies, intellectual property rights, and the relationship between multilateral trade rules and multilateral environmental agreements. All these activities have taken on increased importance with the WSSD Plan of Implementation and with the initiation of formal WTO negotiations on trade and the environment.

WORKING WITH THE PRIVATE SECTOR

Demand and pressure for corporate environmental and social responsibility is coming from all sides. National and local governments are increasingly looking at the environmental costs of business, and more consumers prefer to invest in companies and goods that benefit local communities and do least harm to the environment. These facts were underlined in the UNEP progress report prepared for WSSD, *Industry as a Partner for Sustainable Development*, based on 22 sector reports prepared by relevant industry associations.

The UNEP report *Tomorrow's Markets, Global Trends and Their Implications for Business*, prepared in collaboration with the World Business Council for

Sustainable Development and the World Resources Institute, also analyses global economic, social and environmental trends so businesses can identify opportunities and find innovative solutions to the needs of sustainable development. At WSSD, 10 such innovators were highlighted from 32 businesses around the world that received ICC/UNEP World Business Awards for Sustainable Development Partnerships in 2002 for their significant contribution to sustainable development (www.iccwbo.org).

It is in that context that UNEP has developed a number of partnerships with various industry sectors, in particular finance and insurance, the information, tourism and automotive industries, construction and advertising. For example, the UNEP Finance Initiatives, a partnership between UNEP and 295 financial institutions worldwide released a report *Climate Change and the Financial Services Industry* in October, just prior to the sixth meeting of the United Nations Framework Convention on Climate Change. The report says the increasing frequency of severe climatic events could stress insurers, reinsurers and banks to the point of insolvency. Devastating floods in Europe, forest fires in the United Sates and the failure of the monsoon in Asia are just a few examples of natural disasters whose financial toll is estimated at $70 billion for 2002.

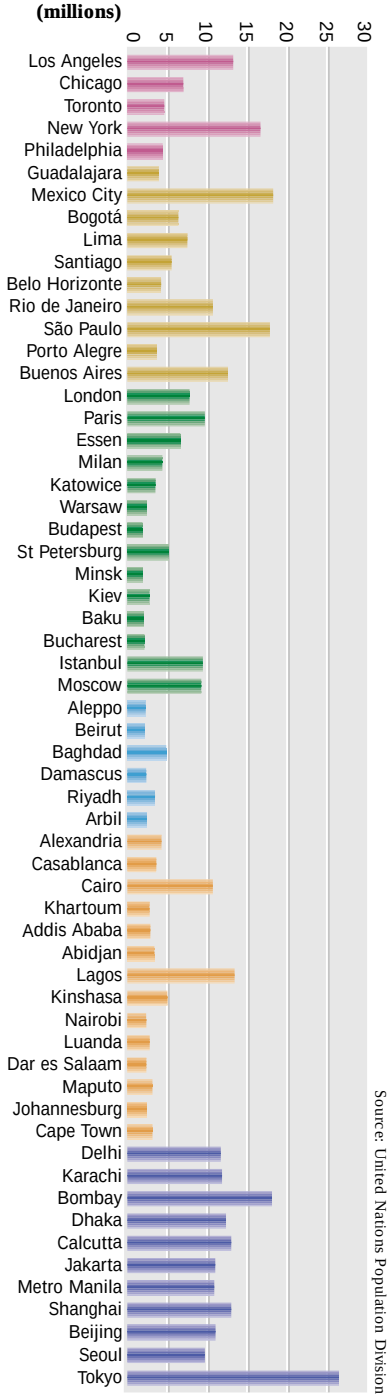
To help monitor and evaluate progress in the implementation of voluntary initiatives for sustainable development, UNEP in partnership with the Coalition for Environmentally Responsible Economics (CERES), with backing from the UN Foundation, has supported the development and establishment of the Global Reporting Initative (GRI) as a UNEP collaborating centre. The goal of the GRI is to develop an internationally agreed reporting format that will enable companies to prepare and publicly report on their environmental, social and economic performance. GRI published the second version of such sustainability reporting guidelines (see www.globalreporting.org) at WSSD, which endorsed the GRI as a key tool to demonstrate corporate responsibility.

IMPROVING THE URBAN ENVIRONMENT

Nearly half the world's population lives in cities; 70 per cent of the world's urban dwellers are in Asia, Latin America and Africa. By 2030, 4 out of 5 billion urban dwellers will be living in the developing world. The implications of urban growth include increased unemployment and poverty, declining air quality, inadequate urban services and overloaded infrastructure—especially solid and liquid waste management. With the proportion of people living in cities expected to reach 65 per cent by 2050, sustainable management of the urban environment is an obvious priority for all governments and their partners, not only to address the health issues threatening urban residents, but also because urban pollution is increasingly contributing to national, regional and global environmental issues, such as climate change and transboundary water pollution.

UNEP is strengthening its involvement in urban issues. It has established an urban environment section in its Division of Policy Development and Law, and is strengthening its cooperation with its sister organisation UN-HABITAT which is also based in Nairobi, Kenya, and which was accorded full United Nations Programme status in 2002. Information on sound urban management is disseminated by IETC—the UNEP International Environment Technology Centre, based in Japan (www.unep.or.jp). Services include maESTro, a free searchable Internet directory of environmentally sound technologies; EMERALD—the Environmental Management Exchange and Resource Alliance for Local

Population of selected major cities of the world by region
(millions)



Source: United Nations Population Division

Ten of the world's megacities are in Asia and the Pacific - Tokyo, with more than 26 million inhabitants, is currently the world's largest city.

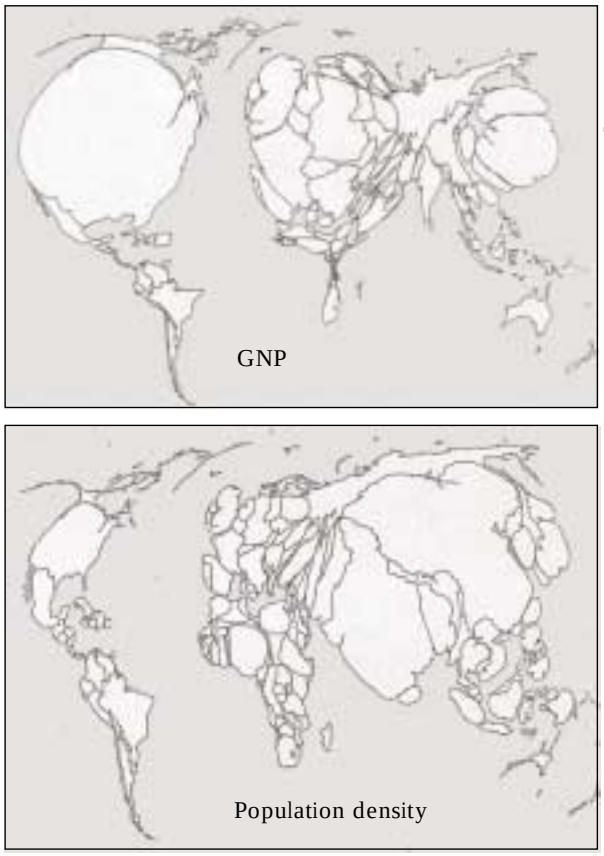
Development; and ESTIS, a new web-based knowledge management tool for the publication and sharing of information on environmentally sound technologies. Among the events organised by IETC in 2002 was an Asia Pacific Regional Integrated Waste Management Strategy workshop to define a framework for technology cooperation among ASEAN governments.

To contribute to the improvement of urban air quality in major and megacities in Asia, UNEP has also initiated the APMA project (Air Pollution in the Megacities of Asia) in collaboration with WHO, the Stockholm Environment Institute and the Korea Environment Institute. In 2002, a regional workshop brought together policy makers and experts on air quality management to discuss a strategic framework and benchmarking document drafted by APMA to strengthen technical and institutional capabilities and mechanisms for cooperation on urban air pollution among countries in the Asian region.

SUSTAINABLE PRODUCTION AND CONSUMPTION

Environmental degradation has two principal causes: the poverty of the world's majority and the high consumption of natural resources by the affluent minority. A potential paradox underlying sustainable development and the achievement of the Millennium Development Goals is that, as people's livelihoods improve, their demand for goods and services increases. Avoiding that demand leading to environmental degradation and increased health risks as air and water becomes polluted by the waste by-products of production and consumption is a challenge that needs to be faced by governments, industry and consumers.

As part of its contribution to WSSD, UNEP produced a collection of reports entitled *Industry as a Partner for Sustainable Development*. The 22 reports (www.uneptie.org/outreach/wssd/sectors/reports) cover a broad range of industry sectors, including finance and insurance, steel and chemicals, tourism, waste management and road construction. Each report was written by industry associations in cooperation with the United Nations, labour and non-governmental organisations.
The conclusions of the overview report *Ten Years after Rio: the UNEP Assessment* are not promising.



Source for maps: World Resources Institute

Fifteen per cent of the world's population accounts for 56 per cent of consumption. The poorest 40 per cent account for only 11 per cent of total consumption. If everybody lived like the most affluent 15 per cent, we would need 2.6 additional planets to support us all. Therefore, if the Millennium Development Goals are to be achieved, unsustainable patterns of production and consumption will have to be addressed.

The state of the planet's environment is worsening, yet in most industry sectors only a few companies are striving for sustainability. For the rest it is business as usual. While there are good examples of sustainable practices—which need disseminating and reproducing—and voluntary initiatives that can be built on, a main lesson of the reports is that governments have a crucial role to play. By combining regulatory, economic and voluntary instruments and by supporting technological innovation, they can encourage the greatest adoption of best practices.

However, even here the news is not good. A joint assessment by UNEP and Consumers International, also done in preparation for WSSD, showed that, three years after acceptance by the United Nations General Assembly, government implementation—or even knowledge—of the United Nations Sustainable Consumption Guidelines was disappointing, with few promoting research on sustainable consumption, using economic instruments such as 'green taxes', or

monitoring their nation's progress towards sustainable consumption. The message, then, is that much still needs to be done to incorporate sustainable production and consumption into mainstream thinking. UNEP has a number of programmes to achieve that goal (www.uneptie.org/pc/sustain) including a Youth and Sustainable Consumption Strategy (page 26) and a Life Cycle Initiative, launched in April 2002, which responds to the call of the world's environment ministers in the Malmö Declaration to develop "cleaner and more resource-efficient technologies for a life-cycle economy."

The UNEP Life Cycle Initiative was launched at the seventh International High-Level Seminar on Cleaner Production. The UNEP Cleaner Production programme (www.uneptie.org/pc/cp) oversees the voluntary International Declaration on Cleaner Production—which received 74 new high-level signatories in 2002—and supports, in collaboration with UNIDO, a growing network of 23 National Cleaner Production Centres in developing countries and those with economies in transition. UNEP has provided key inputs and support to National Cleaner Production Centres to build capacity in fields like environmental technology assessment, facilitating implementation of multilateral environmental agreements, and integrating cleaner production with energy efficiency and sustainable consumption. UNEP has also supported Regional Round Tables in Asia-Pacific, Africa and Europe, as important regional mechanisms for information exchange and dialogue.

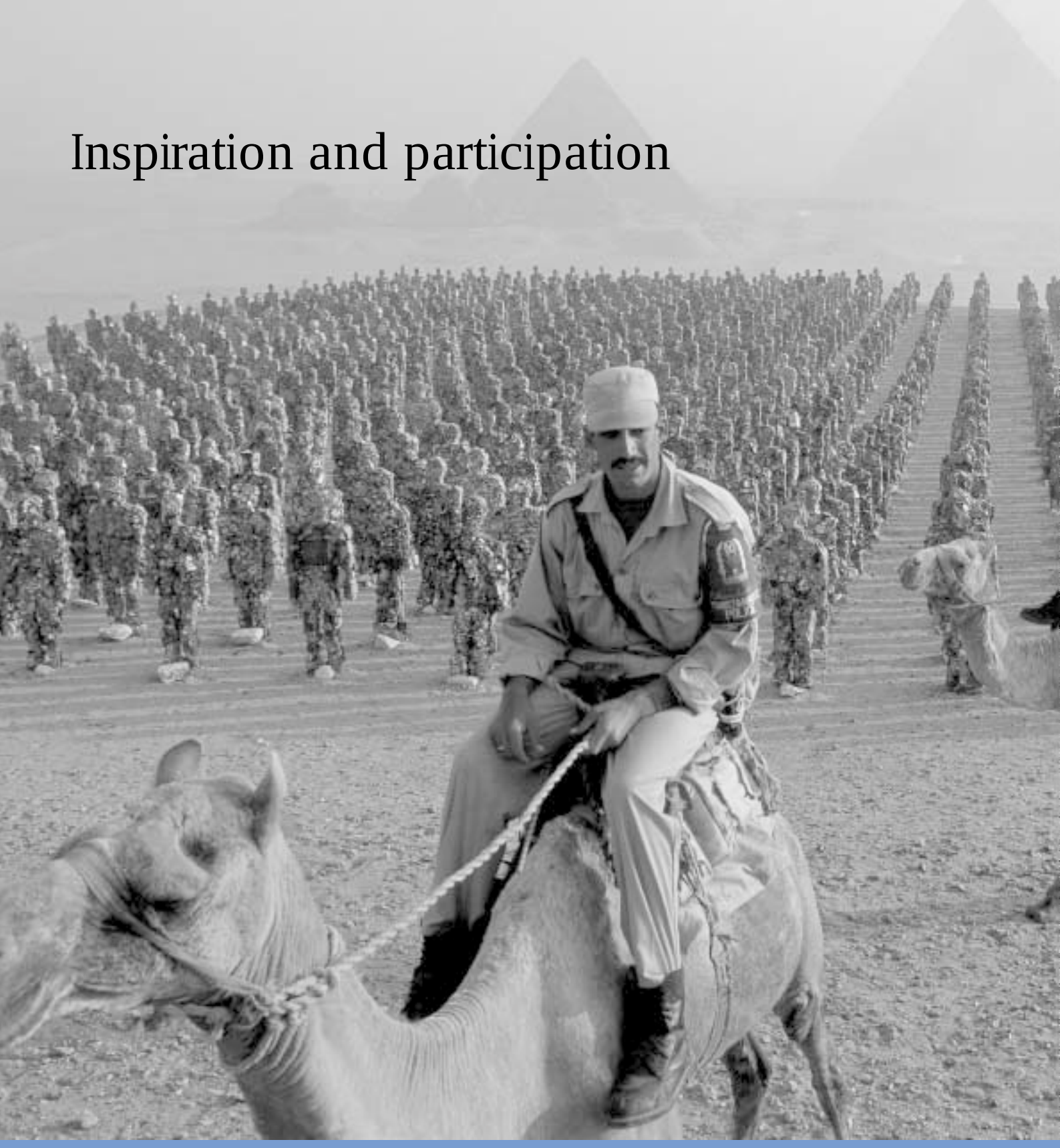
SUSTAINABLE TOURISM

Tourism is one of the world's largest and most widespread industries. A 2002 report on travel and tourism prepared for UNEP shows that the sector accounts for 11 per cent of global gross domestic product, 8 per cent of all jobs and 9 per cent of all capital investment. For many developing countries and small island developing states tourism is often the largest income generator. The industry therefore has great potential to contribute to the achievement of the Millennium Development Goals. On the other hand, badly managed tourism can destroy biodiversity, trample indigenous people's rights and overload local infrastructure.

One of the findings of the tourism sector report is that the fragmented nature of the tourism industry—which is dominated by small and medium-size enterprises—means private and public sector responsibilities are unclear and environmental, economic and social problems are increasing. Governments are only just beginning to take a decisive role in developing sustainable, economically successful tourism. The report notes that strong partnerships are needed between governments, the tourism industry, labour and civil society to create workable policies and logical planning and development. UNEP is facilitating this process in a number of ways (www.uneptie.org/pc/tourism). It is helping governments develop sustainable tourism policies, including destination management guidelines, and it is working with the private sector through voluntary initiatives such as the Tour Operators' Initiative for Sustainable Tourism Development (TOI). In November 2002, the UNEP TOI launched a set of key social and environmental performance indicators to encourage environment friendly and socially responsible business practices.

One such practice, by definition, is ecotourism, which promotes conservation, sustainability and biological diversity. As a development tool, ecotourism can advance the goals of the Convention on Biological Diversity by strengthening protected area management and increasing the value of ecosystems; generating income, jobs and business opportunities, and involving communities and indigenous people in planning and managing ecotourism businesses. UNEP work in 2002—the International Year of Ecotourism—included the publication of *Ecotourism. Principles, Practices and Policies for Sustainability* as an input to the World Ecotourism Summit, May 2002, Quebec, Canada. UNEP also announced a joint project with UNESCO and the RARE Center for Tropical Conservation to use tourism to enhance conservation at six World Heritage Sites in Central America and Indonesia.

Inspiration and participation



Much of the credit for the increase in global awareness about the environment over the past three decades must go to civil society. The activism of non-governmental organisations and concerned individuals has brought what was once a fringe subject into government and business decision making worldwide. UNEP is committed to increasing civil society participation in sustainable development at all levels. UNEP supported civil society participation at WSSD, and is enhancing its involvement in UNEP activities, including the proceedings of the Governing Council where, as part of the annual Global Ministerial Environment Forum, UNEP convenes a Civil Society Forum and a Global Youth Retreat.

© Thomas Hoepker / Magnum Photos

An army of 'trash people' in front of the pyramids of Giza, Cairo, Egypt. Artist H.A. Schult's 1,000 life-size humanoids made from mostly high-tech waste are being exhibited at some of the world's most spectacular sites. High-tech waste is the most rapidly growing waste problem in the world. Goods like mobile phones and computers which have a high rate of obsolescence often contain hazardous materials such as cadmium, lead and mercury (see page 46).

UNEP also helps to empower civil society by providing it with the knowledge it needs to press governments and industry to adopt sustainable policies. UNEP is increasingly being seen as the first port of call for authoritative environmental information. UNEP helps to keep environmental issues and developments in the spotlight through assessments and reports, which command wide international attention, through regular media releases, and through its web site www.unep.org. On television, UNEP's weekly 30-minute *Earth Report* programme, produced in partnership with the independent Television Trust for the Environment (TVE), reaches over 750 million homes worldwide (www.tve.org).

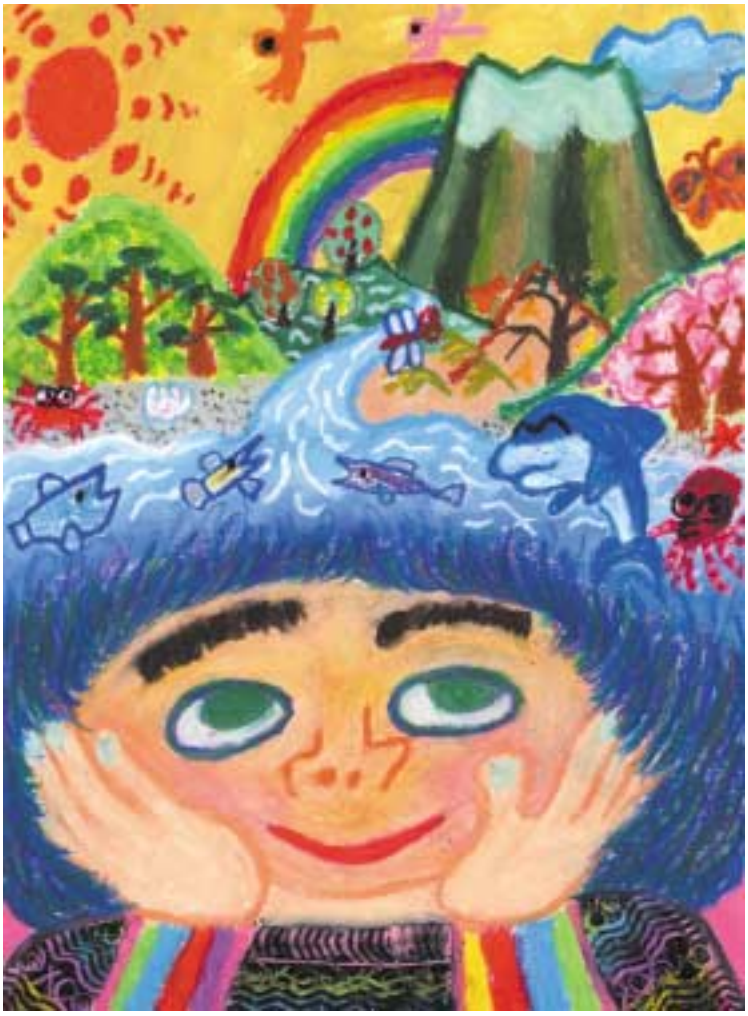
Among the most popular *Earth Report* programmes are the monthly *Hands On* bulletins which provide examples of practical, affordable and replicable actions people are taking around the world to meet the challenges of sustainable development. The inspiration provided by programmes like *Hands On* is essential for maintaining and generating momentum for sustainable development. UNEP also highlights inspirational examples and rewards innovation and endeavour through its Global 500 awards and the UNEP Sasakawa Environment Prize. A new initiative—the UNEP Best Practices and Success Stories Global Network—is taking the theme of inspiration a step further by facilitating the wider sharing of information about tried and tested tools and technologies for sustainable development.

As well as education in the broad sense of information provision, UNEP is engaged in environmental education at university level, including a postgraduate course on Environmental Management for Developing Countries, which celebrated its 25th anniversary in 2002, and a new initiative with the United Nations University to establish a Global Virtual University to promote environmental and development education via the Internet. UNEP is also expanding its work with children and youth. UNEP's work in this arena is not simply about education, it is also about participation. UNEP is helping give young people a voice in the highest forums. At WSSD, the challenge to delegates to deliver a sustainable future presented by children from the UNEP Youth Advisory Council was incorporated into the Johannesburg Declaration.

CHILDREN, YOUTH AND SPORT

Reaching children and youth is imperative for sustainable development. They are a significant consumer group, and they are the next guardians of the planet. UNEP is committed to educating youth and enabling them to participate fully in decision making and advocacy for sustainable development (www.unep.org/children_youth). At the first Global Youth Forum in Denmark in May 2002, 100 young people from 60 countries, supported by UNEP and the Danish organisation Nature and Youth, reviewed progress on sustainable development since 1992 and prepared a statement for WSSD. The Johannesburg Earth Summit was also the focus of the biennial UNEP Children's Conference on the Environment, held in May in Vancouver, Canada. Children from the conference were subsequently invited to WSSD where their challenge to world leaders was incorporated into the Johannesburg Declaration.

UNEP has a vigorous children and youth programme, and is in the process of further strengthening it with new strategies for children and youth, and sport and the environment, being presented to the UNEP Governing Council in 2003. As part of a broader campaign on youth and sustainable consumption UNEP has a joint initiative with UNESCO. The final product of this initiative, *youthXchange*, was released in April 2002. Comprising a web site (www.youthxchange.net) and a hard copy training kit (available from the UNEP bookshop); *youthXchange* provides youth, NGOs and educators with resources to establish youth-friendly awareness raising events and training on adopting more sustainable lifestyles. Other UNEP products for young people include the twice-yearly *Leave It To Us* children's magazine, *Teen Planet*, a magazine for youth in Europe. and *Taking Action: An Environmental Guide for You and Your Community*, which will be launched in 2003 to provide information on environmental issues and tips on how they can be addressed at the local level.



Mario Kajio (Age 9) Japan

"At the beginning of this Summit, the children of the world spoke to us in a simple yet clear voice that the future belongs to them, and accordingly challenged all of us to ensure that through our actions they will inherit a world free of the indignity and indecency occasioned by poverty, environmental degradation and patterns of sustainable development."

Johannesburg Declaration

Also in February 2003 a global campaign entitled Plant for the Planet is being simultaneously launched in Kenya and Bangladesh. Children and schools will adopt areas to plant trees and care for them in their communities. The campaign, which is supported by UNEP and the Foundation for Global Peace and Environment (FGPE) will provide a valuable learning experience and contribute to the greening of various cities and communities. UNEP and FGPE are also combining to support the twelfth UNEP Global Painting Contest. Prizes will be awarded for the best 500 entries.

ENHANCING THE ROLE OF CIVIL SOCIETY

As the world strives to create a coherent system of governance for sustainable development, the involvement of civil society is crucial. The governments of the world recognised this at WSSD. The Johannesburg Declaration states: "We recognise sustainable development requires a long-term perspective and broad-based participation in policy formulation, decision making and implementation at all levels. As social partners we will continue to work for stable partnerships with all major groups respecting the independent, important roles of each of these."

However, national level recognition of civil society organisations as true partners in development remains inadequate. Exactly how it can be achieved is still under discussion. During the seventh special session of the UNEP Governing Council/GMEF held in February 2002, governments requested the Executive Director to further develop a strategy on enhancing civil society in the work of UNEP. Throughout 2002 UNEP undertook broad consultations with civil society, including industry, governments and UNEP divisions to elaborate a comprehensive strategy. As a result of this dialogue UNEP has agreed to two principal focuses for engagement with civil society. One is at the level of governance and policy formulation; the other is at the level of programme operations. What they have in common is a need for an institutional environment with good information and communication mechanisms in order to ensure qualitative exchange between UNEP and its partners at both levels. This institutional framework forms the third pillar of UNEP's new strategy. The UNEP Civil Society and NGOs Unit, which initiated the strategy, has developed a web site: www.unep/dpdl/cso and an interdivisional UNEP task group to discuss civil society issues.

Just prior to the Governing Council meeting, the annual two-day Civil Society Forum will meet to determine its input into the 2003 UNEP Governing Council/GMEF. The 2002 Civil Society Forum, held in Cartagena, Columbia, consolidated the work of regional forums held during 2001, enabling the presentation of a clear common civil society position to the GMEF and to WSSD. At WSSD itself, UNEP supported and organised various side events, including a high-level roundtable on Cultural Diversity and Biodiversity for Sustainable Development. The interlinkages and the reciprocity of cultural diversity and biodiversity have been recognised as essential to achieving sustainable development. UNEP envisages wider engagement in this field and will address the topic of environment and cultural diversity during the 2003 Civil Society Forum and Governing Council/GMEF.

MARK EDWARDS / Still pictures

"Again and again, in recent years, we have seen governments, corporations and other big powers obliged to rethink and adjust their polices under pressure from civil society movements."

Kofi Annan, December 2002

INSPIRATION FOR SUSTAINABLE DEVELOPMENT

Each year on June 5, the international community celebrates World Environment Day (WED) by organising events to inspire reflection on the value of the environment and action to protect it. The WED theme for 2002—UNEP's thirtieth anniversary year—was Give Earth a Chance. The host city of WED 2002, Shenzhen, China, was also one of eight Global 500 award winners. Global 500 awards are given annually by UNEP to recognise significant achievements in sustainable development by individuals, groups and communities around the world. The 2002 laureates included two cities in China, a Jordanian princess, and five ecological groups from Angola, Ecuador, Kazakhstan, the Philippines and the United States of America.

WED and its accompanying Global 500 awards are part of UNEP's work to inspire action to preserve the environment which includes media work, publications, campaigns, the dissemination of best practices and capacity building for sustainable development in every region of the world. Among the most high-profile inspirational events of the year is the annual presentation of the UNEP Sasakawa Environment Prize (www.unep.org/sasakawa2). This prestigious award is given to an individual or institution for outstanding lifetime commitment and achievement in the field of sustainable development. The winner in 2002, Ashok Khosla, must rank as one of the most deserving winners yet. In a lifetime of service to the environment and the poor of his native India, Dr. Khosla has worked in academia, in government and for the United Nations.

However, it is his work of the last 20 years developing innovative business solutions which combine poverty alleviation and environmental protection that has made Ashok Khosla a true inspirational figurehead. By creating technologies that not only help change the lives of India's poor, but which can be transported and replicated across the globe, Dr Khosla has provided an example of what can be achieved. Examples of technologies developed by his organisation Development Alternatives include building bricks that don't need to be fired, thus saving valuable energy, and paper made from recycled cotton waste which is now being used to make biodegradable fuel filters that are now being used by Toyota and Mercedes.

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BEST PRACTICES AND SUCCESS STORIES

The need to disseminate success stories like Ashok Khosla's Development Alternatives is behind a new UNEP initiative, the Best Practices and Success Stories Global Network. A lot of commendable work is being done in the area of environmental management but its visibility remains low. The Best Practices and Success Stories Global Network is a service that will raise awareness of successful development initiatives. It will encourage knowledge sharing and, wherever possible, promote replication. It is a fully interactive web site and database supported with hardcopy material for those with less easy access to the Internet. Anybody can submit cases to the network at any time from anywhere. The Best Practices and Success Stories Global Network (www.unep.org/bestpractices) will be exhibited and demonstrated at UNEP's Governing Council in February 2003.

ENVIRONMENTAL EDUCATION

A $2 million agreement signed at WSSD between UNEP and the Government of Norway paved the way for the establishment of a new university for environmental education. The Global Virtual University will be a branch of the United Nations University (UNU) implemented by UNEP/GRID-Arendal, the Agder University College and the UNU. The Global Virtual University will offer education for the common future, providing scientific knowledge to support prudent environmental management and help map out national and regional paths to sustainable development. The courseware will be developed in a collaborative, global network of academic institutions; the studies will be on-line and decentralised, with a focus on developing countries.

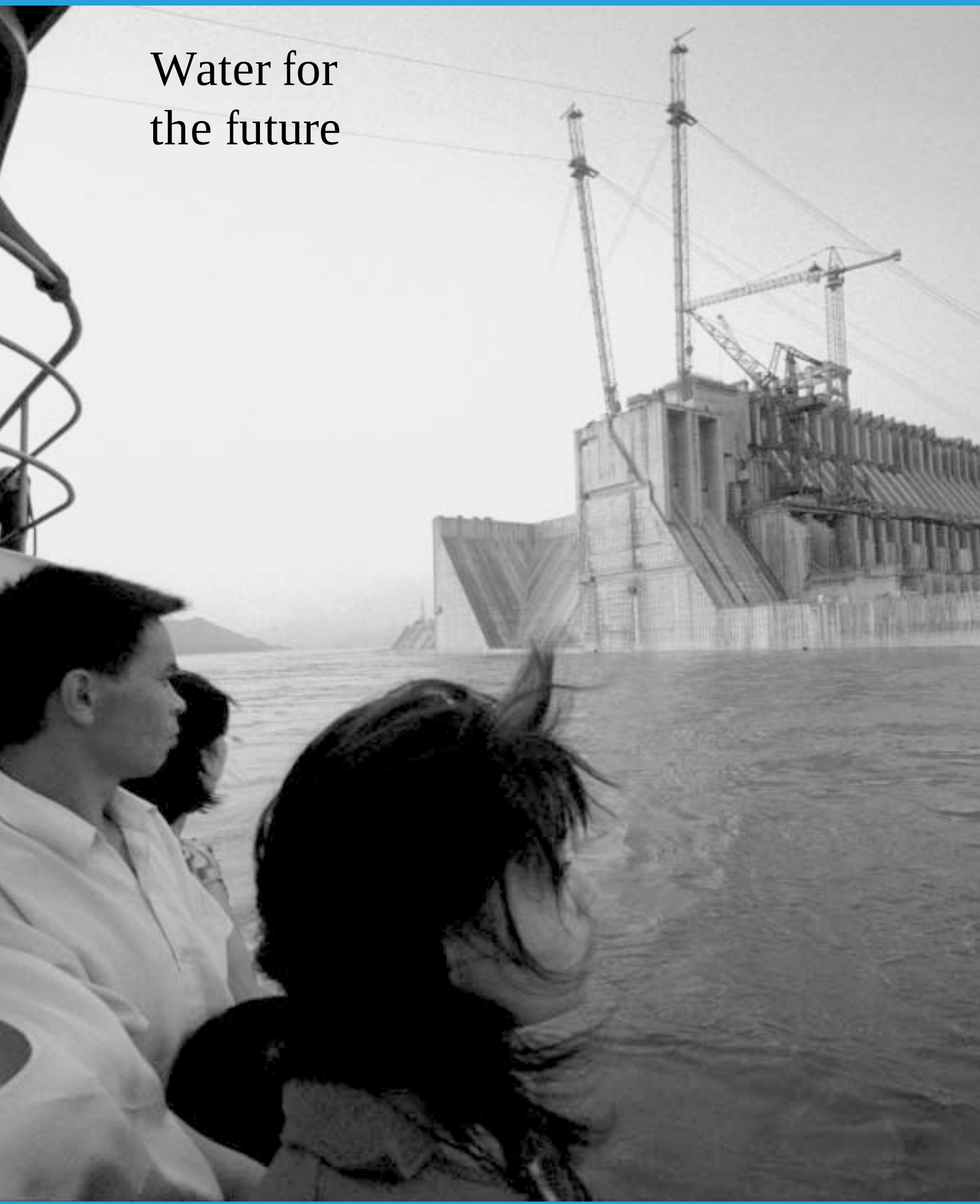
UNEP has been supporting university-level environment education for the developing world for most of its life. The twenty-fifth anniversary of the UNEP/UNESCO/BMU Postgraduate Course on Environmental Management for Developing Countries was celebrated in 2002. During that time 982 postgraduate students have graduated with qualifications in various aspects of environmental management.

UNEP also has active education programmes in Latin America and the Caribbean and the Asia-Pacific region through the Environment Training Network, which supports, develops and coordinates environmental education and training action plans at postgraduate and community level. A number of training materials have been published such as the UNEP/ICLEI/FIDIC kit on environmental management systems for cities, and the UNEP/ISWA/Basel Convention Secretariat *Training Resource Pack for Hazardous Waste Management in Developing Economies.*

Apart from its global mandate to provide leadership in caring for the environment, UNEP also has specific mandate to support Africa in key areas of capacity building. One initiative in 2002 was the Eco-schools for Africa programme in Eastern and Southern Africa. UNEP, in partnership with UNESCO-Africa and other organisations such as the Foundation for Environmental Education and the Wildlife and Environment Society of South Africa, is planning to extend the programme to the rest of Africa as funds become available. UNEP facilitated a workshop on the Establishment and Development of the Eco-schools Programme in Africa in June 2002 in Pietermaritzburg, South Africa, which produced draft guidelines for setting up the programme in Africa. The Eco-schools programme aims to raise students' awareness of environmental and related sustainable development issues through classroom study together with school and community action, and provides an integrated system for environmental management of schools.

Reaching children and youth is imperative for sustainable development. They are a significant consumer group, and they are the next guardians of the planet. UNEP is committed to educating youth and enabling them to participate fully in decision making and advocacy for sustainable development (www.unep.org/children_youth).

Water for the future



© Ian Berry / Magnum Photos

The almost complete Three Gorges Dam at Sandouping, China. The dam will be 2 kilometres wide and 185 metres high, creating a lake 550 kilometres long.

Of the five WEHAB priority areas for action suggested by the United Nations Secretary-General prior to WSSD, water is perhaps the most important. Human and ecosystem health depend on water quality and availability; agriculture—which accounts for over three-quarters of world freshwater consumption—could not exist without it; and electricity production in a number of countries is largely based on hydropower. Water quantity and quality are therefore indicators of sustainable development. Currently, the indicators—as detailed in such publications as UNEP's *Vital Water Graphics* and *GEO-3*—are not encouraging. Population growth, urban, domestic and industrial pollution, deforestation and inefficient use by agriculture are having profound impacts on freshwater resources. Oceans and coastal areas are also being affected by pollution and overfishing. One third of the world's people live in countries where annual water consumption is more than 10 per cent of renewable resources. Over 1 billion people live without safe drinking water, and 2.4 billion lack access to adequate sanitation. The cost is widespread suffering and millions of avoidable deaths each year. How the world addresses water management issues over the next decade will determine the realisation of all the Millennium Development Goals.

At WSSD governments supported the integrated regional and national management of river basins, watersheds, groundwater and other water resources, and made a commitment to halve, by 2015, the proportion of people without safe drinking water and basic sanitation. Achieving these goals demands a concerted effort involving a wide variety of partners as well as an intersectoral approach which recognises the links between diverse and sometimes competing interests. It also needs an international perspective, since many water resources are shared among nations. UNEP's water strategy combines assessment, management and coordination of actions to provide an integrated, comprehensive and dynamic approach to water issues. For example, the findings of the Global International Waters Assessment (GIWA) feed into initiatives like the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA), which is largely implemented through a network of UNEP-supported Regional Seas agreements.

Underlying the whole strategy is the fair share of water resources. The understanding that everybody lives downstream was reinforced by the International Year of the Mountains. By the time a river reaches its destination the demands made on it will have been considerable, and sometimes the cause of conflict between competing uses. UNEP's water strategy therefore calls for a fair share of water for all—for agriculture, industry and domestic use; for the poor, who have to pay proportionally more for scarce resources, both in terms of money and labour; and for the environment, whose threatened forests, lakes, wetlands, and coastal swamps are the foundation for the future availability of the Earth's most precious resource.

WATER:
TWO BILLION PEOPLE ARE DYING FOR IT.

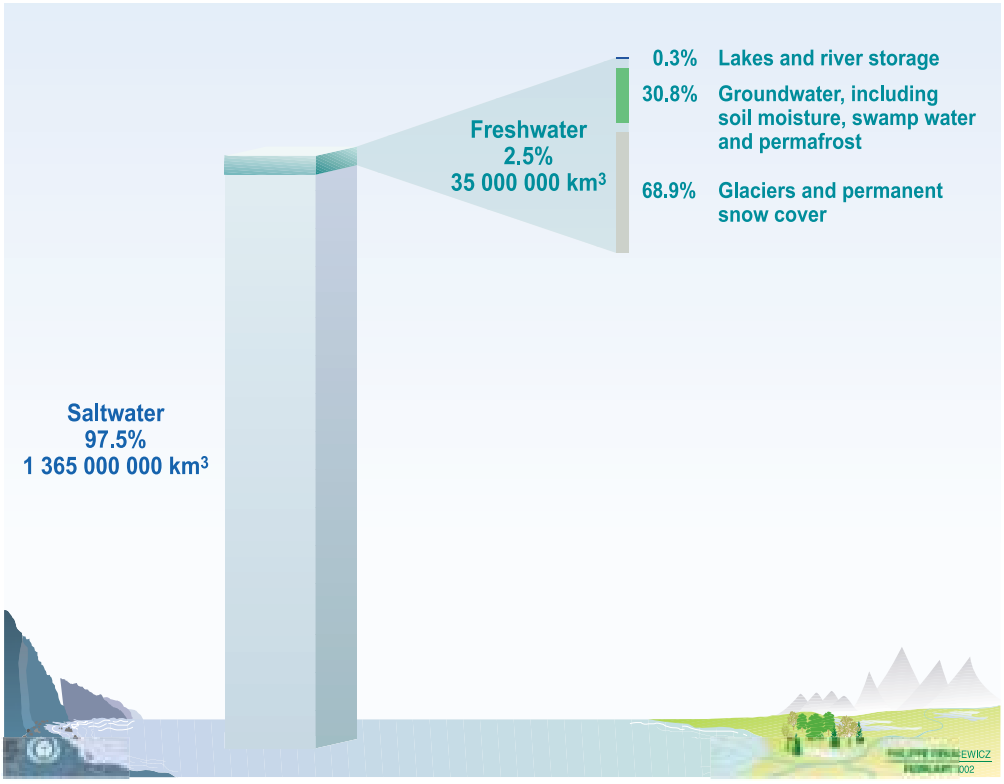
Water is perhaps the major development issue for the coming decades. The importance of maintaining the viability and productivity of the Earth's freshwater resources was reflected in the theme of World Environment Day 2002: Water for Development. The centrality of water will be further highlighted during 2003, the International Year of Freshwater. UNEP will play a key role in the year's activities, including taking the lead for World Water Day (March 22). The theme for World Water Day, which falls during the World Water Forum in Japan, is Water for the Future. UNEP will also highlight water during World Environment Day (June 5), with the motto Water: Two Billion People are Dying for It.

All these events will draw on a growing body of information on water issues, policies and actions to which UNEP is significantly contributing. In 2002, as well as publishing its influential *GEO-3* global environmental assessment, UNEP released *Vital Water Graphics* on global water quality, quantity and availability. *Vital Water Graphics: an Overview of the State of the World's Fresh and Marine Waters* (www.unep.org/vitalwater) provides text and graphics in hard copy—including pre-prepared overheads—and on CD-ROM, making it a valuable resource for educators and professionals involved in water use and management.

Another 2002 publication, *A Survey of Methods for Groundwater Recharge in Arid and Semi-arid Regions*, presents an overview of methods for estimating groundwater recharge, including an assessment of their accuracy and suitability. Groundwater represents 90 per cent of readily available water and accounts for 20 per cent of all water withdrawals. Concern about groundwater resources is growing as pollution and depletion caused by urbanisation and irrigation places increasing demands on underground reservoirs. However, not enough is known about their status. In 2002, a project to address this knowledge gap in seven countries in West Africa concluded its first two-year phase, and is now being extended to eastern Africa (www.unep.org/groundwater).

UNEP continued to increase its capacity to address freshwater quality water issues in 2002 with the strengthening of the UNEP Global Environment Monitoring System (GEMS) Water Programme (www.cciw.ca/gems). Involving several United Nations agencies and other organisations, GEMS is

Total global saltwater and freshwater estimates



Freshwater is the world's most precious and scarce resource. Only 2.5 per cent of the planet's water is not salty. Of that, two-thirds is locked in ice caps and glaciers, and 20 per cent of the remainder is in areas too remote for human access. Of the remaining 80 per cent, most comes at the wrong time and place in the form of floods and storms and is not captured by people.

***Vital Water Graphics: an Overview of the State of the World's Fresh and Marine Waters* will be launched at the UNEP Governing Council in February 2003.**

Source: Igor Shiklomanov, State Hydrological Institute (SHI, St. Petersburg) and United Nations Educational, Scientific and Cultural Organization (UNESCO, Paris), 1999.

monitoring, assessing and building capacity in 69 countries around the world. A new GEMS strategy to make the system more useful to the UN system as a whole was launched at WSSD and presented to the annual UN agencies meeting on water at The Hague in October 2002. The Government of Canada and UNEP have concluded an agreement for financial and institutional support to the new GEMS Water Programme for the next five years, giving priority to capacity building.

UNEP's partner, the International Environmental Technology Centre (IETC), continued to promote the transfer of environmentally sound technologies for freshwater management (www.unep.or.jp) in 2002. Among its activities were the finalisation of the information exchange Internet tool maESTro II—including a new information portal: Strategic Alliance For Freshwater Information, Resources and Education (SAFFIRE)—and publications on phytotechnologies, biosolids management, stormwater and wastewater management, and environmentally sound technologies for implementing the UNEP Global Programme of Action (GPA). Another highlight of 2002 is the addition of the Danish DHI Institute of Water and Environment to a growing list of UNEP collaborating centres of excellence.

Many women in the developing world spend large parts of their day carrying water from streams and rivers that are often polluted. A new UNEP initiative recognises that women rarely own or control environmental resources—especially water—and that they need more time for other productive work. The project Empowering Women in Rainwater Harvesting in Kenya, a partnership with the Earthcare Africa Monitoring Institute, was designed to enhance women's participation in decisions about water and its management. It is part of a wider initiative funded by the Government of Sweden, which is supporting similar projects in Nepal, India, Bhutan and Tonga. The project, launched in September 2002, is providing rainwater harvesting and sanitation facilities to Masai communities in Kenya and is managed by women. It will be a blueprint for similar projects in dry areas in Africa and elsewhere. It also demonstrates how civil society can engage in UNEP's work, and is increasing UNEP's visibility at community level.

Women in the developing world rarely own or have control over water resources. A project initiated by UNEP in Kenya is empowering women by providing rainwater harvesting and sanitation facilities. The project is managed by women. It will be a blueprint for similar projects in dry areas in Africa and elsewhere.

FROM SUMMIT TO SEA: EVERYBODY LIVES DOWNSTREAM

In 1998 the UN General Assembly declared 2002 the International Year of Mountains. Mountains play an important role for human society—spiritually, economically and ecologically. Between 60 and 90 per cent of the world's fresh water originates in mountain ecosystems. They also provide a home for 12 per cent of the world's people. Use of mountain lands is increasing due to human population pressure, often with disastrous results downstream. Deforestation of mountain slopes can lead to water shortages and increased siltation downstream, affecting everything from hydropower schemes to coral reefs. Global warming (page 16) is also affecting mountains. Melting glaciers threaten short term-flooding through Glacial Lake Outburst Floods and long-term drought as the snow-caps that provide the source of rivers disappear.

These and other statistics are included in *Mountain Watch*, a new report published by UNEP. *Mountain Watch*, compiled by the UNEP World Conservation Monitoring Centre (UNEP-WCMC), is the first

map-based assessment of the implications to sustainable development of environmental change in mountain areas (www.unep-wcmc.org). Other UNEP activities during the International Year of Mountains included sponsoring a fact-finding expedition to the Himalayas and a photo exhibition, From Summit to Sea, at the European Parliament in Brussels, Belgium. UNEP also launched the European Mountain Initiative, building on the experience of the Alpine Convention, to address mountain issues in the Carpathians, the Caucasus and Central Asia, and is involved in establishing an international partnership for a Global Programme of Action for Sustainable Mountain Development along similar lines to the Global Programme of Action to Protect the Marine Environment from Land-Based Activities.

The culmination of the International Year of Mountains was the Global Mountain Summit, held in Bishkek, Kyrgyzstan, at the end of October 2002. The Summit produced a platform for guiding action on mountains and announced funding by the Government of Norway to help clean up dangerous nuclear waste dumps high in the mountains of Kyrgyzstan. The presence of dangers like these highlights the fact that water issues affect everyone and everything downstream. This realisation is behind the GPA, UNEP work on integrated coastal and river basin management, and its overall strategy of tackling water issues at the river and lake basin level.

Work also progressed in 2002 on a prototype River Basin Information System initiative to identify the impacts and challenges of global change within selected key watersheds of the world. Harmonious management of watersheds is also a priority for the UNEP Dams and Development Project (DDP). Born from the World Commission on Dams, which employed a successful multi-stakeholder approach to examining issues raised by large-scale dam projects, the UNEP DDP, which is being relocated to UNEP Headquarters from its original home in Cape Town, South Africa, will continue to facilitate dialogue on dams and development. The UNEP DDP is a unique initiative that brings global policy consensus to the national level, examines economical, institutional and cultural differences, and helps countries to tailor their own policy reform to improve decision making in the water and energy sectors.

Eighty per cent of marine pollution originates from land-based sources. UNEP is involved in a number of assessments of freshwater and marine resources. The Global International Waters Assessment (GIWA) is producing a comprehensive integrated global assessment of 66 marine and freshwater international water areas. It is due to produce its Global Report in 2004.

A Global Marine Assessment is also taking shape in line with a decision in 2001 by the UNEP Governing Council which was endorsed at WSSD. The assessment will be established in 2004 following a broad consultative process. Early in 2003 UNEP-WCMC will publish the results of a global survey of seagrass beds, home of manatees and seahorses.

David Woodfall / Still Pictures

PROTECTING THE MARINE ENVIRONMENT

The WSSD Plan of Implementation calls for advancing the implementation of the UNEP Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (GPA), giving emphasis to the issues of municipal wastewater, physical alteration and destruction of habitats, and nutrients. Eighty per cent of marine pollution originates from land-based sources. According to UNEP publications like *GEO-3* and *Vital Water Graphics*, deforestation, fertiliser run-off from agriculture and untreated sewage is causing severe problems for essential coastal habitats such as mangrove swamps and coral reefs (page 58) as well as for human health. With nearly 40 per cent of the human population living within 60 kilometres of the sea, coastal pollution is precipitating a health crisis of devastating proportions.

The GPA (www.gpa.unep.org) is the only global initiative addressing the links between freshwater and coastal and marine environments. It is developing new partnerships and approaches to address the various causes of marine degradation, including developing national action plans and streamlining the relationship between the GPA and the UNEP Regional Seas Programme. GPA work in 2002 included the production of a handbook in six languages on developing and implementing national action programmes, collaboration on the pioneering Internet-based *UN Atlas of the Oceans* (www.oceansatlas.org), and expanding the GPA Clearing-House Mechanism for the exchange of data and information.

The GPA has a global mandate to integrate its work into national programmes and policy processes. It was instrumental in developing the WSSD water agenda. The WSSD directive on municipal wastewater is linked to the target of halving the proportion of people living without adequate sanitation by 2015. A GPA report released in 2002 as part of its Strategic Action Plan on Municipal Wastewater highlights the threats to people's health and livelihoods caused by untreated sewage, especially in Asia, the Northwest Pacific and West Africa. It recommends that countries adopt strict wastewater emissions targets to achieve WSSD sanitation goals.

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THE UNEP REGIONAL SEAS PROGRAMME

The WSSD Plan of Implementation identifies the issue of oceans, seas, islands and coastal areas as critical for global food security and sustaining economic prosperity. It also reinforced the concept that sustainable development of the oceans requires effective global and regional coordination and cooperation between relevant bodies. The UNEP Regional Seas Programme (www.unep.ch/seas/rshome.html) is promoting sustainable development and integrated management of coastal areas and associated river basins and their living aquatic resources. Begun in 1974, the programme has fostered 17 regional seas and partner programmes, and 13 regional action plans have been established under UNEP auspices. The Regional Seas Programme promotes the implementation of appropriate technical, institutional, administrative and legal measures for the improved protection of the coastal and marine environment, and facilitates the monitoring and assessment of coastal and marine environmental conditions and trends.

The UNEP Regional Seas Programme provides governments, international organisations, global environmental conventions, global programmes and initiatives, non-governmental organisations and civil society with an institutional platform through which regional activities and partnerships can address environmental degradation and promote sustainable development. An example is the UNEP-supported negotiations for the Convention for Cooperation in the Protection and Sustainable Development of the Marine and Coastal Environment of the Northeast Pacific, signed in February 2002. Among the Convention's priorities is curbing the discharge of sewage and other pollutants into the coastal environment.

Clean and renewable energy

Achieving the Millennium Development Goals of eradicating extreme poverty, promoting gender equality, reducing child mortality and ensuring environmental sustainability will depend in large part on how society addresses the questions of energy production, use and availability. Current practices are having an increasing impact on human health and the environment through global warming and atmospheric pollution, while the widespread unavailability of affordable energy is perpetuating poverty and gender inequities. Many ways of using energy in the developing world harm the environment and individuals. Firewood gathering, for instance, often causes land degradation, while burning it in the home leads to respiratory problems. Worldwide, air pollution is estimated to cause 5 per cent of disease. This is not just due to indoor air pollution. Society's reliance on fossil fuels for electricity generation and for transport is fouling the atmosphere. It is also contributing to global warming which, ironically, will most affect the people who contribute least to the problem.

The question, then, is how to provide modern energy to those who currently do not have it without exacerbating the already growing problem of human-induced climate change or contributing to other energy-related environmental problems. The answer lies in improving energy efficiency and promoting renewable energy, including ending perverse subsidies that reward unsustainable practices. These issues figured prominently in discussions at WSSD, and are addressed in the Plan of Implementation. UNEP's existing energy activities lie solidly within the WSSD outcomes, and will contribute significantly to their achievement. One of the key UNEP led energy initiatives to feature at the WSSD was the launch of a new Global Network of Energy for Sustainable Development.

UNEP energy activities cover five broad areas: renewable energy, energy efficiency, energy policy, energy finance, and sustainable transport. Transport is a major contributor to greenhouse gases and air pollution. UNEP has a number of activities in this area, including the Mobility Forum (a voluntary initiative with automotive manufacturers), policy studies on phasing out lead in gasoline in developing countries, and an ongoing collaboration with the aviation industry to explore avenues towards sustainability. UNEP is also working to help developing countries participate in the Clean Development Mechanism of the Kyoto Protocol (page 16).

Promoting clean and renewable energy, and making it accessible to the world's poor, forms a major proportion of UNEP energy activities. These include assessing the feasibility of large-scale renewable energy projects, studying options for the phase-out of perverse energy subsidies, promoting clean and efficient energy, and supporting hands-on programmes such as Rural Energy Enterprise Development initiatives, which are underway in seven countries, and a scheme in southern India to provide micro-finance for village-level photovoltaic electricity generation.

Prestige oil spill, Galicia, Spain, November 2002. Volunteers clean the beach in Muxia. Transport accounts for a quarter of global energy use. Ninety-five percent of that energy is derived from petroleum.

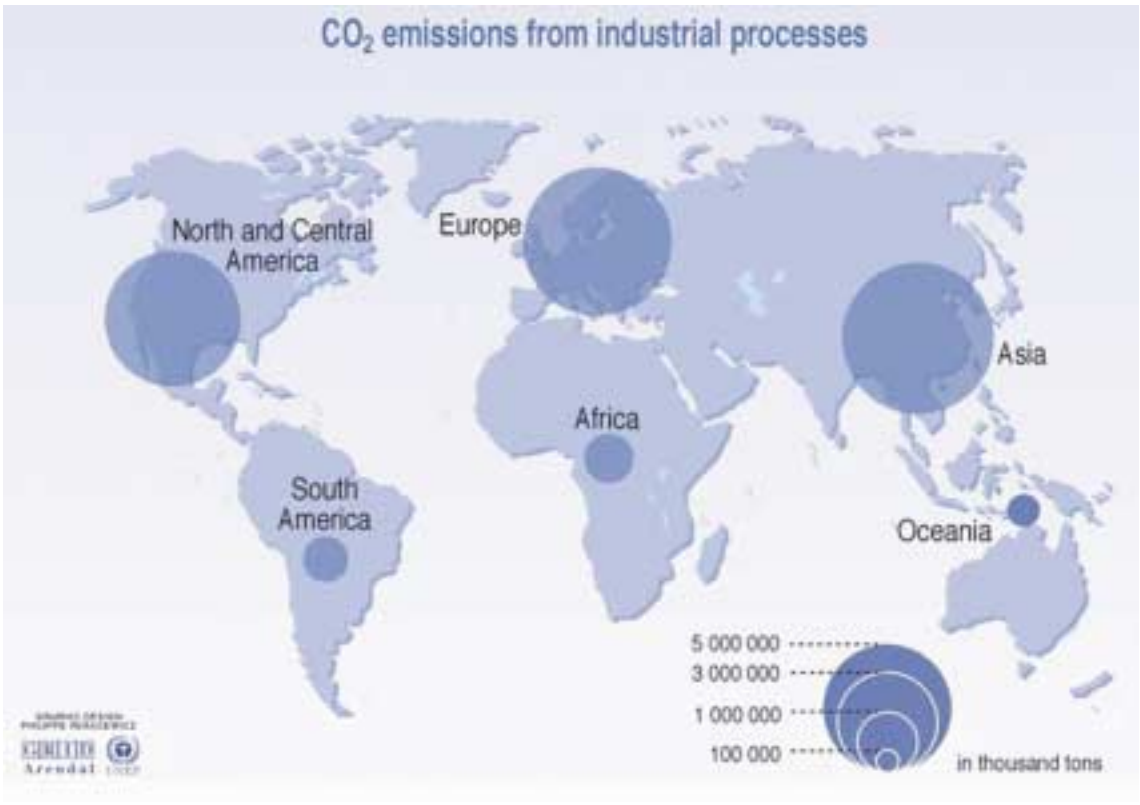
SUSTAINABLE TRANSPORT

The greatest increase in energy use in the decade between the Earth Summit and WSSD occurred in the transport sector. The development of a country's transport sector is seen as an indicator of its economic welfare and success. However, the benefits of transport are not free, nor are they available to all. UNEP is engaging governments and its growing list of partners in industry and civil society to devise ways of making the world's growing demand for transport more sustainable (www.uneptie.org/energy/act/tp).

An example is the Mobility Forum, a voluntary initiative between UNEP and 12 automotive manufacturers from Europe, Japan and the United States to protect the environment while maintaining profitable businesses within the framework of sustainable development. The Mobility Forum aims to engage all stakeholders and facilitate public-private partnerships to promote sustainable production and consumption, and encourage new visions and strategies.

The UNEP Mobility Forum www.uneptie.org/energy/act/tp/ is working with the automotive industry to tackle the growing impact of transport, which accounts for a quarter of global commercial energy use.

Carbon dioxide emissions from industrial processes



Source: United Nations framework convention on climate change

A significant part of carbon dioxide emissions comes from energy production, industrial processes and transport.

Firewood gathering often causes land degradation. Burning it in the home often leads to respiratory problems.
Access to clean, affordable energy is essential for reducing poverty, improving health and increasing women's empowerment.

UNEP is working with a variety of partners to work out how to provide modern energy to those who currently do not have it without exacerbating the already growing problem of human-induced climate change or contributing to other energy-related environmental problems.

The answer lies in improving energy efficiency and promoting renewable energy, including ending perverse subsidies that reward unsustainable practices.

There is no doubt that new approaches are necessary. Transport accounts for a quarter of global energy use. Ninety-five per cent of energy used in transport is derived from petroleum. The consequence is large emissions of carbon monoxide, hydrocarbons, nitrogen oxides and fine particles. Dirtier fuels, such as those used in many developing countries, also contain large quantities of lead and sulphur, which are emitted when the fuels are burned. These emissions contribute to the deterioration of local air quality, especially in urban areas, and a growing human toll from respiratory and cardiovascular disease. Globally, greenhouse gases from vehicles also contribute to global warming.

UNEP work with the Mobility Forum in 2002 included the preparation of a report for WSSD on the economic, social and environmental impacts of the automotive industry, the industry's achievements since Rio, and the remaining challenges for sustainable mobility. The Forum also started developing sector-specific indicators for sustainability reporting in consultation with the Global Reporting Initiative (page 21) and developed an Internet-based campaign on greener driving.

Another UNEP initiative is helping countries address local air pollution and climate change through a coordinated approach to fuel quality improvements and lead phase out. The launch of the Partnership for Clean Fuels and Vehicles at WSSD saw developing and developed country governments, industry, NGOs and international organisations commit to work together to eliminate lead in gasoline and introduce other fuel quality measures. In 2002 UNEP organised a subregional workshop in East Africa which developed an action plan to phase out lead in gasoline. Other regional workshops will follow in Africa, Asia, South America, Eastern Europe and the Middle East to develop programmes of action to combat local air pollution by promoting cleaner fuels. This includes actions that can be undertaken at the legislative, administrative and the refinery levels to achieve lead phase-out and sulphur reduction. Technical assistance will subsequently be provided to help countries implement fuel quality improvement programmes.

UNEP is also working with the aviation industry to look at ways of addressing the environmental impact of air travel (www.uneptie.org/energy/act/tp/aviation). With the growth of the tourism industry this is an increasing problem. A conference in July, in Paris, France—Final Boarding Call: Aviation, Airports and Sustainable Development—covered all major aspects of aviation and sustainable development, including global and local air pollution, noise, infrastructure planning and airport management. Around 200 participants from different regions of the world and representing different players involved in the aviation sector had the opportunity to exchange experiences on good practices, discuss possible solutions and develop joint action plans that balance all three pillars of sustainability.

FINANCING CLEAN ENERGY

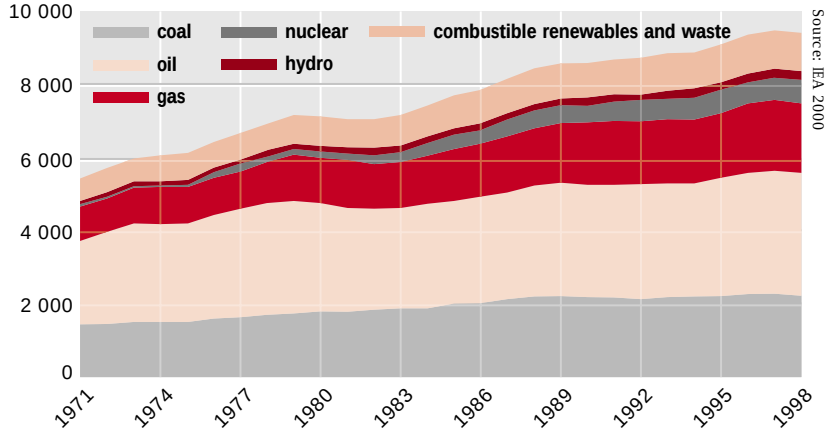
Access to clean, affordable energy is essential for reducing poverty, improving health and increasing women's empowerment. Technology in this field is advancing all the time, and costs are decreasing. Yet, for many, the costs remain prohibitive. UNEP is working in a number of ways to make clean energy affordable both at the household and the national level. A May 2002 report from the UNEP Energy Programme highlighted the damage to sustainable development and national economies caused by subsidies that encourage the production and use of fossil fuels. *Reforming Energy Subsidies* (www.uneptie.org/energy/publ/ensubsidies) presents in non-technical language the findings of a series of regional workshops on energy subsidy reform held in 2001–2.

Another impediment to the adoption of clean energy technologies is the lack of appropriate finance available for entrepreneurs to create clean energy enterprises. UNEP is involved in a number of schemes to address this problem. The Rural Energy Enterprise Development (REED) initiative, a partnership with the UN Foundation and US-based non-profit clean energy investor E+Co, is currently benefiting rural communities in five African countries, Brazil and China. The concept behind REED is simple. Start-up capital and training is provided to small-scale entrepreneurs who have identified a market niche for rural energy provision but who cannot attract the necessary seed financing to begin or scale up their operations. REED projects help these businesses grow sustainably. Examples include businesses making fuel-efficient stoves, repairing wind-pumps, or providing solar crop dryers. A 32-page booklet *Open for Business: Entrepreneurs, Clean Energy and Sustainable Development* was released in December 2002 describing the enterprise-led development model pioneered by E+Co (www.unep.tie.org/energy/publications).

Finance for clean energy is also behind the four-year UNEP/UN Foundation project Financing Indian Solar Home Systems. The project aims to accelerate the market for credit finance for photovoltaic-based solar home systems (SHS) in southern India. The market for SHS in rural India is growing, but few rural households have either the capital or access to credit to invest in such systems. The aim of the project is to develop a credit facility to help Indian banking partners develop lending portfolios targeted at financing solar home systems in regions of Southern India poorly served by conventional financial institutions. The project will use UN Foundation resources to subsidise the cost of financing SHS by lowering the effective interest rate on loans.

Another example of promoting financing for clean energy is a UNEP/World Bank project to increase energy efficiency investments by the domestic financial sectors in Brazil, China and India. With support from the UN Foundation, the project is developing the capacity of new

World energy supply by fuel
million tonnes oil equivalent/year



and existing financial institutions to package energy efficiency investment projects by removing market barriers in each country. Project activities include technical assistance, training and applied research in four areas:

- Developing commercial banking opportunities for energy efficiency.
- Supporting energy service companies (ESCOS).
- Creating guarantee funds for energy efficiency investments.
- Developing equity funding for ESCOS or energy efficiency projects.

As one of the project activities, international exchanges will allow financiers from each of the three countries to learn from each other and jointly address the practical problems each face, thus overcoming barriers to increased investments in energy efficiency.

CLEAN AND RENEWABLE ENERGY

Although the WSSD Plan of Implementation does not commit governments to tangible targets on energy, it does call for an increase in the use of renewable energy as a matter of urgency. One of the issues thwarting agreement at WSSD on renewable energy targets was the lack of information on current global renewable energy use and potential. UNEP has expanded its environmental assessment efforts to include renewable energy resources. The UNEP Solar and Wind Energy Resource Assessment (SWERA) received a boost in September 2002 with the announcement of a new collaboration with one of the world's green energy research centres, the National Renewable Energy Laboratory, located in Colorado, USA.

Under the existing SWERA project, surveys and high-quality solar and wind maps are being prepared for 13 developing countries. The new agreement will increase the number to 14 by bringing in the Maldives in the Indian Ocean. An existing plan to map Bangladesh will also be expanded under the new deal. Another project, financed by the Global Environment Facility will commence in 2003 to investigate the further development of geothermal energy in Kenya, while a related initiative involving Kenya, Ethiopia, Uganda, Djibouti and Tanzania is being proposed to look at geothermal potential throughout the African Rift Valley.

Solar water heaters, Nelamangala Village, Karnataka State, India. The market for solar home systems in rural India is growing, but few rural households have either the capital or access to credit to invest in such systems. A UNEP project is developing a credit facility to help Indian banking partners develop lending portfolios targeted at financing solar home systems in regions of Southern India poorly served by conventional financial institutions.

Promoting renewable energy is also part of the new UNEP-led GNESD initiative that was announced at WSSD. The Global Network on Energy for Sustainable Development (GNESD) will link established centres in developing and developed countries, coordinating joint activities on information exchange, analytical studies, policy support and capacity building. The network will promote research, transfer and take-up of cleaner energy technologies in the developing world. A small secretariat to support the network is located at the Risø National Laboratory in Denmark. One of the first activities of GNESD was the formation of a working group focused on energy access issues for the poor, including household energy use and commercial use. The group's primary objective will be to identify viable and proven policy options that encourage cleaner and more sustainable energy services to the world's poor.

Health and the environment

Each year, drought, floods and a poisoned environment kill millions of people and bring disease to hundreds of millions more. In large part these deaths and illnesses are avoidable. A polluted, degraded environment, which stunts the mental development of children or makes them weak with diarrhoea and parasitic diseases, cannot foster sustainable development and economic growth. Yet, for too many people in the developing world, the environment is the major obstacle to a better future.

Maintaining or improving human and ecosystem health lies at the heart of UNEP's work. Improving sanitation—which was targeted at WSSD—is central to the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (page 34), while improving air quality is one of the principal aims of UNEP's energy programme (page 37). UNEP's energy work is also geared to preventing and mitigating climate change, which itself has major health implications. Health issues also underlie UNEP's capacity building work on sustainable agriculture and biosafety (page 53).

UNEP is also working with other UN entities and governments on a variety of initiatives which recognise the centrality of environmental factors to health management. Examples include UNEP's contribution to the WSSD WEHAB paper *Framework for Action on Environment and Health* and the joint UNEP/UNICEF/WHO book *Children in the New Millennium: Environmental Impact on Health*. UNEP and WHO are also collaborating with the Harvard Medical School Center for Health and the Global Environment on a project Biodiversity: Its Importance to Human Health.

Chemicals and hazardous wastes is another area where UNEP is particularly active (www.chem.unep.ch). UNEP has been instrumental in establishing three important chemicals-related conventions, for which it hosts the secretariats: the Basel Convention on the Transboundary Movement of Hazardous Wastes, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, and the Stockholm Convention on Persistent Organic Pollutants. The importance of chemicals to health and development was also underlined at the seventh special session of the UNEP Governing Council in February 2002, when governments called for the development of a strategic approach to chemicals management. As a first step, it requested UNEP to work with governments and relevant agencies to identify actions currently underway or planned internationally, regionally and nationally to advance the safe management of chemicals, to identify gaps in the priorities for action defined in 2000 by the Intergovernmental Forum on Chemical Safety in its Bahia Declaration, and to further identify concrete projects and priorities for a strategic approach to international chemicals management.

In 2002, 18 years after the Bhopal gas leak, the Indian government began evaluating evidence prior to seeking the extradition of the then head of Union Carbide, the company responsible. The disaster killed 4,000 people within hours, and about 10,000 people have since died due to related illnesses.

SAFE MANAGEMENT OF CHEMICALS

Chemicals are integral to today's society. Some are safe, some are highly dangerous, some we know little or nothing about. There are over 70,000 chemicals on the market, with approximately 1,500 new ones being introduced each year for agricultural, industrial, medical and domestic use. Some of these chemicals have been implicated in causing cancers and other human disease. Others destroy the ozone layer. Some of the most toxic chemicals, known as persistent organic pollutants, can persist in the environment for decades where they bioaccumulate, reaching ever higher concentrations as they are absorbed up the food chain.

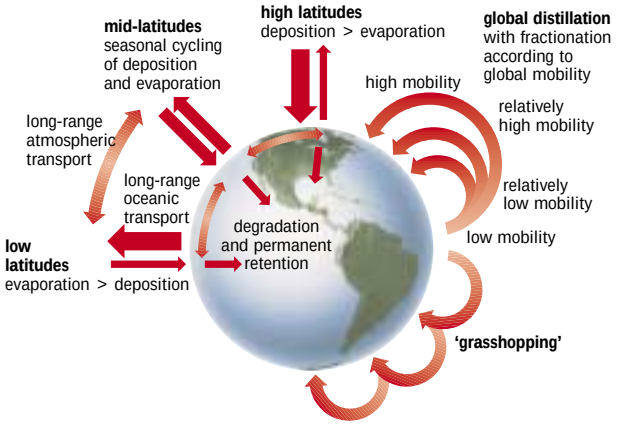
At WSSD, delegates renewed their commitment to the call in Agenda 21 for the sound management of chemicals throughout their life cycle for the protection of human health and the environment. The Johannesburg Plan of Implementation states that, by 2020, chemicals should be used and produced in ways that minimise adverse effects on human health and the environment "using transparent science-based risk assessment procedures and science-based risk management procedures, taking into account the precautionary approach, as set out in Principle 15 of the Rio Declaration on Environment and Development."

As knowledge grows about chemicals, so does the need to provide governments with mechanisms to adequately cope with their use, trade and disposal. The WSSD Plan of Implementation calls for the international community to help developing countries to strengthen their capacity for the sound management of chemicals and hazardous wastes.

This man is using a pesticide. He is also collecting crabs to eat. A strategic approach to international chemicals management should "promote the incorporation of chemical safety issues into the development agenda and identify concrete proposals for strengthening capacity for the sound management of chemicals and related technologies in all countries, taking into account the vast difference in capabilities between developed and developing countries in its field."

UNEP Governing Council, February 2002

Migration of persistent organic pollutants



Source: Wania and Mackay 1996

Persistent organic pollutants spread via a variety of mechanisms at different latitudes.

One mechanism for doing that is the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (www.pic.int). Adopted in 1998 under the auspices of UNEP and FAO, the Rotterdam Convention gives importing countries the tools and information they need to identify potentially hazardous chemicals and to exclude those they cannot manage safely. To date the Convention has been signed by 72 governments (plus the European Community) and ratified by 18. It will enter into force after the fiftieth ratification. In the meantime signatory countries are voluntarily observing the prior informed consent provisions.

The original Convention list included 22 pesticides and 5 industrial chemicals. In February 2002 a committee of government-appointed experts concluded that three widely used pesticides and all forms of asbestos should be added to the list. The three pesticides are highly toxic to birds and mammals as well as presenting an acute hazard to farm workers, especially those in the developing world who often lack adequate protective clothing and equipment. The five types of asbestos named were added to one already listed. Once widely used in buildings as insulation before its dangers became known, asbestos is still used for some applications like vehicle brakes even though cost-effective alternatives are increasingly available.

Among the most toxic chemicals known to man are those known as persistent organic pollutants (POPs), such as the insecticide DDT. In an effort to control their use and manufacture, and to promote their phase-out, a new convention was signed by 127 countries in 2001. The Stockholm Convention on Persistent Organic Pollutants has now been ratified by 22 Parties and is developing a monitoring network to evaluate the effectiveness of the Convention in meeting its objectives of eliminating or restricting the production of an initial list of 12 POPs (www.pops.int). To assist developing countries and countries with economies in transition comply with their obligations under the treaty, a financial mechanism has been created under the Global Environment Facility (GEF). At the second GEF Assembly, held in Beijing, China, in October 2002, POPs were included as a new focal area of activity. UNEP is currently helping 36 countries to develop national implementation plans to phase out the POPs covered by the Convention, and is assisting many other countries to prepare proposals for GEF funding.

HAZARDOUS WASTES

Every product has a life cycle. From plastic bags to ships, sooner or later they reach the end of their useful life. Then, unless they are recycled into other products, they become waste. Much of the waste we produce is hazardous to human health and the environment. Old batteries, obsolete computers and mobile phones, medical waste—all pose a threat. Each year over 150 tons of hazardous waste is produced. Dealing safely with that waste is a growing challenge, one that is being addressed by the Basel Convention on Transboundary Movement of Hazardous Wastes and Their Disposal.

The sixth Conference of Parties to the Basel Convention met in Geneva, Switzerland, in December 2002, to address a wide number of topics, including the growing issue of 'e-wastes', and to adopt technical guidelines on the disposal and recycling of lead-acid batteries, plastic wastes and obsolete ships (www.basel.int). Opening the conference, the UNEP Executive Director, Klaus Toepfer, said: "The industrial world needs to accelerate its investments in cleaner production technologies and processes that can reduce wastes. Governments and industry must also work together to improve recycling systems and treatment plants. And in all cases, poorer countries and communities must not be forced to shoulder the burdens of our industrial economy by being on the receiving end of hazardous wastes that they did not create."

© Gil Moti / Still Pictures

This boy works in a factory recycling lead batteries. The Basel Convention has finalised a set of guidelines promoting the environmentally sound recycling of batteries. Lead is the most widely used metal after iron. Three-quarters of world lead use is in lead-acid batteries. Exposure to lead can cause acute and chronic poisoning. Children and unborn babies are most vulnerable. The new guidelines offer governments a set of best practices and principles for safely recycling old batteries (www.basel.int).

Immediately after the conference ten of the world's leading mobile phone manufactures signed a declaration of cooperation with the Basel Convention. The Initiative for a Sustainable Partnership on Environmentally Sound Management of End-of-Life Mobile Phones is expected to be the first of many similar agreements between industry and the Basel Convention in coming years. Another area under discussion was 'e-wastes', which was the subject of a ministerial roundtable after the conference. Electronic waste is the most rapidly growing waste problem in the world. It is estimated that, weight for weight, the average computer chip does more harm to the environment than a car. To make a 2-gram memory chip, over 1,400 grams of materials and fossil fuel are needed. Computers, which have a high rate of obsolescence, also contain hazardous materials such as cadmium, lead and mercury. When they are no longer required they are either dumped, recycled or disassembled to recover precious metals such as gold and copper. In November, officials from eight Asian countries—the region is a major importer of e-wastes for recycling or recovery—met in China prior to the Basel Convention conference to discuss the environmentally sound management of electronic wastes.

Another area of concern is plastic waste. Earlier in 2002, experts from 100 governments met in Geneva to adopt technical guidelines for the sound management and safe disposal of plastic wastes. Many developing countries lack either facilities or laws to cope with the dramatic growth in these types of wastes. Often they are disposed of by burning, producing toxic fumes, or they are dumped in landfills where they can lie for centuries. While there is enormous untapped potential for recycling, that too poses its own waste problems. There is therefore much work to be done to ensure that society's reliance on plastic becomes more environmentally friendly.

Building national capacities to deal with hazardous waste management is still handicapped by a shortage of well trained personnel. To enhance the teaching of waste management principles UNEP published the *Training Resource Pack for Hazardous Waste Management in Developing Economies*. The handbook covers evaluation, legislation, waste prevention and treatment technologies within a strategic policy framework.

"We must focus on health. In order to save the lives of millions who die each year from an unsafe environment, dirty water, indoor air pollution, toxic wastes, insects that transmit deadly diseases we must redouble our efforts to create a safe environment, make immunisation and treatmnent available to all, and increase our research on tropical diseases whcih impose huge human and economic burdens in the world's poorest countries."

Kofi Annan, May 2002

© Jota Cornea / UNEP

MERCURY

In 2001 UNEP was asked to undertake an assessment of mercury and its compounds. That assessment, conducted in cooperation with UNEP's partners in the Inter-Organisation Programme for the Sound Management of Chemicals (IOMC), is complete and will be presented to the UNEP Governing Council in February 2003. The assessment takes a comprehensive look at what is currently known and being learned about mercury in the environment and its effects on human and ecosystem health, and outlines the options for addressing the adverse impacts of mercury in the environment.

Among the report's findings are that environmental mercury levels have increased considerably since the onset of the industrial age. Mercury is found all over the globe, especially in fish, at levels which are harmful to humans and wildlife. Even regions with no significant mercury releases from human activity, such as the Arctic, are being affected. This is because mercury persists in the environment where it circulates between air, water, soils and the Earth's flora and fauna.

Mercury is extremely toxic, especially to the developing nervous system. It is therefore particularly harmful to children and unborn babies. Despite the risks, mercury is used in a wide variety of products and applications worldwide, including in mining, thermometers, batteries, dental fillings, and in the paper, paint and pharmaceutical industries.

The comprehensive 250-page UNEP *Global Mercury Assessment* can be downloaded from the web site www.chem.unep.ch/mercury. The site contains reports on the status of the various activities initiated and provides all documents and correspondence generated during the process. It also gives access to the information submitted by governments, intergovernmental organisations and NGOs on which the global assessment is based.

Sustainable agriculture

© Ilkka Uimonen / Magnum Photos

As populations increase over the next decades it will be essential to ensure that food production keeps pace to achieve the Millennium Development Goal of halving the number of people suffering from hunger by 2015. Agriculture is the cornerstone of food security and hunger alleviation. In the last 30 years growth in agricultural productivity largely outstripped population growth, and the proportion of undernourished people dropped from 35 to 17 per cent. These results were achieved despite the declining availability of land and water resources per person. However, these advances came at a price. The natural resource base on which agriculture depends is coming under increasing stress. Nearly 40 per cent of agricultural land is experiencing serious productivity reduction due to soil degradation. In some areas it is as much as 75 per cent. Agriculture is also putting a strain on the world's water resources. As much as 70 per cent of water use is for irrigation. Not only is much of that water wasted, but its use is contributing to declining soil productivity. Nearly a third of the 260 million hectares of irrigated land worldwide is now affected by salinisation.

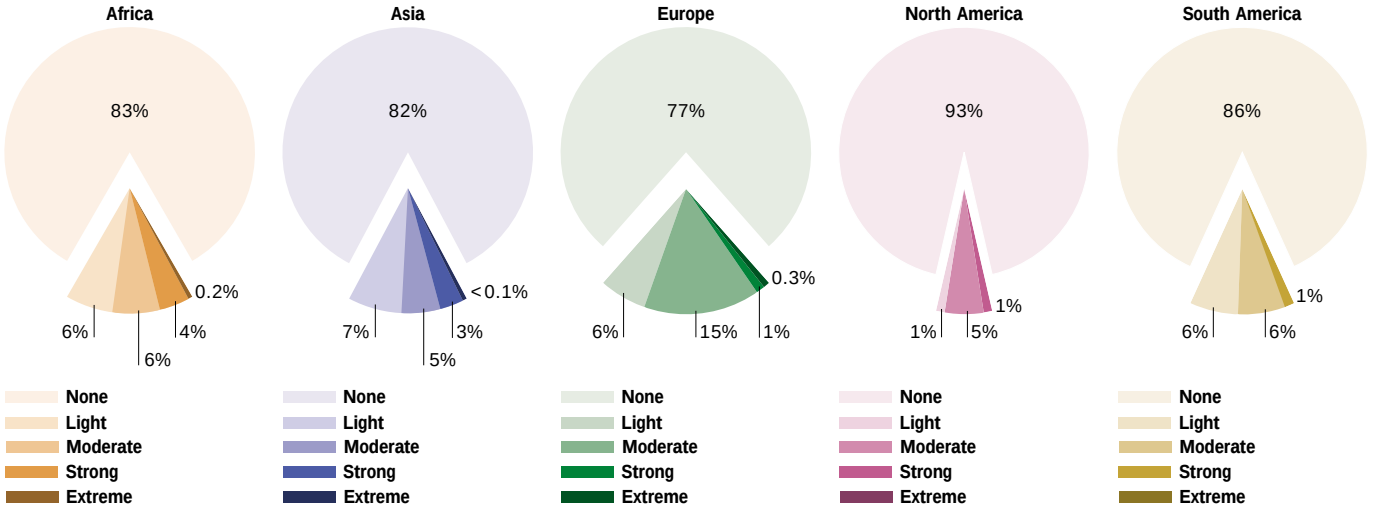
The worst problems of land degradation and hunger are in Africa. Declining soil fertility and water scarcity are being compounded by the AIDS pandemic, which has killed 7 million agricultural workers in the 25 worst-hit sub-Saharan African countries since 1985, and by climate change which appears to be exacerbating the cycles of flood and drought that cripple agricultural productivity in many countries.

UNEP is the task manager for Chapter 12 of Agenda 21: Managing Fragile Ecosystems: Combating Desertification and Drought, and has a number of activities dedicated to reducing land degradation and improving agricultural productivity in Africa and beyond. These range from assessments, such as the Land Degradation Assessment in Drylands, to actions to support the implementation of the UN Convention to Combat Desertification (UNCCD). A major activity is the Global Environment Facility (GEF) Desert Margins Programme, which is working with nine African countries to build capacity to conduct research and implement technologies to reduce dryland degradation. Another promising programme is empowering communities in four countries in the Lake Chad basin to sustainably manage their natural resources.

UNEP is also helping developing countries in the field of biosafety. Much of the agricultural boom of the past three decades was based on yield growth. However, crop productivity began to decline in the 1990s. One possible solution to reduced yields is biotechnology. UNEP is helping countries to develop the necessary skills to assess the potential risks and rewards of genetically engineered crops, so they can make informed decisions on whether to incorporate them into their agricultural strategies. UNEP is also exploring alternative means of increasing soil productivity, such as a newly-launched project to better understand the role of below-ground biodiversity in soil fertility.

Broken Bow, Nebraska, USA. Drought continued to ravage crops and pastures across the parched western United States in 2002, causing an infestation of grasshoppers and Mormon crickets which could be the biggest since World War II. The four-year drought in Nebraska is putting pressure on the Ogallala Aquifer. Water needs are growing and supply is dwindling. Farmers are drilling deeper than ever to keep up with the irrigation that their crops require.

Extent and severity of land degradation



Source: UNEP 1992 and GRID Arendal 2001

In 2002 UNEP completed its policy on land use management and soil conservation, defining UNEP's role in land use management and soil conservation. UNEP's policy is based on the ecosystem approach, highlighting the direct link between environmentally sustainable land use and sustainable development, including poverty reduction.

LAND FOR SUSTAINABLE AGRICULTURE

UNEP is working in a variety of ways to support international efforts to maintain or increase agricultural productivity. Examples include promoting sound chemical management (page 45) and sustainable water use (page 32). UNEP also hosts the Sustainable Agri-food Production and Consumption Forum (www.agrifood-forum.net), which provides access to information on key issues such as agrobiodiversity, water, energy, climate change, chemicals, desertification, consumption, trade and poverty. The Forum's purpose is to help users to understand the environmental implications of various agri-food production and consumption issues so they can respond appropriately.

Agriculture needs fertile soils. All over the world the land is losing its productivity. It is estimated that nearly a quarter of all arable land (excluding mountains and deserts) is now degraded to a degree that affects its productivity. Land degradation has many causes including deforestation, overgrazing, fuelwood consumption, agricultural mismanagement and urbanisation. Among the world's most vulnerable lands are drylands. Drylands occupy one-third of the planet's land area. It is estimated that 70 per cent of the world's drylands are degraded. Climate change threatens to exacerbate the problem further, as does population growth and poverty which is causing people to put increased pressure on marginal land.

UNEP has a number of projects to support the implementation of the United Nations Convention to Combat Desertification (UNCCD), largely funded by the Global Environment Facility (GEF). The second GEF Assembly, held in Beijing, China, in October 2002, made land degradation one of the GEF's six priority areas (www.unep.org/gef). UNEP is currently implementing seventeen activities aimed at combating desertification, focusing predominantly on transboundary dryland ecosystems and shared water resources spanning 26 countries, mainly in Africa. These projects are also contributing to the implementation of the UNCCD Sub-Regional Action Programmes for Africa.

A GEF project which concluded in 2002 was People, Land Management and Environmental Change (PLEC). The final PLEC report *Agrodiversity: Learning from Farmers Across the World* was published, as was *Cultivating Biodiversity: Understanding, Analysing and Using Agricultural Diversity*. Another GEF activity, the Desert Margins Programme, which has been running for five years, entered a new phase in 2002. In collaboration with the World Bank's Consultative Group on International Agricultural Research (CGIAR), UNEP is helping nine African countries to identify the causes of degradation in key selected sites representing a range of dryland habitats. Action plans will be drawn up to arrest

and reverse the decline which will then act as blueprints for land recovery and conservation projects in similar African desert margin areas.

UNEP is also working with UNDP in three African countries (Kenya, Botswana and Mali) to train nomadic people in land management and indigenous species conservation. It is envisaged that the project will evolve into an African Centre for Arid Land Studies and Development where the knowledge gained in the initial studies can be communicated to people living in similar environments throughout Africa. Elsewhere in Africa, the Mega-Chad Biodiversity Conservation and Renewable Energy Technologies Project (www.unep.org/depi/land.asp) is working with communities in the Lake Chad basin to replicate a successful earlier project in Nigeria which demonstrated the sustainable use and management of energy and water for preventing desertification.

THE GLOBAL ENVIRONMENT FACILITY

The People, Land Management and Environmental Change project is among a growing portfolio of projects being implemented by UNEP under the Global Environment Facility (GEF). UNEP is one of three GEF implementing agencies. The others are the World Bank and UNDP. The GEF helps developing countries and those with economies in transition to meet the agreed incremental costs of measures designed to achieve global environmental benefits in six focal areas: biological diversity, climate change, international waters, ozone layer depletion, land degradation and persistent organic pollutants. Land degradation—primarily desertification and deforestation—and persistent organic pollutants (POPs) were designated as focal areas at the GEF Assembly held in October 2002 in Beijing, China.

The GEF is the financial mechanism of the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC). Since 2001 it has been the principal entity operating the financial mechanism of the Stockholm Convention on Persistent Organic Pollutants. GEF support is provided through a variety of activity types: full-size and medium-sized projects (the latter requiring no more than $1 million GEF funding) within thirteen operational programmes; short-term response measures of high priority (not specifically related to one of the operational programmes but which may yield short-term benefits at low cost), and enabling activities.

Enabling activities help countries—and build their capacity—to meet the obligations of being Party to the CBD, UNFCCC, the Stockholm Convention and the Cartagena Protocol on Biosafety. They support the fulfilment of national communication requirements, the assembly of basic information upon which to formulate policy and guide strategic decisions, and the

E. Khaka/F. Elscamp

planning processes for identifying national priorities. In addition, through its Capacity Development Initiative, the GEF supports cross-thematic National Capacity Self-Assessments to identify country level priorities and needs for capacity building to address global environmental issues (in particular biological diversity, climate change, and land degradation) with the aim of catalysing domestic and/or externally assisted action to meet those needs in a coordinated and planned manner. Another category of GEF enabling activities will commence early in 2003, to support the Least Developed Countries prepare National Adaptation Programmes of Action to climate change.

In 2002, UNEP implemented more than 227 enabling activities to help more than 144 GEF-eligible countries meet their legal commitments under the global environmental conventions for which the GEF is the financial mechanism, in particular in the areas of biodiversity, biosafety, climate change, POPs and capacity building needs assessment.

CONSERVING BELOW-GROUND BIODIVERSITY

A new $26 million UNEP/GEF project, with $9 million GEF funding and support from other donors such as the Rockefeller Foundation was launched in November 2002 to investigate the below-ground biodiversity of seven tropical countries in Africa, Asia and Latin America. The objective of the Conservation and Sustainable Management of Below-ground Biodiversity project is to enhance awareness and understanding of the role played by the millions of underground organisms, which include bacteria, fungi, insects, mites and worms, in agriculture in the tropics.

Scientists are convinced that understanding the relationship between below-ground life and such issues as soil fertility, rainwater absorption and carbon sequestration will help to restore degraded lands and improve crop yields without the need for heavy pesticide and fertiliser use. For example, research in the tea growing industry in the Indian state of Tamil Nadu showed that the reintroduction of native species of earthworms that had been eradicated by persistent fertiliser use over decades helped boost stalled yields by nearly 300 per cent. Another example comes from Brazil, where nitrogen-fixing bacteria have been reintroduced to boost soya bean yields. The bacteria, which are being used in 14 million hectares of soya bean fields, have removed the need to use fertilisers and are estimated to be bringing savings of up to a billion dollars a year.

Subterranean life plays a wide variety of roles. Earthworms, termites and other soil-burrowing organisms act as underground ploughs, turning the earth and bringing nutrients to the surface and rejuvenating the soil. They also influence the amount of rainwater soils can absorb. Soils depleted of these organisms are drought-prone and at risk of increased run-off which can lead to soil erosion and flooding. Bacteria and fungi can also help eliminate pollutants and germs from groundwater as it filters through the soil. The wealth of new species awaiting discovery also represents an untapped genetic resource which may yield new drugs such as antibiotics.

The project has targeted areas in seven countries—Brazil, Mexico, Côte d'Ivoire, Uganda, Kenya, Indonesia and India—which are rich in below ground diversity. The countries themselves were chosen because they already have well-developed scientific capacity in the field. The project aims to boost those skills further and to spread awareness and knowledge about conserving below-ground life forms among environmentalists, farmers, government officials and other experts in these and other developing countries.

Earthworms, termites and other soil-burrowing organisms act as underground ploughs, turning the earth and bringing nutrients to the surface and rejuvenating the soil.

Biotechnology is a potentially powerful tool for enhancing the productivity of crops, and hence improving both food security and peoples' livelihoods.

UNEP is helping to build the capacity of developing countries and those with economies in transition to make informed decisions regarding the safe handling, transfer and use of living modified organisms.

BIOSAFETY

Biotechnology is a potentially powerful tool for enhancing the productivity of crops, and hence improving food security. However, there is widespread concern that living modified organisms (LMOs) that result from modern biotechnology may adversely affect biological diversity and human health. The Cartagena Protocol on Biosafety of the Convention on Biological Diversity (CBD) aims to ensure the safe transfer, handling and use of LMOs. It will enter into force 90 days after the fiftieth ratification, which is likely to happen in 2003 (www.biodiv.org/biosafety).

To implement the Cartagena Protocol, new national legal and regulatory frameworks are required. Many countries, especially developing countries and countries with economies in transition, are already having to make decisions about the import and export of products containing or derived from LMOs. There is therefore a strong need to build capacity in biotechnology issues to prepare countries for the Cartagena Protocol's entry into force. This is the focus of the $26 million UNEP/GEF Global Programme for the Development of National Biosafety Frameworks, which is being implemented in over 100 countries between 2001 and 2004. Four Regional Biosafety Awareness Workshops (in Africa, Central and Eastern Europe, Asia-Pacific and Latin America and the Caribbean) were held during the first half of 2002. Following these regional workshops, two further rounds of training workshops will be held to facilitate the development of National Biosafety Frameworks in participant countries.

In addition, UNEP/GEF demonstration projects on the implementation of National Biosafety Frameworks in Bulgaria, Cameroon, China, Cuba, Kenya, Namibia, Poland and Uganda became effective from September 2002 for a duration of three years. Activities will cover finalising the legislative/administrative frameworks needed to make the biosafety regulatory system operational, strengthening local capacity through training, strengthening national institutional facilities, strengthening the biosafety information system within the context of the Protocol's biosafety clearing-house, and enhancing public awareness and participation.

© Karl Ammann

The value of biodiversity

The diversity of life on Earth—from micro-organisms to the largest plants and animals—represents a wealth of resources whose value we are still learning to appreciate. Biodiversity provides human society with goods such as food, medicines and building materials. It also provides ecosystem services including water purification, nutrient recycling and carbon sequestration. It is estimated that there are at least 15 million species on the planet, of which perhaps 2 million have been catalogued and described. The role these species play is still relatively undiscovered, and may remain undiscovered as species become extinct due to land conversion, pollution, unsustainable harvesting of natural resources and the introduction of exotic species.

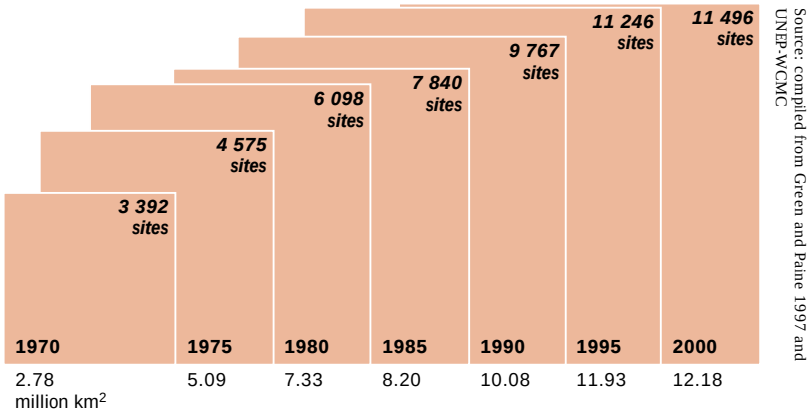
As well as providing known services, biodiversity provides human society with options. Tomorrow's drugs, foodstuffs and technologies depend on preserving today's genes, species and ecosystems. The conservation and wise management of biological resources is a precondition for sustainable development. UNEP provides the secretariat for three biodiversity-related conventions—on biodiversity, migratory species and trade in endangered species. In 2002 the Parties to all three conventions met to discuss issues ranging from access to and benefit from genetic diversity to the conservation of valuable species of trees, mammals, fishes and birds.

An area where biodiversity is increasingly threatened is the world's oceans. UNEP work to protect the marine environment includes supporting a network of regional seas agreements and implementing the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (page 34). UNEP is also a partner in the International Coral Reef Action Network (ICRAN). Climate change, pollution and unsustainable fishing and tourism are taking an increasing toll on the world's coral reefs. The ICRAN partnership was given a boost at WSSD when the UN Foundation and the US Agency for International Development promised a $3 million funding injection to support work to protect the Mesoamerican Reef in the Caribbean.

On land, UNEP is spearheading the Great Apes Survival Project (GRASP). A UNEP report *The Great Apes: the Road Ahead*, detailing the plight of the humankind's closest relatives and providing a roadmap to their preservation, was launched at WSSD. Another 2002 publication, the *World Atlas of Biodiversity*, added to a growing list of UNEP knowledge products, such as *GEO-3*, that are supporting decision making for biodiversity conservation.

UNEP's *GEO-3* report highlights the bushmeat trade as a key issue for biological diversity in Africa. It especially threatens the great apes. A 2002 UNEP TVE Earth Report film exposed how the trade is not just restricted to Africa. Couriers distribute meat to many European capitals. It is estimated that up to 10 tons of bushmeat reach London's Heathrow airport each day.

Global number and area of protected sites by year



Source: compiled from Green and Paine 1997 and UNEP-WCMC

The total area of protected areas that are over 1,000 hectares increased from some 2.78 million km² in 1970 to more than 12 million km² in 2000.

BIODIVERSITY CONVENTIONS

The Parties of the three biodiversity related conventions for which UNEP provides the secretariat—the Convention on Biological Diversity, the Convention on Migratory Species of Wild Animals, and the Convention on International Trade in Endangered Species of Fauna and Flora (CITES)—all met in 2002. The sixth Conference of Parties to the Convention on Biological Diversity (www.biodiv.org), in The Hague, Netherlands, April 2002, charted a course for global action on biodiversity through to the end of the decade, established an international programme on forests, and adopted detailed guidelines on combating invasive alien species and on access to genetic resources (page 57). In their closing declaration ministers resolved to strengthen efforts "to put in place measures to halt biodiversity loss, which is taking place at an alarming rate, at the global, regional, subregional and national levels by the year 2010".

In September, the seventh Conference of Parties to the Convention on Migratory Species met in Bonn, Germany (www.wcmc.org.uk/cms). Several species of wild animals received tough new protection including the great white shark, an endangered species of Mongolian camel and a blind river dolphin which lives in the Ganges and Indus river deltas. Delegates also backed plans to protect birds and other migratory species from power lines and wind turbines. A resolution was backed to require countries to study the impacts of onshore and offshore wind farms which could pose a threat not only to birds but to migratory marine mammals such as dolphins, porpoises and whales. Another campaign to install simple but effective measures to reduce the number of albatrosses and petrels killed by long-line fishing practices also received support.

The third UNEP-hosted convention, CITES, met in Santiago, Chile, in November 2002. Trade in wild species of flora and fauna represents a major sector of the global economy—over $20 billion a year. Up to a quarter of this trade is illegal, representing the second largest criminal activity after narcotics. UNEP support for implementing CITES includes building the capacity of customs officers to detect and prevent illegal trade and promoting improved cooperation between national and international law enforcement agencies and international conventions such as CITES and the Lusaka Agreement, as well as with other conventions that address environmental crimes such as the illegal trade in ozone-depleting substances and hazardous wastes.

CITES delegates voted to increase protection for a variety of threatened species including mahogany trees, whale sharks, sea horses, and a range of plants and animals endemic to Madagascar, one of the world's most species-rich countries. Delegates also revisited the perennial question of the ivory trade which has dominated CITES meetings since the late 1980s when the rapid decline of elephants in Africa and Asia precipitated massive worldwide concern and a total ban on trade in elephant products. An increase in elephant numbers in parts of Africa, combined with improved conservation and monitoring capacity, persuaded delegates in Santiago to provisionally approve the sale of some stockpiled ivory by Botswana, Namibia and South Africa in 2004.

ACCESS TO AND BENEFIT FROM GENETIC RESOURCES

Ministers attending the sixth Conference of Parties to the Convention on Biological Diversity in April 2002 adopted a UNEP initiative on detailed guidelines on access to genetic resources and benefit sharing. The voluntary guidelines will help regulate how foreign companies, collectors, researchers and other users gain access to valuable resources and will improve benefits to countries of origin and indigenous communities. They advise governments on how to set fair and practical conditions on those who seek to use genetic resources, such as plants that can be used to produce new pharmaceuticals, and recommend that users should offer benefits such as profits, royalties, scientific collaboration or training. To help implementation of the guidelines, UNEP will organise training in the regions during 2003 for all stakeholders including government representatives, local experts and representatives of indigenous communities.

Indigenous people are among the first to suffer when relatively untouched areas are opened up for exploitation and development. They are also among the last to benefit from globalisation. As well as representing a major injustice, the destruction of indigenous people's ways of life and livelihoods is a potentially serious loss for humanity. Just as biological diversity provides a foundation of options for future society in terms of food, medicines and other materials for society's use, so does humankind's cultural diversity. Indigenous communities possess a wealth of untapped knowledge about the properties and relationships inherent in the world's ecosystems. A meeting in Montreal, Canada, in January 2002, under the Convention of Biodiversity, looked at ways of preserving and maintaining traditional knowledge and ways of life so that valuable knowledge is not lost to future generations. One of the recommendations was that, just as the world is beginning to accept the importance of conducting environmental impact assessments before embarking on any major development initiative, so too should cultural impact assessments become standard practice before decisions on projects such as roads, mines or dams are made.

UNEP is also working on the conservation and sustainable use of genetic resources by supporting the conservation of priority species in African forests. Indigenous forests are high in biological diversity and are a valuable source of existing and undiscovered medicines, as well as foods. With UNEP support, the International Plant Genetic Resources Institute, in collaboration with the sub-Saharan African Forest Genetic Resources Programme, undertook a study in Benin, Kenya and Togo to develop appropriate conservation strategies for African forest priority species. The overall objective of this capacity building activity was to develop methodologies for assessing the genetic erosion of priority tree species (food, fodder and medicinal) as a basis for developing appropriate strategies for conservation and sustainable use of forest genetic resources in sub-Saharan Africa.

Indigenous people are among the first to suffer when relatively untouched areas are opened up for exploitation and development. They are also among the last to benefit from globalisation.

CORAL REEFS

Coral reefs are among the world's most diverse habitats. These systems, sometimes referred to as the rainforests of the seas, provide a number of ecological services. As well as being home to a staggering variety of marine species, they act as nurseries for inshore fisheries, they provide shoreline protection from ocean waves and storms, and they provide a vital source of tourism revenue. They are under increasing threat from climate change, pollution, destructive fishing practices and ill-managed tourism.

UNEP has a number of activities to promote the sustainable use and conservation of these valuable resources. For example, the communication pack *Coral or No Coral? It's My Choice*, which was launched in January 2002, is helping to educate local authorities, tourism operators and tourists about coral reef protection (www.uneptie.org/pc/tourism). The five communication tools that comprise the *It's My Choice* pack were prepared in collaboration with ICRI—the International Coral Reef Initiative.

Also under the ICRI umbrella is the International Coral Reef Action Network (ICRAN), a wide alliance of partners, including UNEP, which is implementing a range of coral reef protection measures through management, assessment, and education activities(www.icran.org). ICRAN field activities are implemented through the UNEP Regional Seas programmes at sites in the Caribbean, Eastern Africa, East Asia and the South Pacific. Currently additional sites are being identified in South Asia and the Arabian Seas regions, creating a truly global network. Largely supported by the UN Foundation, ICRAN is raising additional resources for a Coral Reef Fund that will provide sustainable financing for coral reef management and conservation.

At WSSD, UNEP organised a side event People and Reefs: A Partnership for Prosperity to address the further development and geographic expansion of ICRAN. At the event, the UN Foundation and USAID announced $3 million new funding for ICRAN work in the Mesoamerican reef—the second largest barrier reef in the world.

The urgency of addressing the decline of the world's coral reefs was highlighted earlier in 2002 with the release of a paper in the journal *Science* identifying ten coral reef 'hot-spots' that are particularly rich in endemic species and therefore highly vulnerable to extinction. The paper drew on data from UNEP-WCMC, which also produced the definitive *World Atlas of Coral Reefs*. Later in 2002 more disturbing findings about the state of the world's corals were released by the ICRAN coral reef information system ReefBase (www.reefbase.org), revealing that a new wave of bleaching has swept coral reefs worldwide. The severity of the 2002 event was second only to the wave of bleaching and mass mortality recorded during and after the 1997–8 El Niño Southern Oscillation event. Bleaching is linked with seawater temperature rises, the suspected cause of which is climate change.

GRASP

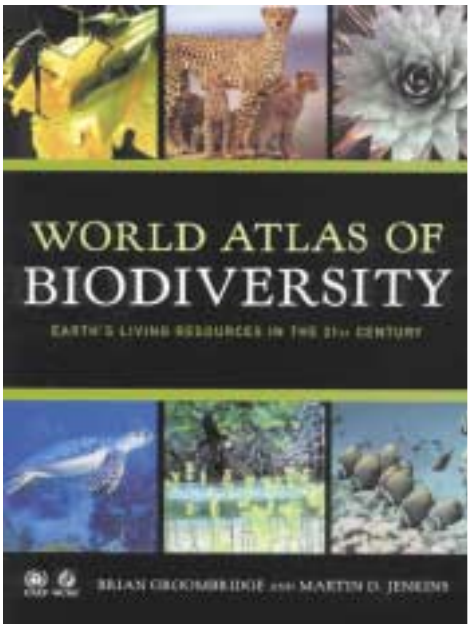
The Great Apes Survival Project, a partnership between UNEP and UNESCO and an array of research and conservation organisations devoted to halting the decline of great apes in Africa and Asia, continued to develop momentum after its 2001 launch (www.unep.org/grasp). A GRASP side event at WSSD saw the launch of two hard-hitting television public service announcements and a report *The Great Apes: the Road Ahead* giving disturbing new statistics about ape habitat loss and setting out a joint strategy that addresses the needs of people, forests and apes.

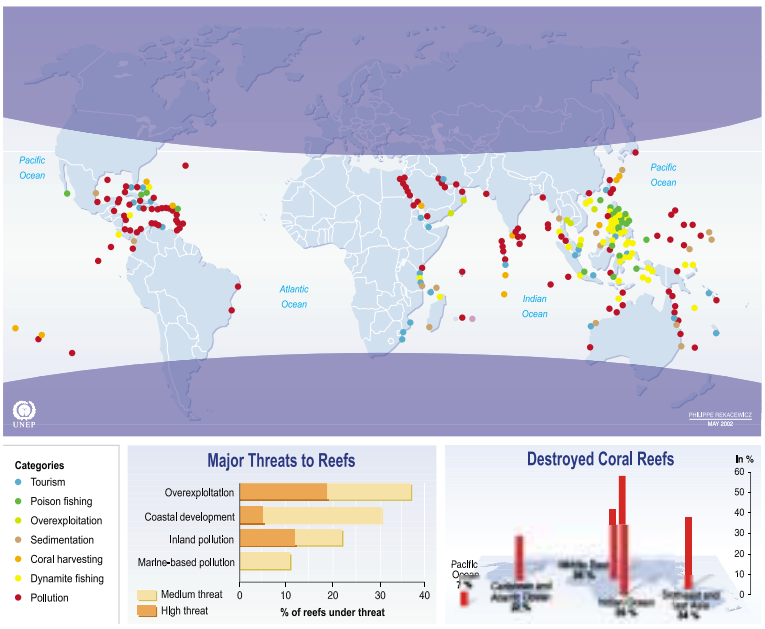
More information on coral reefs and their management is being generated by the Integrated Global Observing Strategy (IGOS). In 2002, the UNEP Coral Reef Unit and the United States National Oceanic and Atmospheric Administration co-led a team of remote-sensing and reef monitoring specialists to prepare an IGOS coral reef sub-theme. Their report will identify strategies for improving coral reef observations from satellites and in the field.

In 2003 the UNEP Coral Reef Unit will relocate to UNEP-WCMC. WCMC already hosts the ICRAN Coordinating Unit. The addition of the Coral Reef Unit will strengthen UNEP-WCMC as a world authority on coral reefs.

Launched in August 2002, the first *World Atlas of Biodiversity: Earth's Living Resources for the 21st Century* shows how humankind is dependent on healthy ecosystems for all its needs. Produced by the UNEP world Conservation Monitoring Centre (www.unep-wcmc.org), the Atlas is the first comprehensive map-based view of global biodiversity. It provides a wealth of facts and figures on the importance of wetlands, forests, marine and coastal environments and other key ecosystems. The World Atlas of Biodiversity is available from www.earthprint.com or from UNEP's publication distributor, SMI (see page 62).

Major observed threats to the world's coral reefs





Source: Bryant et al, *Reefs at Risk: A Map-based Indicator of Threats to the World's Coral Reefs*, World Resources Institute

A combination of road building, logging, mining and other infrastructure development means that less than 10 per cent of ape habitat in Africa will remain undisturbed by 2030, say the reports. The picture is even bleaker in Southeast Asia. However, it is not too late to save humankind's closest relatives and the valuable habitat in which they live. With support from the UN Foundation, UNEP is working to provide cohesion to the GRASP partnership and attract political commitment to saving the great apes. A major thrust of the GRASP strategy is advocacy, education and public awareness at the local level.

The forests which support the great apes are immensely valuable to a wide range of species, as well as to the communities who live in and around them and depend on forest resources for food, medicines and clean water.

Speaking at the GRASP event in Johannesburg, Klaus Toepfer, the UNEP Executive Director, noted that the success or failure of the international community's attempts to save the great apes will be a litmus test of the broader commitment, adopted at WSSD, to significantly reduce biodiversity loss by 2010.

UNEP's finances are improving. The number of donor countries and contributions to core funds are increasing and earmarked funding is coming through new partnerships. Nevertheless, the current positive trend needs to be further strengthened to ensure the successful implementation of UNEP's expanding work programme.

The Environment Fund budget for 2002–2003 biennium is US$119.9 million. The Environment Fund is the main mechanism for financing core UNEP activities. This funding base, which is not tied to specific programmes and projects, remains UNEP's top priority. In addition to the Environment Fund, the total UNEP operational budget includes additional resources from UNEP trust funds and trust fund support, counterpart (earmarked) contributions and the UN Regular Budget. The total 2000–2001 UNEP biennial budget exceeded $200 million. Income was over $207 million. Total income in 2002 is expected to exceed $115 million.

To implement the 2002–2003 programme UNEP still needs increased contributions from a broader donor base. UNEP is planning to achieve this by introducing a pilot phase of the Indicative Scale of Contributions (ISC) from 2003. In September 2002 the UNEP Executive Director approached all 191 UN member states inviting them to follow the decision of the seventh special session of the Governing Council (GC) in Cartagena, 2002 and consider the proposed ISC. The results of introducing the ISC will be analysed and UNEP will report on its implementation at the eighth special session of the GC in 2004.

Good results were achieved in 2002 in fund raising for UNEP activities through establishing long-term partnership links with major donor countries. The idea of Partnership Agreements is to strengthen strategic collaborations between UNEP and donor countries in support of selected priority programme areas. UNEP has developed partnership agreements of different types with Norway, Belgium, Netherlands, Ireland and Luxembourg, and is continuing discussions with several other countries. The agreements focus on projects which strengthen capacity in developing countries for improving the environment and participating in global and regional environmental cooperation.

Increased pledges/payments to the Environment Fund 2001–2002

	Country	2001 contributions	2002 contributions and pledges		Increase (US$)
1	Andorra	7,100	7,810		710
2	Australia	309,300	345,280		35,980
3	Austria	298,576	316,677		18,101
4	Bhutan	1,119	1,235		116
5	Canada	711,514	1,598,101	*	886,587
6	Cameroon	-	5,400	*	5,400
7	Central African Rep.	-	600	*	600
8	China	180,000	187,274		7,274
9	Colombia	35,810	37,000	*	1,190
10	Czech Rep.	124,642	163,383		38,741
11	Denmark	1,758,666	2,055,567		296,901
12	Egypt	-	9,000	*	9,000
13	Fiji	3,500	4,622		1,122
14	Finland	2,520,385	2,820,689		300,304
15	France	885,000	2,006,800		1,121,800
16	Gambia	-	1,000	*	1,000
17	Germany	4,828,884	5,009,716		180,832
18	Ghana	-	1,500	*	1,500
19	Guinea	-	1,800		1,800
20	Iceland	16,000	20,000		4,000
21	Ireland	231,000	271,986		40,986
22	Israel	20,000	22,000		2,000
23	Italy	1,664,978	2,074,600		409,622
24	Latvia	-	5,900		5,900
25	Lesotho	-	10,000	*	10,000
26	Liechtenstein	-	3,500		3,500
27	Luxembourg	41,785	73,178		31,393
28	Madagascar	-	4,740		4,740
29	Mozambique	-	600	*	600
30	Netherlands	4,485,436	4,682,104		196,668
31	New Zealand	56,265	145,800		89,535
32	Niger	-	600	*	600
33	Norway	1,712,720	1,983,340		270,620
34	Pakistan	4,975	5,000		25
35	Philippines	2,297	9,340	*	7,043
36	Portugal	-	60,000		60,000
37	Saint Kitts&Nevis	-	600		600
38	Saudi Arabia	-	151,303		151,303
39	Seychelles	-	1,200	*	1,200
40	Slovenia	-	48,553		48,553
41	South Africa	-	10,000		10,000
42	Spain	535,021	596,625		61,604
43	Sweden	2,093,079	2,210,311		117,232
44	Tajikistan	4,000	10,950		6,950
45	Thailand	14,760	18,594		3,834
46	United Kingdom	5,955,600	6,514,234		558,634
		22,528,052	**26,964,734**		**4,436,681**

Number of new contributors = 18
* = pledges

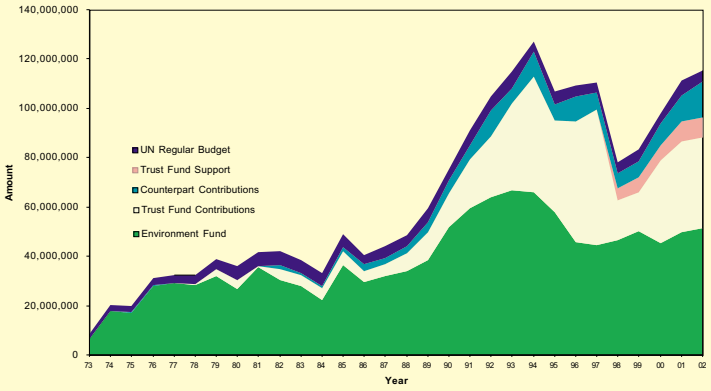
Increasing contributions/pledges to the Environment Fund by countries 2000–2002

Year	Payments	Annual increase	Donor countries	Annual increase
2000	*$40,900,000*		*71*	
2001	*44,100,000*	*7.8%*	*80*	*12.6%*
2002 (estimate)	*48,400,000*	*9.8%*	*95*	*18.8%*

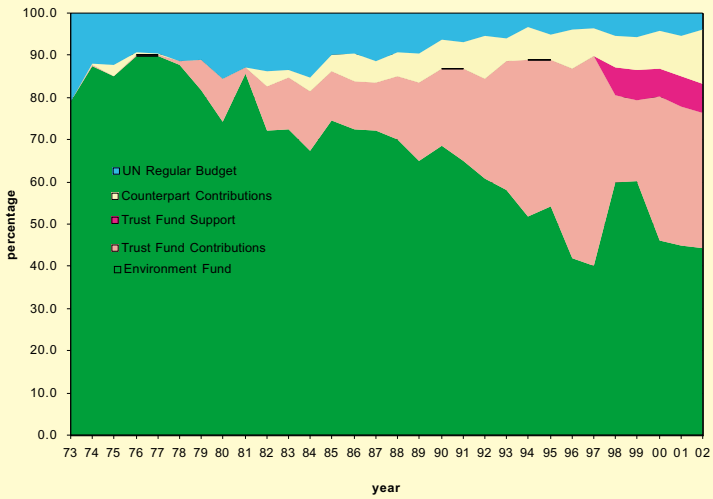
Environment Fund contributions (US$) 2000–2002

	Country	2000	2001	2002*	TOTAL*
1	United States of America	7,235,000	6,500,000	6,500,000	**20,235,000**
2	United Kingdom	6,304,200	5,955,600	6,514,234	**18,774,034**
3	Germany	4,900,752	4,828,884	5,009,716	**14,739,352**
4	Japan	4,545,867	4,545,867	4,100,000	**13,191,734**
5	Netherlands	2,528,065	4,485,436	4,682,104	**11,695,605**
6	Finland	2,547,112	2,520,385	2,820,689	**7,888,186**
7	Switzerland	2,088,236	2,259,866	2,161,538	**6,509,640**
8	Sweden	1,477,054	2,093,079	2,210,311	**5,780,444**
9	Norway	1,777,567	1,712,720	1,983,340	**5,473,627**
10	Denmark	1,617,744	1,758,666	2,055,567	**5,431,977**
11	Italy	483,922	1,664,978	2,074,600	**4,223,500**
12	France	822,584	885,000	2,006,800	**3,714,384**
13	Canada	754,532	711,514	1,598,101	**3,064,147**
14	Spain	563,013	535,021	596,625	**1,694,659**
15	Belgium	504,980	505,000	505,000	**1,514,980**
16	Russia	350,000	500,000	500,000	**1,350,000**
17	Austria	370,065	298,576	316,677	**985,318**
18	Australia	299,400	309,300	345,280	**953,980**
19	Kuwait	220,900	200,000	200,000	**620,900**
20	Ireland	107,750	231,000	271,986	**610,736**
	Total	**39,500,743**	**42,502,893**	**46,452,568**	**128,456,204**
	World Total	**40,895,953**	**43,917,610**	**48,409,664**	**133,223,227**

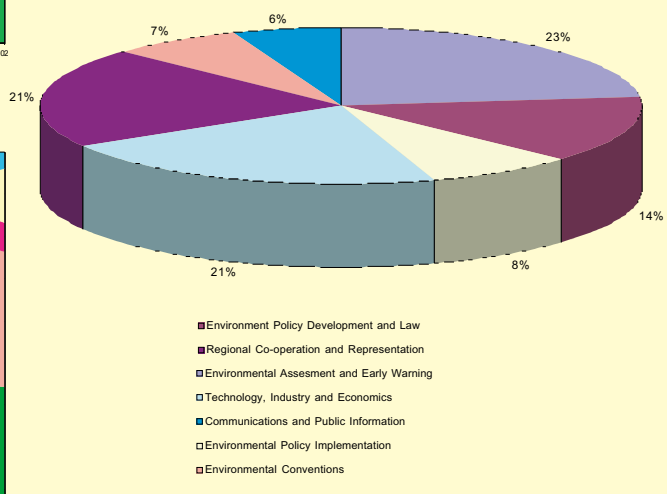
Sources of funds in US$ 1973–2002



Sources of funds in US$ 1973–2002



Environment Fund activities: Programmes of work for 2000–2002



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[1] All UNEP Divisions are located at UNEP Headquarters with the exception of DTIE.

[2] Internet access to all UNEP Divisions and additional e-mail addresses are available from the UNEP web site www.unep.org.

[3] Divisional list compiled according to the UNEP Operational Manual (available from UNEP, Chief, Programme Coordination and Management Unit, P.O. Box 30552, Nairobi 00100, Kenya). Branches and units located outside UNEP Headquarters are listed under UNEP Outposted Offices and Collaborating Centres.

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