

Haiti: Saving the Environment, Preventing Instability and Conflict

I. OVERVIEW

Reversing a decades-long trend of environmental destruction is essential to Haiti's development, social and economic stability and, ultimately, security. Instability and violent conflict are not attributable solely to environmental degradation. But they are made more likely by the latter's interaction with such factors as weak institutions and governance, political fragility, pervasive and extreme poverty, vulnerability to natural disasters, rapid population growth, urban overcrowding and social and economic inequality. Concerted national effort and international support is required to stop deforestation and land erosion; reduce energy shortages and charcoal dependence; address rural and urban pollution, including the absence of a solid waste collection and recycling system; and strengthen an inadequate capacity to cope with natural disasters.

For years, severe environmental problems have been among the roots of Haiti's social, economic and even political crises. Following the devastating floods of May and September 2004, which killed approximately 3,000, Crisis Group warned that the ecological disaster was a "time bomb" that needed to be addressed to prevent new instability. Subsequent governments have not had sufficient commitment and strength to tackle the situation comprehensively. Consequently, Haiti in 2009 risks further economic decline and possible political destabilisation, compounded by the impact of the global financial crisis.

Beginning to halt the depletion of the natural environment and factoring the social and economic consequences into national policy must be an integral part of the strategy to prevent new instability. While the problems can only be addressed fully in the long term, the immediate actions required by the government of President Préval and Prime Minister Pierre-Louis to begin this process should include:

- declaring the environment a national priority and linking environmental rehabilitation and preservation measures to social and economic development strategies, such as the Poverty Reduction Strategy;

- relieving pressure on forest resources by encouraging the use of subsidised wood fuel substitutes, taxing the sale and transport of charcoal and wood and investing returns in environmental rehabilitation programs;
- investing more external aid in rural development to stem the flow of migrants to urban slums and stepping up community-led environmental protection projects in those slums to expand access to clean water and basic sanitation; and
- strengthening institutions to better manage the environment by establishing and empowering local governance structures, including community policing; completing and enacting the organic law for the environment ministry; eliminating overlapping ministerial responsibilities for natural resources management; and ensuring more effective coordination among ministries and the international community by launching the inter-ministerial committee on the environment to be chaired by the prime minister.

II. ENVIRONMENTAL CRISIS

Haiti is one of the world's most natural disaster-prone countries, due to its location in the high latitude tropics, mountainous terrain rising to almost 2,700 metres above sea level and severely degraded environment.¹ Steep slopes² alternate with a few arable plains and valleys bordered by rivers. This topography forces the population to farm the hillsides and reside in plains beneath now deforested watersheds.³ Nearly every year brings extreme climatic shocks, particularly flash

¹ See "Land Resources Information Systems in the Caribbean", Food and Agricultural Organization (FAO), www.fao.org/DOCREP/004/Y1717E/y1717e13.htm.

² According to the FAO, 63 per cent of the land has slopes with an incline greater than 20 per cent and only 29 per cent has slopes less than 10 per cent; over 40 per cent of Haiti's 27,700 sq. km land area is above 400 metres. Ibid.

³ Crisis Group interview, environmental consultant, environment ministry, Port-au-Prince, 6 March 2007.

floods and hurricanes, with average rainfall of 300mm in the north west and 3,000mm in the south east.⁴

Between 2001 and March 2007, natural disasters resulted in 18,441 deaths, 4,708 injuries and 132,000 homeless. Some 6.4 million persons were affected (today, Haiti has a population of 9.7 million),⁵ and damage was estimated at \$4.6 billion.⁶ In August-September 2008, four consecutive storms and hurricanes affected another 800,000 persons. A total 793 were killed, 310 disappeared, 100,000 had to seek temporary shelter, and more than 112,000 homes were damaged or destroyed.⁷ Damages totalled \$897 million.⁸

In early March 2009, moderate showers claimed only one life but affected some 600 to 750 families in the Port-au-Prince metropolitan area.⁹ The 2009 forecast is for fourteen storms in the Caribbean during the season that runs from 1 June to 30 November, seven of which are likely to become hurricanes and three of which are expected to develop to category three (out of five) level or higher, with winds of at least 111mph.¹⁰ An above-average landfall risk for the Caribbean, including Haiti, is anticipated.¹¹ With the new season nearly here, it is estimated that only 35 per cent of Gonaïves, the hardest-hit city in 2008, has been cleaned up,¹² and several hundred families are still

homeless.¹³ Inattention to homeless storm victims can easily lead to the creation of shanty towns.¹⁴ The canals that run from Pétion-Ville through Port-au-Prince toward the seashore in Fort Dimanche, Bel Air, and Cité Soleil remain clogged.¹⁵

Haiti also faces a major energy crisis. It harvests its sparse remaining forests anarchically and otherwise uses inefficiently its few additional energy resources.¹⁶ It gets 5 per cent of its energy from hydroelectricity and 20 per cent from petroleum products, which drain 50 per cent of the government's import capacity.¹⁷ The remaining 75 per cent of energy demands are satisfied by wood fuel. Trees are felled to produce firewood or

during the last week of March a survey to verify the number of persons who still without an official abode. Once the survey is complete, it should be better able to respond to the homeless problem. When the shelters were officially closed, storm victims were given house repair kits and 10,000 Haitian gourds (approximately \$250) by the International Organisation for Migration (OIM) which has assisted in coordinating post-disaster shelter. Crisis Group interview, UN humanitarian officials, Gonaïves, 31 March 2009.

¹³ Crisis Group interview, UN humanitarian officials, Gonaïves, 31 March 2009. A UNICEF article, "Amid last year's destruction, Haiti braces for another hurricane season", of 16 March 2009 indicated that only a third of the city has been repaired, despite round-the-clock efforts, and that there is grave concern about another catastrophic hurricane season in 2009 and the financial capacity to respond to it due to the current global financial crisis. See www.unicef.org/infobycountry/haiti_48724.html.

¹⁴ There have been reports of persons who now occupy sites, such as the Chachou Hotel in Gonaïves, used by the state as official shelters following the 2008 disaster. Some are said to have moved there expecting government assistance. Crisis Group interview, UN humanitarian officials, Gonaïves, 31 March 2009. Other reports indicated that aid sometimes does not reach the real victims, because some persons who pose as victims make a living from disaster relief. Crisis Group interviews, UN environment expert, Jacmel, 5 March 2009; local human rights observer, Fonds Verrettes, 4 March 2009.

¹⁵ Crisis Group interviews, residents, Bel Air, Cité Soleil, 11 April 2009. The blocked canals were the source of the flooding in early March 2009 that affected several hundred households and gave rise to demonstrations in Bel Air demanding state remedial action. A temporary solution was provided by the government and by Viva Rio, a Brazilian NGO working in Bel Air, to move the rubbish clogging the canals to the side and allow for better flow of the water; but residents fear that in the rainy season rubbish will be washed into the canals again, and flooding will re-occur.

¹⁶ Crisis Group interview, energy consultant, Ministry of Public Works, Transportation and Communications (MTPTC, French acronym) Port-au-Prince, 12 February 2009.

¹⁷ "Plan national de développement du secteur énergie", MTPTC, 2004.

⁴"Land Resources Information Systems", op. cit.

⁵"Good Practices for Hazard Risk Management in Agriculture: Summary Report Haiti Project Phase 1", FAO, March 2007, <ftp://ftp.fao.org/docrep/fao/010/ai501e/ai501e01.pdf>; Institut Haïtien de Statistique et d'Informatique (IHSI) 2008 population estimates at www.ihsi.ht.

⁶"Good Practices for Hazard Risk Management in Agriculture", op. cit. Based on the 2008 post-disaster assessment, tropical storm Jeanne caused close to 3,000 deaths and disappearances and \$256 million in damages, 7 per cent of the gross national product, 18 per cent of national investments and 6 per cent of the country's external debt. See "Rapport d'évaluation des besoins après désastre cyclones Fay, Gustave, Hannah et Ike", government of Haiti, 28 November 2008.

⁷"Bilan consolidé des dégâts", Civil Protection Office (Direction de Protection Civile, DPC), Port-au-Prince, 1 October 2008.

⁸"Rapport d'évaluation", op. cit.

⁹"Parlementaires chauffés par un front froid", *Le Nouvelliste*, Port-au-Prince, 6 March 2009.

¹⁰This hurricane pattern is expected to continue for at least two decades. Tim Brown, "Forecasters see active 2009 hurricane season", Reuters, 10 December 2008. See www.reuters.com/article/topNews/idUSTRE4B93XM20081210; and <http://hurricane.atmos.colostate.edu>.

¹¹"Hurricane Season 2009 Forecast", www.cancunweathertoday.com, 10 December 2008, www.cancunweathertoday.com/hurricane_forecast_php.

¹²"Weighed down by disasters: a modest success for the United Nations is threatened by nature and lassitude", *The Economist*, 12 February 2009. The government launched

charcoal.¹⁸ Households (the largest energy consumers), small and medium-sized enterprises (SMEs) and trade and services together consume 70 per cent of the energy generated yearly, mostly from wood and charcoal. The remaining 30 per cent is used by the industrial sector. Though charcoal is produced in the countryside, most of it is consumed in urban areas, an estimated 80 per cent in Port-au-Prince alone.¹⁹

The environmental degradation is most clearly reflected in deforestation and soil erosion that affect over 50 per cent of the territory.²⁰ Both problems can be traced back to the colonial period, when the pillage of precious wood, such as cedar and mahogany, began. Today, the few remaining forests are depleted for charcoal production.²¹ Trees are also cut for use in the local furniture and construction industries or by farmers to increase access to arable land.

The loss of vegetal, particularly, tree cover has a devastating effect.²² Countrywide tree cover, at 80 per cent five centuries ago, was reduced to 22 per cent in the 1940s and is now less than 2 per cent.²³ The 1999

national environmental action plan (see Section III.A below) estimated that in the late 1990s 5.3 million cubic metres of wood was used yearly, which is more than three times higher than the current estimated 1.6 million cubic metre forest and agro-forest reproductive capacity. Reforestation efforts are far from filling the deficit.²⁴ The action plan foresaw the reforestation of mountains where the main watersheds are located, but many initiatives were not launched, due to financial and other problems.²⁵ Political instability,²⁶ inapplicable projects²⁷ and the lack of continuity of policies and programs resulting from changes in government

the plan following the 2008 disaster, but efforts to put the inter-ministerial coordination structure in place remain insufficient.

²⁴“Plan d’action pour l’environnement”, environment ministry, June 1999. A 2008 report indicated that despite several well-intentioned efforts by various organisations, achievements have been limited. There has been some success in planting fruit trees – up to one million in the south since 1985, for example – but groups are not optimistic about large-scale reforestation. Jonathan M. Katz, “Haiti nears grim future without trees as efforts to halt deforestation falter”, Associated Press, 16 February 2008. See www.nctimes.com/articles/2008/02/17/science/17_21_452. School programs and civil society groups have failed to mobilise yearly national plant-a-tree days in some areas, because there are no financial or human resources for follow-up.

²⁵Crisis Group Latin America/Caribbean Report N°10, *A New Chance for Haiti?*, 18 November 2004, p. 23. In 2004, following tropical storm Jeanne, media reports indicated that in the mid to late 1990s only 0.2 per cent of the \$560 million in foreign assistance was allocated to the environment. The July 2004 donors conference pledged \$1.08 billion. However, less than 2 per cent was allocated to environmental protection and rehabilitation. Though the government named the environment a priority, only 2-3 per cent of the 2008-2009 national budget proposed to parliament in December 2008 was for the environment. Crisis Group interview, environment consultant, environment ministry, Port-au-Prince, 6 March 2009.

²⁶Political instability also affected implementation of the 1999 environmental plan, when discontent over the 2000 elections produced a two-year political impasse. Crisis Group interviews, local development organisations, Port-au-Prince, 26 February 2009, Jacmel, 5 March 2009; environment consultant, environment ministry, Port-au-Prince, 6 March 2009.

²⁷It was reported in 2008 that the U.S. Agency for International Development (USAID), for example, embarked on a \$22.8 million project in the 1980s to plant some 30 million trees, but the focus was on trees usable for charcoal, and nearly all were cut down. Jonathan M. Katz, “Haiti nears grim future”, op. cit. In the 1990s, USAID learned from that lesson and switched to programs aimed at planting high-value trees, such as mango and cocoa. Funding was provided for 130,000 farmers to plant six million trees in 1997 and seven million in 1999. Crisis Group correspondence, former senior USAID official, 7 April 2009.

¹⁸“Republic of Haiti: Strategy to Alleviate the Pressure of Fuel Demand on National Woodfuel Sources”, Energy Sector Management Assistance Program (ESMAP), World Bank, January 2007. One ton of charcoal costs \$300, of kerosene, \$750 and of gas, \$1,050. Electricity is not commonly used for cooking.

¹⁹Between 179,000 and 234,000 tons of wood are used annually to fuel some 1,470 bakeries and laundries. Crisis Group interview, energy consultant, MTPTC, Port-au-Prince, 12 February 2009; “Republic of Haiti: Strategy”, op. cit.

²⁰Crisis Group interview, environment project director, United Nations Development Programme (UNDP), Port-au-Prince, 11 February 2009.

²¹Crisis Group interview, Gerald Mathurin, former agriculture and natural resources minister, director, CROSE (Coordination Régionale des organisations du Sud Est), Jacmel, 5 March 2009.

²²In the Massif de La Selle (South East department), in zones with an altitude above 1,000 metres, where the dominating species is western pine, forest cover has been reduced from 30,000 hectares in 1942 to 17,000 in 1956, to 10,000 in 1977 and to only a few hundred today. Only 30 per cent of the original cover remains in the Forêt des Pins, the main forest reserve, with an area of 32,000 hectares, and anarchical exploitation continues despite its protected status. Crisis Group interviews, international environment expert, Jacmel, 2 March 2009; local human rights observers, Fonds Verrettes, 4 March 2009 and Port-au-Prince, 20 February 2009; city hall staff, Fonds Verrettes, 4 March 2009.

²³“Rapport d’évaluation”, op. cit. The 1999 national environmental plan (Plan d’action pour l’environnement) of the environment ministry also noted the reduction in tree cover. It was produced during President Préval’s first term but was never implemented due to lack of funding and/or will. The current Préval-Pierre-Louis government seeks to implement

have also hindered reforestation. Environment Minister Jean-Marie Claude Germain declared in 2008 that reforestation and efforts to preserve trees in three protected zones had been set back by the rebellion that ousted President Jean Bertrand Aristide in 2004.²⁸

The loss of tree cover also contributes to severe scarcity of potable water, because it has negative consequences for watersheds and catchment areas. It triggers soil degradation, agricultural production decline and significant hydro deficit. Water reserves no longer satisfy population needs in dry periods. Only 10 per cent of water infiltrates the soil instead of the required 40 per cent.²⁹ The loss of tree cover has left the majority of hills bare, and tropical storm and hurricane-triggered flash floods regularly cause major destruction. Deforestation is so severe that sediments reaching the rivers and streams from the hilltops produce muddy landscape throughout the rainy season.³⁰

Dwindling agricultural production owing to the effects of deforestation and erosion, among other factors, has spurred massive flight from the land, primarily to the large cities like Port-au-Prince, Cap-Haïtien (North department), Les Cayes (South department) and Gonaïves (Artibonite department).³¹ 75,000 flock yearly to the capital in search of work, taking up residence in already overcrowded neighbourhoods. Port-au-Prince had some 300,000-400,000 inhabitants 40 years ago. Today, there are approximately 2.5 million, more than a quarter of Haiti's total population.³² Average urban population growth is 3.63 per cent per year (5 per cent in the capital), while in rural areas it is just 0.92 per cent.

The negative impact of this unplanned rural exodus and urbanisation is evidenced by the growth of shanty towns (*bidonvillisation*),³³ like Martissant, La Saline,

Solino, lower Delmas, Cité Eternel and Cité de Dieu, where insecurity, spurred by the presence of armed gangs, got out of control during the 2004-2006 political transition.³⁴ Cité Soleil, which remained a stronghold of armed gangs until early 2007, when the Haitian National Police (HNP) and the UN Stabilization Mission (MINUSTAH) largely gained control of the area, has a similar history.³⁵

Infrastructure has not been adapted to meet the pressure of accelerated urban population growth. The state has been unable to maintain adequate sanitation, leading to high levels of marine pollution owing to deposits of solid waste in the ocean, particularly off Port-au-Prince.³⁶ In 1999, public sewage disposal capacity was 47 per cent in urban areas, 16 per cent in rural areas. Only 42 per cent of solid waste is collected in Port-au-Prince and 39 per cent in the remaining nine cities.³⁷ The unplanned urbanisation has led to harden-

Crisis Group interview, civil engineer and former senator, Port-au-Prince, 9 March 2009.

³⁴ Following the armed uprising of 2004 and the departure of former President Aristide in February that year, a transitional government of technocrats headed by a UN official, Gerard Latortue, was put in place based on an accord signed in June 2004 by political parties, civil society and the private sector. The UN Mission, MINUSTAH, was deployed in June but with only two thirds of its authorised force and failed to disarm armed supporters of Aristide and other armed groups, including soldiers of the disbanded FAd'H (Force Armée d'Haïti). A period of violence, particularly in the slums, followed until 2006, when the Haitian police (HNP) and MINUSTAH began a systematic crackdown on armed gangs. Between September and November 2004, at least 80 persons were killed, including eleven HNP officers accused of summarily executing young men in the slums where Aristide was strong. See Crisis Group Report, *A New Chance for Haiti?*, op. cit. Many children of rural migrants, now shanty town residents, whose parents were too poor to pay for their schooling and who have lost all links to the countryside, have turned into *zenglendons*, the Creole term for a common criminal, and resort to illegal armed gang activities. Crisis Group interview, civil engineer and former senator, Port-au-Prince, 9 March 2009.

³⁵ Cité Soleil housed workers in the 1960s. In the 1980s, it grew, along with the blossoming of the textile and assembly industries. In March 2002, during President Aristide's second term, it was upgraded from a ward to a commune. Despite this higher administrative status, it is still considered the country's largest (300,000-400,000) and poorest slum. Crisis Group interview, Jocelerne Privert, former interior and local government minister, under whom Cité Soleil became a commune, Port-au-Prince, 12 February 2009.

³⁶ Crisis Group interviews, consultant, environment ministry, Port-au-Prince, 5 March 2009; civil engineer and former senator, Port-au-Prince, 9 March 2009.

³⁷ "Plan d'action pour l'environnement", environment ministry, June 1999.

²⁸ Jonathan M. Katz, "Haiti nears grim future", op. cit.

²⁹ "Plan d'action pour l'environnement", environment ministry, June 1999.

³⁰ Crisis Group interview, international environment expert, Jacmel, 2 March 2009.

³¹ Crisis Group interview, civil engineer and former senator from the capital, Port-au-Prince, 9 March 2009.

³² "Environmental Vulnerabilities in Haiti: Findings and Recommendations", Chemonics International, Inc., U.S. Forest Service and USAID, April 2007.

³³ A *bidonville* is a residential area with little or no infrastructure, generally on the edge of a large city, where precarious structures are put up with improvised materials. It is often characterised by criminality, difficult living conditions, extreme poverty, overcrowding, dilapidation, lack of ventilation, light or sanitation facilities. Living conditions are considered detrimental to safety, health, and morals. See www.granddictionnaire.com. Haiti's capital is enveloped by *bidonvilles*, generally created by the invasion of unoccupied land.

ing of surfaces that prevents the infiltration of water necessary to recharge aquifers.³⁸ The lack of infiltration and ill-maintained drainage pipes and canals prompt flooding even outside the hurricane season.

III. ENVIRONMENTAL DEGRADATION, INSTABILITY AND CONFLICT

A. STATE WEAKNESS AND THE LACK OF ENVIRONMENTAL POLICIES

The catastrophic state of the environment is closely related to the country's deep-seated institutional, political and governance problems. Coherent national socio-economic development policies have been mostly absent, due to management and political limitations and the narrow interests of those holding economic power, thus contributing to the problem. The extreme environmental vulnerability also stems from the state's institutional weakness and poor governance, especially at the local level.³⁹

The 1987 constitution sought to include the rural, mostly poor sectors in national policy making through a local governance structure. However, credits for farmers were lacking, and the full cycle of elections has never been carried out to put in place that costly and complex structure.⁴⁰ The environment ministry, which was only created in 1995, remains weak in human and financial resources, legal structure and political influence.

³⁸ "Environmental Vulnerabilities in Haiti", op. cit.

³⁹ Crisis Group interviews, director, local development organisation, Jacmel, 5 March 2009; environment consultant, environment ministry, Port-au-Prince, 6 March 2009.

⁴⁰ Crisis Group interviews, member Senate Commission on the Environment, Port-au-Prince, 10 March 2009; leader, local development organisation, Port-au-Prince, 26 February 2009. Haiti's decentralised structures include councils and assemblies directly and indirectly elected to carry out executive and deliberative functions, respectively. Completing this government structure as stipulated in the 1987 constitution would require the direct election of 7,791 officials (only 130 elected offices are at the central level: those of the president, 30 senators and 99 members of the lower house of parliament; the remainder are at the municipal and local levels) and the indirect election of 2,496. The indirect elections have never been held, due to the lack of consensus on local government laws. The directly elected structures remain weak and dysfunctional, due to lack of resources, experience and training. A draft bill on the election and functioning of local government structures is expected to be approved by parliament in 2009. See "Compilation de documents de support a la formation des BCEC", Conseil Électoral Provisoire (CEP), Port-au-Prince, September 2006.

The ministry continues to function without an organic law, and some responsibilities continue to overlap with those of other ministries, such as agriculture and natural resources.⁴¹

Likewise, the environmental action plan designed and published in June 1999 during President Préval's first term was never implemented, mostly owing to a lack of funding. In January 2006, just prior to leaving office, the transitional government led by Gérard Latortue published an environmental decree that defined national policies and sought to make government management and citizen use of the environment compatible with sustainable development goals.⁴² That decree stated that environmental degradation had reached alarming proportions and put sustainable development at risk. However, despite recurring destruction from flooding and hurricanes, the measures it contemplated have still not been implemented.⁴³

In the absence of effective state policies, foreign assistance has sought to fill the void, but a clear strategic and comprehensive policy approach does not exist. Funding fluctuates in accordance with political circumstances,⁴⁴ donor strategies vary, and the government has little influence over the use of funds.⁴⁵ Project visibility, not good results, is often the priority. This is not always compatible with the need to address en-

⁴¹ Prior to the creation of the environment ministry in 1995, the agriculture ministry was charged with managing natural resources, and no portfolio adjustments have been made since then. Forestry, hydro resources, watersheds, parks and protected areas remain the agriculture ministry's responsibility. Crisis Group interviews, environment consultant, environment ministry, Port-au-Prince, 6 March 2009; international organisation environmental expert, Port-au-Prince, 3 March 2009.

⁴² "Décret portant sur la Gestion de l'Environnement et de la Régulation de la Conduite des Citoyens et Citoyennes pour un Développement Durable", *Le Moniteur* (official journal), 161st year, no. 11, Presses Nationales d'Haïti, 26 January 2006.

⁴³ The decree foresaw measures for preventing public health risks due to environmental factors, conservation and rational management of natural resources, prevention and mitigation of risks of disasters, protection of fragile and protected zones, the urban living environment and rural lands and soil, disposal and recycling of garbage and the fight against all forms of environmental pollution and stress.

⁴⁴ In 1999, under Aristide, foreign aid totalled \$560 million; in 2004, donors pledged \$1.08 billion, exceeding the transitional government's request for \$924 million. Crisis Group Report, *A New Chance for Haiti?*, op. cit., p. 23.

⁴⁵ Bilateral donors, the U.S., for example, channel funds through non-governmental organisations (NGOs). The ministry has some influence on how multilateral funds are allocated. Crisis Group interview, environment consultant, environment ministry, Port-au-Prince, 6 March 2009.

vironmental degradation in a sustainable fashion.⁴⁶ Haitians affected by recurrent flooding do not understand why most efforts to control flooding focus on drain cleaning and riverbed repairs in the towns. These are important, but the source of the problem is watershed overflows on the mountains.⁴⁷ In addition, the government has not been effective at providing or coordinating aid to victims because of its weak disaster response capacity.⁴⁸

There have long been allegations of corruption in the management and distribution of relief funds. For instance, following Hurricane Hazel in 1954, claims of misappropriation of international financial aid led to widespread popular resentment, a general strike and martial law. Ultimately, this contributed to the fall of President Paul Eugène Magloire and the year of political chaos that followed.⁴⁹ Criticism of the government's use of the emergency fund for response to the 2008 storms is on the rise in parliament, which has repeatedly questioned Prime Minister Pierre-Louis and various cabinet members about disbursements,⁵⁰ although much of the criticism also stems from the parliamentarians' desire to obtain greater funding for their districts. The most recent such session, on 17 March 2009 in the lower house with the prime minister and the environment, agriculture and public works ministers, ended prematurely when a parliamentarian violently disrupted it by grabbing and destroying the microphones after he was not given the floor.⁵¹

⁴⁶ Ibid; Crisis Group interview, director, local development organisation, Jacmel, 5 March 2009. Bilateral aid, principally from USAID, passes through NGOs. Based on the World Environmental Fund (WEF) convention, the environment ministry manages multilateral aid, though it transits through UN agencies and others, such as the Inter-American Development Bank.

⁴⁷ Crisis Group interviews, international environmental expert, Jacmel, 5 March 2009; leader, women's group, Jacmel, 2 March 2009.

⁴⁸ Crisis Group interviews, local human rights observers, Fonds Verrettes, 4 March, and Port-au-Prince, 20 February and 13 March 2009.

⁴⁹ R. Schubert et al, "Climate Change as a Security Risk", German Advisory Council on Global Change, 2008. Crisis Group interview, member, Presidential Commission on National Security, Port-au-Prince, 20 March 2009. President Paul Eugène Magloire's downfall came when he attempted to extend his term, but his power was already weakened by the persistent allegations of embezzlement following Hurricane Hazel.

⁵⁰ Various local media reports. The prime minister failed to respond to an 11 March 2009 summons.

⁵¹ Jean Pharès Jérôme and Roberson Alphonse, "Le député Bourjolly pète les plombs", *Le Nouvelliste*, Port-au-Prince, 17 March 2009, www.lenouvelliste.com/articles/print/1/68214.

B. EXTREME AND PERVASIVE POVERTY

Environmental degradation is a core development challenge with serious implications for Haiti's peace, stability and security. It contributes to increasing poverty and exacerbates communities' vulnerability to disasters. Security sector reform and other measures to reduce the risk of crime, violence and renewed conflict are important, but security in Haiti has to be understood in broader terms. It is also about such threats as diarrhoea, malnutrition, illiteracy and unemployment, and deadly floods.⁵² The basic needs of water, food and general livelihood are increasingly threatened by pervasive environmental degradation that both results from and drives decades-old extreme poverty.

For instance, in Cité Soleil, where hundreds of families were victims of flooding in early March 2009, the evaluation team of the U.S.-Haiti Stabilisation Initiative (HSI), which assessed the period September 2006-September 2008, found that insecurity and instability will remain until basic living conditions are improved. Its report concluded that those problems are directly related to poverty, which in turn is associated with the absence of economic opportunities and basic services.⁵³

Over 70 per cent of Haitians live on less than \$2 per day, and 56 per cent barely survive on less than \$1. Pervasive poverty produces widespread social resentment and enhances the chances of destabilisation.⁵⁴ With close to one million persons affected by the 2008

The legislator was Emmanuel Bourjolly (Aquin, South department, Fusion des socio-démocrates party).

⁵² Crisis Group interview, member, Presidential Commission on Security, 4 February 2009.

⁵³ "HSI Evaluation Team Phase II Assessment for Cité Soleil", 2008; Crisis Group interview, David Beckham, HSI coordinator, and David Alarid, assistant coordinator, Tabarre, 5 February 2009. In Martissant and Bel Air, similar community-based efforts have been undertaken to help curb violence and insecurity. Viva Rio, a Brazilian NGO, was instrumental in bringing together former armed gang members (from Solino, Bel Air, Delmas 2, La Saline and Fort Rond) to sign an accord in 2007 in support of the government's national commission for disarmament, demobilisation and reinsertion (CNDDR, in French) program. These ex-gang members are now engaged in community cultural projects under the Viva Rio project Tambou la pè (Drums for Peace). Residents of the previously violent zone are working together to manage community projects, such as water kiosks they constructed with Viva Rio money and the technical training and assistance of the national water authority. Five of a planned thirteen kiosks are already functioning. Crisis Group interview, Bel Air residents and Viva Rio local staff, Bel Air, 11 April 2009.

⁵⁴ Crisis Group interview, local human rights organisation, Port-au-Prince, 13 March 2009.

storms, the number of those living in extreme poverty is likely to have increased. The country faces extreme inequality of income: 80 per cent of the population has access to only 32 per cent of the country's revenue. Fewer than 30 per cent are covered by public health care; about 70 per cent has no access to any kind of health care.⁵⁵

The availability of potable water is estimated at 54 per cent in Port-au-Prince and 46 per cent in other cities – but only 25 per cent in the slums – and 48 per cent in the countryside.⁵⁶ 366 of the country's 650 potable water sources that were operational before the 2008 storms have not been repaired. In the South East department, 47 of the 51 sources were damaged, and access to clean water dropped from 40 per cent to 10 per cent following that year's devastating floods. Lack of funding constrains repairs there, and it is estimated that no more than 13 per cent of the damaged sources can be put back in working order.⁵⁷ The 1999 environmental action plan estimated that solid waste disposal was available to 42 per cent of the capital and 39 per cent of other cities, while no city had a centralised sewage system.

In a vicious circle, the poor contribute to environmental degradation through deforestation, which in turn undermines their livelihood, leaving them less and less fertile land to farm and forcing increased dependence on harvesting forests to obtain revenue or firewood as their only affordable energy source.⁵⁸ People deforest out of ignorance and need. With no supervision or training, they use rudimentary farming techniques that damage the environment.⁵⁹ Estimates indicate that one

million families practice subsistence farming in very precarious circumstances.⁶⁰ This means that unless environmental degradation is halted, the livelihood of approximately 60 per cent of the population will remain under constant threat.

Haiti was almost self-sufficient in food two decades ago but currently can satisfy only 47 per cent of its requirements.⁶¹ Prior to the 2008 devastation, 2.5 million depended on food aid; after the agricultural sector suffered \$197 million damage in the storms, 3.3 million did.⁶² Each new storm cycle leaves larger numbers of Haitians calling on the government or international community to satisfy their needs.⁶³

C. RAPID POPULATION GROWTH AND URBAN OVERCROWDING

There is a rather obvious but complex relationship in the country between overcrowding and violence. Haiti's population remains predominantly rural, but there is a steady flow of migrants to urban areas unprepared to handle new arrivals.⁶⁴ In its September 2008 report on

⁵⁵ Figures provided by the planning and economic cooperation ministry at www.mpce.gouv.ht/dsnrcpfinal.pdf.

⁵⁶ National Growth and Poverty Reduction Strategy Paper (Document de stratégie nationale pour la croissance et pour la réduction de la pauvreté, DSNCRP), planning and external cooperation ministry, November 2007.

⁵⁷ Crisis Group interview, international environment expert, Jacmel, 5 March 2009. UNDP surveyed the network of potable water sources. There are 700 at the national level, 650 of which were functional prior to the 2008 hurricane devastation. UNDP is planning a program to help SNEP (Service National d'Eau Potable) construct a new potable water system for the entire South East department, but in the interim, a considerable percentage of the population is consuming contaminated water.

⁵⁸ "From Conflict to Peacebuilding: The Role of Natural Resources and the Environment", UN Environmental Programme, February 2009.

⁵⁹ Crisis Group interview, director, local development organisation, Jacmel, 5 March 2009. The Duvalier regime attempted to control tree cutting, but its measures were repressive, characterised by the use of neighbourhood surveillance agents, known as "chefs de section", the now disbanded army and

thugs known as "Ton Ton Macoutes". There was little or no civic education to change energy consumption habits.

⁶⁰ Crisis Group interview, international environment expert, Jacmel, 5 March 2009.

⁶¹ Crisis Group interview, local development organisation, Port-au-Prince, 26 February 2009. See also "Le droit à l'alimentation en Haïti: Rapport d'une mission internationale d'observation", Droits et Démocratie and GRAMIR (Groupe de Recherche et d'Appui au Milieu Rural), 2008. In 1986 local agricultural production covered 80 to 90 per cent of national food consumption.

⁶² Crisis Group interviews, coordinator, National Coordination for Food Security (CNSA), Port-au-Prince, 24 October 2008.

⁶³ Residents of Fonds Verrettes commune presented demands in 2007 for assistance in security, agriculture, housing and other areas. Flash floods in May 2004, blamed on extensive deforestation, killed some 1,200 of a population of 45,000, mainly in Fonds Verrettes, and washed away homes and livelihoods of several thousand families. A \$51 million project was planned to relocate the town but still has not materialised. The lone concrete response has been an experimental project by the International Organisation for Migration (IOM), which built 91 two-bedroom houses for families who owned a plot of land, but the most unfortunate received nothing from the state. Continued deforestation of even protected areas in the commune creates fear of a repeat of the 2004 disaster. Crisis Group interviews, local human rights observers, Fonds Verrettes, 4 March, and Port-au-Prince, 20 February 2009; city hall staff, Fonds Verrettes, 4 March 2009.

⁶⁴ Crisis Group interviews, senior official, Presidential Commission on National Security, Port-au-Prince, 20 March 2009. Also see "Crime, Violence, and Development: Trends, Costs, and Policy Options in the Caribbean", World Bank and UN

security sector reform, Crisis Group warned that continued overcrowding of the urban slums by poor rural migrants presented an explosive social mix.⁶⁵ Armed gang activity in the slums virtually paralysed metropolitan areas between 2004 and early 2007. Dismantling the gangs, especially in Port-au-Prince's Cité Soleil, has been perhaps the Préval administration's biggest success, but there is a real risk of regression.

With the proliferation of slums came the loss of rural lifestyle and values and a lack of socio-economic opportunity.⁶⁶ The farming culture instilled patience, adaptability and tolerance in the older generation of rural migrants, who learned to deal with the unexpected and were accustomed to the waiting period between planting and harvesting. The younger slum dwellers were confronted with the fast-paced life in urban slums, the unfulfilled expectations of previous generations and weak or non-existent government support. Many had no schooling and little prospect for advancement, increasing the chances of their ending up in armed gangs.⁶⁷

In 2005, during the worst period of armed gang activity, UNICEF reported that around 70 per cent of school-aged children in the poverty-stricken commune of Cité Soleil did not attend school and that more than 30,000 children were living in situations of violence in the capital.⁶⁸ These young people were lured with money or food into the armed gangs to serve as look-outs, messengers, carriers of guns and even fighters against rival gangs. If they refused to join, they were often punished.⁶⁹ In a context marked by poverty and insecurity, children lacking affection and parental care perceived gang leaders as community leaders and heroes.⁷⁰

In the joint operations the police and the UN mission (MINUSTAH) conducted in urban slums, particularly Cité Soleil, in early 2007, most gang leaders were either killed or arrested. Former gang members scattered⁷¹ but in most cases remain poor and with dim economic prospects. They usually have no obvious political agenda, but with the slow start and small yields produced by the follow-up community violence reduction (CVR) and disarmament and reinsertion programs, they can easily re-emerge in urban slums that were less thoroughly purged.⁷² Gang violence was never curbed in Bel Air and Martissant, two Port-au-Prince slum areas notorious for armed gang warfare during the political transition (2004-2006), to the same degree as in Cité Soleil.⁷³ The April 2008 food riots revealed the serious security problems related to the fact that the capital is surrounded by overcrowded slums, whose inhabitants can be easily mobilised.⁷⁴

A breeding ground for crime, the slums now also attract deportees with criminal records, another vulnerable group. There is no official data on their participation, but they are known to be targeted by criminal gangs as recruits. Rival gangs remain in Martissant, for example.⁷⁵ Doctors without Borders (MSF), which began operating a clinic there in December 2006 when it was still plagued by chronic violence, continues to register hundreds of cases of trauma resulting from violence, 420 for February 2009 alone, including 28 bullet injuries.⁷⁶ The National Network for the Defence of Human Rights (Réseau national de défense des droits humains, RNDDH) indicated in its January-December 2008 report that victims of violence continue to be principally from populous neighbourhoods, such as Cité Soleil, Bel Air and Martissant.⁷⁷

Office on Drugs and Crime (UNODC), report no. 37820, March 2007.

⁶⁵ Crisis Group Report, *A New Chance for Haiti?*, op. cit., p. 23.

⁶⁶ Crisis Group interview, civil engineer and former senator, Port-au-Prince, 9 March 2009.

⁶⁷ Ibid; Crisis Group interview, senior official, Presidential Commission on National Security, Port-au-Prince, 20 March 2009.

⁶⁸ Kun Li, "Xchange helps children escape from cycle of poverty and violence", UNICEF, 14 October 2005, www.unicef.org/infobycountry/haiti_28817.html.

⁶⁹ Ibid; Crisis Group interview, members of Cité Soleil Christian youth group, Port-au-Prince, 7 March 2009.

⁷⁰ "Child Soldiers Global Report 2008 – Haiti", Coalition to Stop the Use of Child Soldiers, 20 May 2008, UNHCR Refworld, www.unhcr.org/refworld/docid/486cb10528.html. In Cité Soleil, gang leaders cultivated an almost parental status with children. In Gonaïves, children sent from rural areas to relatives ended up on the streets or joined gangs when the host family did fulfil its promises of food and schooling or

was violent or abusive. Girls were said to have been used to transport illegal weapons from the village port of Anse Rouge to Gonaïves, and children were dressed in school uniforms and instructed to look out for the police or MINUSTAH.

⁷¹ Crisis Group interview, senior official, Presidential Commission on National Security, Port-au-Prince, 4 February 2009; Crisis Group Latin America/Caribbean Report N°28, *Reforming Haiti's Security Sector*, 18 September 2008.

⁷² Crisis Group interview, senior official, Presidential Commission on National Security, Port-au-Prince, 4 February 2009.

⁷³ Crisis Group Report, *Reforming Haiti's Security Sector*, op. cit.

⁷⁴ Ibid.

⁷⁵ Ibid.

⁷⁶ Crisis Group interview, senior official, Doctors without Borders, Pétion-Ville, 19 March 2009.

⁷⁷ "Indicateur des droits humains", no. 13, RNDDH, January to December 2008; Crisis Group interview, senior staff, RNDDH, Port-au-Prince, 13 March 2009.

At an annual rate of 2.5 per cent, Haiti continues to experience rapid population growth, particularly in the cities. The predominantly young population will top 10 million in 2010, and approximately 100,000 youths join the job market yearly.⁷⁸ MSF reports it delivers on average 33 babies daily at the Port-au-Prince Jude Anne Emergency Obstetric Hospital it has managed since 2006,⁷⁹ but health facilities in urban slums are often virtually nonexistent. Risks of mosquito and water-borne epidemics as well as respiratory illnesses due to pollution remain high.⁸⁰

Many of the slums' sub-standard dwellings can only be accessed through a maze of narrow approaches that facilitates the ability of criminals to hide.⁸¹ Because the structures are so tightly jammed together, there is little or no room for infrastructure development.⁸² An August 2007 survey in Cité Soleil and Martissant by MSF found violence to be the chief cause of mortality in the slums.⁸³ For the period 1 January 2006 to 1 May 2007, it determined a murder rate of 400 per 100,000 inhabitants, comparable to that of Colombia's Medellín during the worst days of drug trafficking-related killings in 1991, when it was Latin America's most violent city.⁸⁴

⁷⁸ Crisis Group interviews, senior official, Presidential Commission on National Security, Port-au-Prince, 20 March 2009; senior staff, Doctors without Borders, Port-au-Prince, 19 March 2009. See also "Environmental Vulnerabilities in Haiti", op. cit., and Vario Serant, "L'espace haïtien face au peril de l'environnement et aux incertitudes économiques et démographiques", *AlterPresse*, 31 July 2007, www.alterpresse.org/impimer.php3?id_article=6252.

⁷⁹ See "Haiti Operational Update", at www.doctorswithoutborders.org/news/country_print.cfm?id=2323. Some 32,000 babies were delivered between March 2006 and October 2008.

⁸⁰ Crisis Group interviews, senior staff, Pan American Health Organisation/World Health Organisation (PAHO/WHO), Port-au-Prince, 4 March 2009; senior staff, Doctors without Borders, Port-au-Prince, 19 March 2009.

⁸¹ Crisis Group interview, director general, Haitian National Police, Port-au-Prince, 25 March 2009.

⁸² Crisis Group interviews, senior official, Presidential Commission on National Security, Port-au-Prince, 20 March 2009; civil engineer and former senator, Port-au-Prince, 9 March 2009.

⁸³ Crisis Group interview, senior official, Doctors without Borders-Belgium, Petion-Ville, 29 October 2008.

⁸⁴ Crisis Group Report, *Reforming Haiti's Security Sector*, op. cit.; "El entierro del 'patron'", *Cambio*, 26 March-1 April 2009, p. 60.

IV. THE WAY FORWARD

The Préval/Pierre-Louis government must make environmental rehabilitation an integral part of its stabilisation and broader security strategy. To address environmental degradation challenges, efforts are needed to reduce poverty and avert increasing social tensions brought on by disruption from recurring natural disasters. Deforestation, driven by poverty and weak governance and one of the main causes of environmental degradation, could serve as a point of departure for concerted government action, with the support of the international community. This involves longer-term measures, and the first need is for immediate steps to prepare for the 2009 hurricane season.

A. IMMEDIATE STEPS

With the hurricane season rapidly approaching, the focus should be on risk mitigation, disaster prevention and emergency preparedness, particularly in cities and departments such as Gonaïves, Artibonite, Cabaret and the West department that were rendered more vulnerable by and have not yet recovered from the 2008 devastation. Flooding caused by the early rains this March has already triggered fears among the population and reignited discord between the legislature and the executive over the use of 2008 disaster emergency funds for which parliamentarians are still requesting detailed reports.⁸⁵ If implementation of the government's stabilisation strategy is to begin promptly following the April donors conference, initiatives must be undertaken now to protect planned investments, particularly in agriculture and infrastructure, and to reduce the risk of destabilisation from a disaster on the scale that Haiti experienced in 2008.

After years of storm destruction, some preparation for the hurricane season does exist. The needs in terms of shelters, food, water and hygiene kits can be easily determined, but the availability of funds to procure and reserve stocks on time poses a challenge.⁸⁶ The

⁸⁵ Parliamentarians have continuously expressed dissatisfaction with the executive's reports on the use of \$197 million drawn from the PetroCaribe fund for disaster relief following the 2008 storms. This contributed to parliament's return of the four-month late 2008-2009 national budget proposal to the executive. Prime Minister Pierre-Louis has promised a detailed report on the use of the funds by June 2009. For background see Crisis Group Latin America/Caribbean Briefing N°19, *Haiti 2009: Stability at Risk*, 3 March 2009.

⁸⁶ Crisis Group interview, senior official, Haiti delegation of International Federation of Red Cross and Red Crescent Societies, Pétiion-Ville, 20 March 2009.

UN Office for the Coordination of Humanitarian Affairs (OCHA) hosts a humanitarian forum twice a month that includes the participation of Haiti's civil protection unit (Département de protection civile, DPC) and international partner organisations, such as the International Committee of the Red Cross (ICRC), the International Organization of Migration (IOM) and others to design rescue, emergency and contingency plans and make other arrangements in advance of the hurricane season.⁸⁷ But at a 16 March meeting of disaster-preparedness partners in Gonaïves, participants expressed concerns, in view of the global financial crisis, about the international community's capacity to provide sufficient funding to enable adequate preparations.⁸⁸

On 17 March, Prime Minister Pierre-Louis announced to the lower house a pre-hurricane season program, contemplated in the 2008-2009 national budget, which the government had hoped would pass by early April but owing to debate in parliament was approved only late that month.⁸⁹ The program, originally designed to cost over \$15 million, was reduced on account of budgetary constraints to some \$10 million.⁹⁰ Activities would include the cleaning of rivers and canals in Gonaïves, Cabaret, Léogane, Jacmel and Port-au-Prince. Environment Minister Germain also announced a \$114 million watershed rehabilitation program, already approved by donors, that is to use parts of the \$324 million in new money pledged at the April donor conference in Washington.⁹¹

While these programs will require longer-term interventions to bring effective change, first steps must be taken at once to control water run-offs, one of the most destructive and lethal aspects of environmental degradation

in Haiti, before the hurricane season. The water must be stopped uphill to protect downhill areas, but it is uncertain whether sufficient work can still be done before the season.⁹² In Gonaïves, there are plans to dig canals and plant shrubs in the hills above the town, but how much can be completed before the rainy season to mitigate flooding is doubtful.⁹³

B. LONGER-TERM MEASURES

There have been efforts to improve living conditions in the slums, particularly Cité Soleil in the capital and Raboteau in Gonaïves (Artibonite department).⁹⁴ But the authorities need to parallel such efforts with rural development initiatives to stem further flows of rural migrants, whose lands are less and less productive. In order to prevent the return of armed gangs, it is important to continue and extend the support of community-led security projects to improve cooperation on local-level anti-crime efforts. The inclusion of unemployed youth in actions to protect and rehabilitate the environment is vital.⁹⁵ An environmental education pro-

⁹² Crisis Group interview, European Union international environment and security project director, Pétiion-Ville, 13 February 2009.

⁹³ "Weighed down by disasters", op. cit. The watershed area from which the floods in Gonaïves originate covers 700 sq. km and extends over four communes in the Artibonite – Gonaïves, Ennery, Marmelade and St. Michel d'Attalaye. Rehabilitation will require considerable financial resources as well much work and time. Meanwhile the Artibonite office of the agriculture ministry has identified priority actions to reduce the city's vulnerability to flooding, including re-profiling 10.5km of River LaQuinte, drawdown of Lake Savanne Jaune and rehabilitation of the land drainage system. Crisis Group interview, UN humanitarian officials, Gonaïves, 31 March 2009.

⁹⁴ The Haiti Stabilisation Initiative (HSI) invested \$5 million in Cité Soleil to integrate development, community violence reduction and security action. Residents of Cité Soleil who participated in the refurbishment of strategic commune infrastructure live largely today without the high incidence of violence recorded between 2004 and early 2007. In Raboteau, a Gonaïves slum, the MINUSTAH Community Violence Reduction program helped residents launch efforts to create a fishing cooperative. Fishing is the main economic activity of the neighbourhood, and 200-300 residents, mostly youths, benefit from those efforts and seek to increase export of their catch in 2009 to the larger cities as well as abroad. When residents have economic activities, they rarely find time for violence or crime. Crisis Group interviews, senior officials, HSI, Tabarre, 5 February 2009; members, fishing cooperative RANEPH (Rassemblement National pour l'évolution de la pêche en Haïti), Raboteau, Gonaïves, 31 March 2009.

⁹⁵ The Artibonite Public University in Gonaïves (Université Publique de l'Artibonite aux Gonaïves, UPAG) has created a student research group on the environment (Groupe de Re-

⁸⁷ Ibid.

⁸⁸ "Amid last year's destruction, Haiti braces for another hurricane season", UNICEF, Gonaïves, 16 March 2009.

⁸⁹ Jérôme and Alphonse, "Le député Bourjolly", op. cit. The proposed budget was approved by the lower house on 2 April but the session in the senate for the vote on the budget was three times postponed in the week of 13 April due to a lack of quorum. "Le projet de loi de finance approuvé par les députés", Radio Metropole, 3 April 2009, www.metropolehaiti.com/metropole/full-econ_fr.phd?id=15005 and "Le sénateur Lambert répond à l'appel", Le Nouvelliste, 15 avril 2009, www.lenouvelliste.com/article.php?PubID=1&ArticleID=69327&PubDate=2009-04-17.

⁹⁰ "Le budget 2008-2009 amputé de 20 milliards de gourdes passant de 100 milliards à 80 milliards de gourdes: le ministre des Finances estime vital de stimuler la croissance, supporter les demandes de consommation de la population et continuer à garantir la stabilité de la gourde", Agence Haïtienne de Presse (AHP), 23 March 2009, www.ahphaiti.org/ndujour.html. Planning Minister Jean Max Bellerive announced the cut at a session with the finance commission of the lower house.

⁹¹ Jérôme and Alphonse, "Le député Bourjolly", op. cit.

gram, including family planning, is needed to reshape views on land-use practices and should form part of any government program to improve environmental management.

To build Haiti better and safer following the 2008 devastation, the government should adopt environmentally sustainable development practices. The recurring environmental crises are strongly related to poor development practices and weak governance structures that share responsibility for deforestation and uncontrolled urbanisation.⁹⁶ To reduce poverty, food insecurity and environmental degradation, the authorities should strengthen, empower and equip decentralised government structures so they can effectively assume the responsibility of managing the country's natural resources.⁹⁷ The state's absence or weakness, particularly at the local level and in rural areas, has facilitated environmental degradation.⁹⁸

To tackle deforestation, it is necessary to address land, energy and water issues. A land tenure system that grants clear property titles is acutely lacking. Land users, in their majority poor subsistence farmers, often do not have legal title. Uncertain land tenure produces land management problems, as users who have no sense of ownership are unwilling to invest in sustainable practices.⁹⁹ The same indiscriminate land use has led to the anarchic construction that plagues Port-au-Prince

and its extended metropolitan area. Although city hall officials tend to be aware, invasions of unoccupied land are often ignored.

In a 2008 report commissioned by UN Secretary-General Ban Ki-moon on opportunities to accelerate socio-economic development in Haiti, economist Paul Collier advanced a proposal to address deforestation and soil erosion without dealing directly with the land ownership question that has often impeded development projects.¹⁰⁰ He reintroduced a proposal for a change in incentives to halt cutting by increasing the planting of high-value crop trees, such as fruit trees, particularly mangoes, for which Haiti already has a market. However, poor Haitian farmers have opted since the 1960s for the seeming security of subsistence cultivation of food crops instead of perennial high-value crops, not least because they have stood to receive disproportionately small returns compared to those of the exporters and speculators.¹⁰¹

While deforestation must be halted and regulatory measures should be put in place for the cutting of trees to produce energy, measures must be applied carefully, so as to avoid sudden disruption of the livelihood of a substantial part of the workforce. The charcoal production chain generates 16 per cent of rural income.¹⁰² Projects to provide alternative income

cherche Action sur l'Environnement) and begun activities, including public information and citizen engagement, in the city to encourage people to assist in better managing their environment. The group also organised, from 9-11 April, the forum "The problems of flood disaster risks: issues and challenges", in which various sectors, including the government, participated.

⁹⁶Paul Farmer, an American anthropologist and physician and co-founder of Partners in Health in Haiti, who recently accompanied former U.S. President Bill Clinton on a visit to Haiti, called the country's recurring devastation "less-than-natural disasters, incidents that spiral into catastrophes because of Haiti's development practices of deforestation and unchecked urbanization". "Can Haiti Change Course Before the Next Storm?", *The New Security Beat*, (www.newsecuritybeat.blogspot.com), 11 November 2008.

⁹⁷Crisis Group interviews, member, Senate Commission on the Environment, Port-au-Prince, 10 March 2009; director, local development organisation, Port-au-Prince, 26 February 2009.

⁹⁸*Ibid.* In Fonds Verrettes, a small municipality in the West department near the border with the Dominican Republic through which wood illegally extracted from Forêt des Pins, one of the protected reserves, is transported, the city hall has set up a checkpoint to try to stem the illegal traffic and halt deforestation of the reserve. However, there is no police presence in the area, and funds are scarce to support this small but significant measure.

⁹⁹See "Land Resources Information Systems", *op. cit.*

¹⁰⁰Paul Collier, "Haiti: From Natural Catastrophe to Economic Security", Department of Economics, Oxford University, 27 December 2008; Crisis Group interview, Principal Deputy Special Representative of the Secretary-General Carlos Luiz da Costa, Pétiion-Ville, 15 January 2009. The media reported after the 2008 storms that construction of an emergency relief centre in the capital for which \$635,000 had been approved two years earlier was put on hold due to the inability of the government to grant the land title. Instead of pulling blankets, food, water and medical supplies from a disaster relief warehouse in-country, the 2008 hurricane victims had to wait for helicopter drops and supplies from the U.S.S. Kearsarge. See "In Haiti, 'famine just around the corner'", *The Miami Herald*, 12 September 2008, www.miamiherald.com/opinion/other-v.

¹⁰¹Crisis Group interviews, directors, local development organisations, Port-au-Prince, 26 February, and Jacmel, 5 March 2009. This was particularly evident during the decline in the 1960s in the production of coffee. Haitian farmers did not control the coffee market and prices.

¹⁰²The main parts of the chain are (1) the producers, professional or occasional charcoalers; (2) speculators, who gather at the local level and re-sell at the departmental; (3) Port-au-Prince wholesalers; (4) truck drivers, who transport the product up to the capital and other towns; (5) retailers, who sell the charcoal to consumers in the urban district. "Republic of Haiti: Strategy", *op. cit.* The strategy proposed for reducing pressure on national wood resources aims at a sustainable balance between the supply and demand for cooking fuels.

and employment should target those affected as a key element in programs to reduce charcoal dependency. Further, the public works ministry should launch its charcoal production efficiency program and advance its project to promote the use of alternative kerosene-powered stoves and other alternative fuels as soon as possible.¹⁰³ The environment ministry should complement these efforts with regulations on, and taxes for the cutting of trees, both for fuel and construction. The resulting revenues should be invested in reforestation programs.

Fatalities from natural disasters in Haiti result primarily from flash floods in the now deforested and eroded watersheds that flow down into the communities at the foot of the mountains in cities like Gonaïves and some densely populated parts of Port-au-Prince.¹⁰⁴ Based on lessons learned from previous partial watershed projects of varying degrees of success, the government and donors have concluded that reducing vulnerability to natural disasters is more likely if watershed rehabilitation is based on a national planning and development approach.¹⁰⁵ This entails ridge-to-reef planning, with interventions in whole water catchment areas, from the mountains where water run-offs originate to the sea where they are deposited.

Results from these interventions will come in the long term and require a high level of coordination within government, particularly among the four ministries with

responsibilities in environmental management.¹⁰⁶ Additionally, the interventions will have to engage local governments and communities, particularly farmers whose livelihoods depend on the natural resources involved – land, water and forests. The success of this ambitious plan, however, will depend on improving the government's institutional framework, so as to improve coordination among entities and efficiency in field execution. Environmental decisions are generally unpopular in Haiti, because they tend to entail actions to the short-term detriment of the poor, with negative implications for the authorities' electoral prospects. But the government should revise, update, pass and implement environmental laws, while preparing to parallel these actions with poverty alleviation programs.

V. CONCLUSION

Haiti's weak economic growth, pervasive and extreme poverty and fragile politics and governance structures reduce its capacity to cope with the disruptions severe environmental degradation causes. That the economy is agro-based increases its vulnerability. Sudden and widespread disruptions, such as the 2008 storms, trigger social and political tensions, particularly when government lacks the capacity to respond adequately. Much of the current discord between the executive and the legislative branches of government is related to the use of post-2008 disaster funds. A new natural disaster in 2009 in an overpopulated city such as Port-au-Prince could easily transform the considerable opposition to the Préval/Pierre-Louis administration again into violent conflict.

Reduction in that year's hurricane death toll compared to 2004 due to an improved alert system was already a major step, but efforts must now be taken to engage communities in risk mitigation and hurricane-preparedness efforts before the 2009 season begins in June. With the senate approval of the 2008-2009 national budget on 23 April, the government should launch its pre-hurricane season program immediately.

To achieve lasting reduction in environmental degradation, the Haitian authorities and their international partners must address structural issues. Reforestation of land, rehabilitation of watersheds and conservation of topsoil so as to reduce erosion can only have a positive impact if pressure on the environment is eased by slowing population growth and rapid urbanization.

¹⁰³ The ministry of public works is currently revising a 2004 national energy development plan that proposes technical measures to improve the production of charcoal by introducing techniques to produce more coal for less wood. Current techniques yield only about 20 per cent charcoal. The plan also seeks to reduce the negative impact on the environment by advancing a source of energy for cooking to replace charcoal. The ministry proposes kerosene stoves and plans to provide incentives and subsidies (for two years) to entrepreneurs involved in the import and distribution of kerosene to make this alternative more competitive than charcoal. Crisis Group interview, energy consultant, MTPTC, Port-au-Prince, 12 February 2009. Crisis Group has observed the sale of small, locally-produced kerosene stoves by street vendors, which cost 350 Haitian gourds (approximately \$9). A bag of charcoal is sold at 500 gourds (\$12.5), does not necessarily require a stove and can last a family of nine that prepares two hot meals a day for 22 days. Crisis Group interview, single parent of an extended family, Port-au-Prince, 1 April 2009. See also statements on alternatives to charcoal made by World Bank and Haitian government panellists at IDB donors conference, Washington DC, 14 April 2009.

¹⁰⁴ Crisis Group interview, senior official, Presidential Commission on National Security, Port-au-Prince, 4 February 2009.

¹⁰⁵ Crisis Group interview, environment consultant, environment ministry, Port-au-Prince, 6 March 2009.

¹⁰⁶ The environment, agriculture, natural resources and rural development, planning and external cooperation and public works, transport and communications ministries.

sation. Success in environmental rehabilitation depends in large part on good cooperation between those overusing the natural resources and those seeking to better manage them. The government, with continued international help, will need to reach out to local communities to make them full partners in the reduction of further degradation. The approach to halting and even-

tually reversing Haiti's environmental problems must contain that same strong social component that is fundamental for reducing the risk of renewed violent conflict.

Port-au-Prince/Brussels, 28 April 2009

APPENDIX A

MAP OF HAITI

