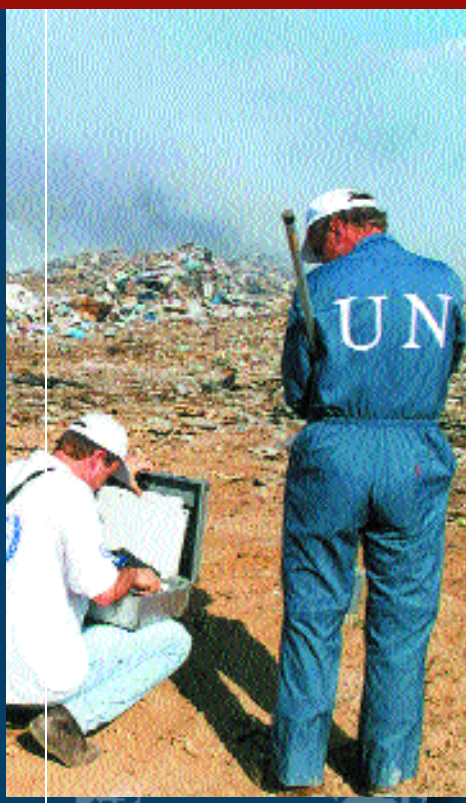
UNEP

Post-Conflict Environmental Assessment—Albania



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Foreword

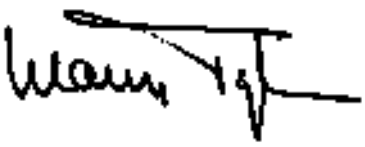
Albania has been undergoing a profound transition during the past decade. Economic and civil reforms have been accompanied by rising environmental awareness and the creation of a National Environmental Agency. The Kosovo conflict added a new and urgent dimension to humanitarian challenges and efforts.

This report continues the United Nations Environment Programme's (UNEP) investigation of the impacts of the Kosovo conflict. It extends the body of knowledge about the environmental impacts of the conflict, and about the urgent environmental challenges facing Albania. The report should provide a useful tool for international community members seeking to assess Albania's needs and assist the country. It also underscores the importance of environmental management during humanitarian assistance efforts.

To conduct the assessment, UNEP drew on the skills of international experts from various scientific and environmental policy disciplines. During a field mission to Albania, the team visited refugee camps and environmental 'hot spots', including neglected industrial sites. The team also took samples and analyzed various environmental and human settlement data. I would like to thank this dedicated and highly skilled team for their hard work.

UNEP is committed to assessing areas of the world suffering from acute environmental degradation caused by human conflicts or natural disasters. This work began following last year's Kosovo conflict, when the Joint UNEP/UNCHS (Habitat) Balkans Task Force (BTF) was established. The BTF conducted a rapid assessment that culminated in the publication of *The Kosovo Conflict: Consequences for the Environment and Human Settlements.* Since that time, UNEP has implemented humanitarian projects to mitigate pollution at environmental 'hot spots' identified by the report.

This UNEP report, *Post-Conflict Environmental Assessment—Albania*, was made possible through generous support provided by The Netherlands, and with the close cooperation of the Stability Pact for Southeastern Europe, the United Nations Development Programme, the United Nations Economic Commission for Europe, and the United Nations High Commissioner for Refugees. My thanks go to the Dutch government and these partner organizations for their contributions and invaluable in-kind support.



Klaus Toepfer
Under-Secretary General of the United Nations
Executive Director of the United Nations Environment Programme

Introduction

In the aftermath of conflict lie opportunities for regeneration. During the past ten years, South Eastern Europe has experienced upheaval and instability. Conflicts were fought, and communities divided. Many fled their homes and their countries to escape danger. As attention focused on other issues, the region's rich natural environment became increasingly degraded.

Fortunately, the momentum in the Balkans has shifted. Peace, democracy and stability are taking hold. Cooperation is growing within the region and across Europe. Reconstruction efforts are underway, and protection of the environment is an emerging priority.

This assessment focuses on Albania's environmental needs in the context of these broad regional developments. Like its Balkan neighbors, Albania is home to some of Europe's most diverse and treasured natural resources. These resources have suffered, however, from decades of unregulated industrial activity.

Today, the country is undergoing a transformation of its democratic institutions. Environmental protection is evolving alongside economic development. There is now an opportunity for Albania to stop the destruction of its precious environment and, at the same time, create a strong economy and prosperity for its citizens.

This report is not intended to be a comprehensive environmental survey. It is, instead, a rapid, strategic assessment aimed at identifying the most urgent environmental needs of Albania in order to prioritize rehabilitation funding. Accordingly, the report focuses on the country's severely polluted, 'hot spot' sites requiring immediate attention; the environmental consequences of refugee influxes from the Kosovo conflict; and the actions that can strengthen Albania's environmental institutions and policies.

Ultimately, the responsibility for improving Albania's environment rests with the people of Albania. The international community can play a valuable role in helping Albania to fulfill its agenda. Albania, however, must set the agenda.

UNEP hopes that the recommendations contained in this report will catalyze action. In particular, UNEP urges the international community to immediately assist local authorities in remediating the 'hot spot' sites identified.

This assessment was developed at the request of the government of Albania (the Government) and under the framework of the Stability Pact for Southeastern Europe. It complements *The Kosovo Conflict: Consequences for the Environment & Human Settlements (1999)* and *Post-Conflict Environmental Assessments—FYR of Macedonia (2000).*

➤ Map 1 : The Balkan region

The Assessment Method

Traditional responses to emergencies tend to focus on humanitarian action. UNEP's post-conflict environmental assessments answer a global need for rapid, independent assessments of environments affected by conflicts and other emergencies. As a focal point for the world environmental community, UNEP is well positioned to coordinate international partners and bring together the expertise necessary to analyze complex post-emergency dynamics. The goal is to provide focused, strategic analyses that help countries set environmental agendas and reintegrate themselves into the regional and world community. Just as importantly, UNEP seeks to assist donor nations in identifying priority areas for environmental cooperation.

UNEP post-conflict assessments analyze environmental conditions with a view toward emergency prevention and preparedness as much as emergency mitigation and response. This requires understanding the broader context of a country's pre-existing environmental conditions and capacities. Assessments, therefore, entail extensive analyses of relevant environmental issues, meetings with key shareholders, field missions, the publication of reports, and efforts to catalyze concrete environmental remediation action.

UNEP's environmental assessment of Albania was made with the close cooperation and support of Albania's National Environment Agency (NEA). The assessment process began with a systematic review of the available literature and data concerning Albania's environment. A preliminary UNEP field mission met with environmental leaders from government, the non-governmental community and academia. Based on this research, UNEP decided to focus this assessment on three core areas of concern:

- sites of urgent environmental concern, i.e., 'hot spots';
- refugee impacts on Albania's environment; and
- albania's institutional capacity for environmental protection.

During the week of 17-24 September 2000, a UNEP mission hosted by the NEA investigated conditions in Albania. The mission team was comprised of specialists in chemical and technological processes, solid waste management, biodiversity, drinking water, waste water, air quality, soil, land use planning, law, government, humanitarian assistance, emergency management, environmental economics, environmental information, and communications. National experts from Albania accompanied the team and provided valuable information.

The mission team divided into three subgroups that focused on 'hot spots', refugee impacts and institutional capacity, respectively. Throughout the week, the teams held dozens of meetings with key stakeholders from government, non-governmental organizations, donors, academia, and the media.

The 'hot spot' team visited nine sites, as detailed in Chapters 3 and 4. The sites were selected in advance of the mission, through in-country consultations with national experts. The aim was to investigate those sites considered most likely to pose immediate risks to the environment and human health. At each of the sites, the team met with plant representatives or local officials, conducted visual inspections of the facilities, and, when appropriate, took samples of soil, water or air. Experts from the team also met with several representatives of non-governmental organizations; the Hydrometeorological Institute; the Institute of Public Health; the Natural Sciences Department of Tirana University; and the Soil Sciences Institute.

The team specializing in the potential environmental impacts of refugees met with a total of seven agencies and organizations that were directly or indirectly

➤ Map 2: Sites assessed by the UNEP mission

Source: Department of Public Information of the United Nations (UNDPI), Cartographic Section, New York ; United Nations Environment Programme (UNEP).

involved with the refugee influx. These included the Resident Representatives of the United Nations High Commissioner for Refugees (UNHCR) and the United Nations Development Programme (UNDP); the NEA; representatives from the Regional Environmental Agencies of Durres, Fier and Shkoder; and the Ministry of Agriculture and Food. Based on pre-mission research and on the content of the aforementioned interviews, the team inspected twelve refugee-affected areas: the refugee camps of Spitalle, Hamallaj 3, Rrushkull 1,Austrian Army, Islamic Relief, Shirokë, and Hope; the Sports Palace; Olympic and Tobacco Factory collective centers; Tirana City Park; and the Tirana Swimming Pool Complex.

The institutional capacity team met with representatives of the NEA; the Environmental Center for Administration and Technology (ECAT); the Municipality of Tirana; the Ministry of Health; the Ministry of Transport; the Ministry of Public Works; the Ministry of Agriculture and Food; the Directorate of Forestry and Pastures; the Secretariat of the National Water Council; the Regional Environmental Agency (Durres); the Institute of Soils; the Ministry of Public Economy and Privatization; the Council on Territorial Adjustment; the Hydrometeorological Institute; the Regional Environmental Center; EU/PHARE; the Public Health Institute; the World Bank; as well as donors and representatives of non-governmental organizations.

At several sites visited the technical information available was limited or outdated. Accordingly, the team reviewed additional data, including the results of samples taken in the field by UNEP experts.

Key Conclusions

1. UNEP identified 'hot spot' environmental conditions in five of the sites it investigated during its field mission:

- the chemical plant in Durres;
- the fertilizer plant in Vlore;
- the oil refinery in Ballsh;
- the oil fields in Patos; and
- the solid waste dumpsite in Sharra.

These sites require urgent attention in order to halt dangerous risks to human health and the surrounding environment. The international community should immediately provide emergency assistance to these priority areas. (For 'Hot Spot' Recommendations, see page 53.)

2. The remaining four sites investigated by UNEP have serious environmental

problems. These problems require investigation, the implementation of remediation measures, and long-term monitoring in order to avoid further risks to nature and human health.

3. The long-term environmental impacts of refugee influxes into Albania were minimal. UNEP, however, observed areas of minor environmental degradation that might have been avoided with a greater degree of environmental planning, management and agency cooperation. In addition, the majority of the camps were not adequately rehabilitated. (For refugee management recommendations, see page 56.)

4. The Government is making significant strides toward developing its environmental protection capacities. Environmental legislation and programs have improved in recent years. Environmental responsibilities within the Government, however, are widely dispersed and often overlapping. As a result, policies are not coordinated, implementation is slow, and enforcement is weak. The monitoring of environmental and health conditions is also inadequate. The creation of a strong, adequately financed Ministry of the Environment would help clarify environmental responsibilities, strengthen policy and enforcement efforts, and increase environmental awareness in Albania. (For institutional capacities recommendations, see page 59.)

Acknowledgments

The UNEP assessment was entirely financed by The Netherlands with the support of the Stability Pact for Southeastern Europe. In addition, essential support in the planning and implementation of the project was provided by UNDP, UNHCR and the United Nations Economic Commission for Europe (UNECE). Special recognition must be given to the Resident Representative and staff of the Tirana office of UNDP, without whose guidance and logistical support UNEP could not have conducted the assessment.

The Government and citizens of Albania provided tremendous assistance to UNEP. The NEA and ECAT deserve special thanks for their consistent spirit of support, indispensable assistance, and expert advice. UNEP also received essential cooperation from many other ministries, authorities, non-governmental organizations and industries in Albania.

To all of its partners throughout the assessment, UNEP would like to express its deep gratitude.

Environmental Context

Background

Albania is located in the western part of the Balkan Peninsula. The country borders the Federal Republic of Yugoslavia to the north and northeast, the Former Yugoslav Republic of Macedonia to the east, and Greece to the south. Its western coast faces the Adriatic and Ionian Seas. Much of Albania's 28,748 square kilometers is mountainous. The country has approximately 3.5 million inhabitants, 46 % of which live in urban areas.

Between 1944 and 1991, Albania's government was controlled by the Communist Party, known most of that time as the Albanian Party of Labor (APL). During this period, the state controlled economic activity—private ownership and private enterprise were forbidden. Industrial infrastructure (e.g. smelting, chemical production, metallurgy and oil refining) was imported primarily from China and the Soviet Union. Emission controls and wastewater treatment were not incorporated into most factory designs. Approximately half of Albania's labor force worked in agricultural collectives. Substantial resources were invested in reclaiming, irrigating, and fertilizing farms, but environmental criteria and soil conservation measures were not employed in the process.

Towards the end of the 1980's, political upheavals swept across Eastern Europe. Facing mounting political pressure, the Albanian government restored religious and travel freedoms and legalized opposition parties. Continuing economic, social, and political instability led to the fall of several governments. In March 1992, the opposition won a decisive electoral victory, and Albania began its transition to a free market economy.

Albania emerged from the Communist era the poorest country in Europe. To address this problem, the new government launched a far-reaching economic reform program. Many state businesses were privatized, production decisions were decentralized, and restrictions on trade and foreign investment were lifted.

Between 1989 and 1992, the economy declined sharply. Factories began to close, and production levels dropped among operations that stayed open. From an environmental perspective, the weakened economy was a mixed blessing. With dramatically lower industrial output, pollution levels decreased. At the same time, plant sites were either abandoned, with few resources available for clean-up, or privatized under conditions that did not clearly establish environmental liability.

➤ Map 3 : Republic of Albania

In 1993, the country's gross domestic product grew by 11 %. In 1994, it grew by 7 %, and in 1995, by 6 %—the highest rate in Europe. From 1992 to 1995 inflation plummeted from a yearly average of 226 % to 7 %. By mid-decade, the state controlled only 40 % of the total economy. Spurred by privatization and land reform, farming rebounded, giving the economy a strong jolt upward.

In 1997, however, Albania experienced tremendous political instability and civil unrest. The consequences for the economy were severe, and Albania continues to struggle with a number of serious difficulties to this day. The vast majority of industries remain shut, and unemployment is high. Poverty is widespread.

One result of continued economic decline has been migration of the population. Many leave Albania in search of better economic prospects elsewhere. Others, move from the country's more economically depressed, rural regions to the cities. The problem is compounded by rapid population growth. Tirana's population, for example, has more than doubled in the past ten years.

Urban infrastructure, however, has not grown commensurately. Water supply and solid waste systems are strained beyond capacity. In extreme cases, some families lacking alternatives have created homes on extremely hazardous industrial sites, as described more fully in Chapter 3. In effect, Albania is struggling with an internal refugee crisis.

At the other end of the economic spectrum, substantial amounts of income are inadequately reported for tax purposes, putting added strain on government resources. Similarly, widespread and unrestrained illegal construction is defacing the country's landscape and further undermining already inadequate public works.

The Environmental Situation

In the face of formidable social and economic challenges, Albania has begun to develop a framework for addressing the environmental problems that have arisen during decades of industrialization and neglect.

The country's Constitution provides that the republic must maintain a 'healthy and ecologically suitable environment for the present and future generations.' Natural resources are to be 'rationally exploited' consistent with 'the sustainable development principle.'

Several positive developments have resulted from this constitutional directive. In 1993, the Government published its first National Environmental Action Plan (NEAP). The NEAP set Albania's environmental goals and recommended an action-plan. It also identified several short-term priorities, including:

- monitoring industrial and urban pollution, including air and water pollution;
- establishing admissible pollution standards;
- halting illegal tree cutting and investing in soil erosion prevention measures;
- assessing the environmental needs of the Albanian coastline;
- regenerating severely polluted zones; and
- implementing European level environmental mechanisms.

Several initiatives are underway to achieve these goals. At the same time, a process to update the NEAP has begun. The revised NEAP is expected to emphasize:

- greater intra-governmental cooperation;
- establishing environmental units in key ministries and municipalities;
- improving the environmental inspection system;
- establishing an environmental information system;
- strengthening the environmental impact assessment (EIA) system; and
- completing the state's environmental framework.

The Law on Environmental Protection, a key framework statute, was enacted in 1993 and amended in 1998. It addresses the full spectrum of environmental policy issues. It also requires the publication of a State of the Environment (SOE) Report. The first official SOE report was published in 1994, the second in 1998. These documents are available on the internet at: http://www.grida.no/enrin/htmls/albania/soe/htmls/

Bunës River joining Lake Shkoder

In 1998, the Government created the National Environment Agency, bringing environmental issues to a new level of national prominence. The NEA is discussed more fully in Chapter 6, below.

Illegal garbage dumps along the bank of Lake Shkoder, Shkoder

■ WASTE

The absence of solid waste management is an enormous, and readily apparent, problem in Albania. Following the adoption of a market economy, the country's production of solid wastes grew significantly. New, imported products entered the Albanian market for the first time. Rapid population growth, urbanization and a boom in construction put significant new stresses on an already weak waste management system.

Today, there is almost no organized solid waste management in the country. There are no official, properly managed dumpsites or incinerators, no waste reduction targets, and no waste monitoring programs. In 1998, the country produced an estimated 520,000 tons of solid waste. That same year, waste collection services, a municipal responsibility, were available to only 55 % of Albanians.

Solid waste is dumped at unmanaged and mostly illegal dumpsites that have appeared across the entire country. The waste is typically burning, spreading pollutants throughout the area. Unrestricted access allows local residents and animals to be exposed to dangerous contaminants. The sites are often adjacent to rivers and other water bodies, some of which may be supplying drinking water. In addition to threatening public health, through air and water pollution, the dumps are also despoiling the otherwise magnificent Albanian landscape.

The development of a new waste management law is under consideration. In addition, proposals have been developed to establish six official landfill sites. One of these projects, in Lezha, is under construction, but financing is needed for the others. Tentative efforts have also been made to establish waste separation and the recycling of paper, glass and metals.

A second extremely serious problem is the complete absence of industrial and hazardous waste management. Approximately 1,500 tons of chemical and hazardous wastes and 1,000 tons of pesticide are stored across the country. In many cases, this waste is being stored on site without adequate safeguards or monitoring systems. Wastes from copper and chromium mines, and from the extraction and refining of oil are posing particularly significant environmental threats.

A related problem is the virtual absence of health care waste management. An EU-funded project by ECAT, however, is currently being implemented in cooperation with the NEA, Ministry of Health, and World Health Organization. The initiative is elaborating a strategic plan for health care waste management in Tirana.

UNEP expert collecting soil sample at Sharra landfill

➤ Map 4 : Water quality in Albania

■ WATER

Water resources are abundant in Albania. Nevertheless, the country's waters face significant threats. There is virtually no wastewater treatment in Albania. Communal and industrial wastewaters are discharged directly into receiving waters. Effluent discharges are not measured, and surface and groundwater monitoring is not systematic. Industrial pollution sources include makers of cement, leather, ceramics, textiles, as well as mines, smelters, oil and gas producers, and wood processing facilities. With the decline in industrial output during recent years, communal waste has become an increasing source of water quality concern.

Drin River

Albania's urban water supply systems are plagued by problems. It is estimated, for example, that 50 % of Tirana's water is lost in the city's supply network. Rampant construction, urban migration, and illegal connections are exacerbating the system's problems, particularly in the city's suburbs. In addition, infiltration from parallel sewer lines causes periodic cross contamination of the supply.

Revenues are collected for only an estimated 30-40 % of the water consumed in Albania. Unless measures are taken to improve the system's financial base, the country's water supply infrastructure seems destined to experience further declines.

There are only three official drinking water plants in the country (two in Tirana, and one in Durrës). In 1997, drinking water quality standards were updated to match World Health Organization (WHO) and EU norms. Monitoring is conducted for some fifteen physical and chemical parameters. Pesticides, heavy metals, persistent organic pollutants and hydrocarbons are not monitored systematically.

A national water strategy, drafted in 1996, has not yet been adopted. A 1996 Law on Water Resources has been adopted, but not implemented sufficiently. A project financed by the World Bank, Kuwait Government and Albanian Government will improve the country's irrigation infrastructure.

Smoke from burning waste at Sharra dumpsite

■ AIR

The quality of Albania's air is not well understood. By law, urban centers must monitor sulfur dioxide (SO_2) and nitrogen oxides (NOx). In practice, however, monitoring throughout the country is neither consistent nor comprehensive, and improvements are urgently needed.

Historically, the major sources of air pollution have been industries involved with chromium smelting, copper, cast-iron and steel metallurgy, and thermo-electric production. Since 1992, many of these industries have closed. Although emissions data generally do not exist, it is evident that air quality has improved. Today, the major sources of air pollution are oil extraction and refining, domestic heating, cement production and unregulated garbage burning.

Transportation is an additional contributor of air pollution. In 1989, there were a total of 2,000 cars in Albania. By 1998, the number had grown to 60,000, out of a total of 150,000 vehicles nationwide. The fleet is generally old and uses leaded gas or diesel fuel. This rapid increase can be expected to be contributing higher quantities of NOx, SO_2, CO, particles and hydrocarbons.

The NEA has drafted an air protection law and is updating the country's 1974 emissions standards for stationary sources in accordance with EU directives. There are currently no mobile source standards.

■ SOIL

Soil erosion is a serious concern in Albania. Although the country's mountainous topography and weather patterns are natural causes of erosion, human activity (e.g., dredging of rivers for construction materials, woodcutting, overgrazing) is accelerating the problem and producing severe consequences. Poor soil decreases agricultural productivity and encourages the expansion of agriculture into unsuitable habitat. River dynamics are altered with negative impacts on water quality and flow regime. Essential infrastructure, such as bridges and roadways are undermined or subject to more frequent landslides. The Ministry of Agriculture and Food is currently preparing draft soil protection and administration legislation. Plans to develop a soil conservation strategy await funding.

■ CHEMICALS

Just as Albania lacks a hazardous and industrial waste policy, so is it in need of a policy governing the proper handling and use of chemicals. The mishandling of polychlorinated biphenyls, ozone-depleting chemicals, agricultural pesticides, and biocides may be unnecessarily allowing the evaporation or leakage of these chemicals into the environment, with serious consequences for nature and human health.

Improperly stored chemicals, Durres

■ ENERGY

Albania is currently experiencing an energy crisis. The supply of electricity is limited, and power interruptions are regular. A shift to electrical heating, combined with uncollected payments and a proliferation of illegal connections has overburdened the country's network. According to national experts, the system experiences 50 % losses, and revenues are collected for only one-third of the electricity consumed. To increase its supply, Albania is currently importing electricity from Slovenia and Montenegro.

Historically, Albania has supplied most of its own energy. One state-owned company produces oil and gas. Another provides electricity, 90 percent of which is supplied by hydro-power. It is anticipated, however, that energy imports will rise steeply during the next ten years, due largely to higher electricity demand and rapid growth in the transportation sector. The country plans to address increased electricity demand by building a new thermo-power plant.

In 1999, the National Committee on Energy finalized a National Energy Strategy in cooperation with the Phare program. The Strategy is intended to provide a comprehensive energy policy and serve as a guide to restructuring the energy sector based on market principles.

■ BIODIVERSITY

Relative to its size, Albania contains an enormous richness of biological diversity. Some 30 % of European plant species, and 42 % of European mammals can be found in the country. Albania's variety of wetlands, lagoons and large lakes also provide critical winter habitat for migratory birds. This rich legacy, however, is under assault.

Today, Albania has one of the highest rates of biodiversity loss in Europe. Deforestation, soil erosion, uncontrolled land use, and pollution - all of these activities are rapidly destroying precious resources. Outside of urban areas, many Albanians depend on firewood for fuel and heat. Unsustainable levels of hunting, fishing, and grazing are also threatening diversity. Indeed, 36 % of the country's vertebrate species are endangered or threatened.

Although efforts have been made to establish protected areas, only 6 % of the country has been set aside for this purpose. Unfortunately, even the biological integrity of these areas has been compromised by illegal hunting, fishing and wood collection. Monitoring and enforcement within Albania's protected areas is inadequate, and management plans do not yet exist.

In 1999, the country developed a Biodiversity Strategy and Action Plan (BSAP) with the assistance of the Global Environment Facility. The BSAP would increase protected areas to approximately 15 % of Albania's territory. It would also give priority to local scientific research in biodiversity, which is currently in limited supply, and the creation of action plans for ecosystems, habitats and species. The Government has adopted the BSAP, but it has not yet been implemented.

A World Bank project is promoting communal forest management, and anticipates incorporating 40 % of Albania's forests into communal management structures by 2002. The 1992 Forest Act is also being amended to strengthen forest protection.

➤ Map 5 : Nature conservation in Albania

Source: Department of Public Information of the United Nations (UNDPI), Cartographic Section, New York ; Biodiversity Strategy and Action Plan 1999, GEF/World Bank.

Principal industrial 'hot spots' investigated by the mission

Overview

After extensive preliminary research and consultation with national environmental experts, UNEP investigated the nine sites in Albania that appeared most likely to be 'hot spots'of environmental concern. The sites visited included facilities from each of Albania's principal industrial sectors. At the sites, the team met with company or local representatives to discuss the plant's processes and environmental conditions. The meetings were followed by inspections of the facilities, during which UNEP experts took samples of water, soil, and air, as appropriate. Wherever possible, the team met with local officials and stakeholders. Following the mission, UNEP experts analyzed additional data pertaining to the sites.

UNEP has determined that five of the nine sites investigated should be considered environmental 'hot spots'. Each of these locations has serious problems that pose immediate risks to human health and the environment and require urgent remedial action. Corresponding recommendations can be found in Chapter 7.

Chemical Plant – Durres

Key Issues:

- A several-square kilometer area is severely contaminated by hazardous chemicals and residues from a former chemical plant, a waste dump, and an abandoned chemical storage site.
- Thousands of citizens who have recently arrived from other areas of Albania are living amidst and around the toxic contamination.
- Grave risks are being posed to human health, groundwater, and marine habitat.

Domestic sheep on grounds of former chemical plant, Durres

The former Durres chemical plant is an environmental disaster area. Until its closure in 1990 the plant produced sodium dichromate, for leather tanning, and pesticides such as lindane (gamma-HCH) and thiram. The pollution from these processes heavily contaminated an area that includes the former plant, a nearby dumpsite and abandoned chemical storage facilities. Today, the area is one of the worst environmental hot spots in the Balkans. Several thousand citizens are estimated to live in and around the plant's contaminated zone. Urgent action is required to protect the health and safety of children and adults.

Significant soil and groundwater contamination is occurring in several locations. The area of most immediate concern is the site of the former plant. The grounds are severely contaminated with lindane and and also contain chromium salt residues. Families are living in homes using contaminated bricks from the former factory. Children play on the contaminated soil. Cows, goats, and sheep that supply milk and food to local inhabitants graze the plant's contaminated grounds. Domestic animals and plants drink contaminated well water.

Samples taken by the mission confirm the obvious degradation of the site. A groundwater sample from a water well showed 4.4 mg/liter of chlorobenzene, over 4,000 times the acceptable level for drinking water in some EU nations. Repeated exposures to large quantities of chlorobenzene can adversely affect the nervous system, bone marrow, liver, kidneys, blood and reproductive organs.

A sample of milk from a domestic cow showed beta-HCH isomer concentrations 100 times higher than acceptable EU thresholds. Soil samples showed extremely

high HCH isomer concentrations, in the range of 1,290 mg/kg to 3,140 mg/kg. In Holland, for example, intervention is required when soil concentrations of total HCH isomers exceed 2 mg/kg. Lindane is generally regarded as among the most hazardous chemicals. It is a carcinogen and has been associated with liver cancer. Even moderate levels of exposure have caused effects on the liver, kidney, and immune system. Lindane is also persistent in the environment and bioaccumulates in the food chain.

Chromium contamination is another source of serious concern. Although very limited sampling did not detect high levels of Chromium (VI), a known carcinogen, further investigation of this issue, and the other forms of contamination just mentioned, is urgently required. The use of chromium-rich residue from the plant to reconstruct local roads also warrants attention.

Altogether, these conditions pose an extremely high risk to human health. The Municipality of Durres has not attempted to remove citizens from this contaminated location. Instead, it is preparing to provide infrastructure that will enable inhabitants to remain on the site, according to the Regional Environment Agency. The government has already installed septic tanks, most of which are no longer functioning properly.

A second site of concern is a nearby wetland that has been used as a dumpsite. Divided from the Adriatic Sea by a road, the site contains about 20,000 tons of toxic wastes including lindane and chromium-rich residue. Several residences are being constructed on the dumpsite without any preventive measures. According to local authorities, the Municipality of Durres plans to zone the area for habitation. A large quantity of dead fish was observed in a nearby channel leading to the sea.

Refugees from the Kosovo conflict stayed in a campsite in this area. The campsite has been cleaned, but natural regeneration has been hampered by a combination of factors, probably including heavy metal contamination, compacting of the soil for habitation, and the soil's high salt content.

A third area of concern is a storage site located approximately 1.5 kilometers from the former plant. The storage site consists of three buildings that contain an estimated 370 tons of chemicals. According to local experts, and based on site inspection, these include lindane, methanol, carbon sulfite, sodium dichromate, monomethylamine, and di-methylamine. The chemicals are leaking from corroded steel barrels and torn sacks. Access to the storage facilities is open. Animals are grazing around the buildings, and beach facilities are being constructed nearby. There is probably groundwater contamination draining to the sea.

Chlorine alkali and PVC factory – Vlorë

Key Issues:

- Families with domestic animals are living in extremely hazardous, mercury-contaminated conditions.
- Government efforts to relocate these families have been ineffective.
- Steps were not taken to prevent contamination of the environment by mercury sludge dumped nearby.

Four kilometers north of Vlorë is the site of a former chemical manufacturing complex consisting of a chlorine alkali factory, a unit for the production of vinyl chloride monomer (VCM) and a unit for the production of polyvinylchloride (PVC). The factory closed in 1992 and was substantially destroyed during civil disturbances in 1997. The plant is today posing an unacceptable threat to the health of some 180 families living on and around the site. Urgent measures are needed to protect public health and prevent further contamination of the environment.

During the plant's operation, chlorine-alkali electrolysis was conducted using excessive quantities of mercury. According to local experts a 1992 feasibility study concluded that approximately 50,000 – 60,000 square meters of the former plant's soil was contaminated with mercury to a depth of 1.0 to 1.5 meters below ground level. A soil sample taken by the mission found mercury content greater than 10,000 mg/kg, some 1,000 times greater than typical EU thresholds. In addition to mercury, it is quite likely that chlorinated hydrocarbons and other dangerous pollutants emitted by the former VCM and PVC production units remain in the soil near those units.

Today, children play on this soil. Domestic animals graze among the contaminated ruins. Vegetables grown there are used to feed families.

Mercury is extremely dangerous to human health. Exposure to high levels can permanently damage the brain, kidney and lungs. Infants and children are especially vulnerable to the effects of mercury and can be exposed in utero or through a mother's breast milk. In addition to causing severe human health effects, mercury bioaccumulates in the food chain.

Site inspection at Vlorë complex

The Government is supplying public drinking water to the families and selling the plant's contaminated scrap metal and bricks for reuse. It has reportedly attempted to bar citizens from living on the plant site, but those efforts have not been successful. Wells on the plant site, meanwhile, are likely being used for domestic animals and the irrigation of vegetables.

The plant used to discharge all of its wastewater into the Bay of Vlorë without treatment. Sludge from the former production process was been dumped in an area between the plant and the Bay of Vlorë. No precautions were taken to prevent the contamination of the surrounding environment. The sludge may be assumed to be high in mercury content.

Contaminated groundwater is most likely draining to the sea. According to local authorities, analyses of the Bay's bottom sediments and marine life have shown adverse impacts attributable to mercury contamination.

Marize Oil Field - Patos

Key Issues:

- Families living in the oil fields are being exposed to serious health risks.
- Groundwater is being severely contaminated by oil from wells, pumps, pipelines and pre-treatment facilities.
- Sulfurous gas and hydrocarbon emissions are polluting the surrounding atmosphere.

With 2,000 wells covering some 200 square kilometers, the Marize oil field in Patos is one of Albania's largest and most important oil fields. It is one of five fields in the area that supply the Ballsh refinery.

The Patos field currently produces 400 tons/day of crude oil, down from an earlier daily output of 2,000 tons. Unfortunately, the field is the source of tremendous soil, groundwater and air contamination. Families living in a small village inside the field are being exposed to grave health risks.

Severe soil and groundwater contamination comes from several sources. According to national experts, local drinking water wells are supplied by the lower aquifer, which is protected by a clay layer. Oil wells, however, are perforating the clay layer and very probably allowing hydrocarbons to contaminate the drinking water supply. The field's pumps are very poorly maintained and leak significant quantities of oil into the surrounding environment. Oil is transported from the pumps to pre-treatment facilities in the field via pipelines. The pipelines are also poorly maintained and lose significant amounts of oil.

The contamination of the oil field and its surrounding area has never been systematically assessed. Company management has not calculated the amount of crude oil leaking into the field, but it estimates losses of 1-2 % of the total quantity pumped, i.e., 4 to 8 tons per day. Management described a proposal to close wells, create new ones, and reinject into the wells wastewater and certain fractions from the pretreatment of the crude oil. The proposal, however, may contain optimistic assumptions and, in any case, lacks funding.

Marize-Patos oil field

Serious problems also exist in a smaller oil field nearby. The pretreatment facility in that field was designed to dewater and separate solids from the oil before the oil is transported to the refinery. A portion of the oil recovered during the pretreatment process is supposed to be recycled. Because the pre-treatment facilities are not functioning properly, however, untreated wastewater containing free crude oil is discharging directly into the environment and draining to the nearby Gjanicës River. The river supplies drinking water to local inhabitants via private field wells. Because the wells are near the river, drinking water supplies are likely to be influenced by river water quality.

The oil fields are also a source of air pollution. Oil is stored in open tanks, from which hydrocarbons evaporate and enter the atmosphere. In the large field, the pumps discharge 8,000 cubic meters of gas containing sulphuric compounds daily. Although one-fifth of this amount is captured to produce electricity for the wells, the remaining four-fifths is emitted directly into the atmosphere. This equals sulphur emissions of approximately 115 tons per year. There is a strong smell of hydrocarbons and hydrogen sulfide in the air. Prolonged exposures to hydrogen sulfide can cause respiratory failure. A UNEP sample showed aliphatic and aromatic hydrocarbon concentrations in the range of 4 - 90 micrograms/m^3.

Oil Refinery – Ballsh

Key Issues:

- Large quantities of the refinery's oil are emitted into the surrounding environment.
- Wastewater containing oil impurities is being discharged into a canal, contaminating the Gjanicës River, and probably affecting local water supplies.
- The refinery emits several toxic air pollutants into the atmosphere.

The refinery in Ballsh produces 300,000 tons of refined oil annually, less than one-third of its capacity. The plant is discharging large quantities of oil into the surrounding environment, especially the Gjanicës River. Local private drinking water wells located along the river are likely to be quite sensitive to river water quality.

One of the plant's principal problems is the loss of oil. The refinery was designed to capture 97 percent of the oil it refines. According to management, however, system-wide leakage is causing average losses during production of approximately 7 % – an estimated 22,500 tons per year.

One of the causes of the oil loss to the environment is the failure of the refinery's wastewater treatment plant to function properly. The wastewater treatment plant was designed to discharge a maximum concentration of 300 mg/liter of dissolved oil components. According to management, however, the plant's design did not anticipate either the impure quality of the domestic crude oil supply—with high (6%) sulphur content—or the amount of solid materials in the oil due to inadequate pre-treatment in the field. As a result, the plant does not function properly. Wastewater containing free phase oil and dissolved oil components discharges directly into a canal that drains into the Gjanicës River.

The Gjanicës provides drinking water for local inhabitants via private wells on the riverbank. According to local authorities, deposits of crude oil have been identified several kilometers downstream of the refinery. A visual inspection of the river confirmed these claims, and a water sample taken 2.5 - 3 kilometers downstream revealed traces of oil. It can be assumed that drinking water from the private wells near the river is being influenced by river water quality.

The refinery also emits sulphur dioxide, hydrogen sulfide, hydrocarbons and carbon dioxide into the atmosphere. Hydrocarbons and hydrogen sulfide can easily be smelled.

No investigations or monitoring programs have yet been conducted to assess the extent of soil and groundwater contamination on the refinery grounds and in adjacent areas downstream. Air measurements were not made available to the assessment team.

Waste Disposal Site – Sharra

Key Issues:

- Due to the lack of hazardous waste facilities in the country, Sharra's waste may be assumed to contain toxic pollutants.
- Toxic smoke and dust is being emitted from the dump's burning rubbish, exposing area inhabitants to serious health risks.
- Dumpsite effluent is probably leaching into the groundwater and contaminating nearby waters.

Sharra is Tirana's principal solid waste disposal site. Most types of non-industrial urban waste, as well as medical waste, are dumped and burned at Sharra. In its current condition, the dumpsite poses an unacceptable threat to the health of local residents.

The site sits on the slope of a valley in the watershed of Erzenit River, southwest of Tirana. Although the landfill is built on clay deposits, national experts report that the bottom of the valley contains sand and gravel sediments. The landfill lacks protective lining for its bottom and side slopes. There is also no drainage system for leachate and percolate from the landfill mass.

Leached water from the landfill may well be draining to the upper secondary aquifer and the nearby Erzenit River. Groundwater downstream from the landfill is being used for drinking water and irrigation. No comprehensive assessments of the landfill's impact on the surrounding environment's soil and water have been conducted. Limited analyses have focused on traditional drinking water parameters and have not examined other elements of concern, e.g., biological oxygen demand, metals, organic compounds, and pesticides.

No air quality measurements have been made in the surrounding area. In general, solid waste pollutes the air via odor, methane production and fires. Sharra emits odors and substantial quantities of heavy smoke. The assessment team observed a heavy cloud of smoke and an odor in a residential area five kilometers downwind of Sharra. Given the content of Sharra's solid waste, it is probable that the landfill emits methane and smoke particulates containing heavy metals, and other inorganic and organic compounds (e.g., dioxins, furans). A UNEP air sample found benzene derivatives, greenhouse gases, and freon. Altogether, air quality conditions at the dumpsite pose a serious health threat to adults and children who are recovering and recycling waste from the dumpsite.

UNEP expert collecting water sample from Erzenit River

In Peze e Vogël, a small village downstream, a well field on the bank of the Erzenit River supplies drinking water to eight nearby villages. The field draws water via three infiltration wells located 20-30 meters from the river. The wells draw water five to ten meters below ground level. Due to the wells' closeness to the river and their relatively shallow screening levels, filtration is limited. Water quality, therefore, is likely to be quite sensitive to river water quality.

Once drawn, the water is treated with chlorine and passes through a sedimentation tank before being pumped to the villages. The Institute for Public Health occasionally monitors the water supply. Current monitoring, however, does not analyze for hazardous elements that might be contaminating the river and field wells.

A second, smaller dumpsite may also be contaminating the Peze e Vogël water supply. Located approximately two kilometers upstream, the Peze-Helmet dumpsite sits on the bank of the Erzenit River. Although the area is closed it continues to be occasionally used as a dumpsite. The site is not managed, and during high water levels waste is in direct contact with the river. Samples taken from the river next to the landfill showed insignificant levels of heavy metals and 10mg/l of organic compounds, a level typical of urban waste.

Other industrial sites investigated

This chapter discusses the four additional sites UNEP investigated. It should be emphasized that, although the 'hot spot' sites described above require urgent attention in the interest of protecting public health, those discussed below have very serious environmental problems warranting swift action.

Nitrate Fertilizer Plant – Fier

Key Issues:

- Soil, and most likely groundwater, are contaminated with high levels of arsenic. The groundwater feeds a river that supplies local drinking water wells.
- Untreated wastewater is being discharged into the same river.

The plant in Fier produced fertilizer from 1967 to 1992. During a four-year period from 1967-71 the plant used crude oil with high sulphur content. Sulphur was removed with solutions of arsenate and arsenite. The plant's principal problem is how to dispose of approximately 850 cubic meters of arsenate and arsenite solution.

The solution contains 25 g/liter concentration. It is currently being stored in four 30-year old steel columns. The columns, which show signs of corrosion,

Steel columns containing arsenate and arsenite solution, Fier

are set in a 200-cubic meter concrete basin that is lined to guard against leakage to the surrounding environment should solution escape from the columns. The lining of the concrete basin, however, is not intact. A water sample taken from the outlet of the basin showed 97.7 mg/liter of arsenic.

Soil samples taken within 50 meters of the storage columns showed values in the range of 830-172,300 mg/kg of arsenic. The area contaminated with arsenic appeared to be limited in size. Nevertheless, the levels of arsenic found compares, e.g., with the German threshold for arsenic in industrial soil of 140 mg/kg. Based on these findings, it can be assumed that the upper groundwater aquifer is contaminated with arsenic. The aquifer drains into the Gjanicës River, which may be a source of water supplies downriver. Arsenic is classified as a carcinogen.

Local experts have developed a plan to dispose of the arsenate and arsenite solution, but the plan lacks funding. According to the proposed plan, the solution would be treated with compounds to reduce its quantity and then removed and disposed at a landfill.

Although the plant's production is minimal, wastewater is discharged into the Gjanicës River without treatment. No monitoring program is evaluating the influence of the wastewater on the environment.

Metallurgical Complex – Elbasan

Key Issues:

- Dumped waste containing high concentrations of heavy metals may be contaminating nearby drinking water sources.
- Untreated wastewater from the plant is being discharged into a local river.

View of Elbasan complex

The metallurgy facilities in Elbasan were open from 1977 to 1990. The site is comprised of factories that once produced coke, steel, pig iron, and some nickel. Today, a scrap steel smelter provides the only sign of activity in a complex that once employed 12,000.

The major source of concern in Elbasan is the possible soil and groundwater contamination being caused by the disposal of 1.5 to 2.0 million tons of solid waste. The waste—tailings and dust from coke production—contains heavy metals. While the complex was in production, the waste was transported via a pipeline to a hydro-tailing sediment lake fifteen kilometers away.

The lake is situated in a valley that drains into a small river and, ultimately, the Shkumbinit River. Local inhabitants living along the small river are using private wells to draw water supplies. No investigations have assessed the extent of soil and groundwater contamination in areas potentially influenced by the hydro-tailing sediment lake. A soil sample taken at the lake, however, showed very high levels of chromium, nickel, and manganese. Heavy metal contamination of the groundwater and local wells can be expected, if it has not occurred already.

Within the complex is a wastewater treatment plant that was constructed principally to treat effluents containing phenol. The plant, however, has not been working for some time. Although the process that produced phenol wastewater has been shutdown, untreated wastewater continues to be discharged into the Shkumbinit River. Private wells along the river downstream of the complex are supplying drinking water to local inhabitants.

Until it closed, the complex was a major source of air pollution in the surrounding valley. Today, emissions are far lower, but the steel process still emits an estimated 20,160 tons of particles, 924 tons of CO, as well as SO_2 and iron dust.

Copper Factory – Rubik

Key Issues:

- Stockpiles of copper-rich residues may be contaminating local drinking water supplies and posing a risk to human health.

The copper factory in Rubik closed in 1998, after sixty years of production. When the plant was operating, it produced refined copper products used for wiring. During its more productive years, it generated approximately 30,000 tons of mineral residues annually.

What had been a major source of air pollution and groundwater contamination is today a quiet facility. According to management, however, the impacts of the plant's earlier SO_2 emissions and acidic wastewater discharges are still reflected in the surrounding environment.

Copper-rich residues from the production process remain deposited on the factory grounds. The residue stockpile is near the bank of the Fanit River. The dumpsite was built without previous preparation of the soil or a protective lining underneath. There is also no drainage system to capture leachate.

UNEP samples of slag found chromium (492 mg/kg), lead (99 mg/kg), and high levels of copper (1,696 mg/kg). Data also indicate that these components are dissolved by acidic rainwater. Leachate and percolate from the dumpsite are, therefore, probably contaminating the upper secondary aquifer of the groundwater that drains into the Fanit River. The Fanit River supplies the Matit River. Wells on the banks of the Matit River that provide drinking water to local inhabitants may be contaminated, posing a risk to human health. High levels of copper are very hazardous to human health and damaging to river ecosystems.

Phosphate Fertilizer Factory – Lac

Key Issues:

- A stockpile of residue is probably leaching arsenic and copper into the groundwater and contaminating local drinking water sources.

When it was in production, from 1967 to early 2000, the plant in Lac used calcium phosphate to produce fertilizer. Today, the factory is shutdown. Privatization efforts have reportedly resulted in the sale of part of the complex.

About 300,000 tons of iron-rich residue from the production process remains deposited on the factory grounds. The dumpsite was built without previous preparation of the soil, a protective liner underneath, or a drainage system to capture leachate. A UNEP sample taken from the residue showed significant levels of arsenic and copper. UNEP analyses also indicated that the arsenic and copper is probably leaching due to rainwater. As a result, the upper secondary aquifer of the groundwater is likely being contaminated. According to maps and national experts, the groundwater aquifer drains toward several drinking water well fields located on the plain downstream of the factory. Arsenic and copper are both extremely hazardous to human health and damaging to water ecosystems.

Managing the Kosovo refugee crisis: environmental consequences

Background to the crisis

In March 1998, a stream of refugees began entering Albania to escape conflicts within the province of Kosovo in the Federal Republic of Yugoslavia (FRY). This number increased in May and June 1998, and by the end of that year, UNHCR estimated that approximately 21,800 refugees from Kosovo had entered Albania. During the first three months of 1999, a slow but steady influx continued.

On March 24, 1999, the Rambouillet peace talks having broken down, NATO commenced air strikes against FRY. Virtually overnight, hundreds of thousands of refugees fled Kosovo to Albania, the Former Yugoslav Republic of Macedonia, Montenegro and Bosnia-Herzegovina. The sudden refugee influx posed a formidable relief challenge to Albania and the rest of the international community.

Albania responded by accommodating as many refugees as resources would permit, welcoming hundreds of thousands of refugees into their homes and communities for as long as was required. Many partners, including UN agencies, international organizations, donors and non-governmental organizations, supported the Albanian relief operations.

On June 3rd 1999, after more than two months of intensive air bombardment by NATO, FRY agreed to an international peace plan and the withdrawal of its military forces from Kosovo.

The population of refugees in Albania peaked on June 9, 1999, when humanitarian aid was extended to some 460,000. According to UNHCR, an estimated 61 % of these refugees stayed with 30,000 host families; 18 % lived in 50 tented camps, and 21 % resided in 300 collective centers.

➤ Map 6 : Distribution of refugees in Albania

Source: Department of Public Information of the United Nations (UNDPI), Cartographic Section, New York ; United Nations High Commissioner for Refugees (UNHCR), Geneva.

On June 10, 1999, following continued negotiations, NATO suspended its military operations and the UN Security Council adopted Resolution 1244, the Kosovo Peace Plan. With the Kosovo conflict ended, the refugees began to return to their homes.

Tirana refugee camp
(Source: UNHCR)

Refugee Crisis Management

Despite national and international contingency planning, no one was prepared for the speed and magnitude of the refugee crisis in Albania. The Government and the international community made extraordinary efforts to respond. Still, in analyzing the consequences of the crisis, it is important to recognize the lack of time that was available for adequate environmental planning.

When the crisis began, the government of Albania established the Emergency Management Group (EMG). The EMG's role was to serve as an information clearinghouse and to coordinate the delivery of services and humanitarian aid to refugees. The group was based out of the Office of the Prime Minister, and included representatives from various government agencies, municipalities, and inter-governmental organizations. Regional Environmental Agency representatives provided input on environmental matters through prefectures and local governments.

The EMG was an innovative attempt to centralize management of the refugee crisis. In practice, however, the EMG did not play a strong role in strategic decisions. Municipalities, prefectures and aid agencies for example, took the lead in camp site selection, often without the direct involvement of the Government or UNHCR. Unfortunately, environmental criteria were frequently not taken into consideration during this process due to information gaps, a lack of local expertise and inadequate time.

Other refugee coordination and management activities were spread over multiple agencies. Some camps were managed by UNHCR, others by local authorities, non-governmental organizations and military entities. Although Regional Environmental Agency officials and UNHCR staff members advised camp managers on environmental protection, standards varied considerably among the camps.

Post-emergency coordination activities were addressed by a combination of the EMG, UNHCR, UNDP and ECAT. UNHCR, however, did not issue formal guidelines on the closure, cleanup and rehabilitation of the camps until July 8th, 1999. By then, the majority of the refugees had already left most camps and the attention of donors and the international community was shifting to other situations. Although all UNHCR-managed camps were cleaned, officials interviewed by UNEP reported that numerous other sites were not adequately cleaned or rehabilitated.

The environmental dimension of the refugee influx

In the context of a conflict, the provision of refugee relief is the first and foremost priority. Food, housing, health care–these basic needs and others must be provided without delay. In the wake of refugee influxes, however, it is worthwhile to examine their impacts, if any, on the environment and to understand whether lessons for the future can be derived.

In Albania, the Government and the international community met the basic needs of some 460,000 people, an overwhelming success in the provision of emergency relief. In spite of the time and pressure posed by the influx, UNHCR and the EMG took measures to ensure protection of Albania's environment. Undoubtedly, the success of these measures is to some degree reflected in the fact that impacts to Albania's environment were minimal.

Nevertheless, after the Kosovo conflict ended, concerns were raised that the refugees may have placed a heavy and lasting burden on the country's environmental management infrastructure. As a result, one of the key aims of the mission was to determine the overall environmental impacts of the refugee influx and to consider what steps can be taken to further integrate environmental protection into future refugee operations. UNEP's observations and conclusions follow. General and site-specific recommendations are contained in Chapter 7.

■ SOLID WASTE

Vast quantities of solid wastes are inevitably produced as the basic living needs of refugees are met. Excessive packaging of food aid and other basic goods is the principle cause. The successful management and disposal of such wastes largely depends on the waste management infrastructure of the host country.

During the crisis in Albania, municipalities, with the support of UNHCR and donors, collected and transported solid waste from refugee camps to local landfills. Wastes produced by refugees staying with host families were also managed by municipal services. Despite this increased load, baseline municipal services were maintained throughout the crisis, and significant impacts on the existing waste management infrastructure were not evident. Nevertheless, UNEP observed waste scattered in the Tirana City Park near the Olympic Camp and also lining the banks of Lake Shkoder in downtown Shkoder. According to local experts, these sites were not degraded before the refugee crisis.

Illegal dump in Tirana City Park

In some rural areas and townships, illegal dumpsites used by the local population were also used for refugee wastes. In some cases, whole new sites were established. These illegal dumpsites, located primarily in parks and along water bodies, continue to be used by the local population at the expense of human health and the environment. Beaches and coastal forests in the districts of Durres, Golem, Divjake and Lezhe were among the areas polluted by illegal dumping.

Comprehensive statistics are not available on the amounts of solid wastes produced by each camp and host family. However, based on data obtained from three camps (Austrian, Caritas, and Islamic Relief), each refugee in those camps produced an average of 1.7 kilograms of solid wastes per day. By contrast, the residents of Tirana reportedly produced a daily average of 0.7 kilograms of solid waste per person that same year. This difference suggests that adequate measures may not have been taken to minimize the generation of refugee solid wastes.

■ WASTEWATER

Albania's lack of wastewater treatment facilities was reflected in the refugee camps and collective centers. Facilities that could not be connected to municipal sewage lines used soak-away pit latrines to collect wastewater. It is unclear what proportion of these latrines were properly lined. After the refugees were repatriated, the majority of these pits were buried and their contents left on-site. The potential of these pits to contaminate groundwater and soil remains unknown.

The Municipality of Tirana maintains a 540-kilometer wastewater collection system. Pipes collecting wastewater from the Olympic Camp in Tirana were connected with the municipal system. Due to hookups by nearby houses that were illegally constructed, however, the camp's sewage pipes were blocked and disconnected from the municipal system. Instead, the wastewater generated was spread over a nearby, poorly drained field.

In Shkoder, wastewater generated by the Islamic Relief Camp was discharged into a small stormwater drainage canal that connected with Lake Shkoder. Lake Shkoder and its adjoining wetlands boast high biological production and diversity. Part of the area is being considered for designation as a national protected area. In such a sensitive aquatic environment, the disposal of the camp's wastewater should have been more carefully considered. A hookup to the municipal wastewater collection system would have been a preferable option.

During the peak crisis period, the refugees accommodated by host families put an additional burden on urban wastewater collection systems. These additional wastewaters increased the amount of untreated chemical and biological pollution entering local receiving waters.

■ WATER SUPPLY

Water appears to have been provided to refugees without long-term impact to the majority of supply systems. Rural camps were supplied either by tanker trucks or artesian wells. Urban and suburban refugee camps were generally supplied by near-by city and municipal systems.

The refugee influx exacerbated the country's water supply problems. Increased demand strained pipelines and created supply shortages. Although water rationing was imposed, some urban water supply systems may have experienced increased losses due to the crisis.

■ FORESTS AND BIODIVERSITY

In Albania, illegal timber harvesting and animal poaching by refugees was minimized by the provision of meals and wood from local suppliers. Minor incidences of animal poaching and timber harvesting were reported at some of the campsites. Long-term impacts, however, are not evident.

The National Environmental Agency and its regional representatives actively attempted to minimize the number of camps located in or near protected areas. Due to their efforts, only six camps were eventually built in the vicinity of protected areas, and two camps were prevented from being established. While some illegal harvesting of timber occurred in these areas, there is no evidence of long-term ecological impacts or loss of biodiversity. The disposal of solid wastes in these areas, however, may have contaminated soil and groundwater and adversely impacted local wildlife.

Forest and biodiversity impacts have not been associated with refugees that stayed with host families or in collective centers.

■ AGRICULTURAL AREAS

During the process of campsite selection, flat and well-drained locations are generally preferred for construction. Unfortunately, agricultural lands often allow camps to be established quickly and at the lowest cost. The Albanian Ministry of Agriculture and Food reports that a total of 500 hectares of agricultural lands were used for refugee campsites. This included 379 hectares of productive state land, 87 hectares of productive private land, and 34 hectares of non-productive state land. Campsites ranged in capacity between 120 and 20,000 people, with a typical capacity of 2,000 to 6,000 people.

Some of these areas have been cleaned by UNHCR. On the majority of sites, however, gravel remains, inhibiting future agricultural production. As of the time of the UNEP mission, 80 % of the agricultural land used required rehabilitation. The lost productivity from these lands is expected to have significant economic impacts on families that had farmed them. A report published by the Food and Agriculture

Organization of the United Nations, entitled *The Impact of the Kosovo Crisis on Albanian Agriculture and the Environment,* provides a comprehensive assessment of the agricultural impacts of the crisis.

Austrian refugee camp, Shkoder

■ URBAN GREEN SPACES AND RECREATION AREAS

The majority of refugees stayed with host families, in camps, or in collective centers. Some makeshift shelters, however, were established in urban green spaces and recreation areas. Much of the vegetation in these areas was trampled or removed, reducing their aesthetic benefit to the community. Garbage disposal and timber removal were also significant problems. The community park in Fier and the City Park in Tirana were among those subjected to minor degradation.

Institutional capacities for environmental management

Overview

During the UNEP mission, a subgroup responsible for assessing Albania's environmental management capacities met with dozens of Albania's key environmental, public works, and planning officials. It also met with representatives of the major intemational and non-governmental organizations doing environmental work in Albania. In addition, the team reviewed statutes, legislation, reports and other documents relevant to assessing Albania's institutional capacities to protect the environment.

Based on this research, it is apparent that Albania has built a foundation for environmental protection and progress. An environmental agency has been created, and important framework legislation put in place. It is also evident that Albania has a small but highly capable and dedicated cadre of scientific and environmental policy experts. These building blocks provide reasons to hope for a strong environmental future in Albania.

Ultimately, the people of Albania are responsible for the future of the country's environment. The international community can help Albania meet its goals, however, by funding environmental protection initiatives, adapting their institutional agendas to Albania's specific needs, and working in close cooperation with one another.

The following sections summarize the priority issues identified by UNEP.

State responsibilities

Albania's profound environmental challenges require strong leadership and adequate financial resources. In 1998, the Government addressed this need by creating the National Environment Agency, which reports directly to the Prime Minister. The NEA's mission is to develop and implement state environmental initiatives, set pollution limits, and coordinate policies with other government institutions responsible for environmental protection.

In addition to its President, the NEA is comprised of five directorates (Air, Water Quality and Waste Management; Nature Conservation and Soil Rehabilitation; Project Implementation; Service Organization; and Human Resources) as well as a Section on Legislation, Foreign and Public Relations. The Agency also has twelve regional offices responsible for environmental protection. The regional offices conduct inspections, review environmental permit applications, enforce regulations, and provide limited technical assistance.

Today, despite the NEA's efforts, the pace of environmental protection and improvement remains slow. With only .01 % of the state budget and seventy staff the NEA's capacity to provide leadership in addressing Albania's many significant environmental challenges is severely limited. Revenues from fines and licensing fees, upon which the NEA depends, are completely inadequate to fund important environmental investments. Plans to develop an 'eco-tax' were considered but not enacted. The Government is now reexamining the financing issue and is considering creating an 'Eco-Fund'.

Several other Government entities have significant environmental policy roles: the Ministry of Agriculture and Food, Ministry of Transport, Ministry of Public Economy and Privatization, Ministry of Public Works, Ministry of Health, National Council on Water, Public Health Institute, Hydrometeorological Institute, Council on Territorial Adjustment and the Institute of Soils. Much greater cooperation and coordination is needed among these organizations, however, in order to make the most efficient use of available resources, increase environmental awareness within Government, and improve environmental management efforts.

Environmental awareness

There is a great need for improved environmental awareness in Albania. Given the country's economic hardships and civil disruptions, attention has been focused on other concerns. The result today, however, is that Albanian citizens are not generally well enough informed about the risks of pollution, the relationship between the environment and public health, and the benefits of a clean environment to the economy and society as a whole.

After decades of strict State control, there is also much general scepticism toward Government mandates, environmental or otherwise. Yet, without a constituency for environmental protection, Government policies will experience weak support and diminished effectiveness.

The Government can play a crucial role in raising environmental awareness. The NEA is creating an environmental information center, but funding for this initia-

tive is due to expire. The publication of State of the Environment Reports and other informational tools has helped build understanding of the country's environmental challenges. More public information and media campaigns would lend to the image of an active Agency while informing citizens. Instilling a deep cultural appreciation of the environment, however, will require a long-term commitment. Environmental education in the country today is poorly funded and is only reaching a limited number of young Albanians.

The growth of Albania's environmental NGO community is a promising development. At present, however, the NGOs tend to be concentrated in Tirana. In several cases, they serve more as professional associations than as activist organizations. Environmental advocacy is not a firmly established approach. There have been no environmental cases in the courts to date.

UNEP and Albanian national experts inspecting nature reserve in Shëngjin

International Cooperation and Strategic Vision

UNEP and Albanian national experts meeting in Tirana

In the last several years, Albania has entered a number of significant international, regional and bi-lateral conventions and agreements. On the international level the country has become a party to the Basel Convention, the Vienna Convention for the Protection of the Ozone Layer, the United Nations Framework Convention on Climate Change, the Convention on Biological Diversity, the Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR), and the Convention for the Protection of the Marine Environment and Coastal Region of the Mediterranean (Mediterranean Action Programme), among others. (For a complete list, see Appendix III.)

Albania is also involved in significant regional environmental processes. It has joined in a bilateral Memorandum of Understanding on Cooperation with Greece and FYR of Macedonia in order to improve joint environmental protection efforts. As a member of the Regional Environmental Reconstruction Program for South Eastern Europe (RERep), the country has also entered into cooperation with other Balkan states seeking to strengthen environmental policy development and institutions in the Balkans. Created in March 2000, RERep is seeking to target funding to priority environmental projects in member states. The program, however, has not yet achieved the level of international assistance needed to support its agenda.

These international and regional developments do much to enhance the country's legal framework for environmental protection. Significant challenges remain, however, for Albania. Most importantly, a clear strategic vision is needed to provide strong direction and coordination to the country's international partners. Among other things, this process will require the harmonization and rationalization of Government strategies and legislation.

Environmental management instruments

Albania has many relevant environmental statutes, but very limited enforcement of them. Forty-four inspectors (32 regional, 12 national) are responsible for enforcing the country's environmental laws. Inspectors may impose fines, withdraw permits, suspend or close operations, and enforce environmental crime statutes. Fines, however, are rarely paid, because collection procedures are slow and cumbersome.

Regional inspectors are also hindered by a lack of basic resources (e.g., cars to travel within their prefectures) and technical capacity. These problems are compounded by poor cooperation among the inspectorates responsible for environmental and public health matters—i.e., NEA, municipal, health, forestry, and others.

Environmental monitoring is a weak link in Albania's environmental management chain. It was completely discontinued for some years after 1990, and reliable information today remains difficult to obtain. Responsibility for monitoring is spread across several Government institutions, including the NEA, Institute of Soils, Public Health Institute, and Republic Hydrometeorological Institute. A result of this dispersion of responsibility is that data collection is too often redundant and lacking in standard methodology. At the same time, substantial gaps in knowledge persist. Some issues are simply not monitored at all (e.g., heavy metals in drinking water), while in other cases data have been collected but not analyzed or published. These problems must be remedied in order to build sustainable and enforceable environmental policies.

Local authority and privatization

Municipalities have several responsibilities relating to the environment, including water supplies, communal waste, solid waste and green areas. In spite of these responsibilities, municipalities typically receive only 0.6 % of revenues they collect, the remainder flowing to the Government. At the time of this assessment, Albania was implementing a new law that will devolve additional responsibilities and revenue-collecting authority to the local level.

It is essential that municipalities develop into strong managers of local environmental issues. At the same time, they will need to have clear direction from the Government regarding environmental quality goals and standards. It will be important to monitor revenues to ensure that municipalities have an adequate financial base with which to discharge their obligations under the new law.

A significant local responsibility is managing the country's dormant industrial facilities, which make up an estimated 90 % of Albania's industrial sector. Due to inactivity, some of these plants may no longer be posing serious environmental risks. As illustrated in Chapter 4, however, a number of these facilities are hazardous and require immediate attention. In some cases, the Government has allocated emergency assistance and is preparing to commence industrial waste clean-up efforts.

Privatization has begun but is proceeding slowly. A major question needing clarification is whether the Government, municipalities or prospective buyers will assume liability for the condition of the industrial sites being privatized. Until liability issues are clarified they will undoubtedly act as a disincentive to many potential investors in Albanian industry. Similarly the country's privatization law prescribes an environmental impact assessment (EIA) when ownership of a site is transferred. It is unclear, however, which party must conduct the EIA. The Institute of Contemporary Studies has examined possible legal frameworks that might resolve this issue, but none have yet been adopted.

Recommendations

During the past few years, Albania has suffered from the effects of regional destabilization and civil unrest. During the Spring of 1999, the country was issued a new and urgent challenge as hundreds of thousands of refugees escaped the conflict in Kosovo by entering Albania. Albania responded to that challenge with remarkable strength, and accepted a great burden on its already weak environmental infrastructure. Nevertheless, the impacts of the Kosovo conflict appear to have been relatively modest when compared with other, more severe environmental challenges in the country.

After decades of environmental neglect, economic factors have slowed Albania's industrial sector. As a result, less smoke, less effluent, and less solid waste is flowing from the nation's factories and mines. In the wake of years of industrial activity, however, remain a number of severely contaminated sites that are threatening human health and the environment. UNEP has identified five such 'hot spot' sites. Some of these plants are closed, others remain operational and important to Albania's economy. All require urgent attention. While several of the other sites investigated by the mission may not be emergency situations, they do pose very serious environmental management problems. These sites, too, require swift attention in order to prevent further risks to human health and the environment.

In general, UNEP recommends a two-track approach to addressing industrial contamination in Albania. First, risk reduction strategies should be quickly developed and implemented to remediate the problems identified in the 'hot spot' sites. Similar, if less urgent, strategies will be needed for the other industrial sites discussed. Second, the pressing need to clean up Albania's polluted industrial facilities calls attention to a host of the country's more structural environmental management issues. Hazardous waste management. Solid waste disposal. Wastewater treatment. Soil and groundwater protection. Monitoring. Enforcement. Today in Albania, all of these issues, and others, require strong leadership and sustained investments that will support the efforts of the country's dedicated environmental experts.

Albania must lead the way by demonstrating a strong commitment to protecting and improving its environment. In this connection, Albania can benefit by working more closely with neighbour states. In turn, the international community should be prepared to support Albania's efforts in the interest of protecting human health and promoting a strong and prosperous regional environment.

Below are recommendations for specific action based on the findings detailed above.

Hot Spots

1. **Chemical plant – Durres**
   a) Commence a coordinated emergency response effort under the direction of the NEA that:
      • Strictly prohibits access to the plant, the dumpsite, and the chemical storage facilities;
      • Immediately resettles all citizens living in or near the plant and the dumpsite into adequate housing and provides health monitoring;
      • Immediately and safely stores the chemicals at a secure site until adequate transport and treatment can be arranged. Strict precautions should be taken to protect workers involved in the chemical transfer process.
      • Conducts a comprehensive study of soil and water contamination in the plant, dumpsite and storage areas and recommends short and long-term remediation measures for each area.
      • Establishes monitoring wells and a monitoring program encompassing the three sites, as well as the upper groundwater aquifer draining to the sea.
      • Reconstructs or, at minimum, repaves local roadways built with contaminated materials from the plant.

2. **Chloralkali and PVC Factory – Vlorë**
   a) Commence a coordinated emergency response effort under direction of the NEA that:
      • Strictly prohibits access to the plant;
      • Immediately resettles all citizens living in or near the plant into adequate housing and provides health monitoring;
      • In the very short term, bonds the mercury residues at the chlorine-alkali electrolysis plant.
      • Conducts a comprehensive study of soil and groundwater contamination in the plant, and recommends short and long-term remediation measures for each area.
      • Establishes monitoring wells and a monitoring program encompassing the upper groundwater aquifer draining to the Bay.

3. **Marize Oil Field – Patos**
   a) In the short term:
      • close wells in a section of the oil field near the village;
      • begin soil remediation immediately; and
      • maintain production levels, if possible, by increasing production from oil wells near the pre-treatment facilities.
   b) Accelerate plans to reconstruct the field, including re-injection back into the wells of wastewater and certain fractions from the pretreatment of the crude oil .
   c) Ensure that pretreatment facilities have a proper oil separator for recirculation of the crude oil.
   d) To protect air quality, upgrade and tighten the wells and pipelines, and cover storage tanks.
   e) Establish monitoring wells and monitor waters and private water wells downstream of the oil field.
   f) Consider management incentives or other methods of encouraging the minimization of crude oil losses during production.

4. **Oil Refinery – Ballsh**
   a) Immediately identify and repair leaks of crude oil and oil components in the oil refinery compound and from the production system.
   b) Rebuild the wastewater treatment plant to match the actual volume and composition of wastewater generated.
   c) Establish monitoring wells along the riverbank downstream from the refinery; investigate river waters and private well water quality.
   d) Monitor air quality around the site, and install emission control technologies.
   e) Consider management incentives or other methods of encouraging the minimization of oil losses during production.

5. **Waste Disposal Site – Sharra**
   a) Strictly prohibit citizen and animal access to the dumpsite.
   b) Develop a management system for the landfill, including strategies for halting the burning of waste, identifying types of waste, and limiting the contamination of soil and groundwater.
   c) Establish monitoring wells and screen them at different levels. Establish a monitoring program that includes surface water and groundwater downriver from the dump. Monitoring should include microbiological and organic compound parameters.
   d) Local authorities should relocate waste at the Peze-Helmet landfill from the outer four to five meters of the landfill (nearest the river) to a site on the inner part of the landfill. To reduce contaminant leaching and prevent contact with river waters, replace the removed waste with clay material.
   e) Local authorities should investigate water quality downriver of the Peze

Helmet dumpsite, in private wells supplied by the river, and waters treated at the Peze e Vogel plant. Sample for microbiological and organic compounds.

Other Industrial Sites

6. **Nitrate Fertilizer Plant – Fier**
   a) Accelerate plans to remove the arsenate and arsenite solution from the plant and remediate the surrounding area.
   b) In the very short-term:
      - Determine the scope of arsenic contamination of the soil and remove the contaminated soil in order to prevent groundwater contamination.
      - Reline the concrete basin to prevent further leakage to the surrounding environment.
      - Investigate soil and surface water near the storage site.
      - Local experts have developed a plan to reduce the volume of concentration needing remediation. Fully explore the feasibility of this plan.
   c) Examine the influence of untreated wastewater from the plant on receiving waters.

7. **Metallurgical Complex – Elbasan**
   a) Investigate the quality of surface water and drinking water in private wells located downstream from the hydro-tailing dam as well as the plant's wastewater effluent.
   b) Monitor soil and groundwater near the hydro-tailing dam and surface water in the river system.
   c) Use fuels with lower sulphur content, and monitor air quality in the area, especially for particles. Install air pollution control technologies to reduce emissions and require the installation of such technologies prior to future reactivation of the complex's air polluting processes.

8. **Copper Factory – Rubik**
   a) As a short-term means of preventing groundwater contamination, cover the residue with lime or limestone.
   b) To clarify the potential risks to human health in the area, investigate private well water quality downstream of the factory.
   c) Establish monitoring wells between the factory and the river, and monitor river waters and private well water.
   d) To eliminate contamination potential altogether, move the residue back into the mine.

9. **Phosphate Fertilizer Factory – Lac**
   a) As a short-term means of preventing groundwater contamination, consider covering the residue with lime or limestone.
   b) To clarify the potential risks to human health in the area, investigate private well water quality downstream of the factory.
   c) Establish monitoring wells between the factory and the river, and monitor river waters.
   d) To eliminate contamination potential altogether, move the residue to a secure storage site, e.g., a mine.

Managing the Environmental Consequences of the Refugee Crisis

10. The shortcomings of the EMG underscore the need to establish a single coordination body at the outset of a refugee crisis. Government-based coordinating bodies must have precise legal mandates covering all activities—from the delivery of humanitarian aid, to campsite selection, management and rehabilitation—as well as the full support of UN agencies, inter-governmental organizations, and NGOs. The experience and expertise of UNHCR should be used as much as possible during refugee operations.

11. 'Life cycle assessment' should be used as a planning tool during refugee crises. This approach requires consideration of a site's future use during the site selection process and in subsequent management decisions. The goal is to ensure that the technologies used on site will facilitate redevelopment and minimize rehabilitation costs. Redeveloping sites with significant benefit to local communities should be a priority.

12. UNHCR has developed environmental guidelines and policies to minimize the environmental impacts of refugees. These documents, however, were not distributed in a timely or comprehensive manner to some relevant agencies and camp managers. Improved efforts should therefore be taken by UNHCR to distribute these materials at the outset of refugee operations.

13. Rehabilitation efforts were supported by the UNHCR Quick Impact Projects (QIPs) program for refugee-affected areas, as well as numerous other agencies and donors. Despite these efforts, the majority of refugee-affected agricultural lands were not rehabilitated. Funding of future rehabilitation projects should be justified against the overall environmental management needs and priorities of the country. Any future rehabilitation work should involve the National Environment Agency and relevant municipal authorities.

14. At the outset of any humanitarian emergency, environmental technology, including GIS inventory and other 'state of the art' data should be used to identify environmentally sensitive areas in the country. This would make possible the selection of sites with low environmental impacts and high redevelopment potential. It would also enable the use of technologies to minimize environmental impacts on sensitive areas selected. UNEP's Environmental Information Services, UNHCR and other international agencies could assist in this process. The campsite selection process should also consider guidance from competent national environmental agencies, as well as from non-governmental and intergovernmental organizations, and municipalities.

15. In order to minimize the production of solid wastes, aid and donor agencies should adopt policies requiring that the food products and durable goods they procure use minimal or biodegradable packaging. Buying in bulk and distributing food via reusable containers is recommended. Preference should be given to goods that are produced in a sustainable way and that can be used locally following the repatriation of the refugees.

16. In order to minimize the potential for contamination by wastewaters, metal tanks should be used as the default method for wastewater management. Soak-away pits may be considered if, according to specialized assessment, unique environmental conditions and topography would prevent seepage into ground water channels.

17. In order to assess the site-specific environmental impacts of refugee camps, standardized photographs should be taken from permanently marked camera locations both before, during and after refugee occupation. This technique, known as Photopoint Monitoring, would help to document site conditions throughout refugee operations and minimize the potential for false claims of damage.

18. **Site - specific recommendations:**

a) Spitalle Camp Site, Durres: Situated on a former wetland, the area has been cleaned, but natural regeneration has been hampered by the soil's high salt content and, possibly, by heavy metal contamination from the nearby former chemical factory (see Chapter 4).

- Rehabilitation of the site needs to be considered in the context of the wider environmental strategy for the area. (See recommendations above re Chemical plant, Durres.)
- A pilot project to establish a forest on the site would provide information about vegetative stabilization of the area and help remediation if soil contamination and salinity levels are found to be excessively high.

b) Hammalaj 3 (Spanish Camp Site), Durres: Although this site has been cleaned, latrine pits and water supply channels are unfilled, and extensive gravel areas remain. Rehabilitation was hampered by land ownership disputes.

- Any rehabilitation funds that are made available to this site should be re-diverted towards addressing local environmental priorities. The sewage management infrastructure in the Durres region is in urgent need of upgrading.

c) Rrushkull 1 Camp Site, Durres: The site has been cleaned and vegetation is regenerating, but two concrete buildings and multiple concrete tents pads remain.

- The NEA recommends that the site be restored to a nature reserve for migratory birds. This proposal requires funds for a feasibility assessment and implementation. An alternative proposal is to develop the site into Department of Forestry facilities for scientific research. At a minimum, the concrete structures on site should be removed.

d) Austrian Camp/Airfield Camp, Shkoder: Gravel roads, concrete septic pits, unfilled drainage channels, and garbage from refugee occupation remain onsite.

- Funds should be directed toward clearing an unofficial riverside dumpsite that developed near downtown Shkoder during the crisis.
- The municipality of Shkoder and private investors should investigate the potential of re-opening the airport at the former camp site.

e) Islamic Relief Camp Site, Shkoder: Wastewaters from this camp flowed into an open drainage channel that discharged into Shkoder Lake. The Lake has high levels of biological diversity and provides critical habitat for a variety of waterfowl. No additional rehabilitation is required; private construction work has been initiated.

f) Hope Camp, Fier: Located on lands prone to flooding. Infrastructure was removed and basic cleanup performed, but gravel-filled drainage channels, gravel roads, concrete-encased latrines and slabs remain. Topsoil removed from drainage ditches and latrine pits was piled into two large mounds.

- Any rehabilitation funds that are made available to this site should be re-diverted towards addressing local environmental priorities.

g) Olympic Collective Center: The camp houses up to 150 refugees in prefabricated accommodations and relies on a soak-away septic field to manage

wastewaters. The field is unlined, and the potential for groundwater contamination is unknown.

- The local health authority should conduct a preliminary assessment to detect possible sources of contamination from the septic field.
- When refugee operations have finished, the area could be developed into recreation and sport facilities.

h)Tirana City Park and Lake: The park and lake represent a valuable recreation area for local citizens. The lack of solid waste infrastructure has led to the creation of numerous illegal dumpsites in the park and along the lakeshore. Refugees exacerbated the problem and also harvested wood illegally.

- An environmental management plan should be developed for the park and lake area. Citizens should be educated in pollution prevention practices. Deforested areas should be replanted. Park management strategies should be adapted from successful models elsewhere.

Institutional capacities for environmental management

19. **State responsibilities**

a) Discussions have occurred within Albania concerning the creation of a Ministry of Environment. This is an important national priority. If environmental progress is to be achieved, strong leadership should be provided by a nationally prominent and adequately financed Government environmental institution. To establish clear responsibility for environmental policies, environmental authority should be concentrated in the Ministry to the extent practicable. A Ministry could coordinate Government environmental policies and strengthen environmental management, enforcement and awareness in Albania.

b) The process of implementing and updating the NEAP should be broadly supported.

c) Training is needed to ensure an adequate supply of professional environmental staff at the NEA and in other Government instititutions with environmental responsibilities.

d) Efforts to create an Eco-Fund should be pursued. Without the necessary resources, environmental management goals cannot be fulfilled.

e) Implementation of a national physical plan and appropriate regulations is urgently needed to control urbanization and illegal construction, which is having devastating effects on the country's energy and environmental infrastructure and landscape.

20. **Environmental Awareness**
    a) The NEA's efforts to develop an information unit deserve continued support. The unit should organize media briefings; public events; informational materials; community outreach programs; linkages with other government entities, schools and universities; and other environmental education initiatives.
    b) Ongoing efforts to develop environmental impact assessment requirements should incorporate public participation and outreach mechanisms.
    c) Efforts should be made to develop a more independent and activist NGO network. Opportunities for direct citizen involvement in environmental issues increase public awareness and commitment to environmental protection.

21. **Management Instruments**
    a) Enforcement procedures should be simplified and enforcement actions increased.
    b) To build awareness and respect for the law, enforcement actions should be publicized.
    c) The environmental inspectorate should be strengthened by providing resources (e.g., cars for regional inspectors) and better access to information.
    d) Greater cooperation should be developed with other inspectorates by sharing information and conducting periodic joint actions.
    e) Environmental management cannot succeed without timely and accurate data. Duplication of effort diverts resources from greatly needed monitoring efforts. To the extent possible, monitoring responsibilities should be consolidated and coordinated. Similarly, monitoring methodologies should be harmonized to the extent practicable.

22. **Local Authority and Privatization**
    a) Current efforts to strengthen local autonomy should ensure that a sufficient revenue base is available for expanded municipal environmental responsibilities in such areas as solid waste, water supply, wastewater, monitoring, green areas, and the proper investigation and remediation of costly industrial clean-ups.
    b) A national registry of priority clean-up sites might help focus donor attention to 'worst case' sites in need of clean-up or other environmental management measures.
    c) Privatization efforts would be aided by a clear assignment of legal liability for clean-up activities at contaminated industrial sites.

23. **Waste**
    a) The National Waste Management Plan should be updated and supported by a new law on solid waste management that clearly delineates municipal waste management responsibilities.
    b) Plans to create national landfills should be accelerated, and recycling efforts should be greatly expanded.

c) Public awareness efforts are needed to discourage littering and illegal waste dumping and burning, and to promote community clean-up efforts.
d) A national industrial and hazardous waste management strategy is urgently needed, as is relevant legislation and industrial waste management infrastructure.
e) The importation of obsolete pesticides and fertilizers should be prohibited.

24. **Water**

a) The National Water Strategy should be adopted and the 1996 Law on Water Resources implemented without delay.
b) Cooperation and coordination between the NEA and the National Water Council should be strengthened.
c) The national water resources plan should be developed with the participation of key governmental and non-governmental stakeholders.
d) Urban water supply infrastructure needs urgent attention and resources.
e) Draft soil protection legislation should be adopted swiftly, and the development of a soil conservation strategy should be supported.

25. **Air**

a) Draft laws on air and emission standards should be adopted without delay.
b) A national database of air emissions should be established and regularly updated.
c) A nationwide air quality monitoring network should be created to ensure sufficient knowledge of ambient air quality, especially in urban areas.
d) Mobile emission standards should be established, and a strategy should be developed to manage traffic, reduce traffic-borne emissions and address issues such as the phase-out of leaded gasoline, reductions in diesel consumption, and the use of catalytic converters.

26. **Chemicals**

a) A national strategy and appropriate legislation is needed to regulate the importation, storage, and handling of chemicals, especially hazardous chemicals, ozone-depleting chemicals, agricultural pesticides and biocides.

27. **Biodiversity**

a) The Biodiversity Strategy and Action Plan should be fully articulated, in a detailed action plan, and implemented. Priority should be given to expanding the number of protected areas and strengthening nature and forest management.

APPENDIX I
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APPENDIX II
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GLOSSARY

A

AMMONIA (NH_3) Ammonia is a colorless gas with a strong pungent odor. It is formed from the natural breakdown of manure, plants and animals. It is present in water, soil and air and acts as a source of nitrogen for plants and animals. Ammonia is also produced industrially, largely as a raw material in fertilizers. A smaller proportion is used to manufacture plastics, synthetic fibers and explosives. It is not persistent in the environment, but high levels may build up around waste disposal sites. Ammonia gas is soluble in water, where it forms ammonium hydroxide. Ammonia is highly toxic for fish, and low concentrations can cause mortality. Human exposure to high levels of ammonia gas is also fatal. Death may occur immediately or from secondary complications after a few weeks. Exposure may also cause burns to the skin, eyes, throat and lungs, permanent blindness, or lung disease. In laboratory animals, long-term exposure to low levels of ammonia causes inflammation and lesions of the respiratory tract.

AMMONIUM HYDROXIDE (NH_4OH) Ammonium hydroxide is a colorless liquid that is formed from the combination of ammonia gas and water. It has a strong irritating odor and is used in detergents, stain removers, bleaches, dyes, fibers and resins. It is a corrosive chemical, and contact with the skin or eyes can cause permanent damage. Human health risks are similar to those of ammonia.

ARSENIC (As) Arsenic is a naturally occurring element with no detectable smell or taste. It is a silver-gray or white metallic solid. Organic arsenic is usually less harmful than inorganic arsenic. The latter is separated during copper and lead smelting and is used in the chemical industry, for example, in pesticides and herbicides. If released into the environment, arsenic does not break down but may change into different forms. If released into the aquatic environment it binds to sediments, and builds up in the tissues of some fish and shellfish. Workers exposed to inorganic arsenic dusts experience irritation to the mucous membranes of the nose and throat. Long-term exposure increases the risk of cardiovascular disease and various forms of cancer including lung, skin, bladder, kidney, and liver. The appearance of small corns or warts on the palms, soles, and torso is also symptomatic of arsenic exposure. Lower levels of exposure may cause nausea, vomiting, diarrhea, decreased production of red and white blood cells, abnormal heart rhythm, blood vessel damage, and a prickling sensation in the hands and feet. Arsenic is also suspected of interfering with fertility, fetus development, and hormone production and regulation. The disposal of wastes containing arsenic is regulated by the Basel Convention.

B

BASEL CONVENTION The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (the 'Basel Convention') entered into force in 1982. A central goal of the Basel Convention is to protect human health and the environment by minimizing hazardous waste production whenever possible through environmentally sound management. The convention requires that the production of hazardous wastes is managed using an 'integrated life-cycle approach', which involves strict controls from its generation to storage, transport, treatment, reuse, recycling, recovery and final disposal.

BIOACCUMULATION Bioaccumulation refers to the ratio between a chemical's concentration in an organism and its concentration in the environment. A compound accumulates any time it is taken in and stored faster than it is transformed into other compounds (metabolized) or excreted. As the chemical progresses up the food-chain (e.g., from contaminated plankton to small fish to larger fish to humans), it might become increasingly concentrated, having toxic effects on the host organism. Some persistent contaminants that bioaccumulate are heavy metals such as mercury and lead, and organochlorines. Understanding the dynamic process of bioaccumulation is very important in protecting humans and other organisms from adverse chemical exposure, and it has become a critical consideration in the regulation of chemicals.

BTF The Balkans Tasks Force was a Joint UNEP / UNCHS (Habitat) project designed to assess and monitor the environmental and human settlements impacts of the Balkans conflict.

C

CARBON DIOXIDE (CO_2) Carbon dioxide is a colorless gas having a faint odor and a sour taste. It is naturally produced by animals during respiration, and used by plants during photosynthesis. Although it only constitutes 0.03 percent of the atmosphere, it is one of the most important "green-house" gases. The combustion of fossil fuels is increasing carbon dioxide concentrations in the atmosphere and is believed to be contributing to global warming. As a result, global emissions of carbon dioxide will be regulated by the United Nations Framework Convention on Climate Change.

CARBON DISULFIDE (CS_2) Pure carbon disulfide is a colorless liquid with a pleasant and sweet odor, similar to chloroform. However, the crude industrial product is a yellowish liquid with a disagreeable odor of decaying radishes. By far the most important use of carbon disulfide in industry is in the production of viscose rayon fibers. It is also used as a solvent in various industrial processes including the refining of paraffin and petroleum, and more recently in the production of flotation agents and herbicides. When released into the environment, carbon disulfide evaporates rapidly. It does not appear to be taken up by organisms living in water. Inhalation of carbon disulfide vapors may cause irritation to the eyes and respiratory

tract. Carbon disulfide is a central nervous system depressant and may cause liver and kidney injury. Long-term inhalation may cause coronary heart disease, and behavioral and neurophysiological changes. Carbon disulphide is a reproductive toxicant which also interferes with the normal development of the fetus.

CARBON MONOXIDE (CO) Carbon monoxide is a colorless, odorless, and tasteless gas that is slightly less dense than air. It is a product of the incomplete combustion of carbon-containing fuels and is also produced by some industrial and biological processes. In low concentrations, carbon monoxide can cause headaches, dizziness, temporary loss of muscle coordination, memory and vision. Long-term, low level exposure can result in heart disease and central nervous system damage. High levels of exposure can impair the ability of blood to carry oxygen, leading to convulsions, coma and respiratory failure. During pregnancy, exposure can cause lowered birth weight and nervous system damage in offspring.

CAUSTIC SODA (NaOH) Caustic soda, also referred to as sodium hydroxide, is a white odorless solid that is highly corrosive. It is used in the production of various chemicals, as well as in petroleum refining and paper production. It is extremely hazardous to the eyes and can lead to permanent damage and blindness. Contact with skin can cause irritation and burns. Inhalation can inflame the lungs and cause coughing, shortness of breath, and fluid accumulation.

CHLORINE (Cl_2) Chlorine is a greenish-yellow gas with a strong irritating odor. It is produced electrolytically from a salt solution. It is sometimes manufactured to combine with petrochemicals to produce organochlorine products such as solvents, pesticides, plastics (especially PVC) and many other chemicals. Chlorine gas is also used as bleach in the production of paper and for disinfecting drinking water. Chlorine gas was used as a chemical weapon in the First World War and exposure can be rapidly fatal. There have been numerous releases of chlorine from industrial facilities, many of them resulting in deaths. Long-term exposure to lower levels of chlorine is reported to cause respiratory complaints and corrosion of the teeth. Chlorine is a potent irritant to the eyes, lungs and skin. Chlorine is not carcinogenic in animals or humans, but is highly toxic to aquatic organisms.

CHLOROBENZENE (C_6H_5Cl) Chlorobenzene, also known as monochlorobenzene or MCB, is a flammable liquid. It does not occur naturally. It is used for the production of adhesives, paints, paint removers, polishes, dyes, drugs and pesticides (including DDT). When exposed to air, chlorobenzene evaporates and breaks down into other chemicals. It is moderately soluble in water, and is not likely to accumulate in the tissues of plants and animals. Contact with chlorobenzene liquid or vapor can irritate the skin, eyes, nose, and throat. Exposure to large amounts can also cause adverse nervous system effects, including unconsciousness. Workers breathing large amounts can experience headaches, muscle spasms, and adverse effects on the bone marrow. Repeated exposure to large amounts can also adversely affect the liver, kidneys, blood, and reproductive organs.

CHLORINATED HYDROCARBONS Chlorinated hydrocarbons (CHC) is a generic term given to compounds containing chlorine, carbon and hydrogen. The term can be

used to describe organochlorine pesticides such as lindane and DDT, industrial chemicals such as polychlorinated biphenyls (PCB), and chlorine waste products such as dioxins and furans. These compounds are persistent in the environment and most bioaccumulate in the food chain. The human and environmental health risks of chlorinated hydrocarbons depend on the compound in question. As a general statement, exposure to chlorinated hydrocarbons has been associated with suppression of the immune system and cancer.

CHROMIUM (Cr) Chromium is a naturally occurring heavy metal that has no taste or odor. It has a variety of forms. Chromium (III) compounds are naturally occurring and are essential nutrients in the human diet. In contrast, most chromium (VI) arises from human activities including leather production, wood preservation, waste incineration, fossil fuel combustion, and the mining and smelting of chromium ore. Long-term exposure to high levels of chromium (VI) can cause damage to the nose and lungs, and can increase the risk of lung disease. Ingesting very large amounts of chromium can cause ulcers, convulsions, kidney and liver damage, and death. Skin contact with liquids or solids containing chromium (VI) may lead to skin ulcers and lesions. Studies also indicate chromium (VI) is a carcinogen. Data are inconclusive about the cancer-causing ability of other forms of chromium. The disposal of wastes containing chromium (VI) is regulated by the Basel Convention.

COPPER (Cu) Copper is a reddish-brown, ductile and malleable heavy metal. It is found naturally in a wide variety of mineral salts and organic compounds, as well as in metallic form. Copper is widely used in cooking utensils and water distribution systems, as well as in fertilizers, herbicides, and paint. It is also used in animal feed additives for growth promotion and disease control. Anthropogenic emissions include smelters, power stations and waste incinerators. The major release of copper to land is from copper mine tailings, sewage sludge and agricultural applications. Copper is vital to life in small amounts, but toxic at high doses. In humans, ingestion of gram quantities of copper salts may cause severe abdominal pain, vomiting, diarrhea, blood or protein in the urine, hypertension, convulsions, coma, and even death. Evidence also indicates that copper compounds are spermicidal. The disposal of wastes containing copper is regulated by the Basel Convention.

D

DDT ($C_{14}H_9C_{l5}$) DDT, or dichlorodiphenyltrichloroethane, was the first chlorine-based organic pesticide to be used on a wide scale. It is packaged as colorless crystals or white powder. After its release in 1939, it appeared to be the ideal insecticide due to its low production cost and apparently low toxicity to mammals. However, problems related to extensive use of DDT began to appear in the late 1940s. Many species of insects developed resistance to DDT, and it was also discovered to have a high toxicity toward fish. Furthermore DDT was found to accumulate in the fatty tissue of animals and bioaccumulate in the food chain. Exposure to DDT can cause nausea, vomiting, dizziness, confusion, loss of muscle control and tremors. DDT may also damage the liver and kidneys and interfere with the immune system. It is

believed to be carcinogenic and should be treated with extreme caution. The trade of DDT will be addressed by the PIC Convention. A United Nations convention on Persistent Organic Pollutants (POPs) is currently being developed to further restrict and control the use of DDT and other hazardous chemicals.

DIMETHYLAMINE (C_2H_7N) Dimethylamine is a highly flammable, colorless liquid or gas with a fishy or ammonia-like odor. It is used as a raw material in the synthesis of insecticides, lubricants, water-proofing agents, tanning and dehairing products, pharmaceuticals, detergents, soaps and rocket fuel. Moderate exposure can irritate the eyes, nose, throat, and skin, and cause shortness of breath. Direct contact with the skin can result in severe burns. Repeated exposure may cause bronchitis and liver damage.

DIOXINS (e.g. $C_{12}H_4Cl_4O_2$) The terms 'dioxin'or 'dioxins and furans' generally refers to a group of 210 chlorinated pollutants, the polychlorinated dibenzo-p-dioxins and dibenzofurans. Dioxins are organochlorines and are regarded as among the world's most toxic organic pollutants. They are produced as by-products of industrial processes involving chlorine and all types of incineration. Once released into the environment, dioxins are environmentally stable and tend to become associated with sediments or suspended material. Dioxins have the potential to bioaccumulate in the food chain and pose series risks to ecological and human health. The most toxic of the dioxins and furans, 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), is used as the toxicological model for the group and has been extensively researched. It is classified as a human carcinogen. In addition to causing cancer, animal studies have shown that it causes damage to the nervous system, the immune system, and the reproductive system, and malformations in the unborn. The most common health effect in people exposed to dioxins is a severe skin disease with acne-like lesions that occur mainly on the face and upper body. Other skin effects include skin rashes, disco-loration, and excessive body hair. Changes in blood and urine that may indicate liver damage have also been observed. The disposal of dioxin wastes is regulated by the Basel Convention. A United Nations convention on Persistent Organic Pollutants (POPs) is currently being developed to further restrict the production of dioxins and other hazardous chemicals.

F

FRY Federal Republic of Yugoslavia.

FYR OF MACEDONIA Former Yugoslav Republic of Macedonia.

G

GRID UNEP's Global Resource Information Database (GRID) is a network of information centres that provides decision-makers and the public with improved

access to high-quality environmental information. There are currently sixteen GRID centres operational world-wide, the European sites being Arendal, Budapest, Geneva, Moscow, Tbilisi, Warsaw and the MAP/Blue Plan Office.

H

HCH (1,2,3,4,5,6 HEXACHLOROCYCLOHEXANE) See Lindane.

HEAVY METALS Heavy metals is a group name for metals and metalloids that have atomic densities of greater than six grams per cubic centimeter. Many of these metals are toxic at very low concentrations. As basic elements, they are also persistent in the environment and have the potential to bioaccumulate through the food chain. Heavy metals discharged into the aquatic environment bind predominantly to suspended material and accumulate in the sediment.

HOT SPOTS Sites that pose significant potential risks to human health and further degradation of the surrounding environment. All identified 'hot spots' require immediate risk reduction measures together with rehabilitation and environmental management.

HYDROGEN SULFIDE (H_2S) Hydrogen sulfide is a colorless gas with a characteristic odor of rotten eggs. It is soluble in water and does not bioaccumulate. It naturally occurs in volcanic gases, and is produced by bacterial action during the decay of plant and animal proteins. In industry, it is usually produced as a by-product from the production of coke from sulfur-containing coal, the refining of sulfur-containing crude oils, and the processing of wood pulp. Hydrogen sulfide is both an irritant and an asphyxiate gas. Its direct irritant action on the moist tissues of the eye produces keratoconjunctivitis, known as 'gas eye'. When inhaled, hydrogen sulfide irritates the entire respiratory tract, causing rapid breathing. Respiratory failure may occur after prolonged exposure to high concentrations.

I

IRON (Fe) Iron is a heavy metal with a gray metallic appearance. Nearly all iron produced commercially is used in the steel industry and made using a blast furnace. The pure metal is very reactive chemically and rapidly corrodes, especially in moist air or at elevated temperatures. Iron is an essential dietary element which is used by blood cells to store oxygen. Excess ingestion of iron, however, has been linked to increased risk of cardiovascular disease and colon cancer. Reports also indicate excessive iron can damage the liver and pancreas, leading in some cases to diabetes. Overall, however, iron is not a significant risk to human or environmental health.

L

LEAD (Pb) Lead is a naturally occurring bluish-gray heavy metal found in small amounts in the earth's crust. It has no special taste or smell. Lead is used in ammunitions, metal products (solder and pipes), roofing, batteries, paints and x-ray shields. Pollution of the environment occurs primarily through the smelting and refining of lead, and the burning of petroleum fuels containing lead additives. In the home, lead pipes and lead-containing paints are also a significant source of exposure. Terrestrial and aquatic plants are known to accumulate lead in industrially contaminated environments. Lead is a serious threat to human health and can adversely affect almost every organ in the human body. The most sensitive is the central nervous system, but immune system and kidney damage are also common effects. Lead exposure during pregnancy can lead to spontaneous fetal abortion, decreased infant size and irreversible brain damage. Children are especially susceptible to lead poisoning because they absorb and retain more lead in proportion to their weight than adults. Learning difficulties and reduced growth rate are common side effects of childhood exposure. Because of health concerns, lead from gasoline, paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years. The disposal of wastes containing lead is regulated by the Basel Convention.

LINDANE ($C_6H_6Cl_6$) Lindane is an organochlorine pesticide. It is a colorless, crystalline solid with either a faint or no smell. It is composed of approximately 99 % HCH. Lindane has been used as a broad-spectrum agricultural insecticide since the early 1950s and is 5-20 times more toxic to insects than DDT. It is also used in ointments to treat head and body lice, and scabies. It is poorly soluble in water and rapid bioaccumulation takes place in microorganisms, invertebrates, fish, birds and humans. However, the elimination of lindane from the body is relatively rapid when exposure is discontinued. Lindane can remain in the air for up to 17 weeks. Workplace exposure has been reported to cause blood disorders, dizziness, headaches, and changes in the levels of sex hormones. The ingestion of large amounts has caused seizures and death. Liver and kidney effects and immune suppression has been observed at moderate ingestion levels. Lindane is considered to be a carcinogen, and has been associated with liver cancer. The international trade of lindane will be addressed by the PIC Convention.

M

MERCURY (Hg) Mercury is a naturally occurring metal that has several forms. Metallic mercury is a shiny, silver-white, odorless liquid. If heated, it is a colorless gas. Metallic mercury is used to produce chlorine gas and caustic soda and is also used in thermometers, dental fillings, and batteries. Mercury enters the air from mining ore deposits, burning coal and waste, and from manufacturing plants. Once metallic mercury has entered the environment, it can be methylated by microorganisms to organic forms of mercury, most commonly methylmercury. This compound rapidly crosses cell membranes and is known to bioaccumulate in the food

chain. The nervous system is very sensitive to all forms of mercury, and effects include irritability, shyness, tremors, changes in vision or hearing, and memory problems. Exposure to high levels of mercury can permanently damage the brain, kidneys and lungs. Very young children are more sensitive to mercury than adults. Mercury in the mother's body passes to the fetus and can pass to a nursing infant through breast milk. Exposed infants may suffer from brain damage, muscular incoordination, blindness, seizures, and an inability to speak. The disposal of wastes containing mercury is regulated by the Basel Convention. The trade of mercury compounds will be addressed by the PIC convention.

METHANOL (CH_3OH) Methanol is a clear, colorless, flammable liquid with a mild odor of alcohol. Pure methanol is an important material in chemical synthesis, and is used to produce a number of commercial compounds including resins, drugs, perfumes, automotive antifreezes, and solvents. Methanol is also a high-octane, clean-burning fuel that can be used as a substitute for gasoline in automotive vehicles. Environmental introduction of methanol is linked with tobacco smoke and exhausts from both gasoline and diesel engines. Methanol is poisonous and causes blindness and death if ingested in high concentrations.

METHYLAMINE (CH_5N) Methylamine is a colorless gas or liquid with an ammonia-like odor. It is used in the production of tanning agent, dyes, pharmaceuticals, insecticides, fungicides, paint removers, photographic developing processes, explosives, and rocket propellant. Exposure to methylamine can irritate the nose, throat and lungs. Repeated exposure may cause bronchitis and associated respiratory problems.

N

NITROGEN OXIDES (NOx) Nitrogen oxides refers to nitric oxide gas (NO) and nitrogen dioxide gas (NO2) and many other gaseous oxides containing nitrogen. The main source of these gases in urban areas are motor vehicle exhaust and indoor gas stoves and kerosene heaters. The brown haze sometimes seen over cities is mainly nitrogen oxides. These gases are also partly responsible for the generation of ozone, which is produced when nitrogen oxides react with other chemicals in the presence of sunlight. Exposure to high levels of nitrogen dioxide can interfere with the ability of blood to carry oxygen, leading to dizziness and shortness of breath. Prolonged exposure can lead to respiratory failure.

O

ORGANOCHLORINES The term organochlorine refers to a wide range of chemicals that contain carbon, chlorine and, sometimes, several other elements. A range of organochlorine compounds have been produced including many herbicides, insecticides, fungicides as well as industrial chemicals such as polychlorinated biphenyls (PCBs). The compounds are characteristically stable, fat-soluble and bioaccumulate. Organochlorines pose a range of adverse human health risks and some are carcinogens.

P

PCBs Polychlorinated biphenyls (PCBs) are mixtures of 209 different chemicals (cogeners) that come in various forms including oily liquids, solids and hard resins. PCBs are organochlorines that were manufactured until the mid-1980s, after which they were banned due to their toxicity and persistence. PCBs have been widely used as insulators in electrical equipment. They have also been used in the production of hydraulic fluids, lubricants, inks, adhesives and insecticides. They are still found in old electrical equipment and releases into the environment continue from landfills. PCBs are very persistent in the environment, taking years to degrade. They are fat-soluble and bioaccumulate in the tissues of animals. PCBs have become world-wide pollutants due to long-distance transport on air currents. Exposure to PCBs can permanently damage the nervous, reproductive and immune systems of the human body. PCBs are known carcinogens and have been linked with the development of various forms of cancer including skin and liver. In mammals, PCBs are passed via the placenta to developing young in the womb and via breast milk to newborn babies. The disposal of wastes containing PCBs is regulated by the Basel Convention. The trade of PCBs will be regulated by the PIC convention. A United Nations convention on Persistent Organic Pollutants (POPs) is currently being developed to further restrict the use of PCBs and other hazardous chemicals.

PERSISTENT ORGANIC POLLUTANTS Persistent organic pollutants, or POPs, are chemical substances that persist in the environment, bioaccumulate through the food chain, and pose a risk of causing adverse effects to human health and the environment. The international community has called for urgent global actions to reduce and eliminate releases of these chemicals (See the POPs Convention).

PETROLEUM HYDROCARBONS Petroleum hydrocarbons are formed from the decomposed remains of prehistoric plants and animals that have been buried in the primeval mud of swamps, lakes and oceans. They are a complex mix of individual chemical compounds and are used in over 3,000 industrial applications. While gasoline is the most common product, other applications include plastics and fertilizer manufacturing, and asphalt production. When released into the environment, petroleum hydrocarbons undergo a number of complex chemical, photochemical and biochemical reactions, leading to a diverse number of breakdown products. Each of these products has unique environmental and human health impacts which require individual assessment and analysis.

PHARE The European Union's Phare programme provides grant assistance to partner countries in Central and Eastern Europe (CEE) to support the efforts of these countries to assume the obligations of EU membership. These countries are Albania, Bosnia-Herzegovina, Bulgaria, Czech Republic, Estonia, FYR of Macedonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovakia.

PIC CONVENTION The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade was opened for signature in 1998. It will come into force when 50 countries provide final

ratification. The Convention will enable the world to monitor and control the trade in various chemicals that threaten human and environmental health. It will give importing countries the power to decide which chemicals they want to receive and to exclude those they cannot manage safely. If trade does take place, requirements for labeling and the provision of information on potential health and environmental effects will promote the safe use of these chemicals.

POPs CONVENTION The United Nations is currently developing an international convention to reduce or eliminate the production of a number of persistent organic pollutants (POPs).

R

REC The Regional Environmental Center for Central and Eastern Europe (REC) is a non-advocacy, not-for-profit organization. Its mission is to assist in solving environmental problems in Central and Eastern Europe. The Center fulfills its mission through encouraging cooperation among non-governmental organizations, governments and businesses, supporting the free exchange of information, and promoting public participation in environmental decision-making. The REC was established in 1990 by the United States, the European Commission and Hungary. Today, the REC is legally based on a Charter signed by the governments of 25 countries and the European Commission, and on an International Agreement with the Government of Hungary. The REC has its headquarters in Szentendre, Hungary and Local Offices in each of its 15 beneficiary CEE countries, which are: Albania, Bosnia - Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, FYR of Macedonia, Poland, Romania, Slovakia, Slovenia and Yugoslavia.

ROTTERDAM CONVENTION See PIC convention.

S

STABILITY PACT FOR SOUTH EASTERN EUROPE This initiative, signed by 27 states, seeks to stabilize, transform, and eventually integrate South Eastern Europe into the European and Trans-Atlantic communities by promoting cooperation and multi-ethnic democracy. The Pact was formally launched in Sarajevo, during a July 1999 summit attended by over 40 leaders from Europe and North America.

SODIUM ARSENATE ($Na_3A_sO_4$) Sodium arsenate is a clear, colorless crystalline material that is used in dying and printing. Human health risks are consistent with those of arsenic.

SODIUM ARSENITE (Na3As03) Sodium arsenite is a white or grayish-white powder. It is used as a pesticide, a hide preservative, an antiseptic, and in dyes and soaps. Human health risks are consistent with those of arsenic.

SODIUM DICHROMATE ($Na_2Cr_2O_7$) Sodium dichromate is a white and odorless compound that is industrially produced in a crystal form. It is used as a corrosion inhibitor in cooling systems and other machines exposed to moisture. It is also used in the production of tanning agents, paint and dye pigments, photographic films, perfumes, flavors, essential oils, saccharin, pharmaceuticals and oil-well drill tips. Inhalation may irritate the respiratory tract and cause coughing, shortness of breath, sore throat and runny nose. Ingestion of sodium dichromate may inflame the membrane of the stomach and intestines, causing abdominal pain, nausea, vomiting and diarrhea. Systemic effects may follow, including ringing of the ears, dizziness, elevated blood pressure, blurred vision and tremors. Sodium dichromate is believed to have carcinogenic properties, and is considered to be extremely hazardous to human health. Additional study is required to understand the full range of human and environmental health impacts.

SULFUR DIOXIDE (SO_2) Sulfur dioxide is a colorless gas that has a pungent, irritating odor. It is produced from the combustion of fossil fuels, and the roasting of sulphide ores. It is also used in the production of sulfuric acid. Acid gases such as sulfur dioxide can influence the pH of precipitation, making it acidic. Over time, acid rain can have deleterious impacts on soil and water quality. There is evidence that sulfur dioxide affects lung function, particularly in asthmatic individuals. It is also a severe corrosive irritant of the eyes, mucous membranes, and skin. Rises in urban levels of sulfur dioxide have been associated with increases in hospital admissions and mortality. Increased morbidity is evident in individuals with pre-existing respiratory diseases.

T

THIRAM ($C_6H_{12}N_2S_4$) Thiram is a pesticide. It is available as a blue or cream-colour solid, or as yellow crystals. Thiram is used to protect vegetables, fruits and seeds from a variety of fungal diseases. It is also used to repel rabbits, rodents and deer from fruit and ornamental trees. The pesticide is moderately toxic by ingestion, but highly toxic if inhaled. Short-term exposure in humans may cause headaches, dizziness, fatigue, nausea, and diarrhea. Prolonged exposure may lead to drowsiness, confusion, loss of sex drive, muscle incoordination, slurred speech, and 'pink eye' (conjunctivitis). In the environment, thiram is unstable in the presence of moisture and oxygen, and rapidly breaks down into ethylenethiourea (ETU). This compound has produced goiter, birth defects and cancer in animals.

U

UNDP Since 1965, the United Nations Development Programme (UNDP) has assisted countries to achieve sustainable human development by helping to build capacity in four key areas: poverty eradication; employment creation and sustainable livelihoods; the empowerment of women; and the protection and regeneration of the environment.

UNECE The United Nations Economic Commission for Europe (UNECE) was founded in 1947 as a forum at which the countries of North America, Central and Eastern Europe and Central Asia come together to strengthen economic cooperation. UNECE focuses on economic analysis, environment and human settlements, statistics, sustainable energy, trade, industry and enterprise development, timber and transport.

UNEP The United Nations Environment Programme (UNEP) was established as one of the consequences of the 1972 Stockholm Conference on the Human Environment. The mission of UNEP is to be the leading global environmental authority that sets the global environmental agenda; promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system; serves as an authoritative advocate for the global environment; and encourages international cooperation and action based on the best scientific and technical capabilities available.

UNCHS The United Nations Centre for Human Settlements (Habitat) was established in 1978, two years after the United Nations Conference on Human Settlements held in Vancouver, Canada. The Centre serves as the lead agency for United Nation's human settlement development activities, as well as for the global exchange of information about human settlements, conditions and trends.

UNHCR The United Nations High Commissioner for Refugees (UNHCR) was established in 1951. UNHCR is mandated to lead and coordinate international action for the world-wide protection of refugees and the resolution of refugee problems. UNHCR's primary purpose is to safeguard the rights and well-being of refugees. UNHCR strives to ensure that everyone can exercise the right to seek asylum, find safe refuge in another state, and return home voluntarily.

V

VINYL CHLORIDE (C_2H_3Cl) Vinyl chloride is a colorless, flammable gas with a mild, sweet odor. It is a manufactured substance that is used to make polyvinyl chloride (PVC) and adhesives. PVC is used to make a variety of plastic products, including pipes, wire and cable coatings, and fumiture upholstery. Vinyl chloride formed from the breakdown of PVC and other chemicals can enter groundwater, but is unlikely to build up in plants or animals. Exposure to vinyl chloride can cause headache, dizziness, fatigue, sleeping disturbances, loss of memory, nerve damage and immune system suppression. People who work with vinyl chloride have reported problems with blood flow in their hands, and occasionally finger bones have degenerated. Animal studies have shown that long-term exposure to vinyl chloride can damage the sperm and testes and lead to various forms of cancer, including liver, brain and lung.

III

APPENDIX III

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MULTILATERAL ENVIRONMENTAL AGREEMENTS TO WHICH ALBANIA IS A PARTY

Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus), as of 25 June 1998.

Convention on Biological Diversity, as of 5 January 1994.

Convention on the Conservation of European Wildlife and Natural Habitats, as of 13 January 1999.

Convention concerning the Protection of the World Cultural and Natural Heritage, as of 10 July 1989.

Convention for the Protection of the Marine Environment and Coastal Region of the Mediterranean (Mediterranean Action Programme), as of 30 May 1990.

Convention on the Protection and Use of Transboundary Watercourses and International Lakes, as of 5 January 1994.

Convention on Wetlands of International Importance especially as Waterfoul Habitat (RAMSAR), as of 29 March 1996.

Convention on Environmental Impact Assessment in a Transboundary Context, as of 4 October 1991.

Convention on the Transboundary Effects of Industrial Accidents, as of 5 January 1994.

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, as of 29 June 1999.

Vienna Convention on the Protection of the Ozone Layer, as of 8 October 1999.

Framework Convention on Climate Change, as of 3 October 1994.

Convention to Combat Desertification, as of 27 April 2000.

Note: Albania is not a party to the United Nations Convention on the Law of the Sea, the Convention on Long-Range Transboundary Air Pollution, the Convention on the Conservation of Migratory Species of Wild Animals, or the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

APPENDIX IV

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IV

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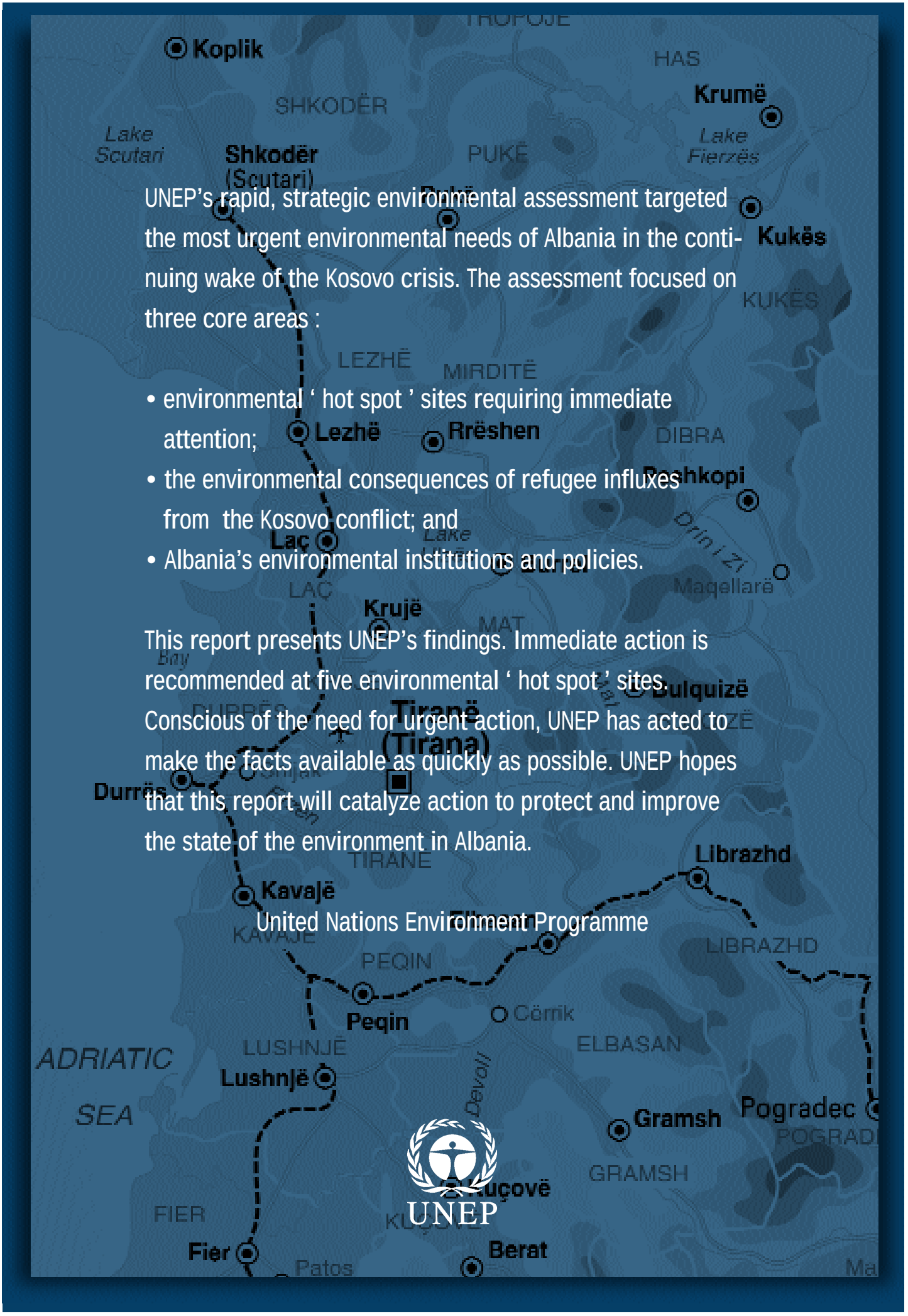

UNEP's rapid, strategic environmental assessment targeted the most urgent environmental needs of Albania in the continuing wake of the Kosovo crisis. The assessment focused on three core areas :

- environmental ' hot spot ' sites requiring immediate attention;
- the environmental consequences of refugee influxes from the Kosovo conflict; and
- Albania's environmental institutions and policies.

This report presents UNEP's findings. Immediate action is recommended at five environmental ' hot spot ' sites. Conscious of the need for urgent action, UNEP has acted to make the facts available as quickly as possible. UNEP hopes that this report will catalyze action to protect and improve the state of the environment in Albania.

United Nations Environment Programme

UNEP