



# UNEP in Haiti

## 2010 Year in Review

United Nations Environment Programme

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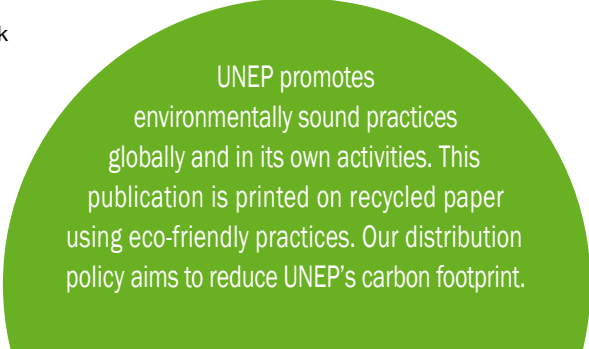
United Nations Environment Programme  
P.O. Box 30552, Nairobi, KENYA  
Tel: +254 (0)20 762 1234  
Fax: +254 (0)20 762 3927  
E-mail: [uneppub@unep.org](mailto:uneppub@unep.org)  
Web: <http://www.unep.org>

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Cover Image: © UNEP, The January 2010 earthquake was a significant setback  
to efforts to reverse years of environmental degradation in Haiti

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# UNEP in Haiti

## 2010 Year in Review

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## Acronyms and abbreviations

|          |                                                                     |
|----------|---------------------------------------------------------------------|
| BME      | Bureau des Mines et de l'Energie (Haiti)                            |
| CIRH     | Commission for the Reconstruction of Haiti                          |
| CSI      | Côte Sud Initiative                                                 |
| DINEPA   | Direction Nationale de l'Eau Potable et de l'Assainissement         |
| FoProBiM | La Fondation pour la Protection de la Biodiversité Marine           |
| GDP      | Gross domestic product                                              |
| GEF      | Global Environment Facility                                         |
| GEO      | Global Environment Outlook                                          |
| HRI      | Haiti Regeneration Initiative                                       |
| IASC     | UN Inter-Agency Standing Committee                                  |
| IRHC     | Interim Haiti Recovery Commission                                   |
| MERHAITI | Marine Environment Regeneration in Haiti                            |
| MINUSTAH | UN Mission for Stabilization in Haiti                               |
| MTPTC    | Ministère des Travaux Publics, Transports et Communications (Haiti) |
| NORAD    | Norwegian Agency for Development Cooperation                        |
| NRM      | Natural Resource Management                                         |
| PARC     | Plan for National Recovery and Development                          |
| PDNA     | Post-Disaster Needs Assessment                                      |
| REA      | Rapid Environmental Assessment                                      |
| SMCRS    | Metropolitan Service for the Collection of Solid Waste              |
| TAF      | Technical Assistance Facility                                       |
| UGSE     | Energy Sector Management Unit                                       |
| UN       | United Nations                                                      |
| UNCT     | United Nations Country Team                                         |
| UNDAF    | United Nations Development Assistance Framework                     |
| UNDP     | United Nations Development Programme                                |
| UNEP     | United Nations Environment Programme                                |
| UNICEF   | United Nations Children's Fund                                      |
| UNOPS    | United Nations Office for Project Services                          |
| USAID    | United States Agency for International Development                  |
| WFP      | World Food Programme                                                |
| WHO      | World Health Organization                                           |

## A challenging year

The massive earthquake that hit Haiti on 12 January 2010 left in its wake a plethora of environmental problems to compound the devastation and human misery inflicted on the country's citizens. As the year ended, most of these problems remained unsolved.

*UNEP in Haiti: 2010 Year in Review* tells the story of a challenging 12 months for the United Nations Environment Programme (UNEP) in Haiti. This is just part of the much wider picture of Haiti, an already fragile nation crippled by natural disaster and disease in 2010 – surely one of the most devastating periods for a single country and its people in recent years.

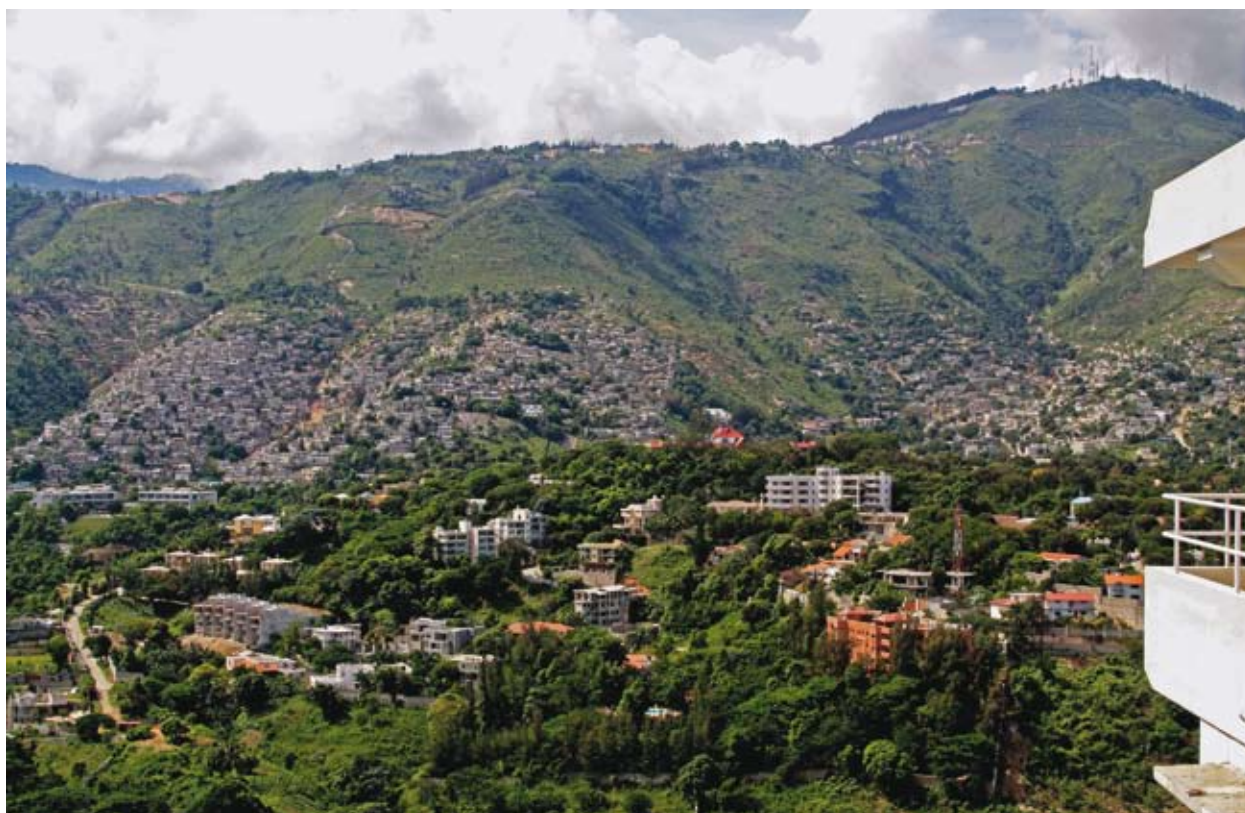
This publication provides a snapshot of the acute and chronic environmental issues facing the country and UNEP's efforts to help resolve them. It gives an insight into the types of activities and challenges that UNEP and its partners have to deal with in such a post-disaster setting, and sets out lessons learned so that UNEP itself – and other environmental organizations – can better understand and prepare to assist in the event of future major crises.

## A troubled nation

As 2010 began, the tiny Caribbean nation of Haiti was already suffering as the poorest, most environmentally degraded and politically unstable country in the Western Hemisphere.

Haiti covers a surface area of 27,750 km<sup>2</sup> in the western part of the island of Hispaniola, with the Dominican Republic (48,730 km<sup>2</sup>) occupying the eastern part. It is a small and crowded Least Developed Country with a population of approximately 9.8 million and a density of 350 inhabitants per km<sup>2</sup>. It is highly mountainous with an overall tropical climate and a wide variation in rainfall by regions, resulting in a number of microclimates and different eco-regions. The main environmental problems are deforestation, soil erosion, freshwater pollution and coastal and marine degradation.

Haiti has an estimated per capita annual income of around US\$650 and 54 per cent of the population exists in extreme poverty (less than \$1/day) and 78



Urban setting in Jalousie, Port-au-Prince, Haiti



Prior to the earthquake, Haiti's environment was already severely degraded

per cent in poverty (less than \$2/day), while a small minority (less than 1 per cent) is relatively rich and controls much of the fertile land. Approximately 65 per cent of the population is directly dependent upon agriculture and 62 per cent suffers from food insecurity, with more than half of the national food supply being imported.

Haiti has been plagued by political turmoil since the 1990s. In 2004, the United Nations intervened with the creation of the UN Mission for Stabilization in Haiti (MINUSTAH), which has succeeded in creating a more secure – although still fragile – environment in the country.

In August 2008, four tropical storms or hurricanes hit Haiti, causing human losses and massive infrastructure and livelihood destruction. In October 2008, the United Nations (including UNEP), the World Bank, the Government of Haiti and other partners

undertook a Post-Disaster Needs Assessment (PDNA) and associated disaster recovery appeal. Recovery funds received were in the order of US\$200 million or more, to be spent within two years.

A substantive United Nations country team programme was already in place in January 2010, with the bulk of expenditure going on disaster relief, tackling chronic food shortages and the provision of basic services including water supply, sanitation and emergency health care.

On the development side, a United Nations Development Assistance Framework (UNDAF) document, signed between the Haitian Government and the UN System in December 2008, established the cooperation framework for 2009-2011. Much of the planned development work had already been delayed or changed due to the 2008 hurricane disaster.



Rural landscape in Jacmel illustrates the high level of deforestation and soil erosion in Haiti

Table 1. Haiti – key environmental statistics as at December 2010

|                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Forestry</b>                                                                                                                                                                                                                 |
| Percentage of remaining original forest cover: less than 1%                                                                                                                                                                     |
| Current total forest cover (all types): 1.5-2.6%                                                                                                                                                                                |
| Ongoing deforestation rate: not quantified but significant                                                                                                                                                                      |
| Percentage of cooking energy derived from woodfuel and charcoal: 70%                                                                                                                                                            |
| <b>Biodiversity and protected areas</b>                                                                                                                                                                                         |
| Percentage of areas under effective protected area management: 0-0.35%                                                                                                                                                          |
| A single site in the Massif La Hotte contains the entire known population of 13 critically endangered and endangered species, more than any other site in the world                                                             |
| Of Haiti's 50 frog species, 46 are threatened                                                                                                                                                                                   |
| <b>Soil and erosion</b>                                                                                                                                                                                                         |
| 63% of the land surface has a slope of over 20%, yet 58% is subject to some form of agriculture                                                                                                                                 |
| Of the country's 30 major river basins, 25 are severely eroded                                                                                                                                                                  |
| Annual soil losses are calculated at 36.6 million tons                                                                                                                                                                          |
| 6% of the land area is impacted by irreversible erosion (zero soil left remaining)                                                                                                                                              |
| <b>Freshwater pollution</b>                                                                                                                                                                                                     |
| 50% of rural and 33% of urban populations are without an improved water source                                                                                                                                                  |
| 84% of rural and 62% of urban populations are without improved sanitation facilities                                                                                                                                            |
| <b>Coastal and marine environments</b>                                                                                                                                                                                          |
| Haiti has 1,535 km of coastline and an island shelf which extends over some 5,000 km <sup>2</sup>                                                                                                                               |
| Mangroves, sea-grass beds and coral reefs are locally highly degraded and under continued significant pressure from overexploitation of resources, land-based pollution and sedimentation, habitat encroachment and destruction |

## UNEP in Haiti

UNEP has been working with the Government of Haiti for many years and established a base in Port-au-Prince in 2008. In October 2008, UNEP participated in the hurricane Post-Disaster Needs Assessment and mobilized a small resident team. The UNEP country-based programme in Haiti started operation as a coherent unit in the first quarter of 2009. At the heart of the programme are the rehabilitation of badly degraded ecosystems and promotion of sustainable development.

In 2009, the focus was on scoping and development of the country programme. Early research

indicated that a standard short to medium-term project approach was not likely to succeed in Haiti, so further investments were made in developing an alternative model based on a new national-scale, long-term initiative. Arising from this, as of 1 January 2010 the Haiti Regeneration Initiative (HRI) was undergoing detailed consultation prior to launch.

UNEP had, and still has, a small team in Haiti. As the country programme is project-financed, staff, consultant and visitor numbers vary on a month-to-month basis. On 1 January 2010, a team of one resident international member and two to four visiting international members was supplemented by six Haitian nationals.



The UNEP team at the United Nations Stabilization Mission in Haiti (MINUSTAH) logistics base, October 2010

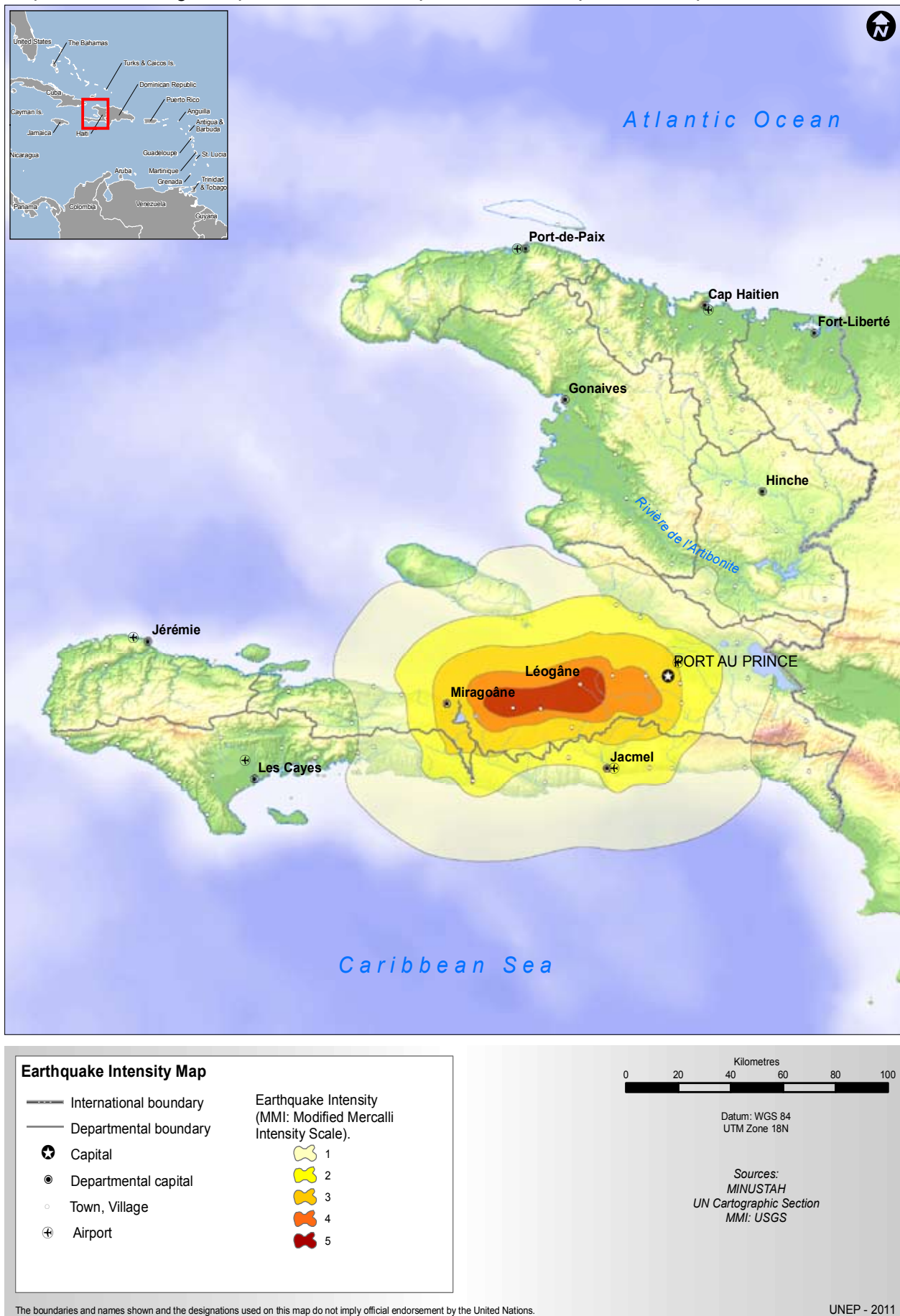


A 300-metre queue waiting for food distribution in front of the collapsed Presidential Palace

Prior to the January 2010 earthquake, UNEP had a dedicated office in the Port-au-Prince suburb of Pétionville. The office was relocated following the earthquake and will be moved again to a more permanent site later in 2011.

UNEP operates in Haiti through partnerships, so the true scale and impact of its presence can only be gauged by assessing the efforts of its many partner organizations (these are listed on pages 35-36).

Map of Haiti showing the epicentre and intensity of the 12 January 2010 earthquake



# The 12 January earthquake

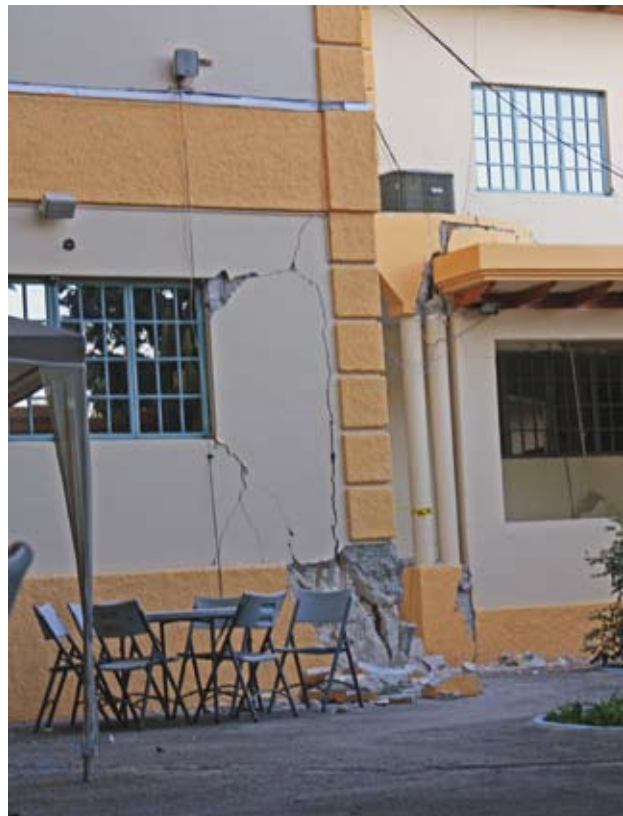
At 4.53 p.m. local time on 12 January 2010, a powerful 7.0 magnitude earthquake hit Haiti. Its epicentre was the crowded city of Léogâne, 56 km south-west of the capital, Port-au-Prince. It was the worst tremor in Haiti in more than 200 years and among the strongest ever to strike the Caribbean. Of the aftershocks which continued for weeks afterwards, a staggering 16 aftershocks registered 5.0 or higher on the Richter Scale.

The earthquake devastated Port-au-Prince, Léogâne and other cities mainly in the south, including Miragoane and Jacmel. Homes, offices and commercial centres were decimated. The Presidential Palace, Parliament, the Supreme Court and most public administration buildings sustained serious damage. An estimated 105,000 houses were reduced to rubble and more than 188,300 others were damaged in the Port-au-Prince area and in much of southern Haiti. Many hospitals, schools, courthouses, police stations and prisons were also destroyed, while rural areas suffered extensive crop losses. Sediment and rubble flowing into coastal

areas closed ports and had a catastrophic impact on fisheries.

More than 222,000 people perished and over 300,000 were injured. In total, 2.3 million Haitians were displaced and almost 1.5 million people were housed in temporary shelters. Haiti's capacity to cope was seriously affected by the death of many key officials and the crippling of government infrastructure. Also among the deceased were 102 UN workers, the single greatest loss of life in the history of the United Nations.

UNEP's personnel were lucky in terms of the direct effects of the earthquake. The entire team along with several visitors were working indoors at the time, but all escaped without serious injury. The office was effectively destroyed but remained standing, allowing for later salvage of most equipment. All Haitian staff members had relatives injured during the earthquake and suffered either major damage to or loss of their homes. For weeks after the earthquake, all staff slept in cars, under tarpaulins and in portable buildings where available.



The January 2010 earthquake destroyed UNEP's office in Port-au-Prince, Haiti



*"The 12 January earthquake posed a significant setback to the efforts Haiti has been making to reverse years of environmental degradation in order to overcome poverty and chart a more sustainable future. The tragedy also starkly underlined the vulnerability of people, the environment and the economy which can intensify when the resilience of ecosystems such as forests and freshwaters is weak."*

*UNEP's goal is to reinforce the capacity and assist the people of Haiti to rebuild communities in ways that reduce that*

*vulnerability to future shocks. In partnership with the Haitian Government and communities, UN agencies and other partners, we are intensifying efforts to restore landscapes and seascapes as part of a wider transition to a low-carbon, resource-efficient, job-generating Green Economy."*

Achim Steiner  
United Nations Under-Secretary-General  
Executive Director of the United Nations Environment Programme

*"The year 2010 will be remembered as one of the most challenging in Haiti's history. We bore the catastrophic impacts of a major natural disaster. This dark period has reinforced the extent to which environmental threats jeopardize this country's recovery and development."*

*We need to do things differently, with a more strategic and structured approach, to increase the resilience of our environment and our people so that we avoid a recurrence of the vulnerability that has plagued Haiti."*

*In this regard we welcome the partnership with UNEP and we have enormous expectations with the further development of initiatives related to transboundary environmental issues, the marine environment, environmental governance, among others. With this commitment, we can look to the future with renewed optimism."*



Jean Marie Claude Germain  
Minister, Ministry of Environment  
Port-au-Prince, Haiti



During the emergency phase, shelter and sanitation were among the key environmental challenges

## Emergency response period

There is no precise definition of the emergency period resulting from the earthquake. Chaos on 12 January was gradually replaced by order, and activities shifted from emergency search and rescue and medical treatment to more established relief activities. The acute emergency period was considered to be 12-30 January.

The United Nations and its partners were already mobilizing international emergency assistance on the night of 12 January, and nationally based staff commenced emergency responses with a focus on search and rescue of people trapped in collapsed buildings and provision of emergency medical treatment. UNEP joined this effort as part of the UN country team.

On 13 January, together with all other agencies, the UNEP team evacuated the UN country team complex in Pétionville and moved to the MINUSTAH logistics base at Port-au-Prince airport. Here the team started to plan and play its role in the emergency. International visitors were evacuated to the USA, while

all international staff stayed on station and national team members gradually remobilized, at the same time dealing with urgent family needs. A further senior UNEP expert was deployed from Geneva, Switzerland, during the second half of January.

UNEP's principal activities during the period 13 January to the end of February can be divided into general remobilization and two concerted actions in support of the overall UN response: building inspections and seismic risk assessments, and Rapid Environmental Assessments (REA). Each of these activities is described separately in case studies in this report.

Finding adequate clean water, food, shelter and sanitation were real problems in the first weeks for many, including UN personnel, among them the UNEP team. Gratitude is due to the staff of MINUSTAH, who hosted large numbers of additional people at their logistics base and provided all possible forms of assistance.

Remobilization of UNEP's full capacity in Haiti took approximately three weeks, although the team was already partly functional by 15 January.

## 2010 calendar of events

2010 will always be remembered in Haiti for the earthquake. However, there were also other major threats to life and livelihoods. In October, the first cases of cholera were found around the upper reaches of the Artibonite River. Aided by unprotected water sources and poor hygiene, the epidemic spread quickly, leaving more than 4,000 people dead and 150,000 sick by the end of the year.

Then, on 5 November, towards the end of the hurricane season, Hurricane Tomas swept across

west Haiti, bringing torrential rain and winds reaching 130 km/h. It devastated parts of the country and led to mass evacuations. More than 12,200 people found refuge in temporary shelters. Contingency planning by the Haitian Government, in partnership with the United Nations and the humanitarian community, helped mitigate the hurricane's impacts.

In a different category, but also presenting its own challenges, elections were held during the year. These events are summarized in the following table.

Table 2. Summary of events in Haiti, 2010

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>12 January</b> – 4.53 p.m. – Richter magnitude 7.0 earthquake, duration 35 seconds, with epicentre near Léogâne. Over 100,000 killed outright and 200,000+ injured. Most ministries and UN offices damaged, many destroyed. Ad hoc search and rescue and first-aid efforts throughout the night.                                                                                                                                                                                                     |
| <b>15 January</b> – First Haiti Flash Appeal released (revised in February, July and December).                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>13 January</b> – Nearly all UN agencies evacuate offices to MINUSTAH logistics base at the Port-au-Prince Airport; the base becomes the new UN HQ and nerve centre of the recovery response. First search and rescue crews arrive by air. Building inspections commence to permit re-occupation where possible.                                                                                                                                                                                      |
| <b>14-30 January</b> – Focus on search and rescue, emergency medical treatment and water supply. Many more deaths from injuries sustained on 12 January. Frequent strong aftershocks and the entire population sleeping outside. Substantial evacuation of international staff and enormous and chaotic inflow of aid from hundreds of organizations. Port out of action and airport paralysed. Significant US military assistance provided. Large population movements out of the Port-au-Prince area. |
| <b>February</b> – Focus moves onto relief: shelter, food and water. Over two million displaced. Detailed assessment of disaster impact under way. Early recovery needs assessment and planning commences.                                                                                                                                                                                                                                                                                               |
| <b>3 March</b> – First major wet-season rains.                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>15-16 March</b> – Launch of the Action Plan for National Recovery and Development (PARAD) in Santo Domingo, Dominican Republic.                                                                                                                                                                                                                                                                                                                                                                      |
| <b>31 March</b> – Major donors' conference for recovery in New York. Release of the PARAD.                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>1-2 June</b> – Second donors' conference in Punta Cana, Dominican Republic, results in over US\$7 billion in pledges.                                                                                                                                                                                                                                                                                                                                                                                |
| <b>29 June</b> – Haitian elections announced.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>17 October</b> – Major diarrhoea outbreak in Artibonite.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>21 October</b> – Diarrhoea outbreak in Artibonite confirmed as cholera.                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>22 October</b> – Cholera deaths rise to 194 with 2,364 hospitalized. The epidemic is gradually spreading to other departments.                                                                                                                                                                                                                                                                                                                                                                       |
| <b>24 September</b> – Brief but locally severe storm strikes Port-au-Prince causing extensive flooding and damage to tents.                                                                                                                                                                                                                                                                                                                                                                             |
| <b>27 October</b> – Presidential election campaigning begins.                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>1 November</b> – Tropical storm Tomas is tracked south-east of Haiti.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>5 &amp; 6 November</b> – Hurricane Tomas (upgraded from a tropical storm and with winds up to 130 km/h) makes a limited landfall on the far western edge of the Southern Peninsula causing localized flooding and crop damage.                                                                                                                                                                                                                                                                       |
| <b>28 November</b> – Haitian Presidential, Senate and Deputy elections. Some localized serious violence and polling disruption, but calm overall.                                                                                                                                                                                                                                                                                                                                                       |
| <b>29 November-6 December</b> – Demonstrations continue pending the completion of vote counting.                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>7 December</b> – Release of preliminary election results are associated with social unrest across the country and restrictions on movement.                                                                                                                                                                                                                                                                                                                                                          |
| <b>18 December</b> – Cholera epidemic statistics climb to 2,535 dead and 58,190 hospitalized.                                                                                                                                                                                                                                                                                                                                                                                                           |



## Case study 1. Emergency building inspections and seismic risk assessments

By Andrew Morton, Haiti Regeneration Initiative and Haiti Programme Oversight Manager

The earthquake either completely destroyed or damaged in excess of 300,000 buildings. While this is a massive figure, it nonetheless meant that approximately 60 per cent of the buildings in the earthquake-impacted zone were still standing in the days after the quake.

These buildings and their contents were sorely needed, but their visibly damaged condition and the constant heavy aftershocks meant that many were seriously unsafe. Indeed, building collapses triggered by aftershocks continued until at least April. A linked problem was that in the absence of expert inspections nobody knew what was safe to enter and so the entire population stayed out of damaged buildings. There was also ongoing uncertainty within the international seismology community as to the potential for further 'triggered' earthquakes, which can occur up to two years after the original quake.

This fear and uncertainty had serious and sometimes deadly consequences: hospitals could not fully re-open even when the injured lay dying at their gates, and warehouses full of food could not be accessed, severely constraining the UN's capacity to respond.

As a geological engineer with experience in building construction and demolition, by sheer coincidence I was one of two UN staff in Haiti on the day of the earthquake with the capacity to carry out building inspections and the only one with the capacity to advise on ongoing seismic risks. In partnership with MINUSTAH and other UN agencies, from 13 to 20 January I inspected over 50 buildings: hospitals, food warehouses, government and UN buildings and housing. Two weeks after the earthquake, volunteer and consulting engineers started arriving in significant numbers, taking over the task in partnership with the Ministry of Public Works. This grew into a major inspection programme and the classification task was eventually completed in the third quarter of 2010; buildings were classed as either OK (Green) or Repair (Yellow) or Demolish (Red).



Collapsed supermarket in Port-au-Prince

### Case study 1, continued

The second part of the interim role was less hands-on but more technical. A large body of international scientists started work on earthquake analysis immediately after 12 January, and their findings and advice were invaluable in guiding the response of the UN and the Haitian Government in the days and weeks after the quake. Fundamental decisions on the future strategy of the UN and the Government had to be made and the population needed to be informed and reassured to allow relief and recovery work to continue with the minimum of constraint.

The need for this work was clearly identified at the time; however, none of it matched UNEP's core mandate. Accordingly, in the second quarter of 2010, responsibility for building assessments was handed over to the UN Office for Project Services (UNOPS), while seismic risk assessment was transferred to the UN Development Programme (UNDP).

I would like to thank all of the volunteer engineers and scientists, within and outside Haiti, who contributed to the building inspection and seismic risk work during 2010.

# Environment in relief, recovery and reconstruction

The estimated cost of the damage from the earthquake was US\$7.8 billion, which represents 121 per cent of Haiti's gross domestic product (GDP) in 2009. The estimated cost of the emergency response and relief effort was in the order of US\$2 billion. Hence, the relief, recovery and reconstruction activities together represented a large part of the 2010 and future economy of Haiti.

Activities on this scale have real and lasting environmental impacts, which in turn can strongly affect the current and future well-being of the Haitian population. Unfortunately environmental issues are very commonly neglected in post-disaster settings: organizations have other priorities and the time pressure inherent in such situations constrains more sustainable solutions.

The environmental problems linked to the post-earthquake relief, recovery and reconstruction process in Haiti were clearly predicted in the Rapid Environmental Assessments conducted by UNEP in January. Unfortunately most of the predictions have proven to be correct, with major impacts noted in environmental health and natural resource exploitation.

Environmental health issues centred around:

- difficulties with collection and disposal of human bodies
- problems of medical waste disposal
- uncontrolled disposal of solid waste, with extensive illegal tipping
- massive sanitation problems in the camps for displaced people, culminating in a cholera epidemic in the last three months of 2010
- a lack of acceptable solutions for disposal or treatment of human waste taken from camps and urban areas, resulting in large-scale open-air dumping of human waste near crowded slum areas.

Natural resource exploitation issues involved:

- increased deforestation for timber for construction and for fuelwood and charcoal
- widespread destruction of urban vegetated areas by uncontrolled settlements of displaced people
- major reconstruction projects approved and funded without any real form of environmental impact assessment.



The severely polluted and blocked drainage canals in Port-au-Prince are a chronic source of infections and prone to flooding



Medical waste disposal site in Truitier, Port-au-Prince

## Case study 2. Medical waste management

By Jean Elie Thys, Technical Assistance Facility Assistant

In the immediate post-disaster period, one of the most notable environmental impacts of the disaster was the surge of medical waste (several hospitals were completely destroyed by the earthquake). Ever-increasing wound infections among the affected population generated high volumes of infected bandages as well as 'sharps' in the form of blades, needles and syringes. For weeks after the quake, given the lack of adequate infrastructure, medical waste was disposed of through open-sky incineration. Frequently waste was unloaded at a disposal site in Truitier, Port-au-Prince, as well as at improvised dump sites.

Environmental pollution, resulting from human-induced activities such as burning waste at dump sites, was also a notable challenge. The toxicity of the smoke from burning waste, along with associated levels of pollution, added to the already serious public health risks.

To reduce the risk of chemical pollution and bacteriological contamination, UNEP together with the World Health Organization (WHO) and the Metropolitan Service for the Collection of Solid Waste (SMCRS) sought to manage the problems arising from post-earthquake medical waste. Accordingly, assistance on medical waste management was provided to the Haitian Government through environmental experts and in collaboration with the Swedish Civil Contingency Agency.

During the emergency phase, a committee was also established to coordinate emergency tasks and the management of the Truitier dump site, as well as to provide advice and recommendations on redevelopment of the waste management sector. In practical terms, collections of medical waste from 25 hospitals and health centres located in the area were made, and pits were dug at the Truitier site for the burial of medical waste and excreta. To help with this crucial work, UNEP provided SMCRS with safety gear, including boots, overalls, gloves, helmets, waste containers, plastic bags, goggles and masks, to minimize the health and safety risks of those carrying out the work.



Provision of clean water was identified as another critical challenge in Haiti  
- illustrated by this child taking water from an unsafe source

## The UNEP approach and impact

As UNEP was present on the ground in January, it was well placed to coordinate and support the environmental aspects of the relief, recovery and reconstruction efforts. Four concurrent general approaches were applied: awareness raising, coordination, technical assistance, and practical action – all with mixed success.

**Awareness raising** of the issues was a major task. UNEP published and distributed a Rapid Environmental Assessment in January followed by Progress Reports in April and June. The main target audience was the humanitarian community, which at that time consisted of over 800 active organizations. The reports were pioneering in some respects in that they visibly scored and ranked the environmental performance of the relief and recovery effort. As the observed performance was generally very poor, they were also highly critical.

**Coordination** of the environmental sector is an ongoing UNEP responsibility. UNEP is the global focal point for the cross-cutting issue of environment in the UN's Inter-Agency Standing Committee (IASC) Humanitarian Cluster System, the aim of which is to strengthen system-wide preparedness and technical capacity to respond to humanitarian emergencies. Accordingly, UNEP set up a number of short and medium-term working groups and attempted to coordinate efforts. This work had mixed success. Some tightly focused working groups, such as that dealing with biogas and improved stoves, succeeded in developing a coherent approach and, as of December 2010, were still progressing well (see page 23, 'Biogas: Towards safe disposal and sustainable treatment of human waste'; and page 27, 'Improved cookstoves'). Others such as the environmental health working group had continuity problems and failed to attract and retain interest. One general problem noted was the very scale of the coordination challenge set against the resources available, as the earthquake brought in literally thousands of international people and hundreds of new organizations, who rarely if ever met in one place.

**Technical assistance** was a major focus of the UNEP effort. From January to December, the UNEP office hosted a range of technical experts and provided expertise to many different humanitarian organizations. The subjects covered included human health risks from industrial pollution, asbestos risks, site selection criteria, flood and erosion risk assessments, solid waste management, sanitation, drainage, and site re-vegetation. The success of this work varied greatly: in the most difficult cases organizations simply ignored advice, while in the more successful outcomes organizations took on the issues themselves and developed their own solutions (see page 20, 'Cash for Work' projects').

In February and March, UNEP led and implemented **practical action** in one small but important area: medical waste management. In the shortterm this was a clear success: the medical waste burden from the surge in medical treatment was successfully removed from many hospital sites and safely disposed of (see page 17, 'Medical waste management'). In the longer term the issue remains problematic owing to an ongoing lack of an adequate high-quality disposal site and the poor condition of the remaining permanent hospitals.

In September 2010, UNEP reviewed its efforts and impacts in the environmental component of the



Government employees at UNEP-led training on the management of medical waste

relief, recovery and reconstruction operations. The conclusion was that UNEP's impact could have been more efficient and had been hampered by several compounding factors:

- **Under-Investment.** Measures to address the environmental consequences of the earthquake in general and UNEP's effort in particular, suffered severely from under-investment. Two notable exceptions were the Government of Ireland, who funded UNEP, and the Government of the United States, who invested in their own Rapid Environmental Assessment and pressured respective implementing partners to apply environmental due diligence to their projects and programmes.
- **A lack of institutional preparedness.** Staff in many of the organizations involved in the humanitarian effort genuinely cared about environmental issues and contacted UNEP for advice. However, they were often unable to catalyse change in their own organizations and projects owing to a lack of policies and technical capacity, and ill-defined budgets and plans. Once these organizations started humanitarian operations, they quickly became overwhelmed and environmental concerns were either not considered at all or treated as low priority.
- **Paradigm shift needed on the ground.** The practical linkages between short-term humanitarian assistance, recovery and long-term development need to be better articulated from the outset in post-disaster relief programmes. One of the cornerstones of such an approach should be a focus on environmental problems, which in principle is an agreed part of UN global policy under the IASC 'Cluster' approach. However, this was not translated into practice in the case of Haiti. This meant that the few environmental organizations on the ground were forced to invest a significant amount of their time in lobbying and making the case for treating environmental issues as a priority rather than actually dealing with them on the ground.

The lessons learned in 2010 from the UNEP country programme in post-disaster Haiti have now been incorporated into UNEP's 2011 Haiti strategy and workplan. However, they also need to be addressed at the global level, both within UNEP and the humanitarian community.



### Case study 3. 'Cash for Work' projects

By Patrick Nicolas, Technical Assistance Facility Assistant

During 2010, the World Food Programme (WFP) funded a number of projects to create short-term employment that would ensure families affected by the earthquake were able to earn sufficient money to buy food. These initiatives were particularly targeted toward single-parent and/or displaced families, women and elderly people.

One such initiative, undertaken in partnership with the Haitian state technical services, sought to restore soil fertility and provide income for the local population. Activities undertaken were centred upon protecting the environment through soil conservation upstream of critical water sources, reforestation and rehabilitation of roads and ravines.

UNEP lent support for the project through its Technical Assistance Facility (TAF) – a network of specialized national and international experts who work with partners to provide in-kind expertise to design and implement environmental recovery programmes. UNEP helped to identify and provide recommendations on challenges faced by the WFP with regard to its watershed rehabilitation programme in Haiti.

UNEP's recommendations were targeted at improving the technical quality and better management of biomechanical structures in watersheds and ravines. For example, unused space between the structures was put to use for the cultivation of bananas, maize and other crops, as well as contributing to reducing the vulnerability of flood-prone areas.



Drystone sills – part of the ravine rehabilitation work at  
Rivière Mancelle, Gros Morne/Gonaïves, September 2010

### Case study 3, continued

A key recommendation by TAF focused on the development of a participatory institutional structure – for example, a site management committee – to help identify priority activities for sustainable management of watersheds. Local communities need to be consulted and involved in all stages of decision-making processes in all types of projects, helping to guarantee their sustainability as well as community ownership.



Wrecked port facilities in Port-au-Prince  
in the aftermath of the earthquake

#### Case study 4. Incorporating environment into humanitarian responses

By Silvana Mastropaolo, Humanitarian Coordinator

Following the earthquake, UNEP deployed specialists to advise the Haitian Ministry of Environment and UN agencies and partners on integrating environment into humanitarian response action. A series of Rapid Environmental Assessments was carried out in January to identify the most acute areas. Management of waste (municipal, human, medical, rubble), access to energy and potable water, sanitation, illegal timber extraction and land accessibility were some of the most urgent priorities affecting the displaced population, increasing health risks and vulnerability to natural hazards.

The UNEP contribution to the Post-Disaster Needs Assessment identified broad-scale solutions to environmental problems and monitored the environmental performance of the humanitarian response. Progress reports covering the period February to May recounted and addressed environmental cross-cutting issues for each subject area.

By the second half of 2010, as the post-quake emergency phase was transiting to early recovery phase, impacts arising from the hurricane season and the cholera outbreak overloaded the capacity of the humanitarian response, slowing down the reconstruction process. That the cholera outbreak appeared in areas not directly affected by the quake highlighted the great vulnerability of the country's entire population. Emergency health care and promotion of basic hygiene measures accounted for US\$120 million nationally; of this, only 25 per cent has been allocated.

While efforts to save lives and livelihoods in a multi-disaster scenario have remained paramount, the need for environmental rehabilitation as an urgent step towards mitigating future risk and reducing vulnerability has become increasingly evident. In the context of humanitarian responses, the Haitian Ministry of Environment, with UNEP's support, is advocating the inclusion of environmental considerations as a prerequisite when preparing for and responding to natural disasters. In particular, the partnership has contributed to:

- inclusion of environmental and sustainability components in strategic frameworks for, among others, water, sanitation and hygiene; agriculture; camp management; temporary shelter; recovery and reconstruction processes; and rubble management.
- establishing a mechanism to monitor the disposal operations of the Truitier landfill site, critical for the safe disposal of solid waste from population displacement camps, cholera treatment centres and health-care centres.
- assisting DINEPA, the Haitian Government's water and sanitation authority, in drawing up plans for a community biodigester capable of transforming human waste into energy.
- a strategy for implementing a national programme of fuel-efficient stoves, thereby reducing domestic accidents and the illegal use of charcoal.
- helping the Interim Commission for the Reconstruction of Haiti (CIRH) to evaluate environmental projects.
- the provision of technical assistance to UN agencies and Government partners in building ecologically sustainable solutions into projects and programmes.
- introducing environmental considerations into reconstruction processes such as urban catchment restoration, land-use planning, disaster reduction, environmental protection, ecological sanitation, and rubble management.



Excreta pit dug after the earthquake at the Truitier solid waste disposal site, Port-au-Prince

## Case study 5. Biogas: Towards safe disposal and sustainable treatment of human waste

By Maximilien Pardo, Associate Programme Officer

Before the earthquake, Haiti did not have any form of modern sewage network or human waste treatment system. The solutions in place at that time included uncontrolled toilets/open ground, pit latrines, latrines placed over or connected to joint sewage/storm-water drains, and septic tanks (which are usually stand-alone features and not connected to any treatment systems). In addition only 24 per cent of Haitians had access to improved sanitation in urban areas.

Since the earthquake, the installation of hundreds of thousands of latrines, as well as the two pits dug in the Port-au-Prince landfill site at Truitier, can only be temporary solutions. The problem of sewage disposal, though exacerbated by the disaster, cannot be resolved through a purely humanitarian framework, as the root causes of the situation are strongly tied to Haiti's status as a Least Developed Country and its worryingly basic levels of sanitation. The cholera outbreak that has affected Haiti since October 2010 demonstrates that long-term solutions to the disposal and sustainable treatment of human waste are needed more than ever to prevent the proliferation of waterborne and fly-borne diseases, as well as to safeguard the environment.

If the lack of long-term/proactive thinking is an ingrained, institutional constraint to sustainable sanitation solutions for Haiti, the cost – both the enormous capital investment required to install a modern sewage network and associated water supply (for modern flushing toilets) and the significant operating cost – is the biggest practical obstacle to progress. Modern sewage and drinking-water supply network costs in Northern countries are extremely variable and can range from US\$36 to US\$360 per person per annum. Given the 'ground zero' level of Haiti in terms of water and sanitation, it must be assumed that costs for a new system from scratch would be at the high end of this range. This is completely unaffordable when compared to the average pre-earthquake annual income of about US\$650 per person.

UNEP has long been advocating the need to develop tailor-made solutions for safe disposal and sustainable treatment of human waste that are locally appropriate, prioritized and tightly targeted. In this respect, one option is the potential of anaerobic biodigestion technology (biogas) to improve sanitation, as well as to provide a source of clean energy for Haiti – particularly in the greater Port-au-Prince area that has been worst affected by the effects of the earthquake. Biogas can provide part of the solution to this challenge, particularly in crowded urban areas. The combination of methane gas and fertilizer outputs would assist greatly in reducing overall operating costs, potentially to the stage of generating a marginal profit for some operations.



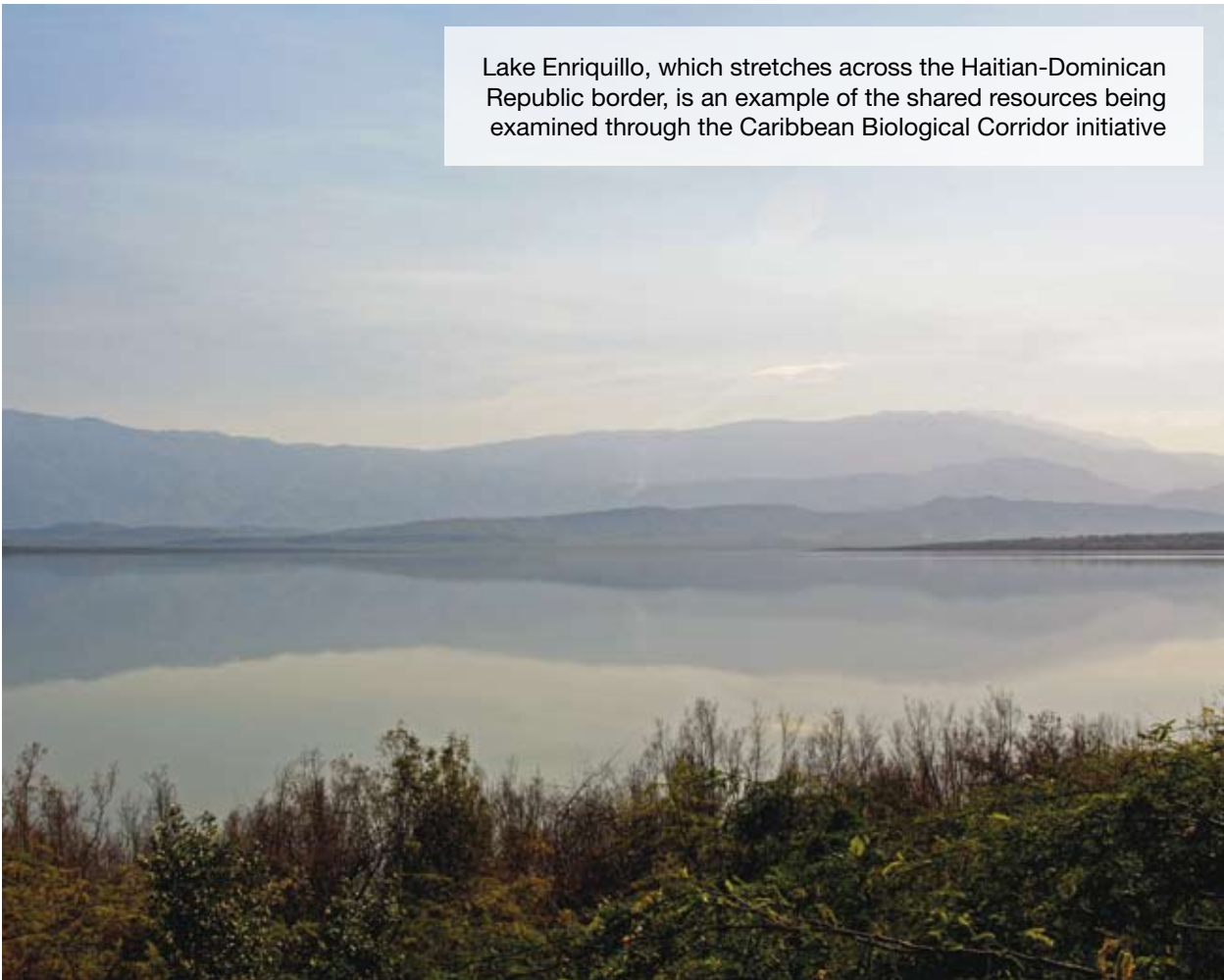
Biogas burning from a small-scale biodigester built in Bel Air, Port-au-Prince, connected to toilets and providing cooking fuel to surrounding communities

### Case study 5, continued

If successful and fully rolled out across Haiti, biogas systems could provide several million people with sustainable benefits, such as management and treatment of sewage and other organic waste, significant improvements in hygiene (compared with pit latrines), generation of energy, and production of treated sludge that can be used as a soil conditioner. In close collaboration with the Haitian Government and key partners (International Organization for Migration, UNICEF and USAID), UNEP set up the Biogas Working Group in mid 2010 with the aim to catalyse the expansion of biogas technology as part of the sanitation solution for Haiti. Through the Working Group, UNEP succeeded in:

- building momentum and creating strong partnerships around the technology
- developing a government-owned biogas strategy to guide investment in the sector
- giving the government the means to progressively monitor and supervise (still marginal) biogas activities in the country.

By the end of the year, the biogas strategy had progressed further with significant investment in overall coordination, active lobbying efforts and research into both small-scale and industrial-scale disposal and treatment systems. Substantive efforts will continue from 2011 onwards, culminating hopefully in the construction of an industrial biogas plant with power generation using sewage, waste from butchery and vegetable waste from the Port-au-Prince region.



Lake Enriquillo, which stretches across the Haitian-Dominican Republic border, is an example of the shared resources being examined through the Caribbean Biological Corridor initiative

### Case study 6. Implementation of the Caribbean Biological Corridor

A Tri-National Project managed by UNEP's Regional Office for Latin America and the Caribbean and a dedicated Tri-National Project Unit

Since 2007, the national Governments of Haiti, the Dominican Republic and Cuba have been developing a tripartite cooperation to tackle shared environmental issues. This cooperation notably gave way to the creation of the first Caribbean Biological Corridor established within the *Santo Domingo Declaration*. UNEP provided support to all three governments to develop this cooperation centred on the Insular Caribbean and today, it serves as the implementing agency for this European Union-funded initiative.

In addition, the governments of Jamaica, Puerto Rico and the French Departments of Martinique and Guadeloupe have been designated as Permanent Observers of the Caribbean Biological Corridor.

A Plan of Action which charts the long-term direction for the initiative has been adopted by the governments of Haiti, the Dominican Republic, Cuba and Jamaica.

In 2010, UNEP's activities were centred upon providing support to participating countries, notably the Government of Haiti, to help implement activities within the Caribbean Biological Corridor framework.

In July, at a high-level ministerial meeting, a policy for the Tri-National Leading Committee of the Caribbean Biological Corridor initiative was defined. This meeting also coincided with the official launch of the Caribbean Biological Corridor UNEP/European Commission Project, as well as the Tri-National Project office. Representatives from the national governments of Haiti, the Dominican Republic and Cuba, as well as UNEP convened for the event.

Key outcomes during 2010 with respect to the Caribbean Biological Corridor included programme and sub-project development, and provision of technical advice from the Caribbean Biological Corridor Technical Consultation Group.

Among the next steps, which are supported with seed funding from the European Union, are strengthening a network of protected areas for the Island of Hispaniola and the establishment of a training centre in Haiti to build the capacity of the community to embrace the sustainable ecosystem management principles.



*"2010 was a year of extraordinary challenges for the Haitian people and, on a different dimension, for the UN officials who have responsibility for supporting the country in achieving the Millennium Development Goals and responding to the emergency. The earthquake was unprecedented and caused immense devastation to the people, the infrastructure and the country's resources, which were even more severe due to the existing significant environmental degradation in Haiti.*

*Under these very difficult circumstances, we learned just how important it is that all the UN agencies, the government institutions and other stakeholders work closely and effectively together to succeed. The achievements have been substantial during this year and UNEP is very proud to have had the opportunity to be part of all these efforts."*

Margarita Astralaga  
Regional Director  
UNEP Regional Office for Latin America and the Caribbean

*"Following the events of 2010, the need for proper sanitation and appropriate toilet facilities is more than urgent in Haiti. But, from the Government's perspective, responding to the emergency in the sanitation field should be done bearing in mind mid and long-term solutions.*

*UNEP assisted the Ministry to develop a national biogas strategy and its implementation from 2011 onwards will have radical, positive results for the Haitian people."*

Gérald Jean Baptiste  
Directeur Générale de la Direction Nationale de l'Eau Potable et de l'Assainissement (DINEPA)  
Ministry of Public Works, Transport and Communications  
Port-au-Prince, Haiti

*"Haiti is extremely energy poor. Modern and reliable forms of energy are available to only a fraction of the population and unit costs are very high. The great majority of the population has no access to electricity and relies on charcoal and wood for cooking and flashlights, candles and kerosene lamps for lighting. The dependence on charcoal is a major driver of deforestation and associated soil erosion and flooding problems.*

*In this context, through UNEP support, the Ministère des Travaux Publiques, Transports et Communication (MTPTC) has been laying the groundwork for the clean energy (energy efficiency and renewables) sector in Haiti in order to facilitate access to clean energy technologies and, at the same time, strengthen Government leadership and institutional commitment. The role of UNEP in supporting Haiti's efforts for consolidation and establishment of a solid foundation for clean energy in the country will be crucial in the years to come."*

René Jean-Jumeau  
Coordinator, Energy Sector Management Unit (UGSE)  
Ministry of Public Works, Transport and Communications



## Case study 7. Improved cookstoves

By Megan Rapp, Consultant

Under its Clean Energy Programme, UNEP is exploring practical applications such as the introduction of improved stoves (institutional and household) across Haiti. High-efficiency biomass-fuelled cooking stoves can reduce families' fuel expenditure, lessen deforestation and decrease public health risks, as well as spur private-sector growth.

During the summer of 2010, the capacities of key stakeholders in Haiti currently working on improved stoves were assessed. In partnership with a local non-governmental organization, surveys were undertaken to assess individual fuel and stove use in the camps for displaced people, as well as institutional stove use in bakeries, restaurants, schools and among street vendors around Port-au-Prince and Léogâne. It transpired that many Haitians living in camps spend significant amounts of their income on charcoal, clearly identifying a need to increase the energy efficiency of stoves.

As a next step, an Improved Stoves Working Group was initiated by UNEP, together with representatives from UN affiliates, governmental entities, non-governmental organizations and the private sector. There is considerable overlap in the network of actors working in Haiti, such that the Working Group partners expressed the need to coordinate activities in order to maximize the number and quality of improved stoves available to Haitians.

To develop a way forward among all stakeholders, a series of six discussion papers was compiled, advocating:

- the establishment of a Stove Resource Centre
- close collaboration with the Haitian Ministry of Public Works, Transport and Communications (Ministère des Travaux Publics, Transports et Communications – MTPTC) and the Office of Mines and Energy (Bureau des Mines et de l'Energie – BME)
- adequate quality control and appropriate testing procedures
- recommendations for baseline information gathering
- production and marketing strategies
- financial mechanisms, and
- an overall coordination approach.

Each paper contained contributions from essential stakeholders, including Haitian Government Ministries, International Lifeline Fund, The Paradigm Project, Columbia University's Earth Institute, World Food Programme, UN Development Programme and Trees, Water & People. These papers will serve to develop a Haitian Government-led national strategy for improved cookstoves to help set the country on a green economy path.

# Chronic issues and sustainable development

## Adopting a longer-term view

During the period January to May 2010, the Haitian Government and the United Nations, including UNEP, were – for good reason – focused on addressing short to medium-term needs. As of early 2011, the humanitarian community continues to focus on such needs and will probably be required to do so for years to come.

The second half of 2010 brought new challenges, notably in the form of a cholera epidemic and Hurricane Tomas.

Since the January earthquake, the Government of Haiti has, to its credit, attempted to balance short and medium-term imperatives with longer-term needs and has advocated strongly for investment in recovery and development.

In this context, UNEP recommenced development of its long-term programme, in the framework of sustainable recovery allied to sustainable development. One priority for UNEP in the first half of 2010 was to complete two existing technical assessment projects: a study of lessons learned in relation to Haiti's environment, released in early 2010 (see below, 'Lessons learned in managing environmental projects in Haiti'); and the Global Environment

Outlook (GEO) Haiti report assessing the state of the country's natural resources and the problems encountered in trying to manage them sustainably, launched on 5 June.

GEO Haiti 2010 is the first ever assessment of the state of the country's environment and the problems encountered in trying to conserve its natural resources. Produced by the University of Quisqueya, Haiti's Ministry of the Environment and UNEP, the report states among its recommendations that measures must be implemented immediately to enable improved monitoring and response to natural disasters.

Joint research teams from UNEP, the Earth Institute at Columbia University and the American University of Les Cayes commenced pilot surveys for the Haiti Regeneration Initiative, collecting data on landscape ecology, social institutions and climate conditions.

A further task was the recruitment and mobilization of a national staff member in September to assist Haiti in an ongoing programme for the elimination of ozone-depleting substances under the Montreal Convention. The remaining UNEP resources were focused on programme and concept-note development and resource mobilization.

### Case study 8. Lessons learned in managing environmental projects in Haiti

By Lucile Gingembre, Associate Project Officer

To guide the design phase of its long-term intervention in Haiti, from June to December 2009, UNEP conducted a lessons learned study of 43 environmental and Natural Resource Management (NRM) projects across Haiti – 16 finalized and 27 in progress – dating from 1990. The study was released in early 2010.

The quality and lasting impact of the 43 projects differed greatly. They ranged from those with no remaining evidence of impact – or even adequate project records – through to ongoing successful, locally owned initiatives. The following findings and lessons learned are grouped under key issues that need to be addressed if NRM projects in Haiti are to be better managed and have improved outcomes and impacts in future.



## Case study 8, continued

### Geographic focus and increased coordination

- After many years of poor coordination between international actors and the Government of Haiti, and among international actors themselves, projects/programmes are becoming more geographically concentrated and the distribution between players on the ground is better coordinated than in the past.
- Major donors now give special attention to the management/rehabilitation of entire watersheds ('ridge to reef approach'), often targeting the most vulnerable zones and following more integrated approaches than in the past.

### National ownership and capacity building

- Haitian governmental bodies are too often poorly consulted or involved in aid projects, including environment-related projects, implemented in the country.
- The Government of Haiti has little control over programmatic orientation of projects, monitoring or financing. This is partly due to the fact that financial and human capacities are lacking at the national level to assist the many projects being developed or implemented, resulting in an over-dependence on international staff and consultants and a lack of retained knowledge within national institutions.
- Overlapping mandates and competencies of governmental institutions represent significant obstacles to government involvement. Moreover, the ad hoc nature of many projects indicated a chronic lack of coordination among governmental bodies.
- National-level programmes have a significant role to play in assisting the development of enabling policy and legal frameworks, in reinforcing governmental capacities and in supporting inter-institutional coordination mechanisms.

### Scale and duration of projects

- Despite the high stakes and tough challenges at play in the field of environmental rehabilitation, the majority of projects/programmes reviewed had small or mid-range budgets (40 per cent of the projects had a budget of less than US\$3 million while only ten projects exceeded US\$10 million) and timelines (around 80 per cent of the operations spanned five years or less).
- Many projects suffered from funding variability and instability. As a result, despite having shown positive results, many short-term projects have not been extended and, in a few cases, ongoing projects have had to reduce their scope or close early. It is clearly difficult to achieve a national-scale, lasting impact with such an approach.
- Focus should be put on a longer-term (i.e. greater than five year) project/programme planning horizon, an approach which has proved more successful in the past.

### Integration of environmental concerns into participatory rural livelihood frameworks

- Environmental protection initiatives work best when they are integrated into a broader cross-sectoral strategy for local development and land-use planning.
- Specifically this means combining the protection of natural resources with income generation for the beneficiaries; for example via the sustainable development of profitable forestry or agroforestry product supply chains, the development of profitable vegetative soil conservation structures, and well-designed cash-for-work projects.
- Community participation in all phases of the project/programme cycle is crucial to enhancing local ownership and thereby improving the impact of interventions.
- Clarifying land ownership through a participatory diagnosis of land tenure is also a necessary step prior to implementing NRM projects.

### Knowledge management

- A lack of systematic national-level data and knowledge management indicates that most lessons learned from previous projects are either lost or very difficult to obtain; a major investment was required to locate and obtain the material required for this study.
- Streamlining information sharing on past and ongoing projects, on the multiple analyses and studies undertaken, on best practices and lessons learned would enable actors to capitalize on the knowledge and experience acquired, improve the sustainability of interventions and result in cost-effective outcomes.

## The UNEP strategy for 2011

In 2011, UNEP will expand its support to the Government and people of Haiti, intensifying its efforts to further the nation's recovery and development in a sustainable manner.

Haiti faces a long list of national-scale, chronic environmental, social and economic challenges. The specific challenge for UNEP, and the original rationale for its country presence, is to catalyse major changes to address these challenges while ensuring long-term sustainable development. At the same time it must support the ongoing recovery efforts, continue to pursue its own regional and global programmes relevant to Haiti, and also fulfil its obligations as a UN country team member.

In this context, UNEP invested heavily in programme development during the second half of 2010, and in December finalized its 2011 Haiti country programme strategy and workplan.

The country programme will focus resources geographically in order to achieve the intensity of investment necessary for real impact. In practical terms, this means:

- national-level activities focused on governance, policy, planning and capacity building.
- practical action focused in two distinct regions: the western end of the Southern Peninsula, in the Sud and Grand Anse Departments, and the Haiti-Dominican Republic border region – in total covering a land area of approximately 5,000 km<sup>2</sup> (25 per cent of Haiti) and potentially benefiting approximately one million people (10 per cent of the population). Activities will be further targeted to specific sites and zones within these two major regions.

The workplan is based on seven themes, all highly tailored to match identified priorities and opportunities for Haiti in 2011:

- Integrated, sustainable rural development initiatives
- Management of coastal and marine environments
- Clean energy (renewable and low greenhouse gas-emitting energy sources, and energy efficiency)

- Transboundary environmental cooperation and conflict risk reduction
- Environmental health – including the sustainable treatment of human waste
- Environmental governance – including support for participation in and implementation of the Montreal Protocol<sup>1</sup>
- UN Environmental Mainstreaming (integrating environment into development institutions and decisions).

These themes are in many cases closely interlinked. Investments will not be equal across the themes and not universal, and not all themes will be present in all geographic areas.

In the last quarter of 2010, UNEP and its partners secured project financing of US\$9.5 million for ongoing programme development, two major multi-year projects and one short-term relief project. It therefore enters 2011 with a portfolio of six projects:

- Haiti Regeneration Initiative Support Programme (US\$550,000). Donor: Government of Norway. Timing: October 2010-December 2011.
- Integration of Environmental concerns into the response and relief effort (US\$470,000). Funding source: Haiti Emergency Response and Relief Fund. Timing: December 2010-June 2011.
- Haiti Southwest Sustainable Development Project (US\$8 million), part of the Côte Sud Initiative. Donor: Government of Norway/Haiti Recovery Fund. Timing: January 2011-March 2012.
- Frontera Verde – Components 2 & 4 (US\$800,000). Donor: Government of Norway. Timing: January 2011-March 2012.
- Montreal Protocol (US\$200,000). Funding sources: UNEP, Ministry of Environment, Haiti / National Ozone Office. Timing: January-December 2011.
- Caribbean Biological Corridor: Tri-national Office opened in July 2010 (US\$4 million). Funding source: European Commission. Timing: January 2011-March 2013.

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<sup>1</sup> The Montreal Protocol on Substances that Deplete the Ozone Layer is an international treaty designed to protect the ozone layer by phasing out the production of substances (groups of halogenated hydrocarbons) believed to be responsible for ozone depletion. See case study 11 on page 34.

The Côte Sud Initiative (CSI) – part of the Haiti Regeneration Initiative in which UNEP is a key player – is a new long-term recovery and sustainable development programme for 10 communes in the western part of Haiti's Sud Department. The CSI's 20-year vision is for "a prosperous and resilient region, where extreme poverty and ongoing environmental degradation have been effectively eliminated". It will cover a land area of 780 km<sup>2</sup>, a marine area of some 500 km<sup>2</sup> and a population of approximately 205,000. Existing baseline data are inadequate for informed long-term planning, so 2011 will be year zero, to include a baseline assessment and development of a five-year plan for the period 2012-2016.

The CSI scope of work covers the following six themes:

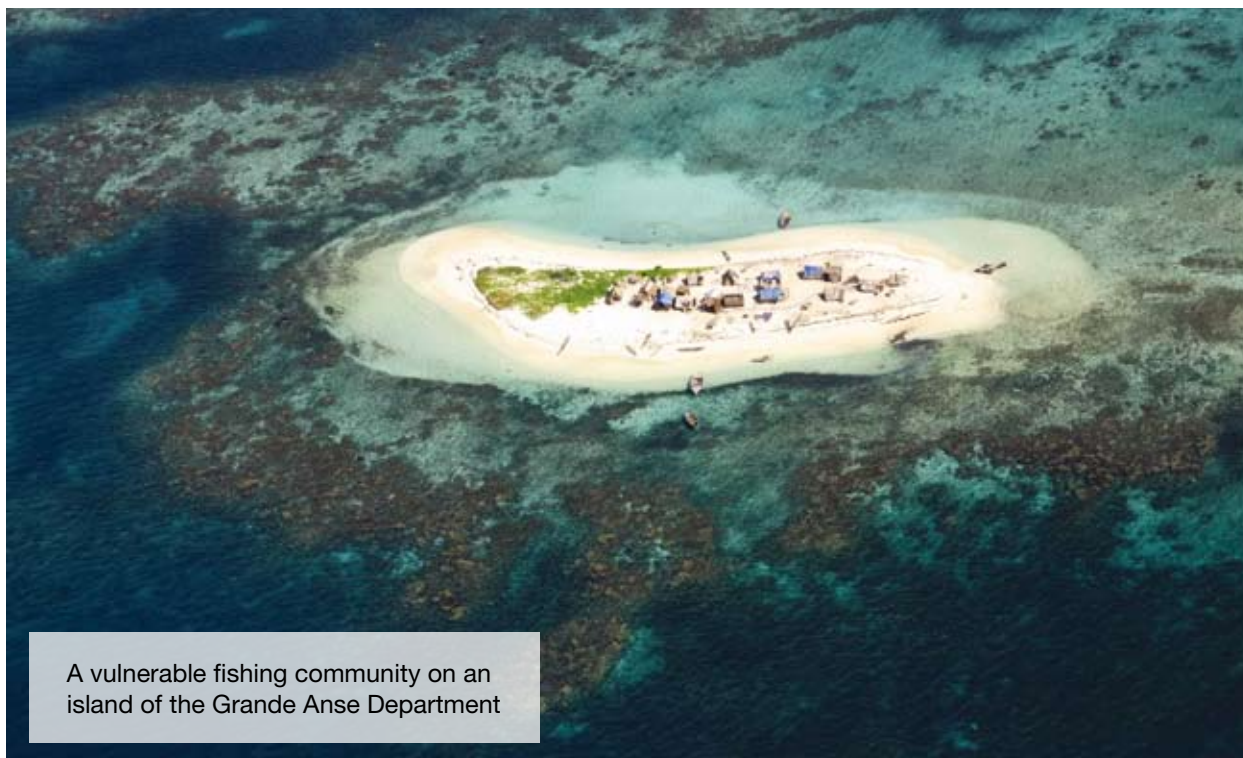
- **Support programme:** coordination; support; National and Departmental initiatives
- **Natural Resource Management:** agriculture and forestry; marine and coastal management; water resource management
- **Economic development and Infrastructure:** private sector development; tourism; roads; energy; telecommunications
- **Social services:** education; health; potable water; sanitation
- **Governance and disaster risk management:** local governance; disaster preparedness
- **Integrated local development programmes:** Port-à-Piment Millennium Village.



### Case study 9. Protecting Haiti's marine and coastal heritage

By Antonio Perera, UNEP Country Programme Manager

One of UNEP's most immediate findings in Haiti was that marine and coastal resource management has not been widely considered in national and international efforts in dealing with poverty, disaster responses, risk reduction strategies and preservation of the country's natural resources. Thus, one of UNEP's early actions was to develop a marine programme capable of supporting a considerable portion of Haiti's population whose livelihoods are dependent on the marine and coastal ecosystems and the services they provide.



A vulnerable fishing community on an island of the Grande Anse Department

### Case study 9, continued

Haiti's marine and coastal ecosystems are severely degraded. Lack of appropriate and enforced regulation, overexploitation of resources, habitat destruction and consequent loss of biodiversity, encroachment of human settlements, land-based pollution (solid waste, oil and sewage) and sedimentation due to erosion of degraded catchments have all played a part.

UNEP's approach has been to propose constructive interventions, building capacity and providing technical assistance for the protection, management and use of the marine and coastal environment and resources.

This approach has guided the design of the MERHAITI (Marine Environment Regeneration in Haiti) programme. Its overall objective is to find a sustainable response to the pressures and impacts on the integrity of coastal and marine ecosystems while strengthening the resilience of coastal communities. Environmental regeneration, biodiversity conservation and livelihood generation are key components. An initial emphasis has been on short-term activities – such as control of floating marine debris and improving fishery gear – to address some of the most immediate and acute concerns.

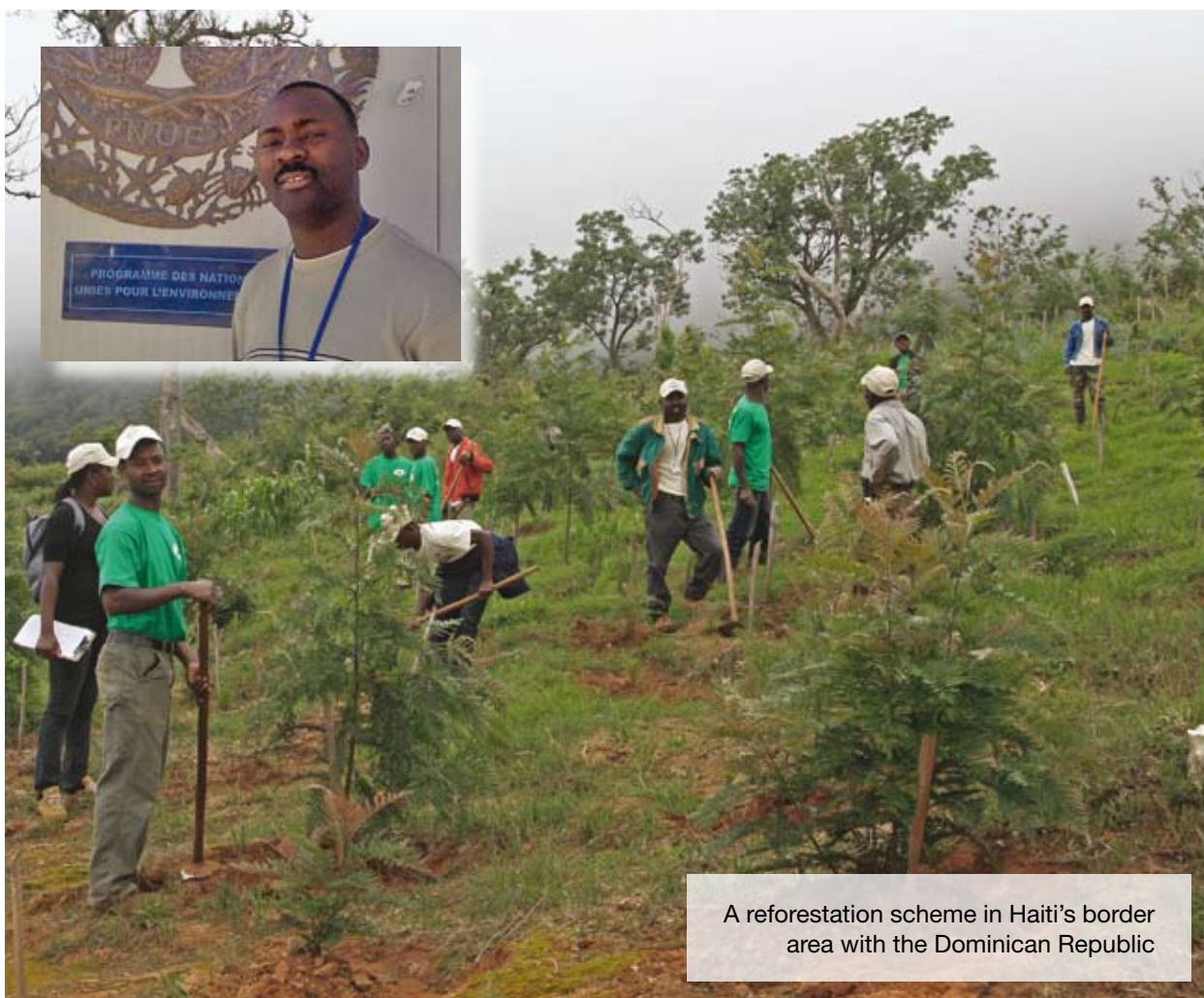
The partners involved in the programme's development come from a wide array of backgrounds and expertise: the Haitian Ministries of Environment, Agriculture, Planning, and External Cooperation, the UN Development Programme, Food and Agriculture Organization, World Food Programme, UN Office for Project Services, Inter-American Development Bank, USAID and the Spanish Agency for International Development Cooperation. National non-governmental organizations such as La Fondation pour la Protection de la Biodiversité Marine (FoProBiM) and Rezo Ekolo, and international groups like The Nature Conservancy and Reef Check are also playing an important role.

MERHAITI's development is building on the results of baseline studies and practical actions supported by UNEP over the last two years. These include an analysis of legislation, policies and institutional arrangements relevant to marine and coastal ecosystems in Haiti; rapid assessments of coastal and marine resources along Haiti's Southern Peninsula and in the coastal zone around Cayes à Aquin and Baradères-Cayémites; and scoping missions and interviews with coastal villagers, community-based organizations and fishermen.

MERHAITI's first concerted actions will be in the framework of the Côte Sud Initiative in Haiti's Sud Department (see page 31). Concurrently, UNEP, in partnership with UNDP and the Ministry of Environment, is participating in a Global Environment Facility (GEF) project aimed at the national level.

Raising public awareness of the importance of marine and coastal ecosystems is another important thread. Together with MINUSTAH and the Ministry of Environment, UNEP helped promote International Beach Cleanup Day in October 2010, when massive collections of debris were removed from beaches in three locations around Haiti's coast.

As of December 2010, the MERHAITI was awaiting funding.



A reforestation scheme in Haiti's border area with the Dominican Republic

## Case study 10. Frontera Verde

By Paul Judex Edouarzin, Ecological Expert

The potential for tension between Haiti and the Dominican Republic over limited natural resources in the border area is an issue that demands particular attention. Common efforts to restore shared watersheds and deal with illegal trade of charcoal, wood products and wildlife has inspired the 'Frontera Verde' (Green Frontier) initiative, originally promoted by the Dominican Republic's Ministry of Environment.

The roots of the initiative lie in the Dominican Government's efforts to support reforestation activities on both sides of the border. Modest resources have inevitably meant that these actions have been limited and too dispersed to have any impact over a wider area. Recently the Norwegian Government, through the Norwegian Agency for Development Cooperation (NORAD), expressed its desire to support Frontera Verde to enhance the environmental situation on both sides of the border. In view of the excessive resource degradation on the Haitian side, the Haitian and Dominican Governments agreed that two-thirds of the Norwegian funding be dedicated to activities in Haiti. Responsibility for implementation of the project involves both Ministries of Environment, UNEP and UNDP.

Frontera Verde consists of three phases, the first of which focuses on the transboundary Masacre and Pedernales watersheds. Here the project aims to restore forest cover by planting native forest trees, fruit trees and/or multiple-use trees, reduce vulnerability to climate change impacts and to improve the living conditions and employment prospects of Haitians and Dominicans, especially those inhabiting the river catchments in the border region.

Solving transboundary environmental problems is a field in which UNEP has built considerable expertise in different parts of the world. While implementation of Frontera Verde lies jointly with UNDP and UNEP, the latter's responsibilities lie specifically with transboundary activities and technical coordination of the project, working closely with Haitian and Dominican governmental counterparts.

The initiative was submitted to the Interim Haiti Recovery Commission (IRHC) in November 2010 and Phase I activities are expected to start in the first quarter of 2011.



### Case study 11. Montreal Protocol

By Artie Dubrie, Policy and Enforcement Officer, Montreal Protocol Compliance Assistance Programme  
UNEP Regional Office for Latin America and the Caribbean

Haiti's Ministry of Environment, through the National Ozone Office, oversees the country's obligations under the Montreal Protocol on Substances that Deplete the Ozone Layer.

Since 1999, UNEP has collaborated with the United Nations Development Programme (UNDP) to provide ongoing support to phase-out the importation and use of Chlorofluorocarbons (CFCs), Hydro-chlorofluorocarbons (HCFCs) and other ozone depleting substances.

UNEP recognized that the reconstruction activities in Haiti would increase the demand for air-conditioning and refrigeration equipment and services, and therefore identified a need for Montreal Protocol considerations to be integrated into the national post-disaster recovery effort. The Haitian Government requested the application of measures under the protocol which prevent technologies requiring the use of ozone depleting substances from being imported into the country during its recovery period and beyond.

UNEP began advising the government on its negotiations with the Montreal Protocol Multilateral Fund to allow for flexibility in the implementation of projects, to meet the country's new needs following the earthquake.

In addition, the Montreal Protocol Multilateral Fund provided extra funding to enable the repair of earthquake damage to the premises of the National Ozone Office.

The challenges ahead include integrating Montreal Protocol considerations into wider national rebuilding activities to ensure the technologies introduced are energy efficient and ozone friendly and will assist Haiti on a Green Economy path.

UNEP and UNDP will also assist with training and capacity building in the enforcement and control of trade in ozone depleting substances and related technologies. Training covering energy efficient technologies and good repair practices for existing inventories will focus on the air-conditioning and refrigeration sectors, covering importers, distributors, servicing companies and servicing technicians.

UNEP will continue to support the government in preparing a phase-out plan for HCFCs linked to national policies for energy efficiency and climate impacts and to advocate for improved methods of disposal of air-conditioners and fridges and the harmful substances they contain.

## A learning process



*"Everyone agrees that achieving sustainable development in Haiti will require a broad-based approach aimed at ambitious, integrated objectives with consistent support over the long term. One of the most frustrating challenges has been the absence of tangible mechanisms to pursue such a strategy."*

*"Working with UNEP and local partners to support the Haiti Regeneration Initiative has been gratifying precisely because of the enormous enthusiasm behind its commitment to sustained progress built on sound natural resource management and broad-based economic development."*

Marc Levy  
Deputy Director

Centre for International Earth Science Information Network  
Earth Institute, Columbia University, USA

2010 was a tragic year for Haiti and a challenging one for the UNEP team in Haiti. All of the United Nations and its national and international partners learned many lessons over the course of the year. If properly absorbed, these lessons should assist in future relief and recovery efforts. In that context, the following are the key lessons learned by UNEP Haiti in 2010:

- Emergency preparedness and contingency planning needs to be firmly built into the culture and procedures of UNEP country programmes, wherever they may be.
- The onset of a major emergency is too late to commence advocacy and organizational reform for mainstreaming environment into humanitarian organizations. The investment must come earlier and at a global level within those organizations, not from UNEP.
- Despite the short to medium-term focus on humanitarian issues, underlying environmental problems – which typically exacerbate humanitarian and socio-economic problems – will themselves usually only be worsened by a natural disaster, so chronic, long-term needs will grow alongside the emergence of acute, immediate needs.
- This situation presents significant and complex challenges in ensuring continuity and resource mobilization for sustainable development programmes in the context of major disasters. Balanced against these challenges is the funding 'window of opportunity' that opens as donors investigate the situation and note the contributory role that poor environmental management has played in worsening the disaster's impacts.

# Acknowledgements

## UNEP Haiti team, 2010

Andrew Morton, Haiti Regeneration Initiative and Haiti Programme Oversight Manager

Antonio Perera, Country Programme Manager

Maximilien Pardo, Associate Programme Officer

Lucile Gingembre, Associate Project Officer

Paul Judex Edouarzin, Ecological expert

Jean Elie Thys, Technical Assistance Facility Assistant

Patrick Nicolas, Technical Assistance Facility Assistant

Silvana Mastropaolo, Humanitarian Coordinator

Megan Rapp, Consultant

Lejeune Lesperance, Driver

Rosval Poteau, Driver

The project case studies contributed by the team members illustrate the diverse roles and outputs of UNEP team in emergency situations.

## UNEP Regional Office for Latin America and the Caribbean

Margarita Astralaga, Regional Director, UNEP Regional Office for Latin America and the Caribbean

Ricardo Sanchez, Office of the Special Envoy for Haiti to UNEP

Artie Dubrie, Policy and Enforcement Officer

## Donors and other partners

American University of the Caribbean

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Groupe d'Initiative pour un Port-à-Piment Nouveau

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Ministry of Environment (Ministère de l'Environnement)

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Ministry of Public Health and Population (Ministère de la Santé Publique et de la Population)  
Ministry of Public Works, Transport and Communications (Ministère des Travaux Publics, Transports et Communications)  
Ministry of Tourism (Ministère du Tourisme)  
National Directorate of Water Supply and Sanitation (Direction Nationale de l'Eau Potable et de l'Assainissement)  
Organisation pour la Réhabilitation de l'Environnement  
Reef Check  
Service Metropolitain de Collecte des Résidus Solides  
Société Audubon Haïti  
Sun Mountain International  
The Nature Conservancy  
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United Nations Food and Agriculture Organization  
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World Health Organization

## Editors

Tim Davis and Tim Jones, DJEnvironmental (United Kingdom)

## More information

[www.unep.org/conflictsanddisasters](http://www.unep.org/conflictsanddisasters)

[www.haitiregeneration.org](http://www.haitiregeneration.org)

See also *GEO Haiti 2010: State of the Environment Report*



## About UNEP's Disasters and Conflicts Programme

From Kosovo to Afghanistan, Lebanon, Sudan or China, UNEP has responded to crisis situations in more than 40 countries since 1999. As the international community has shifted its focus from post-crisis intervention to crisis prevention, UNEP has expanded its operational range, adding disaster risk reduction and environmental cooperation to its core services of environmental assessment and recovery.

UNEP's Medium Term Strategy (MTS) for 2010-2013 designates "Disasters and Conflicts" as one of the organization's six priority areas of work. The Disasters and Conflicts sub-programme is comprised of four operational pillars: post-crisis environmental assessment, post-crisis environmental recovery, disaster risk reduction and environmental cooperation for peacebuilding. The Post-Conflict and Disaster Management Branch (PCDMB) is tasked with coordinating the theme across UNEP.

Further technical information may be obtained from the UNEP Post-Conflict and Disaster Management Branch website at: <http://www.unep.org/conflictsanddisasters/> or by email: [postconflict@unep.org](mailto:postconflict@unep.org)



[www.unep.org](http://www.unep.org)

United Nations Environment Programme  
P.O. Box 30552 Nairobi, Kenya  
Tel: +254 (0)20 762 1234  
Fax: +254 (0)20 762 3927  
Email: [unepub@unep.org](mailto:unepub@unep.org)

