

Office for the  
Coordination of  
Humanitarian Affairs



United Nations  
Environment Programme

# **International Environmental Emergency Response**

## **Major Activities 2007-2009**

**Joint UNEP/OCHA Environment Unit**



**UNITED NATIONS**

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Published in Switzerland, 2009 by the Joint UNEP/OCHA Environment Unit  
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AGEE Document Number: EU/AG/54

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## Introduction

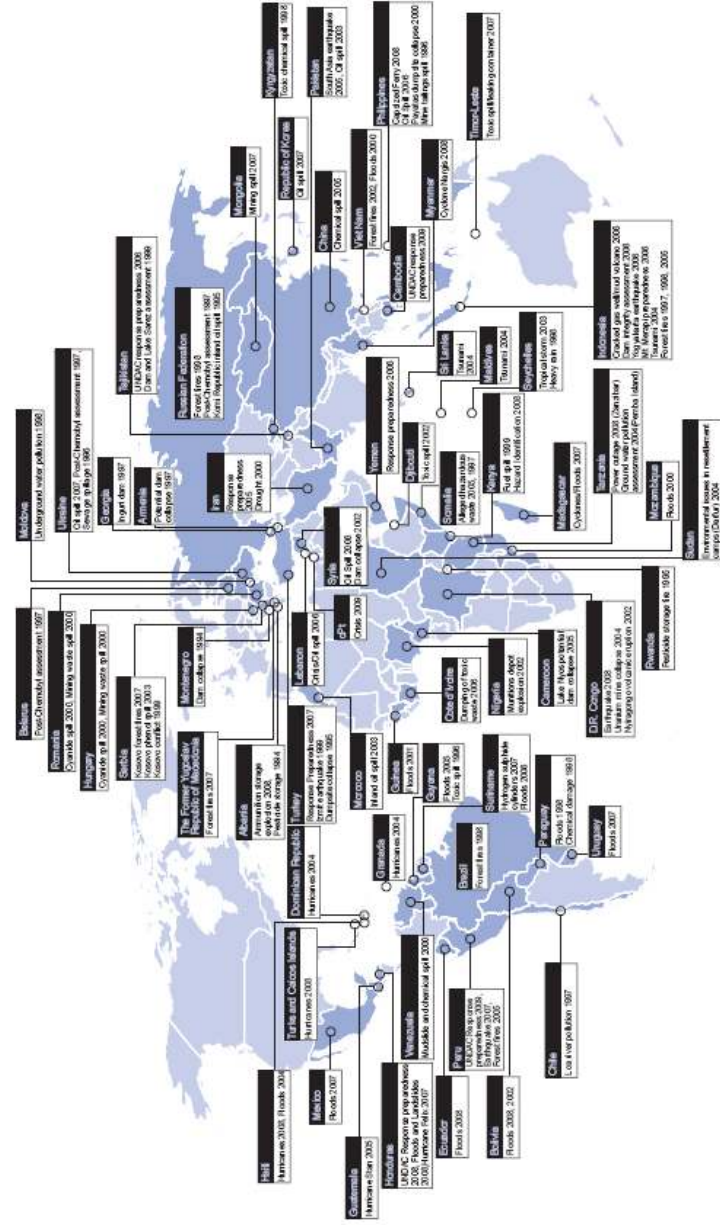
Humanitarian catastrophes, including natural disasters, complex emergencies and industrial accidents, can cause environmental emergencies that threaten human life and welfare. A vital part of effective humanitarian response is to ensure that these emergencies, such as landslides, chemical spills, dam breaches and forest fires, are promptly identified, prioritized and addressed.

The Joint UNEP/OCHA<sup>1</sup> Environment Unit (Joint Environment Unit) is the United Nations mechanism to mobilize and coordinate the international response to environmental emergencies. The Joint Environment Unit works with affected countries to identify and mitigate acute negative impacts stemming from emergencies, and provides independent, impartial advice and practical solutions. It also cooperates with organizations dedicated to medium and long-term rehabilitation to ensure a seamless transition to the disaster recovery process. Through networks such as the Advisory Group on Environmental Emergencies (AGEE) and the Environmental Emergencies Partnership, the Joint Environment Unit supports preparedness activities, including capacity-building and contingency planning.

This document describes the major activities undertaken by the Joint Environment Unit from 2007 until 2009.

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<sup>1</sup> UNEP = United Nations Environment Programme;  
 OCHA = Office for the Coordination of Humanitarian Affairs.



The location of each event and the date of the incident is marked on the map. The bar above the map indicates the type of international assistance provided by the United Nations. The bar below the map indicates the type of international assistance provided by other agencies. The bar above the map indicates the type of international assistance provided by the United Nations. The bar below the map indicates the type of international assistance provided by other agencies.

# Chapter 1: Mobilization and coordination of international assistance

The core function of the Joint Environment Unit is to mobilize and coordinate urgent international assistance to affected countries, when domestic capacity is exceeded or additional response resources and specialized expertise are required. During the period from 2007 to 2009, the Joint Environment Unit continued to ensure timely and effective response to requests for international assistance from countries affected by environmental emergencies.

The Joint Environment Unit was involved in the response to 40 natural disasters, man-made disasters and/or complex emergencies. Depending on the nature and scale of the emergency, the potential environmental impacts and the national capacity to respond to the situation, the response required from the Joint Environment Unit varied. In 17 cases, no international assistance was requested, and the Joint Environment Unit's activities were limited to monitoring and hazard identification (see following section). In 23 situations, the Joint Environment Unit facilitated rapid environmental assessments and/or ensured the deployment of specialized expertise. These responses are outlined in the following subsections.

### **Monitoring activities and hazard identification**

As highlighted in the previous section, from April 2007 to March 2009, the Joint Environment Unit monitored 40 environmental emergencies worldwide and offered assistance in situations where this was deemed suitable.

Since 2007, it has become standard procedure to apply the Hazard Identification Tool (HIT; see Chapter 2 for more details) to identify potential acute life-threatening secondary environmental risks following the onset of a natural disaster. Hence, HITs have been compiled in response to the majority of sudden-onset natural disasters that occurred during the reporting period. The 17 emergencies, in which no further specialized assistance was requested, are listed on the next page.

The following sub-sections outline the Joint Environment Unit's response to those environmental emergencies where international assistance was requested.

### **Sudden-onset natural disasters for which the Joint Environment Unit carried out a hazard identification**

(no requests for specialized international assistance)

- Solomon Islands – Tsunami – April 2007
- Pakistan – Floods – June/July 2007
- Indonesia – Floods – July 2007
- Swaziland – Wildfires – July 2007
- Nepal – Floods – August 2007
- Caribbean (multiple countries) – Hurricane Dean – August 2007
- Indonesia – Mt. Kelud volcano activity – October 2007
- Costa Rica – Floods – October 2007
- Nicaragua & Dominican Republic – Storms and Flooding – October/November 2007
- Bangladesh – Typhoon – November 2007
- Philippines – Typhoon & storms November 2007
- Mexico – Floods – November 2007
- Dominican Republic – Storms – December 2007
- Indonesia – Floods and Landslides – December 2007
- Guatemala – Floods – November 2008
- Costa Rica – Earthquake – January 2009

### Cyclone Indlala – Madagascar (April 2007)

Madagascar experienced an exceptional number of cyclones and tropical storms during the 2006-2007 cyclone season. Seven tropical cyclones either made a direct landfall and/or influenced precipitation levels and patterns on the island. The last two cyclones alone affected an estimated 190,000 people and killed 150. In response to a request of the Malagasy Government, a United Nations Disaster Assessment and Coordination (UNDAC) team was deployed to the country from 9 to 23 April 2007. The Joint Environment Unit conducted a HIT to identify any secondary environmental risks arising from Cyclone Indlala and shared it with the UNDAC team. Because of concerns about potential environmental impacts of the cyclones and associated floods, the Joint Environment Unit, in close collaboration with the OCHA Field Coordination Support Section, provided an environmental expert as an associate member to the UNDAC team. This expert, from UNEP, was tasked to carry out a rapid environmental assessment to identify any urgent and life threatening secondary environmental impacts and risks. The major conclusion of the assessment was that no urgent life threatening environmental impacts were identified. The report recommended that urgent attention be paid to the issue of polluted drinking water wells aggravated by the disaster, and made a number of other recommendations for consideration in the recovery phase.

### Floods – Uruguay (May 2007)

In May 2007, Uruguay experienced torrential rains which caused flooding in nine *departamentos*. Over 110,000 people were affected and around 12,000 people were evacuated. Thousands of houses were damaged, as was much of the public infrastructure, including the water supply, sewer and drainage systems, power and telephone lines, roads, agricultural land and municipal buildings. In response to this disaster, the Joint Environment Unit prepared a HIT to identify secondary risks posed by large infrastructure and industrial establishments that could hold hazardous materials in the area affected by natural disaster, which was shared with the UNDAC team. The UNDAC mission took place from 7 to 31 May and the Joint Environment Unit ensured the inclusion of an environmental expert in the UNDAC team.

The rapid environmental assessment that was carried did not identify any acute life-threatening environmental impacts, but noted a number of longer term issues. The observed impacts were linked to the already existing precarious conditions of the sanitary system; to the insufficient disposal of waste in the affected areas; and to the irregular occupation of the risk areas, which were aggravated by the floods. The final report made recommendations for the improvement of these systems as well for the establishment of a specific plan for environmental emergencies.

### Toxic spill of sodium cyanide – Mongolia (2007)

A spill of sodium cyanide from gold mining activities in the area of Khongor Soum in northern Mongolia took place on 23 April 2007, polluting the ground, air and drinking water. It was feared that this incident could threaten 6,000 people and 60,000 animals.

While no international assistance was requested as an immediate response to the toxic spill, in July of the same year, Mongolian authorities requested the Joint Environment Unit to deploy an environmental expert. The task of the team deployed from 23 June to 4 July 2007 was to undertake a fact-finding mission on the accident and the national response to it, and examine related environmental risks stemming from the mining sector. Regarding major impacts of the incident, the expert found the soil on an area of 44,790 m<sup>2</sup> to be contaminated with mercury and sodium cyanide, as well as the ground water, drinking water supplies and the wastewater treatment plant. While no human casualties resulted from this accident, a total of 1,427 persons underwent medical examinations as part of the national response measures. As a result, five were hospitalized; another 612 persons received medical treatment and 226 showed signs of minor intoxication or more serious intoxication.

Based on the findings, several immediate and more long-term recommendations were made to prevent further contamination on the one hand, and to support response preparedness and capacity-building initiatives on the other.

Considering the quantity of hazardous chemicals released at the site, the above outlined immediate impacts can be considered to have been rather limited.



*Poor environmental practices in the gold mining sector, Mongolia (Photo: A. Pasche)*

However, given the potential danger from chemical substances at the site and in Mongolia generally, the Joint Environment Unit received a further request for assistance for capacity-

building. In cooperation with the United Nations Development Programme (UNDP) Mongolia, terms of reference for a consultancy were developed and two experts hired by UNDP to train the emergency responders in Ulaanbaatar. The Joint Environment Unit also collaborated with the World Health Organization and the Post-Conflict and Disaster Management Branch of UNEP (UNEP PCDMB) to ensure that follow-up technical support was provided. Subsequently, soil and water were sampled at Khongor Soum of Darkhan-Uul Aimag and tested for level of contamination with mercury and cyanide.

### Fires – Kosovo (July/August 2007)

Upon request of the UNDP Office in Kosovo, the Joint Environment Unit, together with the Global Fire Monitoring Center, urgently deployed an expert to undertake a rapid assessment of the fire situation in Kosovo from 29 July to 1 August 2007. Based on aerial surveillance and interviews, and given favourable weather conditions, it was concluded that no immediate international relief assistance was required. For the medium-term, fire management and basic-security training needs were identified, as well as the need for some basic equipment, such as mobile weather stations and global positioning system equipment.



*Active bush fire, Kosovo (Photo: Global Fire Monitoring Center)*

Following these recommendations, a meeting between the Director of the Global Fire Monitoring Center and UNDP was held in Pristina on 26 August 2008. Furthermore, at a regional meeting held in Skopje, FYR Macedonia, in December 2008, in preparation of the 2009 Regional Seminar on “Fire Management on Terrain contaminated by Unexploded Ordnance, Land Mines and Radioactivity”, Kosovo was invited to join the regional network and to attend the 2009 seminar.

### Fires – FYR Macedonia (July/August 2007)

Between July and August 2007, the Former Yugoslav Republic of Macedonia (FYR Macedonia) experienced extended wildfires affecting forests and other vegetation on an area exceeding 50,000 hectares and causing 200 people to be evacuated. Direct impact on residential areas and damage to infrastructure remained limited.

As part of the international response, OCHA provided an emergency cash grant of US\$30,000. Additionally, the Joint Environment Unit, in cooperation with UNDP, UNEP and the Global Fire Monitoring Center, responded to a request of the Government of the FYR Macedonia, by deploying a joint mission to the country to assess the damages of the wildfires and to recommend action for future fire disaster risk reduction. The assessments were carried out from 27 August to 7 September by a team of international experts who cooperated closely with experts from national agencies.

Based on needs identified, the recommendations made included the launch of programmes aimed at strengthening fire management capabilities at national and regional levels, and the adequate training and equipment of voluntary rural fire brigades. Given the fact that fires are a recurrent problem in the Balkans region, the development of a regional strategy on cooperation in fire management and the establishment of a regional fire monitoring centre were recommended. In this context, the FYR Macedonia hosted the preparatory regional meeting and will be participating in the above mentioned Regional Seminar.



### Earthquake – Peru (August 2007)

On 15 August 2007, a major earthquake measuring 7.9 on the Richter scale struck southern Peru, with the majority of damage occurring in the *departamento* of Ica. More than 500 people were killed and 1,300 injured. Approximately 75,000 homes were either damaged or destroyed. Immediately, the Joint Environment Unit compiled a HIT, identifying mining activities, hydropower dams and the metallurgic industry as potential threats.

Following a request from the UNDAC team which was deployed to the affected area from 17 August to 15 September, the Joint Environment Unit deployed two environmental experts of the Center for Scientific Support in Disaster Situations (CENACID) of the Federal University of Paraná, Brazil to undertake a rapid environmental assessment. They identified debris and hazardous waste, including health-care waste, as acute issues requiring immediate attention. As a result of their efforts, government authorities agreed to move debris dumping from a natural reserve to a more suitable area, and also purchased two incinerators to deal with hospital waste. The authorities also distributed the



*Industrial installation, Peru  
(Photo: CENACID)*

Emergency Waste Management guidelines, developed by the Joint Environment Unit, to raise awareness of the need to properly handle waste to ensure public safety and to minimize the impact on the environment.

As medium-term measures, it was also recommended that the quality of the water reserves be monitored and the pipeline system be repaired. Furthermore, it was suggested that geohazards be reassessed, as well as environmental impacts on the fishery industry. While no acute threats were identified at the industrial sites visited, it was advised that the situation be monitored and inspections of additional sites as well as oil and gas infrastructure sites be conducted.

Lastly, the team recommended that longer-term impacts on the environment – including on the natural reserve of Paracas, which was severely affected by the tsunami associated with the earthquake – be assessed and recovery and reconstruction efforts be planned in line with the needs of sustainable development.



*Sign depicting an ecologic reserve among rubble, Peru (Photo: CENACID)*

### Hurricane Felix – Honduras (September 2007)

Hurricane Felix made landfall in north-eastern Nicaragua as a category five hurricane. While moving inland over Nicaragua and Honduras as a tropical depression, it continued to severely affect thousands of families in Honduras and neighbouring countries with heavy rainfall and flooding. Consequently, an UNDAC team was mobilized and deployed to Honduras from 4 to 8 September. With support from Sweden, the Joint Environment Unit provided an environmental expert as an associate member to the UNDAC team to undertake a rapid environmental assessment. While no major urgent and life threatening secondary risks and environmental impacts were identified, the rains caused the contamination of water supplies and a breakdown of sanitation infrastructure. In cooperation with UNICEF, the environmental expert provided advice on repairing the water and sanitation systems.



*Flood situation, Honduras  
(Photo: UNDAC)*

As a follow up, the UN Resident Coordinator in Nicaragua requested assistance regarding environmental assessment of a biosphere reserve affected by Hurricane Felix. While ensuring a smooth hand-over to the early recovery phase, the Joint Environment Unit, in cooperation with the UNEP Regional Office for Latin America and the Caribbean, facilitated the deployment of a UNEP expert.

### Floods – Mexico (November 2007)

Heavy rains from end-October 2007 onwards caused floods in the Mexican States of Tabasco and Chiapas. The Mexican Government requested the assistance of an UNDAC team, which was subsequently deployed from 6 to 22 November. An UNDAC-trained UNEP staff member was deployed as part of the team to identify any (potential) secondary life threatening environmental issues that would need to be addressed. Furthermore, urgent needs for further specialized assistance would be identified.



*Unstable dam formed by a landslide,  
Mexico (Photo: J. Calderon)*

The assessments focused on issues such as disaster waste management and a landslide that had formed an unstable dam in a river. Following discussions with the authorities, no further specialized assistance was requested. Recommendations for the recovery phase included the implementation of environment management and land use plans for Tabasco and Chiapas, reforestation projects for Tabasco and Chiapas, development and implementation of rain water catchment projects, contingency plans for solid waste disposal, as well as an economic evaluation of the environmental impacts caused by the floods.

**Oil spill – Kerch Strait, Ukraine (November 2007)**

A heavy storm in the Kerch Strait, connecting the Sea of Azov and the Black Sea, resulted in 5 sunken ships and 6 stranded. One of the sunken ships lost between 1300 and 2000 tons of heavy fuel oil. Following a request for assistance from Ukrainian authorities to the European Community, the Monitoring and Information Centre of the European Commission (EC-MIC) invited the Joint Environment Unit to participate in an EC-led assessment mission from 18 to 24 November. A staff member from the Joint Environment Unit was deployed as liaison officer with the team.



*Clean-up activities, Ukraine (Photo: EC-MIC/Joint Environment Unit)*

Main conclusions resulting from the assessments included that clean-up measures were well underway and that there was no immediate need for emergency relief assistance. It was recommended that a medium and long-term environmental assessment of the spill impacts be carried out. For this purpose, the Joint Environment Unit ensured a smooth hand-over to UNEP PCDMB. Upon invitation by the Directorate General for External Relations of the European Commission, UNEP coordinated a joint EC-UNEP comprehensive post-disaster needs assessment covering scientific, coastal sensitivity mapping, economic and institutional issues.

**Oil spill (Hebei Spirit) – Republic of Korea (December 2007)**

A collision between a barge and an oil tanker caused the release of 10,500 tons of light crude oil into the Yellow Sea off the west coast of the Republic of Korea on 7 December 2007. No casualties were reported, however there were potentially serious long-term implications for livelihoods, the environment and wildlife in the area. More than 300 km of coastline was affected. On 13 December 2007, the Government of the Republic of Korea requested international assistance. Following a joint offer of assistance by the Joint Environment Unit and the EC-MIC, an assessment team lead by the Chief of the Joint Environment Unit was deployed to the Republic of Korea from 15 to 22 December.

The UN/EC Assessment Team determined that no immediate international assistance was required to aid clean up operations already underway. Due to the deployment of oil booms very quickly after the spill, many sensitive areas were protected. Natural surf – in the form of tides and wave action – cleansed some beaches and shoreline and would continue to do so. The



*Clean-up activities, Republic of Korea (Photo: EC-MIC/Joint Environment Unit)*

team made a number of observations and practical recommendations, including the need for medium and long-term biological monitoring; for Republic of Korea to join the international efforts to phase out single-hull tankers; and a joint training carried out among all relevant agencies involved in oil spill pollution clean-up. The mission report and assessment results were shared with the authorities and relevant agencies.

Authorities of the Republic of Korea requested further international assistance on training and shoreline assessment techniques and, through the Joint Environment Unit's brokerage role, officials from Canada provided follow-up assistance on a bilateral basis. The Joint Environment Unit ensured the smooth transition from emergency response to recovery with a hand-over to UNEP PCDMB and the European Commission, who undertook a post disaster needs assessment. On 17 March 2008, the Joint Environment Unit participated in an EC-MIC led lessons learned meeting.

### **Floods – Bolivia (January/February 2008)**

From November 2007 onwards, heavy rains caused by La Niña resulted in floods in several *departamentos* of Bolivia. In January 2008, the Bolivian Government requested the deployment of an UNDAC team to assist in the response activities. The UNDAC mission took place from 25 January to 16 February 2008, and included a UNEP staff member who was deployed through the Joint Environment Unit. The rapid environmental assessment of the affected area did not identify major environmental emergencies that would have required further mobilization of international assistance. However, competent authorities were alerted to environmental risks that should be taken into consideration for the early and medium-term recovery phases.

### **Floods – Ecuador (March 2008)**

La Niña also caused heavy rains in Ecuador resulting in floods and affecting 60,000 of families. Following the deployment of an UNDAC team from 23 February to 15 March, the Joint Environment Unit facilitated the deployment of an environmental expert of the Brazilian Center for Scientific Support in Disaster Situations from 9 to 16 March. By field-testing the prototype of the Flash Environmental Assessment Tool (FEAT; described in more detail in section two of this document), the expert identified a number of environmental issues requiring further attention. A report, detailing the impacts and recommendations for the early recovery phase, was prepared and presented to the UN Resident Coordinator and the authorities.

### Earthquake – Democratic Republic of Congo and Rwanda (February/March 2008)

On 3 February, a number of earthquakes – ranging in magnitude from 5.0 to 6.1 on the Richter Scale – struck the Great Lakes region of Africa near the border between Rwanda and the Democratic Republic of Congo. After the initial response phase, an UNDAC team was requested to undertake a damage assessment in the affected region around Bukavu in the Democratic Republic of Congo. The Joint Environment Unit ensured the deployment of two environmental experts from Switzerland and Denmark to undertake a rapid environmental assessment to identify damage to industrial facilities and other secondary risks as well as the needs for mitigation measures. The experts field-tested the FEAT. Main recommendations included the mapping of high risk areas for landslides, including addressing the issue of people living on these sites. The relocation of power lines to less vulnerable areas was also recommended. The findings of the assessment were shared with the authorities and included in the UNDAC mission report.

### Explosion – Albania (March 2008)



*Explosion, Albania (Photo: UNDAC)*

On 15 March 2008, a large explosion occurred at an ammunition decommissioning facility west of Albania's capital Tirana. The explosion killed 26 people, injured 300, and over 4000 people

were evacuated. Upon the request of the Albanian Government and the UN Resident Coordinator, an UNDAC team was deployed from 20 March to 3 April. The Joint Environment Unit ensured the deployment of an UNDAC-trained UNEP staff member to evaluate the environmental impact of the explosion and to provide an analysis of samples of soil and ground water.

The analysis of the soil samples, provided by the Swiss Spiez laboratory, did not indicate critical levels of hazardous substances or heavy metals. However, the overall assessment of environmental impacts determined that the area around the depot should be considered an environmental hotspot. For the immediate response phase, it was recommended that unexploded ordnance be cleared and that hazardous substances be stopped from draining directly into the downhill river. Environmental actions recommended for the reconstruction phase were included in an appeal to the international community, with estimated costs of approximately US\$9.2 Million. The findings of the assessment were shared with the authorities.

### Cyclone – Myanmar (May 2008)

Category 3 Cyclone Nargis struck Myanmar on 2 May 2008. The cyclone made landfall in the Irrawaddy delta region, approximately 250 km southwest of Yangon, and subsequently moved inland and directly hit this major city. Major damage was reported in the affected areas, particularly the low-lying delta region, where the cyclone's impact was compounded by a storm surge. Overall, about 2.4 million people were affected and an estimated 140,000 were killed.



*Destruction caused by Cyclone Nargis in Irrawaddy Delta, Myanmar (Photo: www.ifrc.org)*

The Joint Environment Unit compiled a HIT to identify potential environmental risks in the affected areas. Integrating environment in the first phase of the humanitarian response, the Joint Environment Unit ensured the deployment of an environmental expert from the Swedish Rescue Services Agency<sup>2</sup> on a bilateral basis. Information available from the most-affected areas did not indicate any potential acute environmental risks to human health or to the envi-

<sup>2</sup> On 1 January 2009, the Swedish Rescue Services Agency was merged into the Swedish Civil Contingencies Agency. For the purposes of this report, the former title will be used throughout.

ronment from industrial activities or waste facilities. The environmental expert consulted with numerous UN agencies and non-governmental organizations to ensure the integration of environmental concerns in any recovery framework that would be developed. This could include, for example, mangrove reforestation and coastal environmental management; rehabilitation of salinated land and water sources; debris recycling; and addressing environmental concerns in reconstruction and resettlement. However, due to limitations of time and access, it was not possible to draw any conclusion about Nargis' impacts on oil fields or the industrial zone in Yangon.

During the emergency response phase, the Joint Environment Unit liaised closely with the UNEP Regional Office in Bangkok as well as UNEP PCDMB. This allowed for a smooth transition to the early recovery phase. UNEP facilitated the deployment of an expert to undertake technical assessments, provide direct technical advice to the recovery team, act as a focal point for the coordination of environment and natural resource-related recovery programmes, and develop longer-term proposals for implementation.

### Earthquake – China (May 2008)

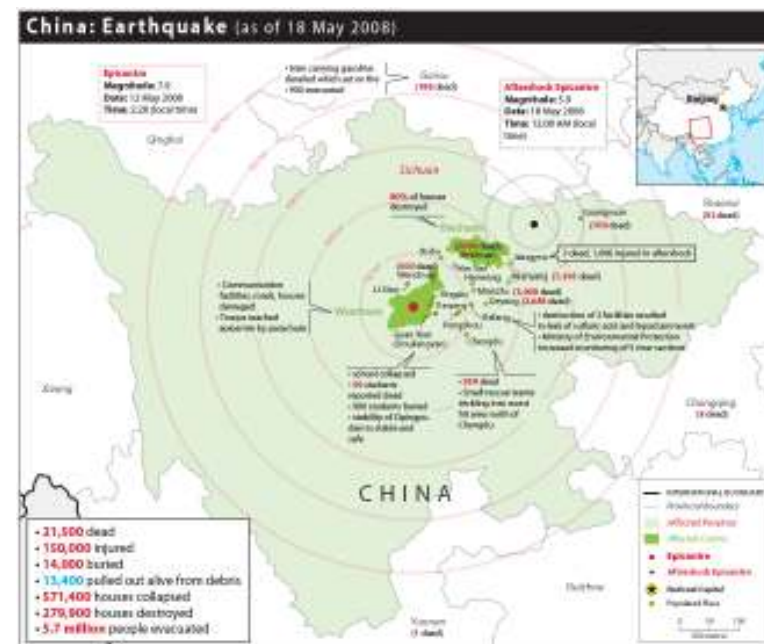
On 12 May 2008 a major earthquake measuring 7.9 struck Wenchuan County in the Sichuan Province of China. According to official statistics, the death toll reached almost 70,000 people, with 374,171 people injured, while a further 18,467 remained missing and were presumed dead. The total number of affected people was about 45.5 million. The Joint Environment Unit monitored the situation from the onset and noted an unprecedented number of secondary environmental risks and impacts stemming from the earthquake.

#### Secondary environmental impacts:

- Damage to two chemical factories in Shifang, causing the spill of 80 tons of toxic liquid ammonia;
- Derailment of a 40-car freight train carrying gasoline that caught fire;
- Over 400 dams that suffered damage, putting downstream populations at risk;
- Numerous landslides blocking roads and limiting humanitarian access to the affected area;
- Formation of so-called ‘quake lakes’ due to the blocking of waterways by landslides;
- Bleach powder, used for disinfection, catching fire and causing toxic gas clouds.

The Joint Environment Unit established close coordination links with UNEP PCDMB, the Regional Offices of OCHA and UNEP, and the UN Country Team. Following the

transition to the recovery phase, the Joint Environment Unit seconded a staff member for four weeks to UNEP PCDMB to ensure a smooth hand-over.



Map highlighting environmental impacts in the area affected by the earthquake, Sichuan Province, China ([www.reliefweb.int](http://www.reliefweb.int))

As part of the recovery phase, UNEP and the Ministry of Environmental Protection co-hosted a workshop entitled “Post-Earthquake Reconstruction in the Environmental Sector” in July 2008. The “China Appeal for Early Recovery Support” recognized the critical importance of addressing environmental issues such as water, soil contamination, and hazardous waste management, requesting an envelope of nearly US\$6 million for “environmental recovery”.

**Power outage – Zanzibar (June 2008)**

On 21 May 2008, Zanzibar experienced a power outage, when the national power grid of Tanzania temporarily collapsed. For a month the power grid on the island of Unguja remained dysfunctional and people were dependent on alternative methods of electricity generation (mainly diesel generators). Based on a request by the Revolutionary Government of Zanzibar, an UNDAC team carried out an assessment of the impact and provided a risk analysis of the power outage. The Joint Environment Unit ensured the deployment of a Danish environmental expert on the UNDAC team. The UNDAC mission took place from 10 to 20 June 2008. The environmental assessment focused on drinking water supply, waste water treatment, municipal waste management and industrial installations. The supply (access), as well as the quality (back flow) of drinking water was seriously hampered by the lack of electricity, and emergency generators were installed at critical points. With already poor hygienic standards, there was a high risk of the development of water-borne diseases. Short-term recommendations from the environmental expert focused on the provision of chlorine tablets and undertaking an information campaign at emergency public water points, installation of additional generators (including provision of fuel) and increased monitoring of water quality by the authorities. Medium- and long-term recommendations included flushing the entire water supply system once the electricity grid was fully functional and retaining the emergency generators as a back-up for possible future emergencies.

**Cyclone/capsized ferry – Philippines (July/August 2008)**

Typhoon Fengshen struck the Philippines on 21 June 2008, causing the *MV Princess of the Stars* ferry to capsize approximately three kilometres from the shore of Sibuyan Island in the central Philippines. Less than 60 of over 850 passengers survived the disaster. During the search and rescue activities, information was received that the ferry was carrying large quantities of highly toxic pesticides in addition to an estimated 100,000 litres of engine fuel. Consequently, rescue activities were halted in order to not endanger the rescue teams.



*Capsized ferry MV Princess of the Stars, Philippines (Photo: EC-MIC/Joint Environment Unit)*

Following a request from the Philippines

Government, and in close consultation with the International Maritime Organization and the World Health Organization, the Joint Environment Unit and the EC-MIC deployed a joint mission from 9 to 20 July 2008 to assess the potential hazard and related impacts from the fuel and pesticides discovered on board the ferry. The assessment team undertook site inspections on land, sea and air. There was concern that should the hazardous substances be re-



leased into the water, there could be serious secondary impacts on human health in the region. The joint assessment team also undertook an evaluation of planned response activities at the national and international levels, which focused on identifying gaps in current response activities, and making recommendations on further possible international assistance. Following the assessment, a number of recommendations were made in relation to improving emergency response coordination, including contingency planning and the establishment of a command post, sampling and monitoring procedures, and future planning for emergency operations. The Joint Environment Unit participated in a lessons-learned exercise organized by the EC-MIC in Brussels on the joint response to Typhoon Fengshen.

### Conflict – Georgia (August 2008)

In early August 2008, the number of military incidents in Georgia increased, leading to an escalation of the conflict in particular in South Ossetia and Abkhazia, as well as the area around the Georgian capital Tblisi. The Joint Environment Unit monitored the situation for any environmental impacts, focusing on industrial installations and large infrastructure such as airports, port facilities, oil storage sites and gas pipelines. The Unit liaised closely with relevant partners, including UNEP PCDMB and the UNEP Regional Office for Europe, as well as the Global Fire Monitoring Center.

### Hurricanes – Haiti (September 2008)

A series of hurricanes and tropical storms devastated the Caribbean region in late August, continuing into September 2008. Haiti was among the countries most seriously affected. As per standard procedure, the Joint Environment Unit produced a HIT and no major and obvious risks were identified. A French expert from the UN Department on Safety and Security was deployed as part of the UNDAC mission which took place from 4 September to 2 October 2008. Under the lead of this expert, a rapid environmental assessment was carried out in Gonaïves using the FEAT. The map that was produced based on the FEAT assessment pointed to several petrol stations, but did not identify any acute life-threatening environmental impacts.



*“FEAT map” (UNDAC)*

An official request for assistance from Haiti was received for disaster waste management expertise. The request was subsequently met in close cooperation with the cluster for Water, Sanitation and Hygiene. As part of the early recovery process, a UNEP PCDMB staff member joined the Post-disaster needs assessment mission in October 2008.

### Hurricanes – Turks and Caicos Islands (September 2008)

After Tropical Storm Hanna, Hurricane Ike struck the Turks and Caicos Islands on 7 September 2008, severely affecting the islands of Grand Turk, South Caicos and Salt Cay. An UNDAC mission, including a UNEP expert, was deployed from 8 to 21 September 2008. The expert undertook an environmental assessment of the area. One of the immediate environmental risks identified was disaster waste management, and the long-term risks of inadequate debris disposal and management were highlighted. As a result, the authorities requested urgent assistance from the Joint Environment Unit to address disaster waste management issues. In response to this request, the Joint Environment Unit, supported by the Swedish Rescue Services Agency, deployed an expert for a period of three weeks, to conduct a needs assessment on waste management, and to



*Dumpsite, Turks and Caicos Islands (Photo: P. Berg)*

provide recommendations on immediate and longer-term measures. The mission report was shared with the authorities, UNDP and UNEP. A second mission was undertaken by the same expert in order to follow up on his initial recommendations.

### Floods/geohazards – Honduras (October/November 2008)

Following heavy rains that resulted in flooding and landslides in Honduras in October 2008, the Joint Environment Unit prepared a HIT to highlight large infrastructure and industrial facilities in the affected area that could potentially have secondary impacts on human health and life. An UNDAC team was deployed from 22 October to 9 November. Following recommendations made by the UNDAC team, the Honduran authorities, through the UN Resident Coordinator, requested international assistance from the Joint Environment Unit. With support of the Swedish Rescue Services Agency, two experts were subsequently

deployed by the Joint Environment Unit to undertake a geohazard risk assessment. The mission was carried out in close cooperation with UNDP and the Honduran Permanent Commission for Contingencies. The medium- and long-term

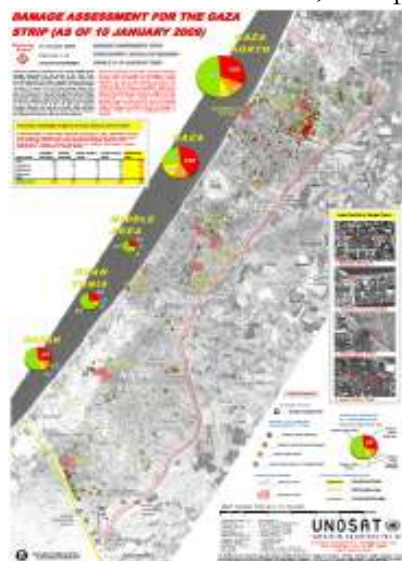


*Landscape with indication of landslide (Photo: Geohazard expert team)*

recommendations were included in the mission reports and subsequently shared with the national authorities and the UN Resident Coordinator. The UN Resident Coordinator subsequently approached the Joint Environment Unit in February 2009 to assist with national capacity-building and other follow up measures.

### Conflict – Gaza (December 2008-January 2009)

During the hostilities in the Gaza strip in December 2008 and January 2009, the Joint Environment Unit monitored the situation in Gaza for damage to industrial, utility and sanitation infrastructure, also paying attention to secondary



*Map indicating damage caused by armed hostilities (UNOSAT)*

long-term environmental impacts. Three areas of potential environmental concerns were identified: (1) disaster waste management, including rubble, hazardous waste and chemicals; (2) sewerage infrastructure; and (3) use of weapons. In close cooperation with UNEP PCDMB, the Joint Environment Unit provided briefings on environmental concerns to the senior management of both OCHA and UNEP.

While the expertise on the ground was deemed to be sufficient, an adequate response to environmental concerns was hampered by restricted access during and after the hostilities. In order to fully integrate environment into the UNDP-led Early Recovery Rapid Needs Assessment mission, a UNEP PCDMB staff member was deployed. The results of the expert's assessments confirmed the urgency of the impacts previously identified.

## Chapter 2: Implementation of the global Environmental Emergencies Partnership and preparedness activities

The Environmental Emergencies Partnership<sup>3</sup> was launched by OCHA and UNEP in 2002 at the World Summit on Sustainable Development. The Partnership was initiated to enhance environmental emergency management practices in developing countries, and countries with economies in transition, by “bridging gaps” between phases of the disaster management cycle (prevention, preparedness and response) and among disaster management stakeholders.

Following the integration of the Joint Environment Unit into the Emergency Preparedness Section of OCHA in August 2008, discussions regarding collaboration in the framework of the Environmental Emergencies Partnership are ongoing. This section gives an overview of the activities undertaken in the implementation of the Partnership, in particular with a view to enhancing preparedness for environmental emergency response.

<sup>3</sup> Original name: “An integrated approach to prevention, preparedness for and response to environmental emergencies in support of sustainable development”.

### **Development of terms of reference for environmental experts**

Upon request from supporting countries and in order to be able to respond more quickly and effectively, the Joint Environment Unit has developed generic terms of reference for different types of expertise frequently requested in the response to environmental emergencies.

Through a consultative process, terms of reference have been developed for environmental generalists that are deployed with an UNDAC team to determine potential needs for further specialized assistance using the Flash Environmental Assessment Tool. The development of terms of reference for disaster waste management experts and geohazards experts is ongoing, involving a broad range of relevant partners, including UNEP PCDMB and individual experts.

The Joint Environment Unit, in consultation with its partners, has also developed a guidance note for environmental experts deployed on UNDAC disaster response preparedness missions. In the context of a general evaluation of national preparedness for the response to a broad range of emergencies, the environmental expert will (1) advise on an adequate level of environmental emergencies preparedness and response; (2) raise awareness among stakeholders and promote existing guidance material; and (3) promote the understanding of issues, knowledge, expertise, skills and measures with respect to preparedness regarding environmental emergencies.

### **Review of guidelines on environmental emergencies**

Upon recommendation of the 3<sup>rd</sup> meeting of the AGEE, the Joint Environment Unit developed the following guidance material on environmental emergency response:

- Guidelines for the development of a National Environmental Contingency Plan & Sample of National Environmental Contingency Plan; and
- Establishing a National Environmental Emergency Response Mechanism.

The Joint Environment Unit reviewed the guidance material to evaluate their validity as well as potential overlaps with other guidance material. Ways for a better dissemination and use of the guidelines were identified, including through (1) the Inter-Agency Standing Committee Sub-Working Group on Preparedness and Contingency Planning; (2) UNDAC disaster response preparedness missions (see above); (3) joint capacity-building activities with the OCHA Emergency Preparedness Section; (4) National Focal Points; and (5) by possibly piloting the guidelines in two or three countries.

### **Environmental emergency response preparedness mission to Kuwait (April 2007)**

Through the UNDP Office in Kuwait and the OCHA Regional Office in Dubai, the Government of Kuwait expressed interest in exploring options to strengthen national environmental emergency preparedness. In response, a joint mission of the Regional Office and the Joint Environment Unit was conducted in Kuwait City between 24 and 26 April 2007 with the overall purpose of identifying needs for environmental emergency response preparedness activities.

More specifically, the mission's objectives were to (1) identify focal points in relevant national agencies, (2) undertake an initial scoping survey to determine Kuwait's environmental emergency capacity and needs, and (3) discuss possible actions and next steps for partnerships and actions among the national authorities, the Joint Environment Unit, the Regional Office of OCHA, and UNDP.

The report of this preliminary mission was shared with national authorities via UNDP, featuring observations and feedback received during the mission, as well as a number of interrelated recommendations. These included the implementation of a practical environmental emergencies system, a review of national disaster coordination structures in comparison with international good practice; a reconsideration of plans for a national emergency centre; the adoption, implementation and use of internationally recognized tools and mechanisms; and requests for assistance from qualified international organizations whenever needed.

### **UNDAC disaster response preparedness mission to Honduras (July/August 2008)**

At the request of the Government of Honduras and the UN Resident Coordinator, an UNDAC Disaster Response Preparedness Mission to Honduras was undertaken from 21 July to 1 August 2008. An environmental expert from Brazil was part of the UNDAC team to assess the national capacity to respond to environmental emergencies. Prior to the mission, the Joint Environment Unit compiled a Hazard Identification Tool and shared it with the UNDAC team.

Based on assessments, investigations, on-site visits and interviews, the following observations related to environmental emergency response preparedness were included in the mission report and shared with the government authorities: As a general observation, the environment sector focused on response to emergencies rather than taking preventative measures. Given that a national contingency plan for environmental emergencies was not in place, it was suggested to consider including environmental impacts in national contingency planning. The lack of regulations increases the risk for technological disasters, and limited response capacity with expertise on hazardous materials should be addressed. Additionally, to be able to better respond to secondary impacts of natural disasters such as floods and landslides, mapping of industrial facilities and infrastructure that may pose risks in case of floods should be pursued.

### UNDAC disaster response preparedness mission to Cambodia (March 2009)

At the request of the Government of Cambodia and the UN Resident Coordinator, an UNDAC Disaster Response Preparedness Mission to Cambodia took place from 16 to 27 March 2009. An UNDAC-trained UNEP staff member was part of the team as environmental expert. The mission had the overall objectives of evaluating the disaster management system; providing an analysis of current capacities and future needs at the provincial and district level in the areas of planning for and implementing preparedness programmes, response operations and recovery programmes. In preparation for the mission, the Joint Environment Unit prepared a HIT and shared it with the UNDAC team. The environmental expert participating in the mission focused on capacity to respond to environmental emergencies.

### Enhancing collaboration among stakeholders

In the context of the humanitarian reform, the Inter-Agency Standing Committee invited the Joint Environment Unit to develop a tool to integrate crosscutting environmental issues into the humanitarian cluster approach. Consequently, the Joint Environment Unit worked closely with UNEP PCDMB to develop guidance material for disaster managers and humanitarian workers to avoid environmental impacts related to disasters and conflicts. The brochure “Humanitarian Action and the Environment” addresses the following issues and questions:

- (1) Why do the environmental impacts of emergencies matter?;
- (2) How is the environment impacted by emergencies?;
- and
- (3) What are the links between environment and humanitarian action?

Furthermore, relevant available standards, guidance and tools, as well as further sources for information, are indicated.



Brochure available at  
[www.humanitarianreform.org](http://www.humanitarianreform.org)

The Joint Environment Unit and UNEP PCDMB developed and finalized Standard Operating Procedures to better define the roles and responsibilities concerning the deployment of environmental experts during environmental emergencies, as well as to ensure a smooth transition and hand-over from the emergency phase to the (early) recovery phase. Furthermore, the Joint Environment Unit has cooperated closely with UNEP regarding the Medium Term Strategy which was adopted by a ministerial meeting in February 2008. Based on its expertise in environmental emergency response, the Joint Environment Unit has provided substantial inputs to the document covering the Medium Term Strategy priority “Conflicts and Disaster”.

## **Chapter 3: The Rosersberg Initiative**

### **Improving the international environmental emergency response system**

In June 2007, the participants of the 7<sup>th</sup> meeting of the AGEE<sup>4</sup>, following a review of research and strategy documents, agreed that the existing system for environmental emergency response and preparedness was *ad hoc* in key areas and needed improvement. It was decided to address this through a new international undertaking that has become known as the Rosersberg Initiative.

The overall objective of the Rosersberg Initiative is to strengthen the international system for environmental emergency response. While the existing system contains many elements of effective emergency relief, it lacks a homogenous and structured set-up, with gaps existing in areas of environmental emergency response and response preparedness, including the lack of an international notification system. As the growing number of natural and man-made disasters require a coordinated and effective response from the international community, both at national and global levels, the Rosersberg Initiative aims to make priority recommendations and enable its members to implement them in a participatory manner.

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<sup>4</sup> The AGEE is a forum that brings together environmental experts from around the world to share information, expertise and lessons learned for improved response to environmental emergencies. The Joint Environment Unit serves as the secretariat to the AGEE.

To achieve these objectives, the Rosersberg Initiative Working Group was created, and Sweden agreed to sponsor the first meeting of the working group which took place in Tunis, Tunisia from 3 to 5 December 2007. At this meeting, the representatives from 15 countries and international organizations, including the European Commission, agreed on actions to be undertaken in each of the three thematic areas of the Rosersberg Initiative.

- Thematic Area 1 – “Awareness raising, engagement, training and capacity-building” – aims to increase the awareness of stakeholders and encourage their engagement in environmental emergency preparedness and response through increased communication and advocacy activities.
- Thematic Area 2 – “Improving the international legal system in environmental emergencies” – aims to commission a baseline study of the existing international systems that govern environmental emergencies by a well-known environmental law expert.
- Thematic Area 3 – “Improving national structures and mechanisms” – aims to help countries to improve their operational structures and mechanisms to ensure a better, more coordinated and more effective response in case of disasters.

Activities carried out by the Joint Environment Unit under each thematic area are outlined in the following subsections.

THEMATIC AREA 1  
**AWARENESS RAISING, ENGAGEMENT AND  
CAPACITY-BUILDING**

**Green Star Awards**

As part of the Rosersberg Initiative, the AGEE recommended that a special recognition scheme be established and requested that Green Cross International (GCI), OCHA and UNEP jointly develop a suitable award/honour. The concept of the Green Star Awards was endorsed by participants in a follow-up meeting held in Tunis, in December 2007.



In line with the objectives of Thematic Area 1 of the Rosersberg Initiative, the Green Star Awards is a peer recognition forum to increase awareness of environmental emergencies by drawing attention to efforts made to prevent, prepare for and respond to such disasters. This awards scheme is intended to help raise the profile of environmental emergencies, and to underline the connection between environmental impacts of natural disasters, technological accidents and complex emergencies, and their consequences for affected populations and providers of humanitarian assistance. Additionally, international participation in preventing, preparing for and responding to environmental emergencies would be increased.



There are five categories of nominees/awardees: Individuals, Organizations, Donor Governments, Aid-Recipient Governments, and Corporations. Selection criteria comprise e.g. dedication to respond to environmental emergencies in a professional, collaborative and transparent manner; major improvements in internal capacity and preparedness to deal with environmental emergencies; efforts to support international response missions to countries affected by environmental emergencies; and international capacity-building missions aimed at helping countries prepare for environmental emergencies.

The Green Star Awards were launched on 17 November 2008, and the awards will be presented on the occasion of the meeting of the international AGEE.

### **Geographical distribution of donor network**

From 2007 to 2009, the Joint Environment Unit has continued its excellent collaboration with donors in Europe and North America who are often called upon to provide the expertise and equipment needed to respond to environmental emergencies around the world.

Despite these positive developments, there is still a need for stronger collaboration with nations in other regions of the world. The capacity to deploy resources from all regions of the world is essential not only for effectiveness but also in case of emergencies occurring during a period of travel restrictions (for example, in the event of a pandemic). Language and diversity issues are also relevant in this context. The Joint Environment Unit has initiated a discussion on how to go beyond “traditional” donors and seek support in particular in Asia and the Pacific, as well as in Latin America and the Caribbean. In this context, the Joint Environment Unit has already pro-actively approached a number of countries. Discussions on specific ways of collaborations are ongoing.

### Hazard Identification Tool (HIT)

Natural disasters often have secondary impacts, including damage to infrastructure and industrial installations. These so-called environmental emergencies may pose a threat to the health, security and welfare of the affected population



*A volcano eruption led to the explosion of a petrol station killing fifty people (Goma, Democratic Republic of Congo, 2002)*

and the emergency responders. Too often, these risks are neglected, resulting in preventable deaths and injuries. It is therefore essential that information on the location of the hazardous facilities and the potential impacts is made available to relevant authorities and emergency responders at a very early stage of the disaster response or even prior to the onset of a disaster.

In recognition of the above outlined need, the AGEE 7 supported the Joint Environment Unit's efforts to develop a tool for desk research based identification of potential acute life-threatening environmental hazards. Consequently, the Joint Environment Unit fully adapted the tool to the science-based FEAT methodology and subsequently finalized the Hazard Identification Tool (HIT).<sup>5</sup>

<sup>5</sup> The HIT was previously named Profile of Potential Environmental Risks (PPER).

The HIT is usually applied to a region affected by a major natural disaster upon receiving the UNDAC stand-by alert message. The HIT provides a list with potential secondary risks in the affected area, such as large infrastructure, nuclear facilities, hazardous waste storage sites and industrial facilities. The HIT lists the hazards these facilities may contain, including ammonia, chlorine, cleaning agents, cyanide, oil, solvents, and pesticides. This technical information is then translated into “humanitarian language” by indicating estimated potential impacts: (1) direct impact on humans; (2) direct impact on the natural environment or (3) longer-term impacts on humans and the environment. Efforts are made to locate the sites as precisely as possible. The primary audience is the UNDAC team. The HIT is also shared with relevant partners at headquarters, regional and/or country level.

As part of the Rosersberg Initiative, the 7<sup>th</sup> meeting of the AGEE also recommended to explore the development of the HIT as a response preparedness tool, i.e. the mapping of potential secondary risks of natural disasters before a disaster strikes. Following this request, the Joint Environment Unit supported an initiative by Kenyan authorities and the Swedish Rescue Services Agency to “field test” the HIT in Kenya. A pilot mission took place in December 2008 with the objective to validate the tool and explore its potential for being used in preparedness for natural disasters. Additionally, the HIT has been shared with the OCHA Regional Office for Latin America and the Caribbean to support response and preparedness activities in the region.

### Flash Environmental Assessment Tool (FEAT)

As described in the previous section on the HIT, natural disasters such as earthquakes, floods and hurricanes can damage infrastructure and result in secondary environmental impacts such as immediate or potential releases of hazardous materials. These can pose acute risks to human life and health, and adversely affect surrounding environments that are vital for livelihoods. Natural disasters may also trigger physical impacts such as salt water intrusion, mudslides, slope instability and flooding.



Disaster response teams are faced with the difficult task of not only dealing with the disaster at hand, but also identifying and responding appropriately to these potential environmental impacts. However, thousands of toxic chemicals could be involved in any given disaster, each with its own toxicity profile, and with a multitude of exposure pathways (e.g. air, water and soil) and receptors (e.g. humans, livestock, and fishing grounds). In such complex situations, it can be easy to overlook or misjudge important risks. At the same time, given the often overwhelming demands of disaster situations, complex and full-fledged environmental assessments would be impractical. Therefore, an accurate yet simple tool is required to assist first responders, such as UNDAC teams.

With these challenges in mind, the Joint Environment Unit, in close collaboration with the Dutch Government, developed the FEAT. A prototype of the tool was reviewed by experts and field tested in the response to the Great Lakes earthquake and the floods in Ecuador in February and March 2008 (see Chapter 1). Following several rounds of revision and refinement, the FEAT was finalized by the Joint Environment Unit and its partners.

In summary, the FEAT is a “first aid” tool to identify environmental impacts, and support initial response actions in disaster contexts. It is a carefully balanced compromise between simplicity and scientific rigor, with emphasis on usefulness to response mechanisms such as UNDAC teams. It provides quick answers in complex disaster situations, even in the absence of specialized technical resources or expertise. It does not take the place of in-depth environmental assessments, which may be appropriate at later stages of the disaster response. Findings from use of the FEAT should be communicated quickly to appropriate organizations so that appropriate actions can be taken, as described in the FEAT User Guide, available on the Joint Environment Unit’s website.

The final version of the FEAT was presented during the pilot Environmental Emergencies Training in August 2008, and other trainings of experts and emergency responders, including a dedicated training of UNDAC environmental experts, have taken place. To facilitate broad dissemination and use, the FEAT has been translated into French and Spanish.

### Environmental Assessment Module (EAM)

In March 2007, the International Humanitarian Partnership launched the development of an environmental assessment module. Following recommendations by the AGEE, the Netherlands' Ministry of Housing, Spatial Planning and the Environment and the Ministry of Foreign Affairs, in a joint initiative, developed the Environmental Assessment Module (EAM). The module was officially inaugurated at the occasion of the pilot Environmental Emergencies Training in The Hague in August 2008.



*EAM staff taking a soil sample (Photo: Ministerie van VROM)*

The EAM is an innovative mobile laboratory to support international response to environmental emergencies, in particular to assess effects of environmental disasters. It can be rapidly deployed for disasters involving hazardous substances, together with the relevant technical expertise and two fully-equipped off-road vehicles: one containing a

mobile measurement and analysis unit, the other containing materials for logistical support, such as satellite and global positioning system equipment.

The EAM will mainly be deployed in countries that lack the specialist knowledge or capacity needed to deal with environmental disasters. For this purpose, the entire EAM can be transported in a cargo aircraft. However, being a modular unit, equipment relevant to a given emergency can be selected and deployed individually. When deployed, the EAM will be supported by a knowledge network of research institutions and Ministries in the Netherlands to ensure affected countries receive the best available support.

Several actors can request the Netherlands to deploy the EAM, including the UN or other international organizations and affected countries themselves. A primary client of the EAM is the Joint Environment Unit. The first “deployment” of the EAM took place during the biannual Triplex disaster simulation, held in Sweden and Norway in mid-September 2008.

## Trainings

In coherence with the objective of the Rosersberg Initiative to strengthen the international system for environmental emergency response, the Joint Environment Unit has stepped up its training and awareness raising activities.

The following subsections give an overview of these activities, including the Environmental Emergencies Training as well as the integration of training modules on the FEAT into existing training initiatives, such as the UNDAC trainings and the course offered by the Partnership for Peace of the North Atlantic Treaty Organization (NATO).

### Environmental Emergencies Training

Together with Crisis Management Netherlands and the Swedish Rescue Services Agency, the Joint Environment Unit developed a training course on environmental emergency response. After a series of consultations among all partners involved, the pilot Environmental Emergencies Training took place in The Hague, the Netherlands from 18 to 22 August 2008.

At this first training, staff of the EAM and UNDAC associated experts of Sweden and Denmark were trained. To ensure that participants of the training would be mission ready, the comprehensive curriculum of the training covered a wide range of issues such as the UN response system to natural disasters, environmental emergencies, personal mission preparedness, information management,

stress management and cultural awareness.



*Participants and trainers in the pilot Environmental Emergencies Training held from 18 to 22 August in The Hague.*

The 35 course participants expressed great satisfaction with the training, and provided valuable feedback. Based on this, the curriculum and methodology were reviewed by the Steering Committee in order to determine the most appropriate means of rolling out a generic environmental emergencies training. In this context, it should be mentioned that the training has as its primary target audience environmental experts that can be deployed for multilateral emergency response missions through the mechanisms of their home countries. Donor countries are invited to approach the Joint Environment Unit for more information on how to organize the Environmental Emergencies Training in their country.

### **UNDAC training courses and environmental emergencies**

Training of and awareness raising among UNDAC members on environmental emergencies remains an essential task of the Joint Environment Unit. Over the past two years, training modules on the FEAT have been integrated into UNDAC training courses. The Joint Environment Unit has facilitated training in environmental emergencies as part of the various UNDAC induction, refresher and consolidation courses in all three UNDAC regions. These included courses held in Denmark (November 2007), Switzerland (April and October 2008), Panama (May 2008), Singapore (July 2008), France (September 2008), Australia (October 2008), as well as the UNDAC team leaders training held in Germany (July 2008).

### **FEAT training for UNDAC environmental experts**

In addition to the integration of “FEAT modules” into existing trainings, the Joint Environment Unit hosted a two-day FEAT training for UNDAC environmental experts in Geneva in November 2008. As an important step towards embedding the assessment methodology in the UNDAC system, UNDAC-trained environmental experts from UNEP offices in Brussels, Geneva, Panama, and Paris, as well as national UNDAC members from Brazil, Denmark, the Netherlands and Saudi Arabia were fully trained in the use of the FEAT. The training also provided a unique opportunity to bring many collaborators together to share lessons learned from past deployments, and to discuss fu-

ture strategies for improving environmental emergency response.

### **FEAT “Training of Trainers”**

With a view to ensuring that additional environmental experts can provide training on the use of the tool, thereby contributing to the further dissemination and widespread use of the tool, the Joint Environment Unit facilitated several 'training of trainers' sessions in addition to FEAT users' trainings.

### **NATO/Partnership for Peace – International Course in Environmental Disaster Operations**

The Joint Environment Unit continued to support the NATO/Partnership for Peace<sup>6</sup> – International Course in Environmental Disaster Operations, which is organized on a yearly basis by the Swedish Rescue Services Agency. The course attracts around thirty participants each year. Over the past two years, the Joint Environment Unit facilitated various sessions at the trainings that took place in Sweden in June 2007 and Croatia in May 2008. At the latter occasion, the FEAT was presented.

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<sup>6</sup> The Partnership for Peace is a programme of practical bilateral cooperation between individual partner countries and NATO. It allows partner countries to build up a relationship with NATO, choosing their own priorities for cooperation.

## Triplex

The Joint Environment Unit supported the International Humanitarian Partnership by implementing the Triplex disaster simulation exercise held in Norway and Sweden in September 2008. A major component of Triplex 2008 focused on international cooperation and coordination in the response to environmental emergencies, as part of a large scale natural disaster. The Triplex scenario was developed providing different types of responses based on over 15 years of experience in international environmental emergencies response.

Among the participants were several Swedish associate experts and EAM support staff that had participated in the pilot Environmental Emergencies Training in The Hague in August 2008. Drawing on the knowledge gained in this training, Triplex 2008 gave the opportunity to field-test the cooperation of key resources, including (1) assessment and identification of potential environmental risks, carried out by UNDAC associate environmental experts from the Swedish Rescue Services Agency using the FEAT; (2) on-site analysis and sampling by using the EAM; and (3) chemical decontamination by using the Decontamination Module of the Danish Emergency Management Agency.

Lessons observed at this exercise are contributing to improvements of the coordination structure among the different elements, as well as building a more robust international response system to environmental emergencies.

## THEMATIC AREA 2

### **IMPROVING THE INTERNATIONAL LEGAL SYSTEM IN ENVIRONMENTAL EMERGENCIES**

Following the recommendations made at the 7<sup>th</sup> meeting of the AGEE, the Joint Environment Unit engaged a consultant to undertake an analysis of existing governance systems in the field of environmental emergency response, to identify gaps and overlaps and to make recommendations for improvement of the international environmental emergencies response system. A draft of the report was submitted to the Rosersberg Initiative Working Group prior to its meeting in Tunis in December 2007, and, following endorsement by the working group, the study was finalized as “*Strengthening International Governance Systems to Respond to Environmental Emergencies: A Baseline Review of Instruments, Institutions, and Practice*”; also referred to as the *Bruch Report*. The following gives an overview of the findings of the report.

In recent years, States and international organizations have established a growing number of agreements, institutions, and guidelines. The *Bruch Report* examines the experiences of numerous regional and international approaches, including lessons learned from 20 frameworks in addition to 15 agreements governing international watercourses. These instruments have been adopted to address specific needs at the international and regional levels. However, there is no overarching framework within which the different institutions and agreements operate. In particular, the following gaps were identified:

- Lack of awareness regarding existing instruments and requirements;
- Lack of a commonly agreed definition of “environmental emergency”;
- Lack of guidance/frameworks on specific environmental emergencies, including:
  - Environmental concerns in the context of complex emergencies;
  - Emergencies arising from land-based sources of marine pollution;
  - Accidents that are severe, but not necessarily transboundary;
- Lack of a comprehensive international system regarding procedures for notification, as well as for requesting, offering, and providing international assistance in response to environmental emergencies;
- Lack of specific regulations to facilitate the entry, stay, and exit/re-export of experts, equipment, and materials, as well as bringing samples into a country or transporting them through a transit state;
- Limited formal mandate providing for the role and responsibilities of the United Nations in mobilizing and coordinating international assistance;
- Few governance frameworks effectively address coordination among organizations.

The above named gaps cause uncertainties regarding obligations and procedures, and the lack of an overarching governance system limits effective operationalization during environmental emergencies.

Consequently, the *Bruch Report* makes several recommendations on how to improve the international system governing the response to environmental emergencies. These recommendations are summarized below and serve as a basis for the way forward regarding many issues included in the Rosersberg Initiative.

<p><b><u>Operational Measures</u></b></p> <ul style="list-style-type: none"> <li>• Develop and implement a Joint Management Plan for Environmental Emergencies</li> <li>• Develop guidance for responding to environmental emergencies</li> <li>• Develop and implement a certification system for responding to environmental emergencies</li> </ul>	<p><b>Address Unresolved Issues</b></p>
<p><b><u>Capacity-building and Awareness Raising Measures</u></b></p> <ul style="list-style-type: none"> <li>• Strengthen regional systems for responding to environmental emergencies</li> <li>• Conduct training and raise awareness</li> <li>• Institutionalize technical assistance and capacity-building</li> </ul>	
<p><b><u>Legal and Policy Measures</u></b></p> <ul style="list-style-type: none"> <li>• Secure a political mandate for improving international environmental emergency governance systems</li> <li>• Develop a new international legal instrument governing notification and response to environmental emergencies</li> </ul>	



THEMATIC AREA 3  
**IMPROVING NATIONAL STRUCTURES  
AND MECHANISMS**

Thematic Area 3 of the Rosersberg Initiative aims to help countries to improve their operational structures and mechanisms to ensure a better, more coordinated and more effective response in case of disasters. To achieve this, a global study of best practices for the provision and receipt of international assistance at the national level, both in donor and recipient countries, has been commissioned to a consultant, with the goal to develop best practice guidance material for the use of national authorities, and guidance material on the establishment and maintenance of a National Focal Point system.

In carrying out these tasks, the consultant conducted a thorough global analysis of existing mechanisms, instruments and best practice regarding alerts, and the offer/provision, and request/receipt of international emergency assistance. This included a review of lessons learned from previous disasters where assistance was offered and received, as well as the identification and analysis of existing mechanisms at national level for the facilitation of international assistance activities. Furthermore, research into best practice regarding the establishment of National Focal Points was undertaken.

On the basis of the results of the research, best practice guidelines on the provision and receipt of assistance specifically for environmental emergencies have been pre-

pared. This includes a comprehensive set of recommendations for tools and instruments for the facilitation of good practice of providing and receiving assistance at the national level, as well as guidance material and terms of reference for the nomination of National Focal Points on environmental emergencies. This guidance material also sets out ways and means for the maintenance of a global system of National Focal Points.

## Conclusion

In summary, the Joint Environment Unit has implemented its activities during the period from 2007 to 2009 in accordance with recommendations of the seventh meeting of the AGEE. This has included carrying out its primary function as the core mechanism of the UN for the mobilization and coordination of international assistance for environmental emergencies, and the implementation of the Environmental Emergencies Partnership and of the Rosersberg Initiative.

Major achievements of the Joint Environment Unit's work include the emergency response to the Peru earthquake in August 2007, the Hebei oil spill off the coast of the Republic of Korea in December 2007, the ammunition depot explosion in Albania in March 2008, the capsized ferry following the cyclone in the Philippines in July 2008, and the geohazard assessment in Honduras in November 2008.

Progress was made in the implementation of the Environmental Emergencies Partnership, in particular regarding response preparedness activities.

In the framework of the Rosersberg Initiative, the Joint Environment Unit has been able to consolidate tools for the identification of environmental impacts of disasters, namely the HIT and the FEAT, and has increased the stand-by capacity for international environmental

emergency response both in terms of additional national experts trained for international deployments and the Environmental Assessment Module for on-site sampling and analysis.

While significant achievements have been made in the areas of global governance and operational aspects, challenges remain regarding the improvement of the international system for the response to environmental emergencies.

## List of abbreviations

<b>AGEE</b>	Advisory Group on Environmental Emergencies
<b>CENACID</b>	Center for Scientific Support in Disaster Situations, University of Paraná, Brazil
<b>EAM</b>	Environmental Assessment Module
<b>EC</b>	European Commission
<b>EC-MIC</b>	Monitoring and Information Centre of the European Commission
<b>FEAT</b>	Flash Environmental Assessment Tool
<b>FYR Macedonia</b>	Former Yugoslav Republic of Macedonia
<b>HIT</b>	Hazard Identification Tool
<b>Joint Environment Unit</b>	Joint UNEP/OCHA Environment Unit
<b>NATO</b>	North Atlantic Treaty Organization
<b>UN</b>	United Nations
<b>UNDAC</b>	United Nations Disaster Assessment and Coordination
<b>UNDP</b>	United Nations Development Programme
<b>UNEP</b>	United Nations Environment Programme
<b>UNEP PCDMB</b>	Post-Conflict and Disaster Management Branch of the United Nations Environment Programme