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**Assessment, monitoring and early warning: state of the environment**

**State of the environment**

**Report by the Executive Director**

The present document contains a summary of the state of the environment relating to activities of the United Nations Environment Programme (UNEP) in environmental assessment and early warning, thematic assessments, assessing the environmental contribution to development, and the state of the environment in the regions. The ministerial consultations of the eighth special session of the Governing Council/Global Ministerial Environment Forum have as their theme environmental dimensions of water, sanitation and human settlements; accordingly, the document places special focus on activities relevant to water, sanitation and human settlements. It also addresses areas of special geographic focus taking into account the region where the session/forum is being held.

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\* UNEP/GCSS.VIII/1.

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## **I. State of the environment**

### **Annual Global Environmental Outlook – 2003**

1. The first annual global environment outlook statement has been produced in response to Governing Council decision 22/1 I B of February 2003 and is being made available to the eighth special session of the Governing Council/Global Ministerial Environment Forum as document UNEP/GCSS.VIII/INF/2. Known as GEO Yearbook (GEO)-2003, the statement contains a feature focus on water and human vulnerability. Prepared with the participation of a number of Global Environment Outlook (GEO) collaborating centres and other partners, GEO-2003 also highlights and analyzes key issues and developments during the year at both the global and regional levels. In collaboration with experts from the Scientific Committee on Problems of the Environment of the International Council for Science, the document presents a selection of potentially significant environmental issues that have emerged in 2003. GEO-2003 also includes indicators to help monitor progress towards environmental sustainability and introduces preliminary work undertaken towards the development of a human environment index.

## **II. Keeping the world environmental situation under review**

### **A. Strengthening the scientific base of UNEP**

2. In 2002, the Open-ended Intergovernmental Group of Ministers on International Environmental Governance concluded that the increasing complexity of environmental degradation required an enhanced capacity for scientific assessment, monitoring and early warning. Furthermore, the group recommended that further consideration be given to strengthening the scientific base of UNEP by improving its ability to monitor and assess global environmental change, including through the establishment of an intergovernmental panel on global environmental change. The effective participation of developing countries in the work of the panel was to be ensured, and the mandate, modalities and composition of any mechanism were to be decided by the Governing Council/Global Ministerial Environment Forum. At its twenty-second session, held from 3 to 7 February 2003, the UNEP Governing Council/Global Ministerial Environment Forum decided to initiate those considerations through a consultative process on strengthening the scientific base of UNEP (Governing Council decision 22/1 I A). The outcome of that consultative process is described in documents UNEP/GCSS.VIII/5, UNEP/GCSS.VIII/INF/4 and UNEP/GCSS.VIII/INF/5.

### **B. Fourth Global Environment Outlook (*GEO-4*)**

3. In response to Governing Council decision 22/1 I B of February 2003, which requested the UNEP Executive Director to prepare the comprehensive Global Environment Outlook report every five years, with the next report for 2007, planning has started with a review of the GEO process. The review has involved, among other things, examining the strengths and weaknesses of the UNEP network of collaborating centres, the need and possible mechanisms for strengthening the involvement of the scientific community in various aspects of the process, improving capacity of stakeholders, particularly those in the developing regions, and determining ways of making the GEO series more responsive to the needs of policymakers. The findings of the initiative on strengthening the scientific base of UNEP will feed into the *GEO-4* process. As a result of the extended timeline for the global GEO report series, UNEP is placing increasing emphasis on developing regional, subregional, national and city-level environment outlook reports to provide a more complete information base for the development of the global reports. In 2003, UNEP published a GEO report for Latin America and the Caribbean, *GEO Andes* and numerous national and municipal environmental outlook reports. UNEP has also published, together with the African Ministerial Conference on the Environment, *Africa Environment Outlook, Case Studies: Human Vulnerability Due to Environmental Change*.

4. GEO capacity-building activities focus on strengthening the participation of developing country institutions in the GEO process. These various processes have received funding support from various Governments, including those of Belgium, Ireland, Luxembourg, Norway and the Netherlands.

### **C. Millennium Ecosystem Assessment**

5. The first product of the Millennium Ecosystem Assessment is the report: “Ecosystems and Human Well-being – A Framework for Assessment”, which was released in 2003. The full assessment report is to be distributed to Governments and experts for the first round of peer review in January 2004, with the final assessment reports and syntheses to be completed in early 2005. UNEP coordinates the secretariat of the Millennium Ecosystem Assessment and is one of the implementing agencies of the project together with the World Fish Center and the World Resources Institute. The Millennium Ecosystem Assessment includes both a global assessment and 15 subglobal assessments. The assessment will provide state-of-the-art scientific information on conditions and trends in ecosystems and their services, plausible future changes in ecosystems and the impact this may have on human well-being, and an evaluation of the potential policy, institutional, technological and other responses to enhance human well-being while conserving ecosystems. Through the subglobal assessments and through tools and training workshops and a fellowship programme, the Millennium Ecosystem Assessment is also building capacity to undertake integrated ecosystem assessments at different scales. Some regional and national Millennium Ecosystem Assessment projects are also being supported by UNEP. A Caribbean Sea assessment is being implemented with technical and financial help from UNEP. Other similar joint initiatives are also under negotiation.

## **III. Thematic assessments**

### **A. Atmosphere**

6. Measurements over and near Antarctica show that the concentration of ozone decreased more rapidly in 2003 than in previous years. The size of the ozone hole was reported by the World Meteorological Organization in September 2003 to be as large as the all-time record size of 28 million sq. km recorded during September 2000. This was in stark contrast to the ozone hole of 2002, which was the smallest in more than a decade after splitting in two during late September. In recent years, the ozone hole has been at or near its maximum size during mid-September, with the maximum sometimes reached in late September. Recent variations in size, depth and persistence of the ozone hole are due to year-to-year changes in meteorological conditions in the lower stratosphere over Antarctica, rather than changes in the amount of ozone depleting chemicals present in the ozone layer.

### **B. Biological diversity**

7. Loss of biological diversity and degradation of ecosystems is occurring at an unprecedented rate. The participants at the World Summit on Sustainable Development (the Johannesburg Summit) agreed that there is a need to significantly reduce the current rate of loss of biological diversity by 2010. The challenge of achieving this target was addressed at the “2010 - The Global Biodiversity Challenge” meeting, which was held in London in May 2003 and was jointly organized by the Convention on Biological Diversity (CBD) secretariat in partnership with the UNEP World Conservation Monitoring Centre (WCMC) and the United Nations Development Programme (UNDP). The meeting participants suggested that a small number of targets and indicators be identified at the global level to operationalize the 2010 target, building upon existing mandates of CBD and other relevant United Nations targets. The CBD Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) recommended at its ninth meeting, which was held in Montreal, 10-14 November 2003, that the Conference of the Parties to CBD agree at its seventh meeting (to be held in Kuala Lumpur, Malaysia, from 9 to 20 February 2004) on a limited number of trial indicators, applicable at the global level but developed in such a way that they may be used at the regional, national and local levels, as tools to support implementation of national biodiversity strategies and action plans. SBSTTA further recommended that WCMC be invited by the secretariat of CBD to

facilitate and coordinate the compilation of necessary information for reporting on achievement of the 2010 target<sup>1</sup>. A further SBSTTA recommendation covered the related issue of the Global Strategy for Plant Conservation, with specific reference to the support needed from WCMC. SBSTTA also endorsed the important role of the World Database on Protected Areas as a key mechanism for measuring the global status of protected areas<sup>2</sup>. UNEP will continue to provide support to UNEP-WCMC to meet the relevant needs as identified by the parties to the CBD and the other biodiversity related Multilateral Environmental Agreements in the area of assessment, monitoring and early warning<sup>3</sup>.

8. UNEP released the *2003 United Nations List of Protected Areas* at the decennial World Parks Congress, held in Durban in September 2003. This thirteenth version of the United Nations list, prepared by WCMC and IUCN, is the first to attempt a comprehensive presentation of all the world's known protected areas. These now number over 100,000, but although progress has been made towards representing the world's major biomes, their protection remains patchy. Lake systems and temperate grasslands are both significantly under-represented. However, it is the minimal conservation of the world's marine ecosystems (less than 1%) that stands out as a global priority, as identified by the Johannesburg Summit 2002 marine protected areas target. The recent *World Atlas of Seagrasses*, compiled by WCMC, highlights the need for improved management of coastal ecosystems in support of sustainable livelihoods. At the World Parks Congress, UNEP renewed its collaboration with IUCN through a memorandum of understanding covering protected areas monitoring and assessment that paves the way for future partnership activities with a consortium of international non-governmental organizations.

9. Following a meeting of national experts, to be held in Paris Nov 26-28 in cooperation with the United Nations Educational, Scientific and Cultural Organization (UNESCO), UNEP will continue with the preparation of an intergovernmental meeting on the conservation of great apes and the Great Ape Survival Project (GRASP). It is anticipated that the intergovernmental meeting will take place before the end of 2004. GRASP was launched by the Executive Director of UNEP in May 2001 and adopted as a biodiversity type II partnership at the Johannesburg Summit in September 2002.

### C. Land: greening of the Sahel

10. Land degradation is still a challenge in many places of the world. A special case in point is the Sahel region of Africa. Satellite mapping over the last 20 years has made a major contribution to the current state of scientific knowledge and analysis of the spatial and temporal patterns of vegetation variability across the Sahel region. Recent findings suggest a consistent trend of increasing vegetation "greenness" in much of the region<sup>4</sup>. However, the greening trend cannot be explained solely by the variation in rainfall. While extensive, the greening is not uniform, suggesting that factors other than rainfall may be contributing to the greening of some areas and not others. In addition, the pattern of greening, which might help explain its causes, may be partly obscured by the coarse resolution (8 km) of the data.

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<sup>1</sup> This activity directly responds to paragraph 1 of decision 22/1 III.

<sup>2</sup> Recommendations from SBSTTA will be considered at the seventh meeting of the Conference of the Parties to CBD.

<sup>3</sup> For further information on biodiversity, refer to document UNEP/GCSS.VIII/INF/2 (annual global environment outlook statement on the environment).

<sup>4</sup> Summary of the findings of a workshop on changes in the Sahel, which took place from 14 to 16 October 2003 in Nairobi, Kenya and was organized by UNEP, the Food and Agriculture Organization of the United Nations and the secretariat of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (the Desertification Convention).

11. Yet, the “greenness” value may be similar to the original state because overall plant cover may be the same although species composition has changed. Recovery of the state at which the original array of species and plant cover has been reduced and invaders increased may represent a new equilibrium point because the relationship among species or nature of the soil has changed due to erosion. Furthermore, analytical studies at the subnational level on linkages between long-term environmental change, population growth, technological change, policies and institutions show that the perceived view of land/environmental degradation due to ecosystems’ constrained production potential (rainfall variation/scarcity) is not always compatible with local data. It often fails to separate human and natural causes and may underestimate the capabilities of local resource users (and customary land tenure systems) to adapt.

12. Speculation about the climatology of the Sahelian droughts is unresolved, as is speculation about the effects of land clearance on rainfall and about land degradation in this zone.

13. Altogether, these findings suggest continued caution in interpreting the greening phenomenon, particularly with respect to how it might influence policy and any actions that might be taken in the near future. While it may be true that climatic conditions have improved, it is not possible to predict how long this may continue. It is certain, though, that drought will return and that policy should be flexible enough to accommodate that certainty and the non-equilibrium conditions that accompany it. The Sahelian success stories, while showing that success can be achieved with and without outside intervention, may serve a broader purpose by suggesting model strategies that might be pursued.

#### **D. Chemicals**

14. Pursuant to decision 22/4 (Chemicals) of February 2003 and previous decisions, UNEP is involved in a number of activities related to chemicals. The Global Network for the Monitoring of Chemicals in the Environment aims at linking together national, regional and global organizations, laboratories and individuals responsible for or involved in monitoring of chemicals in humans and the environment. The initial focus is on the 12 substances under the Stockholm Convention on Persistent Organic Pollutants. A workshop on persistent organic pollutants (POPs) monitoring was held in late March 2003. An expert consultation to develop guidance for a global POPs programme was to be held in October 2003. The draft guidance document will be tested, subject to available resources, in pilot projects to be initiated in developing country regions during 2004.

15. The recently finalized Regionally Based Assessment of Persistent Toxic Substances provides a snapshot of persistent toxic substance-related issues from 12 regions around the world. Dioxins and furans, polychlorinated biphenyls (PCBs), hexachlorobenzene, polyaromatic hydrocarbons (PAHs), dichlorodiphenyltrichloroethane (DDT), lindane and endosulfan are priorities in several regions. Data suggest that human health and the environment might be at risk from the presence of persistent toxic substances in air, water and food. There is a lack of data on persistent toxic substances in developing country regions and a recognized need for capacity-building to survey and monitor persistent toxic substances in humans and in the environment, to strengthen regulatory systems and for training at all levels. Further information on UNEP work on chemicals is found in the progress report on the development of a strategic approach to international chemicals management contained in document UNEP/GCSS.VIII/6.

### **IV. Special thematic focus: environmental aspects of water, sanitation and human settlements**

#### **UNEP assessment activities relevant to water, sanitation and human settlements**

16. Water assessments are critical for all countries. The environmental aspect of water, sanitation and human settlements is the theme for the ministerial consultations to take place during the eighth special session of the Governing Council/Global Ministerial Environment Forum and is the agreed thematic cluster of the multi-year programme of work of the United Nations Commission on Sustainable Development for the period 2004-2005. The quantity and quality of freshwater remain

the most serious and critical issues of the twenty-first century. At the twenty-second session of the UNEP Governing Council/Global Ministerial Environment Forum, held in February 2003, water-related outcomes of the Johannesburg Summit as well as the water, energy, health, agriculture and biodiversity (WEHAB) initiative were accorded a high degree of attention. Water resources are rapidly being depleted and polluted and management measures are urgently needed to ensure sustainability. Water and human vulnerability is a feature focus in the Annual Global Environment Outlook – 2003 (document UNEP/GCSS.VIII/INF/2). UNEP has also provided input to the Secretary-General's report to the Commission on Sustainable Development at its twelfth session. The discussion paper presented by the Executive Director on the environmental dimension of water, sanitation and human settlements in support of the ministerial-level discussion is found in document UNEP/GCSS.VIII/4.

17. UNEP has produced some key publications arising from its assessment activities. Among these are *Vital Water Graphics - An Overview of the State of the World's Fresh and Marine Waters*, *Groundwater and its Susceptibility to Degradation: A Global Assessment of the Problem and Options for Management* and the *International Atlas of Freshwater Agreements*.

18. At the Johannesburg Summit, the protection and management of the natural resource base, including water, was recognized as fundamental for economic and social development. Consequently, UNEP is strengthening its water assessment activities and has reinforced the roles of its strategic collaborating centres such as the International Environment Technology Centre, the UNEP Collaborating Centre on Water and Environment and the UNEP Global Environment Monitoring System Water Quality Assessment Programme (GEMS/Water).

19. Links between assessments and actions are fostered through UNEP membership in the United Nations Secretary-General's Millennium Project Taskforce on Water and Sanitation, which is entrusted with developing strategies for achieving the Millennium Development Goals as they relate to water under the overall theme of environmental sustainability. UNEP assessment activities are also linked to the coordinating role of UN-Water – as a key to improved United Nations system-wide cooperation on water issues and follow-up of the United Nations Secretary-General's WEHAB initiative. In March, WCMC collaborated with UNDP and others to convene an international meeting in London entitled "Biodiversity After Johannesburg: The Critical Role of Biodiversity and Ecosystem Services in Achieving the UN Millennium Development Goals". This was an important step towards understanding the role of biodiversity in underpinning sustainable livelihoods and towards raising awareness among policy makers.

20. UNEP has initiated freshwater-related assessment activities that include projects, programmes and publications focusing on global freshwater issues, both surface and groundwater. The Global International Waters Assessment forms an interface for assessment of international freshwater and marine areas as well as groundwater in a systematic and comprehensive way. Pursuant to decision 22/1 II, entitled "Global assessment of the state of the marine environment", and in response to General Assembly resolution 57/141, a number of activities have been implemented as the contribution of UNEP to the global marine assessment process in collaboration with other UNEP programmes and United Nations agencies (UNEP/GCSS.VIII/6). In addition, pursuant to decision 22/2 IV, and by working closely with the International Coral Reef Initiative and its operational networks such as the International Coral Reef Action Network, the Global Coral Reef Monitoring Network and other partners, UNEP continues to support the regular monitoring and assessment of the state of coral reefs around the world and addresses new emerging marine environmental issues such as cold water coral reefs, which provide livelihoods for and determine the needs of more than 1 billion people.

21. GEMS/Water activities support the UNEP water strategy and that of its partners and collaborators. Key activities include monitoring, assessment and capacity-building. The twin goals of the programme are to improve water quality monitoring and assessment capabilities in participating countries and to determine the status and trends of regional and global water quality. These goals are implemented through the GEMS/Water data bank, with water quality data from more than 100 countries and over two million entries for lakes, reservoirs, rivers and groundwater systems. GEMS/Water activities add value to country-level data by creating global and regional water quality

assessments. The programme also carries out assessments on a range of water quality issues and evaluating methodologies.

22. UNEP environmental assessments emphasize the role of ecological goods and services in contributing to development goals and targets in the areas of water, sanitation and human settlements. Gender is a critical factor in these assessments. Environmental degradation could represent a serious obstacle to addressing development goals such as poverty reduction and environmental security. The importance of building capacity at different levels for assessments pertaining to water, particularly in developing regions, cannot be overemphasized. Such capacity-building should include local government areas; accordingly, UNEP, through integrated environmental assessment and reporting, is undertaking city-level assessments. For example, UNEP is cooperating with UN-HABITAT in supporting the preparation of environmental assessments in several cities in Latin America and the Caribbean. A report on the UNEP contribution to the establishment of a regular process for the global assessment of the state of the marine environment as called for in General Assembly resolution 57/141 is contained in document UNEP/GCSS.VIII/6.

23. Jointly with the UNESCO International Hydrological Programme and partners, UNEP has initiated a project on the assessment of pollution and the vulnerability of water supply aquifers of African cities. This project builds upon similar joint work in West Africa that covered six countries (Benin, Burkina Faso, Cote d'Ivoire, Mali, Niger, and Senegal) and has now been extended to Ghana, Ethiopia, Kenya and Zambia. In addition, a project on the vulnerability of water resources to environmental change in Africa has been initiated involving partners in Western, Northern, Eastern and Southern Africa, GEMS/Water and the University of New Hampshire.

24. The year 2003 was particularly significant: it was the International Year of Freshwater and also the year in which the third World Water Forum was held. UNEP provided significant input to the *World Water Development Report*, which was launched at the third World Water Forum in March 2003. UNEP provided support to the "Pan-African Implementation and Partnership Conference on Water", which was held in Addis Ababa, Ethiopia in December 2003.

## **V. Assessing the environmental contribution to development**

### **A. Poverty and environment**

25. Poverty eradication is an essential requirement for sustainable development. The Governing Council, in decision 22/10 of February 2003, requested the UNEP Executive Director to, inter alia, assist Governments upon their request to integrate environmental decision-making into social and economic policy towards poverty eradication. UNEP is undertaking work on poverty and environment with a special focus on poverty reduction strategy papers and ways to better incorporate the environment within these strategies. The work is undertaken in cooperation with partners such as the Millennium Ecosystem Assessment with a view to assessing the inter-linkages between environment and poverty and the role of ecosystem goods and services and environmental management in promoting poverty alleviation. Country studies in Africa will build on assessments of the environmental and poverty situation in various countries. UNEP has conducted workshops in Côte d'Ivoire for the western Africa region and in Chad for the central African region on the theme: "the crucial role of women in managing biodiversity and its impact on poverty reduction".

### **B. Environment and security assessment**

26. Conflicts in such disparate locations as the North Caucasus, Iraq and West Africa (Liberia and Cote d'Ivoire, for example) continue to pose problems for the local or regional environment. In addition, tensions between states and ethnic groups over scarce resources (e.g., in forested basins such as the Amazon and Congo basins, freshwater in West Asia, grazing lands in Central Asia, etc.) in different parts of the world continue to illustrate the environmental roots of human insecurity. In Europe, new legal instruments such as the Framework Convention on the Protection and Sustainable Development of the Carpathians serve to illustrate how the preservation of the environment can also be a means to bring peoples and states closer together.

27. In response to Governing Council decisions 22/1 IV and 22/1 V of February 2003, which among other things requested the UNEP Executive Director to further strengthen the ability of UNEP to assess environmental impacts in post-conflict situations, UNEP is undertaking the following activities:

- (a) The flagship UNEP post-conflict project continues to be the clean-up of environmental hot spots following the Kosovo conflict. Environmental clean-up and risk reduction measures at key hot spots started in 2000 and will be completed on schedule by December 2003. Various capacity-building activities in waste management and cleaner production have also been undertaken with the environmental authorities. An evaluation report on the clean-up activities will be prepared in 2004;
- (b) A UNEP post-conflict environmental assessment of Afghanistan was released in January 2003. As a direct follow-up to the report, a second capacity-building phase was launched in October 2003. The two-and-half-year project will build the capacity of the Ministry of Irrigation, Water Resources and Environment to conduct environmental management by providing required tools, training and technical assistance. Project partners include the European Commission and the World Conservation Union (IUCN);
- (c) A UNEP desk study outlining the state of the environment in the Occupied Palestinian Territories was released in February 2003. A second phase of implementing the recommendations of the desk study has started, and will continue at least until February 2005;
- (d) A UNEP study on the environmental risks and impacts of the use of depleted uranium in Bosnia and Herzegovina was released in March 2003. As a follow-up to the report, UNEP developed a depleted uranium awareness brochure and organized a training workshop for mine clearance staff together with the national authorities of Bosnia and Herzegovina. This report, the third in a series of successful depleted uranium assessments conducted in Kosovo (2000-2001) and in Serbia and Montenegro (2001-2002), marks the end of UNEP depleted uranium activities in the Balkans;
- (e) UNEP developed an environmental database and analysis service for the United Nations Compensation Commission (UNCC). The services are used by the UNCC panel of commissioners assessing claims for environmental damages arising from the 1991 invasion of Kuwait and the ensuing Gulf War to analyze and evaluate the progress and results of on-going monitoring and assessment projects in the region;
- (f) In April 2003, UNEP published a report, which outlined the environmental vulnerabilities in Iraq resulting from years of conflict, the low priority attached to environment by the previous regime and the unintended effects of the sanctions in the 1990s. The desk study was followed by two fact-finding missions to the region in July and August to collect additional information and prepare the technical field missions for the scientific assessment. A progress report on the environmental situation was released in October 2003. Additional technical missions have been postponed due to the security situation. A final report on the environmental assessment in Iraq is envisaged for 2004. During July to September 2003, UNEP was also the lead agency on the environmental issues for the United Nations system-wide needs assessment of Iraq;
- (g) UNEP is currently making in-house preparations for an assessment to be carried out in Africa during 2003-2004. Several African countries have recently requested UNEP environmental assessments. Systematic information collection and analysis is being conducted on candidate countries in order to understand the key issues and conditions for possible interventions.

## **VI. State of the environment in the regions**

### **A. Africa**

28. Environmental degradation and poverty continue to be crucial issues in Africa. A major environmental policy response in the region was the endorsement by the heads of State and Government of the African Union of the Action Plan for the Environment Initiative of the New Partnership for Africa's Development (NEPAD). In response to Governing Council decisions 22/1 IB and 22/9 of February 2003, which requested the UNEP Executive Director to continue supporting subglobal integrated environmental assessment processes, emphasis has been placed on the regular production of the Africa Environment Outlook (AEO) report and the establishment of the Africa Environment Information Network (AEIN). The second AEO, which will be published by 2006, will focus on issues highlighted in the environmental action plan of NEPAD. Data and indicators to be used in the second AEO report will be strengthened through the AEIN process. AEIN will focus on core data sets for integrated environmental assessment and reporting. It will provide targeted information products and services to support initiatives and decision making processes in respect of poverty eradication, as well as other sustainable development goals outlined in the United Nations Millennium Declaration and the Johannesburg Declaration on Sustainable Development. Emphasis will be on filling identified gaps in data resources to strengthen the data foundation in the long-term, on the basis of demands for new data or the need to improve the quality of existing data. The governments of Belgium, Ireland and Norway fund both the AEO and AEIN processes.

### **B. Asia and the Pacific**

29. Water scarcity and pollution are key issues, with the region experiencing the lowest per capita freshwater availability in the world. Air in Asia's cities is amongst the most polluted in the world. Of the 15 cities in the world with the highest levels of particulate matter, 12 are located in Asia. Natural habitats like dry and moist forests, wetlands, marshes and mangroves have been reduced significantly. Global warming and climate change have become evident in the region with an increase in the frequency of environmental and natural disasters ranging from cold waves, floods, cyclones and droughts.

30. In September 2003, Pakistan experienced its worst oil spill ever when the MV Tasman Spirit broke apart near its Arabian Sea port of Karachi. The spill occurred in a rich tropical marine ecosystem area, home to extensive mangrove forests, green and Olive Ridley sea turtles, dolphins, porpoises, beaked whales and several species of lizards and sea snakes. A 40-square-kilometre oil slick killed marine plants and threatened a vast unique mangrove forest. UNEP has submitted a report on the incident to the Government in which it states that acute effects of oil spill are evident and further scientific investigation are needed to determine the extent of damage to ecosystems around Karachi.

31. The participants at the second Asian ministerial conference on the Desertification Convention, which was held in June 2003 in Abu Dhabi, called for progress in the implementation of a subregional action programme to combat desertification in the Aral Sea Basin in Central Asia and cooperation among North-east Asian countries to prevent and control dust and sand storms. The meeting participants also called for the development of a subregional action programme for South-east Asia, South Asia and the Pacific to address issues such as salinization, drought, land degradation, forest and mangrove destruction and coastal erosion.

32. Delegates from countries in the Asia and Pacific region, who met at a meeting of the Environment Congress for Asia and the Pacific in Japan in mid-2003, stressed the need to integrate environmental policies into national economic and social development policies. It was argued that the region needs to strive for the sound implementation of measures relevant to natural resource management, including forests, water, waste and recycling and transboundary management of the environment. The vulnerability of coastal areas and mountain ecosystems due to climate change in the region was also emphasized during the meeting.

33. On 19 September 2003, the first Asia-Pacific Subregional Environmental Policy Dialogue was held in Beijing. The roundtable meeting, which was attended by environment ministers and eminent persons in the environment field, was designed to provide UNEP with feedback on critical emerging issues and perspectives in the region. At the meeting, representatives discussed the strategy for environmental protection in the Asia-Pacific region and other related issues.

### **C. Europe**

34. Major developments of the year include the continuation of the "Environment for Europe" process and the related Kiev ministerial conference held in late May. Expansion of the European Union – the so-called "accession process" – continued as well, with ten new members due to enter the European Union in May 2004. This process has the effect of ensuring that environmental norms and standards and existing multilateral environmental agreements, such as the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, will be subscribed to and applied by an ever-growing number of European countries.

35. The latest comprehensive report on the state of and trends in the European environment, the third such assessment prepared by the European Environment Agency (EEA) in consultation with UNEP, was released at the Kiev ministerial conference. The major thematic issues of concern identified in the report of the Kiev Conference include ongoing soil degradation, erosion and sealing; water quality and, in some regions, water quantity, problems; fragmentation of biodiversity-rich and other natural areas by increasing transportation networks and urban infra-structure. The report concludes that Europe's environmental progress is at risk as a result of "unsustainable economic activities".

36. The oil from the tanker Prestige, which sank off Spain in November 2002, is still leaking into the Atlantic. Ten months after the disaster, more than 80 per cent of the tanker's 77,000 tonnes of fuel oil has been spilled. The leakage has affected coastal areas to different degrees from northern Portugal to Belgium. In reaction, the European Parliament's Transport Committee has approved a range of proposals aimed at banning the transport of oil by dangerous single-hull tankers in European Union waters.

37. Greenhouse gas emissions from the European Union increased for the second consecutive year, moving the European Union further away from meeting its commitment to achieve a substantial emissions cut by the 2008-2012 period. Finally, the European Parliament's Committee on the Environment, Public Health and Consumer Policy voted in May 2003 for stronger laws governing genetically modified organisms.

### **D. Latin America and the Caribbean**

38. The main challenge for Latin America and the Caribbean (LAC), like other regions in 2003, is still to address growing levels of poverty and inequality while at the same time integrating environmental and social concerns into development policy. If the countries are to achieve the Millennium Development Goals, including environmental sustainability by 2015, major changes must occur in economic, social and environmental policies.

39. The environmental agenda has become more internalized in Latin America and the Caribbean as was seen in the LAC presentations made at the Global Water Forum in 2003 and other events such as the Iberoamerican meeting of environment ministers. This translates into the emergence and development of legal and institutional frameworks to deal with environmental problems as well as policies designed to counteract the most serious signs of deterioration. Progress towards these goals in 2003 included the development of plans for biological corridors in the Andean region and the Amazon basin, as well as the designation of new protected areas in numerous countries in the region. There have also been more state regulations, as well as more participation by the private sector and civil society.

40. In order to help support the reorientation of policies, in 2003 UNEP, regional Governments and collaborating centres supported the development of GEO assessments in five cities, seven countries, two subregions and Latin America and the Caribbean as a whole within the context of the Forum of Ministers of Environment of Latin America and the Caribbean. UNEP, in collaboration with the World Bank and the Government of Costa Rica, is also helping to develop a core set of national indicators as a follow-up to the implementation of the Latin American and Caribbean Initiative for Sustainable Development adopted at Johannesburg in August 2002. UNEP has been working intensively in capacity-building in the region. Special support was given to the small island developing States of the region in preparation for the Mauritius Summit. A number of activities are underway related to ecosystem services, identification of emerging issues and creating capacities for better urban environmental management. UNEP activities are undertaken to provide information tools for timely decision making, policy setting and the development of actions to help reverse negative trends.

## **E. North America**

41. The Government of Canada signed the Kyoto Protocol to the United Nations Framework Convention on Climate Change and launched programmes to help reduce greenhouse gas emissions to meet the country's reduction target. Canada's National Roundtable on the Environment and Economy recommended that Canada be the first country to start using formal environment and development indicators to measure the country's real wealth and the sustainability of its economy.

42. The United States Government announced new programmes and investment for transition toward the hydrogen economy. The administration released a 10-year strategic plan for its Climate Change Science Program intended to enhance scientific understanding of global climate changes. At the same time, an Earth Observation Summit was organized to promote the development of a comprehensive, coordinated, and sustained Earth observation system or systems among governments and the international community to understand and address global environmental and economic challenges. The Pew Commission, a non-profit non-governmental organization, issued a report saying that oceans in the United States were in crisis from overfishing, pollution and development.

43. The United States and Canada agreed to build on the transboundary air quality improvements of the last decades by developing new cooperative projects for the future. Driven by domestic and international challenges, both countries are leading in the development of new technologies to find solutions to environmental problems.

## **F. West Asia**

44. Environment and security has been the major issue in 2003. The military conflict in Iraq has had direct and indirect impacts on the environment in Iraq and surrounding areas. Smoke from the oil well fires and burning oil trenches caused local air pollution and soil contamination in different areas. The lack of investment in the oil industry in recent years reduced maintenance and raised the risk of leaks and spills. Following a decade of sanctions and physical damage to the country's environmental management infrastructure, water supply and sanitation systems have been impacted, leading to higher levels of pollution and health risks. The destruction of military and industrial infrastructure during Iraq's various conflicts has released heavy metals and other hazardous substances into the air, soil, and freshwater supplies. UNEP released a study in April 2003 which reported that the Mesopotamian marshlands continue to deteriorate. The study shows that a further 325 square kilometres have dried out since 2000, leaving just seven per cent of the original area.

45. Water issues continue to be a priority for the region as the demand for freshwater continues to grow. The coastal zone is increasingly under pressure, mainly due to urbanization. In terms of environmental management, the Arab Initiative for Sustainable Development continues to gain momentum and increased support from the countries of the region. This is mainly through regional ministerial forums of the League of Arab States, and focuses on three priority issues: freshwater resources, land resources and coastal and marine environment.

## **G. North and South Poles**

46. Much of the 'permanent' sea ice in the Arctic is expected to melt during summer by the end of this century, according to a study by the Nansen Center in Norway. Funded by the European Commission, the study indicated that the area of Arctic sea ice had shrunk by 7.4 per cent over the past 25 years, with record low coverage in September 2002. An analysis of 30 years of satellite data by the National Aeronautics and Space Administration of the United States Government and the University of Maryland also suggests that the loss of Arctic sea ice is accelerating. In contrast, the latter analysis indicates that the overall extent of Antarctic sea ice has gradually increased since 1977, recovering somewhat from a significant decrease in the early 1970s. This reversal presents a greater variability in the trend for Antarctic sea ice extent in comparison to a more consistent trend of decline in the Arctic. On the Antarctic peninsula, however, and in the Amundsen Sea sector of West Antarctica, the disintegration within the last few decades of several ice shelves that are thousands of years old is a sign of rapid change in the region. The breakup of the Ward Hunt sea ice shelf in Northern Canada, the Arctic's largest, was also reported in 2003.

47. The indigenous peoples of the Arctic are also noticing the impacts of climate change, reporting variations in timing of seasonal changes and animal behaviour, including the movement of species into new areas. These observations and their traditional knowledge are key inputs to the Arctic Council's Arctic Climate Impact Assessment report, which will be released by the end of next year. An Arctic Council assessment on human health released this year expresses concern for fetal and neo-natal development due to exposure to mercury and PCBs through the consumption of traditional foods contaminated by long-range transport of pollutants and their bio-magnification in the food chain. However, the same report, as well as studies by indigenous organizations, indicate that changing diets to store-bought foods have significant negative effects on health.

48. The sustainability of development in the Arctic continues to be a major concern. Construction of transport and power infrastructure, expansion of military practice areas (in Northern Scandinavia), mining activities, and the exploitation of hydrocarbon resources (especially in Northern Russia, Canada and Alaska) are just a few of the issues that have implications for Arctic inhabitants and the environment. A key Arctic Council assessment of the socio-economic circumstances of Arctic residents, the Arctic Human Development Report, will be released in 2004.

## **VII. Special geographic focus areas**

### **A. Small island developing States**

49. In response to UNEP Governing Council decisions 18/34 (1995), 19/18 (1997) and 20/19 (1999) and specifically decisions 22/1 I B and 22/13 of February 2003, UNEP is working with partners in small island developing states to prepare three small island developing states environment outlook booklets. The reports will feed into the 2004 international Barbados +10 meeting, which will focus on Caribbean, Atlantic, Indian and Pacific Ocean small island developing States, within the Global Environment Outlook framework. UNEP organized the inception meeting of the initiative at a meeting of the Commonwealth Secretariat in London on 12-13 June 2003. The booklets, which will be launched in August 2004, will:

- (a) Highlight the pressures, impacts and policy responses critical to small island developing States' ability to sustainably manage fisheries, coastal areas, exclusive economic zones and the continental shelf;
- (b) Highlight issues related to the adverse effects of climate change, sea level rise and climate variability;
- (c) Assess efforts to reduce and manage waste and pollution and to build capacity for maintaining and managing systems to deliver water and sanitation services, in both rural and urban areas;

- (d) Assess environmental policy measures aimed at poverty alleviation.

50. In the Asia and the Pacific region, UNEP has been assisting Pacific island States in their efforts to conserve the environment through capacity-building and strengthening institutions. UNEP has been working with the South Pacific Regional Environment Programme on ongoing ozone-related projects which have contributed to establishing national compliance centres, training programmes for refrigeration service technicians, establishment of national ozone units and raising public awareness on ozone as well as to the development of community-based freshwater resource kits in the sub-region. Further information is found in the report on small island developing States as contained in document UNEP/GCSS.VIII/6.

## **B. East Asia: major environmental concerns including dust and sandstorms**

51. East Asia is very diverse in terms of population distribution, economic development, political systems, ethnicity, culture and natural resources. Rapid economic development and industrialization over the years have led to different environmental problems such as diminishing forest, land degradation, biodiversity loss, deteriorating air pollution, urban pollution and degradation of marine and coastal resources.

52. South-East Asian cities have a high percentage of the population connected to water supplies, but sanitation lags far behind. While some countries have seen an improvement in industrial pollution control (for example, heavy metal contamination in Japan), most still suffer from high levels of organic pollution, particularly from municipal sewage. Water pollution in the urban environment has had the severest impact on human health in South-East Asia, and eutrophication is a serious problem. The impact of water-borne diseases caused by contaminated water has been widespread. Diseases such as dengue and malaria are also a major problem.

53. With the exception of Japan, inefficient industry and energy generation practices have resulted in high levels of atmospheric pollution in major cities of East Asia. Worsening trends in air pollution are being observed in many cities. The increase in vehicles and emissions has increased traffic congestion and reduced the ambient air quality of the cities. Transboundary haze pollution is significant in the region due to forest fires.

54. As a result of rapid industrialization, the East Asian region faces increasing risks of problems of acid deposition. Considering the transboundary nature of air pollution and potential environmental impact on aquatic and terrestrial ecosystems in the region, an East Asian network has been established by countries to monitor acid deposition levels.

55. Deterioration of the marine and coastal environments in the region is high. These environments are suffering from pollution (siltation from soil erosion, marine-based and inland water pollution and the destruction of mangroves for shrimp ponds and aquaculture) and depletion of marine resources from, for example, over-fishing and destructive fishing methods. Population growth and unplanned and sporadic developments also have serious implications for coastal and marine resources. Large-scale land reclamation and industrial and commercial developments have encroached into coastal wetlands. High levels of nutrients, trace metal and organochlorines introduced by rivers are resulting in coastal eutrophication and, in many areas, a high incidence of red tides, with pronounced negative effects on fisheries, recreation and health.

56. Land degradation and desertification severely affect the countries of North-East Asia, especially China, the Russian Federation and Mongolia. Soil erosion and contamination in South-East Asian countries are diminishing the productivity of arable land. Problems are most acute in the Philippines, Thailand, Viet Nam, Malaysia, Indonesia, Cambodia, and the Lao People's Democratic Republic.

57. Dust and sandstorms in North-East Asia due to land degradation and desertification are emerging as serious environmental challenges. Most of the sand particles originate in Mongolia's

Gobi desert and the Taklamakan desert in Western China. In 2002, schools were closed and transportation facilities paralyzed due to dust storms in Beijing and Seoul. In Japan, flights were cancelled because of poor visibility. In Japan, sand particles carried by dust storms were observed in many locations during the year compared to 2002. In recent years, countries affected by dust and sandstorms have begun to respond. For example, China is now implementing an unprecedented raft of policies intended to convert developed farmland back into forest grasslands. Though progress has been slow, the measures have been effective in holding off desert encroachment. In March 2003, Japanese, Chinese, South Korean and Mongolian officials in charge of dust and sand storm policy met in Manila with representatives from the Asian Development Bank, UNEP, the United Nations Economic and Social Commission for Asia and the Pacific and the Desertification Convention secretariat to review the work programme prepared and facilitated by UNEP for the monitoring and early warning component of the project. Further information about the initiative is contained in document UNEP/GCSS.VIII/INF/3.

58. Continuing exploitation of forests and other habitats is impacting severely on biodiversity in the region. A wide variety of habitats have been degraded due to development and natural disasters. Logging, shifting cultivation and conversion to plantations are the principal causes of the loss of natural forest habitat. Disturbance of grassland habitats through extensive agriculture, industrial and transport-related development has played a particularly major role in the depletion of biodiversity. Conversion of mangrove forests for shrimp farming has had a significant impact on existing coastal biodiversity resources. Natural disasters, especially floods, are also degrading habitats and depleting resources in the East Asian subregion and forest fires in South-East Asia have gravely affected biodiversity resources.

59. Cooperation between the environment ministers of North East Asian and member countries of the Association of Southeast Asian Nations (ASEAN) has been initiated in recent years. Environment ministers from ASEAN member countries and China, Japan and the Republic of Korea had their inaugural meeting in November 2002 in the context of "ASEAN+3" (ASEAN, China, Japan and the Republic of Korea) cooperation. ASEAN has been at the forefront in the region in the field of environmental conservation and cooperation among member countries, enabling them to initiate several environmental conservation projects.

60. ASEAN members signed the ASEAN Agreement on Transboundary Haze Pollution in June 2002. At the Tenth ASEAN Ministerial Meeting on Haze, held in Siem Reap in March 2003, the ministers agreed to work towards making the agreement effective by June 2003. The ministers also agreed to further enhance long-term preventive measures to tackle transboundary haze pollution. The agreement contains provisions on monitoring, assessment and prevention, technical cooperation and scientific research, mechanisms for coordination, lines of communication, and simplified customs and immigration procedures for disaster relief. The agreement provides for the establishment of an ASEAN Coordinating Centre for Transboundary Haze Pollution Control.

61. UNEP, through its Regional Seas Programme for the Northwest Pacific region (the Northwest Pacific Action Plan or NOWPAP, established in 1994) is implementing a multilateral regional effort that aims at the protection and management of the marine and coastal environment. NOWPAP provides a platform for environmental cooperation for protection of the marine and coastal ecosystems in a region shared by Japan, the People's Republic of China, the Russian Federation and the Republic of Korea.

62. NOWPAP activities are implemented through four regional activity centres (RACs) which are responsible for carrying out their activities at the regional level and serve all member states: Monitoring and assessment of the environment is implemented through two RACs, the Pollution Monitoring Regional Activity Center (POMRAC, Vladivostok, the Russian Federation), which focuses on atmospheric input and on river's input of contaminants into the marine and coastal environment, and the Special Monitoring & Coastal Environmental Assessment RAC (CEARAC, Toyama, Japan) which focuses on harmful algal blooms and remote sensing of the marine and coastal environment. The Data and Information Network Regional Activity Centre (DINRAC, Beijing, China) coordinates regional activities for the establishment of a comprehensive database and information management system. The Marine Environmental Emergency Preparedness and Response

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Regional Activity Centre (MERRAC, Taejon, Republic of Korea) coordinates regional activities on preparedness for and response to oil spills. This RAC has developed a regional oil spill contingency plan, which is currently being negotiated.

63. NOWPAP is currently engaged in the process of establishing its regional coordinating unit, which will be co-hosted by Japan (Toyama) and the Republic of Korea (Pusan). This will move the programme forward and ensure the coordinated and effective implementation of the action plan. The participants at the eighth NOWPAP intergovernmental meeting, which was held in the People's Republic of China from 5 to 7 November 2003, approved the work plan and budget of NOWPAP for 2004-2005.

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