



**Governing Council  
of the United Nations  
Environment Programme**

Distr.: General  
21 December 2005

Original: English



**Ninth special session of the Governing Council/  
Global Ministerial Environment Forum**  
Dubai, 7–9 February 2006  
Item 9 of the provisional agenda\*

**Implementation of the programme of work  
of the United Nations Environment Programme  
and the relevant decisions of the Governing Council**

**Environmental emergency response, and also disaster  
prevention, preparedness, mitigation and early-warning systems**

**Report of the Executive Director**

*Summary*

The Executive Director has the honour to provide a progress report on the implementation of UNEP Governing Council decision 23/7 on strengthening environmental emergency response and developing disaster prevention, preparedness, assessment, response, mitigation and early-warning systems in the aftermath of the Indian Ocean tsunami disaster.

The Indian Ocean tsunami, and also other disasters in 2005 such as the South Asia earthquake, caused tremendous loss of life and destruction of physical infrastructure, while also damaging ecosystems and posing further risks to human health and livelihoods. In that context, UNEP has focused its efforts in support of the United Nations system on responding to natural disasters and developing mechanisms to guide environmental recovery.

The present report summarizes the actions carried out by UNEP in providing assistance to the tsunami-affected countries. It also highlights the joint efforts of UNEP and the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) through the Joint UNEP/OCHA Environment Unit in responding to environmental emergencies, while noting the continuing role of UNEP within the United Nations International Strategy for Disaster Reduction (UN/ISDR) system in reducing disaster vulnerability and implementing the Hyogo Framework for Action 2005–2015.

\* UNEP/GCSS.IX/1.

## **I. Preamble**

1. Natural disasters such as those arising from seismic and volcanic activity are enduring experiences for humankind. They are increasingly being joined, however, by “quasi-natural” disasters in which human influences are thought to play an aggravating role. Such influences may have an impact on the intensity of storms and droughts through, for example, increased climate variability, or increased damage by natural and quasi-natural events through such phenomena as sea-level rise, landslides encouraged by deforestation or reduced resilience of inhabited or protective ecosystems resulting from past or even historical damage. The network of causality is complex, but it may be concluded that more must be done to reduce disaster vulnerability and that sound management of natural resources, use of environmental technology and “soft” engineering solutions, and better management of coastal zones and critical ecosystems are essential elements in disaster reduction.

2. The role of UNEP is to integrate environmental management into the entire disaster management cycle and provide environmental expertise to the United Nations system and countries in need. Although many UNEP activities contribute to the international disaster management agenda, the following key mechanisms highlight the degree to which UNEP is integrated into that agenda:

(a) UNEP participates in United Nations response mechanisms through the Joint UNEP/Office for the Coordination of Humanitarian Affairs (OCHA) Environment Unit, which is the United Nations mechanism to coordinate the international response to environmental emergencies, including natural disasters with major environmental impacts;

(b) UNEP is integrated into post-disaster recovery planning through the International Recovery Platform and the Inter-Agency Standing Committee (IASC) working group on early recovery;

(c) UNEP participates in United Nations-international financial institution disaster damage and needs assessments and acts as United Nations Country Team environmental focal point during the recovery and reconstruction processes;

(d) UNEP is well placed to participate in early-warning mechanisms and in strengthening the scientific knowledge base on environmental change and risk;

(e) UNEP is integrated into United Nations efforts through the International Strategy for Disaster Reduction (ISDR) system to strengthen disaster reduction efforts with environmental management.

3. The damage caused by natural disasters in 2004 and 2005 has been the most costly in history. Hundreds of thousands have lost their lives, millions have been displaced. National and international response systems have had to meet unprecedented needs. UNEP has provided environmental expertise and taken part in a number of operations. The environmental dimension has become an increasingly well recognized element of response and recovery. UNEP is determined that the lessons learned in 2004–2005 will contribute to an increased capacity at all levels of society to anticipate, prepare for and, when necessary, respond to the calamities which may occur in the future.

4. In a joint workshop on 31 October and 1 November, OCHA and UNEP reaffirmed their determination to enhance the international community’s ability to assist countries affected by, and vulnerable to, natural disasters and environmental emergencies and to strengthen further their collaboration through the Joint Unit. OCHA recognizes the need to ensure that environmental issues are reflected fully in disaster response and recovery and will continue to provide UNEP with access to disaster response tools and mechanisms. UNEP will continue to provide technical expertise to the United Nations system and to affected countries to ensure that environmental issues are integrated into disaster response and post-disaster recovery and reconstruction plans.

## **II. Emergency responses to the Indian Ocean tsunami disaster**

### **A. Overview of UNEP measures**

5. As the United Nations system began addressing the immediate humanitarian impacts of the Indian Ocean tsunami disaster, many of the affected people and Governments also voiced their concern about the potential environmental damage and associated risks to human health and livelihoods. To address those concerns, the Governments of Indonesia, Maldives, Seychelles, Somalia, Sri Lanka, Thailand and Yemen requested UNEP to assist their national experts in understanding the environmental dimensions of the disaster. To meet those requests, UNEP established the Asian Tsunami

Disaster Task Force (ATDTF) and mobilized nearly 30 environmental experts to the affected countries. The experts were tasked with assisting the environmental authorities in each country in assessing the damage and the reconstruction needs. ATDTF operated in close dialogue with OCHA, IASC and the United Nations Development Group (UNDG) coordination mechanisms. The Joint UNEP/OCHA Environment Unit was part of ATDTF, which was also supported by international non-governmental groups such as the World Conservation Union (IUCN) and WWF. Stakeholders helped ensure that the environmental response was coordinated and that information on environmental impacts was efficiently shared.

6. As requested by the affected countries, UNEP provided expertise in support of environmental assessments and to strengthen the capacity of environmental authorities, promote sound environmental solutions and provide management tools for integrating environmental factors into recovery and reconstruction plans. In the aftermath of the assessment phase, UNEP has also supported the implementation of environmental rehabilitation and recovery activities in Indonesia, Maldives, Sri Lanka and Thailand.

7. The UNEP environmental response has been generously supported by the Governments of China, Finland, Norway, Spain, Sweden, Switzerland and the United Kingdom. OCHA has also allocated considerable support to UNEP environmental activities.

8. In all the above fields, UNEP has focused on four main areas:

(a) *Providing technical assistance*: UNEP experts have been made available to the United Nations system and to national ministries of environment to provide technical assistance on addressing immediate environmental threats to human health, in particular from wastes. Key activities have included training and assessment, programming and planning of priority environmental response measures;

(b) *Identifying environmental impacts and risks*: UNEP experts supported national colleagues in conducting rapid environmental impact assessments, often in conjunction with the UNEP/OCHA Environment Unit, the United Nations Disaster Assessment and Coordination (UNDAC) team and in conjunction with needs assessments carried out by the United Nations, the World Bank and others. Following the preliminary UNEP report entitled "After the Tsunami: Rapid Environmental Assessment" of February 2005, more detailed field assessments were carried out in Indonesia, Maldives, Seychelles and Sri Lanka, and a desk study was undertaken on the environmental situation in Somalia;

(c) *Promoting environmental restoration and management*: UNEP has advocated environmental action, distributed information about environmental needs and supported risk reduction activities such as cleaning up hazardous wastes, and has also assisted in the development of national environmental recovery plans and tools to integrate environmental considerations into the planning and implementation of reconstruction efforts;

(d) *Mobilizing resources for environmental recovery*: UNEP worked to ensure that environmental needs were included within the United Nations flash appeal process, initially to ensure that needs for urgent environmental assessment and risk reduction projects were recognized in the first appeal, in January 2005, and then that a significantly increased inputs were included in the revised appeal in February. Specific environmental coordination meetings took place in Indonesia, Maldives and Sri Lanka to help mobilize resources for the environmental sector and also to improve coordination. Through active participation in IASC, UNDG and other coordination mechanisms, UNEP has helped to mobilize resources for environmental assistance.

## **B. Regional activities**

9. The Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA) hosted a meeting on coastal zone rehabilitation management for the tsunami-affected region in Cairo in February 2005, in conjunction with ATDTF and the UNEP Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA). This allowed key principles for coastal reconstruction and rehabilitation to be discussed within the broader framework of integrated coastal zone management while providing a venue for knowledge to be exchanged on related policy tools and mechanisms aimed at reducing the impact of possible future disasters. The participants adopted 12 guiding principles for environmentally-sound coastal rehabilitation and reconstruction (known as the Cairo Principles). As a follow-up to the Cairo meeting, the GPA coordinating office mobilized resources to support national-level dialogue in the Seychelles, Sri Lanka and Thailand.

10. UNEP has been closely involved in strengthening early-warning systems as a founding member of the ISDR working group on the topic. Following Governing Council decision 23/7, UNEP has strengthened its engagement with the process led by the International Oceanographic Commission (IOC) of the United Nations Educational, Scientific and Cultural Organization (UNESCO) to develop a multi-hazard early-warning system for the Indian Ocean. Through the flash appeal on strengthening early-warning systems in tsunami-affected countries, which was launched in January 2005, UNEP is assisting national Governments in building the capacity of their environmental authorities for early warning and disaster risk reduction.

11. The tsunami overwhelmed existing waste management systems, causing a massive waste problem. UNEP immediately offered environmental assistance to the national authorities and other United Nations agencies in dealing with the waste problem while also facilitating and supporting the development of waste management strategies and guidance materials. In February 2005, UNEP organized a technical meeting on debris and waste management, contributing to the United Nations Post-tsunami Waste Management Plan. These then formed the basis for capacity-building activities and workshops which UNEP undertook in the tsunami-affected countries.

12. UNEP has been assisting in Indonesia, the Maldives and Sri Lanka in building the capacity of environmental authorities to guide the reconstruction process and monitor the environmental situation. Also, UNEP is working with all those countries on environmental impact screening of reconstruction activities and in carrying out strategic environmental assessments of proposed plans and programmes.

## **C. Measures in affected countries**

### **1. Indonesia**

13. On 27 December 2004, one environmental assessment expert provided by the Joint UNEP/OCHA Environment Unit was deployed as part of the UNDAC team in Indonesia. A rapid environmental assessment of acute environmental problems with immediate and direct relevance to human lives and welfare was conducted. The assessment was widely circulated to the Government of Indonesia, the donor community and other stakeholders. Its findings were used as inputs to subsequent environmental assessment activities.

14. UNEP worked in close cooperation with the United Nations Country Team to ensure inclusion of environmental assessment activities in the January 2005 flash appeal. UNEP was also the focal point for the environmental sector in the World Bank-led needs assessment which took place that month. Since then, UNEP has been supporting the State Ministry of Environment in developing a strategy and plan for an environmental assessment and disaster mitigation centre. UNEP co-sponsored the Green Aceh Conference held in Banda Aceh from 21 to 23 June 2005. The Conference registered 672 participants who attended the plenary and the parallel workshops and promoted the integration of a diverse range of good environmental practices into tsunami reconstruction efforts, including the cross-cutting issues of participation, transparency, accountability and gender equity. A regional initiative was undertaken to develop eco-friendly houses and villages through the UNEP Regional Office for Asia and the Pacific, with a regional workshop held in Bangkok in March 2005 and a follow-up workshop in Jakarta in May to apply the broad guidelines within the Indonesian context.

15. UNEP provided technical support to the environmental and planning authorities on the environmental screening of reconstruction plans. The aim was to ensure that all plans and activities integrate environmental concerns and minimize environmental impacts. Two experts were recruited to assist in the environmental screening of post-tsunami projects, as requested by the National Project

Office. In spring 2005, UNEP developed the United Nations post-Asian-tsunami waste management plan, which was launched at a workshop in Banda Aceh on 29 and 30 June 2005. A total of 106 participants attended the two-day workshop, and, subsequently, a tsunami waste management forum was established which continues to meet on a weekly basis.

16. UNEP conducted a series of workshops on geographic information systems (GIS) and remote sensing, and also on field assessment and case study development for district environment officers. Computers, digital cameras and global positioning system (GPS) equipment were provided. UNEP has also found that materials containing asbestos among the debris is an issue in debris management and reconstruction activities and is conducting more detailed monitoring of the environmental situation in the affected districts.

17. UNEP is supporting ecosystem restoration in Aceh through mangrove afforestation in Aceh Besar district, is assisting with eco-housing initiatives and ecological construction guidance, and has also seconded an environmental specialist to the office of the United Nations Recovery Coordinator in Aceh to ensure that environmental issues are well integrated into the overall recovery operations. Also, UNEP is assisting the Ministry of Environment in re-establishing its offices in Aceh and restarting its environmental monitoring and planning functions.

## **2. Maldives**

18. On 27 December 2004, one UNEP staff member from the Joint UNEP/OCHA Environment Unit was deployed as part of the UNDAC team in the Maldives. The team completed a rapid environmental assessment of acute environmental problems with immediate and direct relevance to human lives and welfare. The assessment was widely circulated to the Government of Maldives, the donor community and other interested parties. Its findings were used as inputs to national environmental assessment activities. UNEP also worked in close cooperation with the United Nations Country Team to ensure that environmental assessment and emergency waste management activities were included in the January 2005 flash appeal.

19. UNEP provided technical support and in-country training on emergency waste management issues and took the lead for the environmental sector in the inter-agency needs assessment of January 2005. UNEP then worked closely with the Ministry of Environment, Energy and Water on a detailed assessment of the environmental impacts and lessons learned from the tsunami; the final post-tsunami environmental assessment report was released in June 2005. Also, in May 2005 UNEP organized a waste management workshop in Malé which was attended by some 30 participants, including the Acting Minister of Environment, Energy and Water, the United Nations Resident Representative, representatives from the Ministry of Environment, Energy and Water; the Ministry of Health; the Ministry of Tourism; the National Security Service; United Nations agencies including the United Nations Development Programme (UNDP), the World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations (FAO); and donors. In addition, UNEP assisted the Government of the Maldives in cleaning up hazardous wastes on 89 islands and is also supporting both a sustainable islands initiative and a coordination mechanism which brings together key actors in tsunami-related activities.

## **3. Seychelles**

20. A UNEP fact-finding mission, consisting of experts from UNEP, IUCN and the Dutch Ministry of Water and Transport, conducted a rapid assessment of the environmental impacts of the tsunami and of reconstruction and capacity-building needs. The mission focused on collecting available information on the topics requested by the environmental authorities in order to identify key issues and to plan for a full assessment mission in February and March 2005. The scope of the fact-finding mission covered such topics as the long-term consequences of the tsunami for the productivity of marine ecosystems, rehabilitation of services for the Marine Parks Authority, improving the stability of the coastline, which was impaired as a result of the wave surges, assessing institutional capacity, and identifying chronic disaster risks.

## **4. Somalia**

21. An inter-agency meeting in March 2005, with the participation of UNEP, OCHA, UNDP, WHO and FAO, considered possible United Nations responses to reports of possible hazardous wastes in Somalia, which, if present, might have been disturbed by the tsunami. It was agreed to field a United Nations mission to the country, and UNEP subsequently participated in an inter-agency fact-finding mission to the Puntland region of Somalia in May–June 2005. The mission also included experts from WHO, UNDP, FAO and the office of the Humanitarian Coordinator/Resident Coordinator. Neither the

mission nor subsequent work by the Joint UNEP/OCHA Environment Unit in collaboration with the International Atomic Energy Agency (IAEA), the International Maritime Organization (IMO), UNDP, WHO, the Secretariat of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, OCHA and UNEP, nor a questionnaire distributed to the Transitional Federal Government of Somalia and other Somali partners, was able to confirm the presence of toxic chemicals at any location in Somalia. Concern remains, however, and in June 2005 UNEP organized a further round-table meeting on the environmental situation in Somalia, followed by a desk study, as inputs to the ongoing Somalia joint needs assessment process in which UNEP is taking the lead of the environment subcluster. The desk study identified glaring gaps in information on the environment and natural resources of Somalia.

## **5. Sri Lanka**

22. An UNDAC mission was launched on 26 December 2004 which included an environmental expert provided by the Joint UNEP/OCHA Environment Unit. The team conducted a rapid environmental assessment of acute environmental problems with immediate and direct relevance to human health and welfare. Its findings were used as an input to the national environmental assessment process. UNEP also worked with the United Nations Country Team to ensure that environmental assessment activities were included in the January 2005 flash appeal.

23. UNEP thereafter worked in close cooperation with the Ministry of Environment and Natural Resources to conduct a detailed environmental assessment of the environmental impacts and lessons learned from the tsunami, and the final post-tsunami environmental assessment report was released in October 2005. Also, GPA organized a training workshop on the Cairo Principles for post-tsunami rehabilitation and reconstruction in September 2005. UNEP has also provided technical support to the Ministry of Environment and Natural Resources on coastal ecosystem restoration, including mangrove reforestation, nature conservation and also a public awareness campaign on the environmental issues associated with reconstruction and the conservation of natural resources.

24. UNEP also worked in close cooperation with the Ministry of Environment and Natural Resources, and the Central Environmental Authority in particular, to initiate an Awareness and Preparedness for Emergencies at the Local Level (APELL) process for tsunami-exposed and other sites in Sri Lanka with the aim of strengthening such local-level awareness and preparedness for both natural and human-caused emergencies. Activities focused around a mission in late October which included site visits, meetings and a workshop, and will be complemented in 2006 by two on-site demonstrations of the APELL process.

## **6. Thailand**

25. Assistance to the Ministry of Natural Resources and Environment was provided by Bangkok-based staff at the UNEP Regional Office for Asia and the Pacific and by five additional staff members deployed to provide technical support. UNEP has been assisting the Ministry of Natural Resources and Environment in assessing the economic cost of tsunami-related damage at four representative sites to promote the integration of environmental concerns into reconstruction and rehabilitation activities. Thailand has also hosted two UNEP-supported workshops on implementing the Cairo Principles for post-tsunami rehabilitation and construction in coastal zones. A pilot project is being implemented in Had Thai Muang Marine National Park to engage local communities and the private sector in restoring and managing the park's natural resources.

26. UNEP is supporting the Government of Thailand in developing a unified, GIS-based database at the National Coastal and Marine Information Centre to cover key components of the marine and coastal resources of the six affected provinces. Also, a series of subregional dialogues on rehabilitation and recovery activities has been organized to reassess local priority needs and further develop effective implementation mechanisms. In addition, UNEP is helping to develop digital maps to show the current status of mangrove forests, which is proving helpful in planning for the rehabilitation of damaged mangroves and in the creation of mangrove plantations in other areas.

## 7. Yemen

27. A UNEP fact-finding mission to Yemen conducted a rapid assessment of the environmental impacts of the tsunami and of reconstruction and capacity-building needs. The Joint UNEP/OCHA Environment Unit, in collaboration with the UNEP Division of Technology, Industry and Economics, is planning a capacity-building workshop for Yemen in early 2006; the workshop will include introduction of the APELL tool. The main focus, however, will be on increasing the capacity of the Environmental Emergency Centre of the Ministry of Water and Environment. The workshop is a follow-up activity to a capacity assessment which was carried out by the Joint Unit in March 2005.

## III. Environmental response to the South Asia earthquake

28. In response to the South Asia earthquake, the Joint UNEP/OCHA Environment Unit deployed two UNDAC-trained environmental experts with the UNDAC teams, one to Muzaffarabad and one to Islamabad and Mansehra. They identified a range of urgent environmental needs and recommended the immediate deployment of additional assistance in the areas of waste management, deforestation and landslides. With support from the Governments of Sweden and Switzerland, the Joint Unit subsequently deployed two waste management experts to ensure that waste management was fully integrated into the response phase, especially in the areas of water and sanitation, camp management and health. Guidelines and checklists to assist emergency responders on health-care waste and debris management were provided.

29. The Joint Unit also deployed an expert from the Government of Switzerland to assist in the relief activities and ensure the full integration of natural resource management into those activities. The expert assessed deforestation and its implications for flooding and landslides, and assisted the Government in developing recommendations for minimizing harm from the use of wood for heating and early reconstruction. An expert on slope stabilization, supported by the Government of Switzerland, was also deployed by the Joint Unit to assist the authorities in Pakistan in clean-up operations and in implementing measures to mitigate the landslides which are hampering the relief efforts.

30. In mid-October 2005, UNEP was invited to contribute to the United Nations post-earthquake early recovery needs assessment and lead the environment sector. UNEP drafted the environment sector part of the needs assessment, in close consultation with the Ministry of Environment and many other partners, including the Joint UNEP/OCHA Environment Unit, IUCN, WWF, UNDP, WHO and the United Nations Children's Fund (UNICEF). The needs assessment was launched by the Government of Pakistan on 19 November 2005.

31. The environment section of the needs assessment recommends more detailed environmental assessment, together with immediate recovery-oriented interventions to improve management of wastes and natural resources and also the environmental planning and management of the recovery phase. In particular, for the 18-month early recovery phase, the environment section proposes priority interventions to deal with the unprecedented amounts of waste and debris generated by the earthquake in the form of the landslides, damaged buildings and other infrastructure, solid and human wastes, medical wastes and other hazardous materials. The environment section also proposes priority interventions to reduce the increasing pressures on natural resources, such as vegetation removal for reconstruction and also for heating, cooking and other energy needs; landslides on slopes already destabilized by seismic activity, grazing and other vegetation removal, and erosion; water contamination and lake outbursts; and impacts on critical habitats and protected areas. The estimated total budget for these priority environmental interventions is some \$22 million. The total in the needs assessment across all sectors, including environment, is understood to be some \$400 million.

32. At the request of the Ministry of Environment of Pakistan, UNEP, in cooperation with OCHA, compiled a preliminary environmental assessment report which the Ministry is using in promoting immediate recovery and meeting longer-term environmental needs. UNEP worked closely with the Ministry of Environment and consulted with many experts and organizations in Pakistan to compile the report. In particular, the report refers to the earlier work of UNDAC experts. The preliminary environmental assessment was launched on 19 November 2005 in Islamabad by Mr. Shafqat Kakakhel, UNEP Deputy Executive Director, and the Minister of Environment of Pakistan.

33. Currently, UNEP is engaged in designing an environmental recovery programme in collaboration with the Ministry of Environment. The programme will be an endeavour which builds on the capacities of such organizations as UNDP and IUCN.

## **IV. UNEP/OCHA joint actions**

### **A. Background**

34. In addition to the joint action by OCHA and UNEP on the Indian Ocean tsunami and the South Asia earthquake operations, the agencies have collaborated through number of activities by the Joint UNEP/OCHA Environment Unit, as detailed below.

35. The Joint Unit is a unique collaborative arrangement which has been in operation for over 10 years. It ensures an integrated United Nations emergency response for countries facing environmental emergencies and natural disasters. By working together, the two organizations combine the specialized environmental expertise of UNEP with the humanitarian response mandate of OCHA.

36. To provide assistance to countries affected by disasters, the UNDAC mechanism, which is managed by OCHA, mobilizes the expertise of United Nations agencies such as the World Food Programme (WFP), UNICEF and WHO. Upon the request of a disaster-stricken country, an UNDAC team can be deployed within hours to carry out rapid assessment of priority needs and to support national authorities and the United Nations Resident Coordinator in coordinating international relief. Members of the UNDAC team are on permanent standby to join relief missions following disasters and humanitarian emergencies. UNEP is integrated into the UNDAC mechanism through the Joint Unit.

### **B. Forest fires**

37. Recent examples of the Joint Unit's operation include interventions concerning forest fires in Indonesia and Peru in which its staff have undertaken assessment missions, produced reports and participated in consultative meetings. Assistance in preventing forest fires in the future has been broadly welcomed by the Governments concerned, and discussions will be held for follow-up activities.

### **C. Risk and needs assessments**

38. Following media reports indicating that a natural dam retaining Lake Nyos in north-western Cameroon is in danger of collapse, the Joint Unit offered an immediate evaluation of the situation so as to provide a factual baseline for further action. The resulting report concluded that the dam would probably collapse within five years, threatening some 10,000 people downstream in Cameroon and Nigeria, and would possibly be associated with the release of a cloud of carbon dioxide. A similar cloud killed 1,700 people in Cameroon in 1986. The report contains recommendations to the Government and to the donor community on urgent measures to prevent the dam from collapsing.

39. In early October 2005, Hurricane Stan gave rise to torrential rainfall in parts of Central America, particularly affecting the southern and western highlands of Guatemala, where it led to flooding and mudslides. An UNDAC team carried out a human needs assessment and an environmental expert, working in collaboration with the Joint Unit, conducted a rapid environmental impact assessment, providing a basis for subsequent, more detailed work.

### **D. Other activities of the Joint Unit**

40. In July 2005, the Joint Unit led a multi-stakeholder capacity-building mission to the Islamic Republic of Iran to assist in the development of an environmental emergency centre. UNEP APELL participated in the mission. A range of individual meetings and briefings were held with, among others, the Department of Environment, the Iranian Red Crescent Society and the Ministry of Interior. A one-day workshop was held to exchange lessons learned and discuss specific options for the environmental emergency centre with representatives of those organizations and others, including representatives of the City of Tehran.

41. The Joint Unit developed a chapter on environmental emergencies as part of the UNDAC Field Handbook to provide guidance to UNDAC members in covering the environmental aspects of disasters during missions.

42. The Joint Unit facilitated, together with the Swedish Rescue Services Agency, the NATO Partnership for Peace international course on environmental disaster operations. It also supported the participation of participants from Yemen and the Islamic Republic of Iran as part of the ongoing capacity-building activities of the Joint Unit in those countries.



43. In August–September 2005, the Joint Unit facilitated training on secondary environmental impacts during natural disaster response at the United Nations Disaster Assessment and Coordination Induction course for Asia, which was held in Singapore.

## **E. Future development of the Joint Unit**

44. The Joint Unit has prepared a position paper on future directions and opportunities which identifies the following opportunities for its further development:

- (a) Enhancing the Joint Unit roster of experts, in particular through new agreements with donor countries and experts, coupled with new, “retainer”-type contracts, as appropriate;
- (b) Developing an assessment methodology for use in the hours immediately following a disaster, in collaboration with bodies such as including UNDAC and the International Search and Rescue Advisory Group (INSARAG) as required; such methods, although focused on immediate issues, must also be linked to long-term assessment and action;
- (c) Developing, together with donor countries, environmental support modules with basic measurement equipment and associated training of environmental experts;
- (d) Developing interface procedures with international organizations involved in environmental emergencies and exploring the possibility of developing a joint environmental emergency response plan to enhance response effectiveness, increase collaboration, improve efficiency, form a basis for measuring results and ensure coherence between the shorter-term activities of the Joint Unit and the longer-term activities of UNEP;
- (e) Ensuring efficient environmental emergency response and building response preparedness capacity, by using the Joint Unit’s key tools such as its Guidelines for the Development of National Environmental Contingency Plans and Guidelines for Establishing a National Environmental Emergency Response Mechanism, while also enhancing the curriculum used for national-level environmental emergency capacity building;
- (f) In its role as secretariat for the Environmental Emergencies Partnership, catalysing new projects which meet stakeholder needs by creating linkages between prevention, preparedness and response.

45. In October–November 2005, UNEP and OCHA held a joint workshop which concluded that the two institutions will:

- (a) Increase the use of each others’ assets, including through training more UNEP experts and deploying them on emergency missions of UNDAC teams;
- (b) Better integrate UNEP expertise into OCHA disaster response preparedness efforts and make full use of UNEP early-warning information and mapping capabilities to prepare for effective response;
- (c) Collaborate in developing mechanisms which ensure effective response, including a new rapid environmental assessment methodology, and operating procedures which streamline emergency notification and response while also enhancing links between environmental response and recovery;
- (d) Further strengthen and develop their cooperation.

## **V. Actions with other partners**

46. In May 2005, together with the Government of Pakistan and UNDP, UNEP organized a national symposium on natural resource damage assessment arising from the Tasman Spirit oil spill. The participants agreed on a strategy which included direct and indirect restoration of coastal ecosystems, compensatory restoration and establishment of a Tasman Spirit Restoration Compensation Trust Fund.

47. In August 2005, together with the University of Swaziland and the Swazi Ministry of Tourism, Environment and Communication, UNEP organized a workshop on the application and use of indigenous knowledge in nature conservation and environmental emergency management. The workshop reviewed information from five areas of sustainable development: biodiversity conservation and use; natural disaster management; food plant production; traditional medicine; and poverty alleviation. It also reviewed training modules in each field which are targeted at a wide range of stakeholders, including trainers, community leaders, agricultural extension workers, health workers, disaster managers, policy-makers and development planners, educationalists at primary, secondary and

tertiary levels, and the media. Its report provided information on various types of indigenous knowledge used in the conservation of natural resources and natural disaster management, and will help promote the use of indigenous knowledge in environmental conservation and disaster management at the national and local levels.

48. In August–September 2005 in Nairobi, together with the Intergovernmental Authority on Development (IGAD) Climate Prediction and Applications Centre (ICPAC), UNEP organized the sixteenth Climate Outlook Forum for the Greater Horn of Africa. This was attended by over 129 participants, with representation from Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, Uganda and Zimbabwe and WMO, UNEP, UNDP, the United States Agency for International Development (USAID), the United States National Oceanic and Atmospheric Administration (NOAA) African Desk and the United Kingdom Meteorological Office (long-range forecasting applications). It focused on weather patterns for the period September to December, when rainfall is particularly critical to farming in the whole subregion. UNEP made a presentation on the use of indigenous knowledge by local communities in providing early warning of drought and flooding, and in developing coping strategies. The Forum concluded that good rainfall was likely in four of the eight climatic zones of the subregion.

49. In September 2005, together with ICPAC, UNEP organized a workshop on the application and use of indigenous knowledge in nature conservation and natural disaster management in Kenya. The workshop reviewed and validated the information collected in five parts of the country and also training materials, thus helping promote the use of indigenous knowledge in nature conservation and environmental emergency management.

50. The fourth issue of the UNEP Environmental Emergencies News focused on dust and sand storms. These are often caused or exacerbated by poor environmental management resulting from a range of factors including deforestation, degraded rangeland, exhausted cultivated fields, salinized irrigated land, depleted groundwater resources and shrinking water bodies, as is the case of Lake Chad and the Aral Sea. Issue 4 of the newsletter provides information about what dust and sand storms are, their causes and impacts, the methods used to detect them and the available mitigation and control options.

51. UNEP carried out a comprehensive assessment of Typhoon Tokage (typhoon 23 of 2004), which struck central Japan, with the aim of understanding the causes of the extensive flooding which it caused. The assessment also studied the level of preparedness and looked into the causal factors behind the impacts of the disaster. Having documented the preparedness measures in place in Japan, the assessment provided valuable lessons for mitigation and management in other countries which face similar disasters.

## **VI. Disaster risk reduction and preparedness**

### **A. World Conference on Disaster Reduction**

52. UNEP played a key role in the World Conference on Disaster Reduction held in Kobe, Hyogo, Japan, in January 2005, and continues to support the goals of disaster risk reduction and the implementation of the Hyogo Framework for Action 2005–2015 agreed at the Conference. The Conference was convened in order to seek ways to reduce disaster vulnerability in the context of sustainable development, to identify gaps and challenges, and to increase awareness of the importance of disaster reduction policies and facilitate their implementation. It also aimed to increase the reliability and availability of appropriate disaster-related information to the public and disaster management agencies in all regions, as set forth in relevant provisions of the Johannesburg Plan of Implementation.<sup>1</sup>

53. Highlights of the involvement of UNEP in the Conference included:

- (a) The Executive Director's presentation during High-Level Round Table 1 entitled "Disaster Risk: The Next Development Challenge";
- (b) Presentations at the Cluster 4 Panel session on "Reducing the underlying risk factors", and preparation of the resulting discussion paper and presentations to meet the Panel's reporting requirement to the plenary and intergovernmental meetings;

<sup>1</sup> Plan of Implementation of the World Summit on Sustainable Development (*Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August–4 September 2002* (United Nations publication, Sales No. E.03.II. A.1 and corrigendum), chap I, resolution 2, annex).

- (c) Presentations during the Africa Round Table hosted by NEPAD and ISDR Africa;
- (d) Organization of thematic session entitled “Environmental Management and Disaster Reduction: Building a Multi-stakeholder Partnership”;
- (e) A press conference to launch the Typhoon Tokage study report;
- (f) A joint press event on the role of the financial and insurance sectors in disaster reduction;
- (g) Participation in the special plenary session on the Indian Ocean tsunami disaster;
- (h) Facilitation of the United Nations Centre for Regional Development (UNCRD) public symposium on building safer communities against disasters;
- (i) A presentation during the ISDR parallel session on early warning entitled “People-centred early-warning systems”;
- (j) A presentation during the special technical session on early warning for Indian Ocean tsunamis;
- (k) A presentation by the Joint UNEP/OCHA Environment Unit during a parallel session entitled “Effective response through coordination, partnership and integrated assessment”.

54. UNEP has set up an internal working group on environment and disaster risk to track the UNEP contribution to implementing the Hyogo Framework for Action, and to advocate greater integration of disaster risk concerns into UNEP programmes.

## **B. Advisory Group on Environmental Emergencies**

55. The sixth meeting of the Advisory Group on Environmental Emergencies (AGEE) was convened jointly by UNEP and OCHA in June 2005. On the agenda was the UNEP Strategic Framework on Emergency Prevention, Preparedness, Assessment, Mitigation and Response, which the UNEP Division of Environmental Policy Implementation Disaster Management Branch has been coordinating on the basis of the UNEP Governing Council decision 22/8. The meeting discussed the Strategic Framework and provided inputs to the review on the basis of the paper prepared by UNEP.

56. The AGEE meeting also discussed the environmental response to the Indian Ocean tsunami based on the document “Emergency response and environmental issues during the Indian Ocean Earthquake-Tsunami: initial lessons to learn”.<sup>2</sup> While the international response to environmental aspects of the tsunami disaster was considered very positive, improvements needed to be made in terms of strengthening overall coordination and elaborating common methodologies for environmental assessment.

57. Several country representatives at the AGEE meeting, including those of Senegal and Nigeria, also expressed their willingness to have APELL implemented in their countries. Discussions with representatives of Brazil, Indonesia, Morocco, Romania and Sri Lanka confirmed their wish to strengthen APELL-related projects in those countries.

58. A presentation was made at the AGEE meeting on future activities of the Joint UNEP/OCHA Environment Unit. These included a greater emphasis on cooperation with APELL, the development of a roster of experts, provision of training by the UNEP Division of Technology, Industry and Economics on environmental emergencies for those taking part in Joint Unit missions, APELL promotion in the Islamic Republic of Iran and Yemen, and APELL participation in future AGEE meetings. The AGEE meeting gave broad endorsement to the activities proposed in the background papers. The meeting was particularly appreciative of the collaboration between the APELL programme and the Joint UNEP/OCHA Environment Unit.

## **C. The APELL programme**

59. The UNEP APELL programme is being strengthened as a key vehicle for UNEP work at the local level in preventing and preparing for natural and other disasters, such as industrial disasters. To promote the APELL process further, UNEP is revising, adapting and elaborating new tools and methods to repackage it as a multi-hazard programme for disaster reduction, one that enables local communities

<sup>2</sup> AGEE Document EU/AG/37. Available at <http://ochaonline.un.org/GetBin.asp?DocID=3405>.

to identify, assess, prevent and prepare for the impacts of any type of disaster in an integrated, community-based, participatory way. Multiple hazards, as in the case where a human-induced disaster could trigger a larger natural disaster or vice-versa, are also covered. UNEP is focusing on the development and implementation of pilot and demonstration projects in which the new approach can be developed, tested, demonstrated, revised and then disseminated.

#### **D. ISDR: Inter-Agency Task Force on Disaster Reduction**

60. Recognizing the adverse affects of disasters on the environment and the potential roles of environmental information and environmental management in reducing disaster risk, UNEP has consistently and strongly advocated increased attention to environmental factors in all phases of disaster management.

61. Pursuant to the findings of the Inter-Agency Task Force for Disaster Reduction, UNEP has led the establishment of the Working Group on Environment and Disaster Risk Reduction, whose aim is to foster understanding of environmental concerns and integrate them into the implementation of the Hyogo Framework of Action from local to global levels. The Working Group will promote understanding of the two-way linkages between environment and disaster risk reduction from both the scientific and the policy perspectives and will respond to requests for guidance on related issues from the ISDR system.

### **VII. Key observations**

62. Activities during 2004 and 2005 in environmental emergency response, disaster prevention, preparedness, mitigation and early-warning systems have given UNEP valuable experience which will be reflected in future work. Some key observations were as follows:

(a) Early post-disaster environmental assessment and environmental expertise at the field level and also in the United Nations coordination mechanisms have helped identify environmental risks during the recovery process and catalyse appropriate mitigation measures;

(b) The positive achievements from environmental emergency response and recovery activities would not have been possible without strategic engagement with national environmental authorities;

(c) Environmental disaster management efforts during 2004 and 2005 have resulted in recognition of the importance of integrating environmental concerns into disaster response, recovery and risk reduction;

(d) Through the years' experiences, the value of the cooperation between UNEP and OCHA has been further realized and the two bodies have restated their commitment to working together;

(e) Post-disaster needs assessment processes, including recovery planning, must be further developed based on a sound technical review of assessment instruments and mechanisms;

(f) Without UNEP involvement in the needs assessment process, the environmental sector would have been ignored or undervalued;

(g) Environmental and disaster risk concerns should be considered at the earliest stages of recovery and reconstruction to avoid generating new risks;

(h) Dealing with post-disaster needs requires sustained commitment, with a rolling and flexible plan for addressing environmental issues during the recovery process;

(i) Environmental authorities and disaster managers could play a key role in strengthening national and regional disaster management and reducing future risk through greater involvement in prevention, preparedness, response and recovery efforts;

(j) Some of the environmental risks resulting from disasters and post-disaster relief and recovery operations could be minimized through greater emphasis on preparedness and prevention;

(k) Greater attention and resources must be directed towards the transition from the response to the recovery phases in post-disaster situations;

(l) Greater attention to awareness and preparedness at the local level would not only have mitigated disaster losses but would have greatly facilitated response and recovery efforts;

(m) Endorsing the concept of “building back better” creates valuable opportunities for the introduction of environmentally safe technologies and management practices which will contribute to sustainable recovery and development;

(n) Natural ecosystems play a significant role in buffering communities from the effects of natural hazards, although a stronger scientific basis is still needed if relevant principles are to be applied in the restoration of coastal ecosystems.

63. The above observations are being taken into consideration in the new strategy for the UNEP Disaster Management Branch.

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