

7.0 Haiti

ALM	Adaptation Learning Mechanism
BME	Bureau des Mines et de l'Énergie (Mines and Energy Bureau)
CARICOM	Caribbean Community
CCCCC	Caribbean Community Climate Change Centre
CIA	Central Intelligence Agency (United States)
CIDA	Canadian International Development Agency
DFID	Department for International Development (United Kingdom)
DRR	disaster risk reduction
GEF	Global Environment Facility
FAO	Food and Agriculture Organization
LDCF	Least Developed Country Fund
MDE	Ministère de l'Environnement (Ministry of Environment)
NAPA	National Adaptation Programme of Action
PAE	Plan d'Action pour l'Environnement (Action Plan for the Environment)
PRSP	Poverty Reduction Strategy Paper
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development

Haiti is the poorest country in the Western Hemisphere, with approximately 80 per cent of the population living in poverty (MDE, 2006). Its widespread poverty and ecological degradation make Haiti particularly susceptible to climate change impacts. Rapid deforestation, at a rate of about 1,000 hectares per year between 2005 and 2010 (FAO, 2010),¹¹⁵ has left only three per cent of the country with forest cover (Williams, 2011). Consequently, 25 of 30 watersheds in Haiti are completely deforested (PAE, in MDE, 2006). This rate of deforestation

¹¹⁵ In its *Global Forest Resource Assessment*, FAO (2010: 232) indicates that Haiti's forest cover rested at 116,000 hectares in 1990 and had shrunk to 101,000 hectares by 2010, with an annual deforestation rate of 0.77 per cent or 1,000 hectares per year between 2005 and 2010.



results from the use of fuelwood to supply 71 per cent of Haiti's energy requirements (BME 1999, cited in MDE, 2002). Vulnerability to climate change was further increased in January 2010, when a crippling magnitude 7.0 earthquake destroyed much of Haiti's capital city, Port-au-Prince. Approximately two million people lived within the zone of heavy and moderate structural damage (CIA, 2010). Haiti also lies in the middle of a hurricane belt, with the most severe storms occurring from June to October (MDE, 2006). The country also has been plagued by political violence throughout its history (CIA, 2010).

A. Adaptation Needs and Priorities

Based on available projections, major climatic changes expected to occur in Haiti include a reduction in rainfall of 6 to 20 per cent by 2030 and by 11 to 36 per cent by 2060 (MDE, 2006). While annual precipitation is projected to decrease, the more limited rainfall events are expected to become more intense. Temperatures are also expected to increase by 0.8° to 1.0°C by 2030, and by 1.5° to 1.7°C by 2060 (MDE, 2006). Identified climate-related hazards in Haiti include: (flash) flooding, salt water intrusion, drought, intense rainfall, landslides, severe soil erosion, and hurricanes.

According to its First National Communication to the United Nations Framework Convention on Climate Change (UNFCCC), the adaptation needs of Haiti relate primarily to: (1) agriculture/food security; (2) coastal zones and marine ecosystems; and (3) water resources (MDE, 2002). Similarly, the National Adaptation Program of Action (NAPA) identified the following adaptation priorities: (1) watershed management and soil conservation; (2) coastal zone management; (3) evaluation and conservation of natural resources; (4) preservation and enforcement of food security; (5) water protection and conservation; (6) infrastructure construction and rehabilitation; (7) waste management; (8) education and outreach. The NAPA also identified Haiti's most vulnerable areas to be the Southern, Western and North-Western departments, as well as the department of Artibonite (MDE, 2006).

As noted above, climate change will have repercussions on diverse sectors. These climate change impacts are often interlinked. The decreased annual rainfall and intense storm events projected with climate change would decrease agricultural productivity (namely corn, rice and potatoes) and increase dependence on imported food (MDE, 2006). In addition to compromising food security, decreased precipitation would also likely result in water scarcity. Intense storm events could threaten water security by contributing to increased erosion and the subsequent fouling of water quality. On the other hand, intense rainfall events would also lead to flooding, landslides and significant erosion, especially considering that most of Haiti's watersheds lack protective forest cover. Erosion from the wind and rain of intense storms, coupled with iterative cycles of drought and chronic anthropogenic degradation, will also amplify desertification in Haiti, thus further compromising agricultural productivity and food security (MDE, 2006).

Coastal communities in Haiti are also particularly vulnerable to climate change impacts. The most intense rainfalls primarily occur and will continue to occur along the coast resulting in significant runoff of water and pollution into densely populated coastal areas. Sediments and pollutants from eroded upstream lands also negatively impact marine ecosystems. In addition to runoff events, sea level rise induced by climate change will also impact Haiti’s coastal population and ecosystems. Sea level rise will increase coastal erosion and salt-water intrusion and thus very likely compromise food and water security (MDE, 2006).

B. National Level Policies and Strategic Documents

With the elaboration of Haiti’s First National Communication (MDE, 2002) and NAPA (MDE, 2006), Haiti’s Ministry of Environment has undertaken steps towards the elaboration of national level adaptation policy. The NAPA recognizes the need to synergize existing national strategies with climate change adaptation. Specific national level policies that will be integrated with the NAPA include the Interim Cooperation Framework (*Cadre de Cooperation Interimaire*) and Poverty Reduction Strategy Paper (PRSP). These policies share mutual goals, including the sustainable intensification of agriculture production, prevention of land degradation, and increasing access to clean water (MDE, 2006). Haiti’s PSRP and NAPA also share mutual objectives to implement the vulnerability reduction activities as outlined in the National Risk and Disaster Management Plan (*Plan National de Gestion des Risques et Desastres*) (MDE, 2006). Another plan that will be integrated with the NAPA is the National Environmental Action Plan (*Plan d’Action pour l’Environnement*) released in 1999, which focuses on sound environmental management and recognizes climate change as a priority. Finally, the Coastal Zone Management Plan will also be integrated into NAPA activities. The integration of these diverse national level policies will help Haiti adapt to the broad spectrum of climate change impacts. However, it remains to be seen how and to what extent these policies will be integrated and successfully applied on the ground to reduce the country’s vulnerability to climate change.

Table 1: Key Government Policies and Reports reflecting Adaptation Needs, Priorities and Planned Actions

Name of Policy Action		Government Division Responsible	Status	Sector(s) of Focus	Summary description
1.	First National Communication to the UNFCCC ¹¹⁶	Ministry of Environment	Submitted August 2001	Agriculture; Freshwater supply; Coastal zone management	On adaptation, this report presents preliminary assessments of the vulnerability of Haiti’s agriculture sector, freshwater resources and coastal zones to climate change.
2.	National Adaptation Programme of Action ¹¹⁷	Ministry of Environment	Released October 2006	Multi-sectoral	The NAPA presents: climate change vulnerability assessments focused on soil erosion/desertification, agriculture, coastal

¹¹⁶ UNFCCC, http://unfccc.int/essential_background/library/items/3599.php?rec=j&preref=3425#beg

¹¹⁷ UNFCCC, <http://unfccc.int/resource/docs/napa/hti01f.pdf>



Name of Policy Action	Government Division Responsible	Status	Sector(s) of Focus	Summary description
				zones and water; a brief overview for the need to integrate the NAPA with other national strategies; and analysis and ranking of adaptation needs and priorities.

C. Current Adaptation Action

The review revealed a total of five current adaptation-focused projects in Haiti, an average number of projects for the Caribbean region. Over half of the adaptation actions in Haiti are being implemented solely in Haiti, with the remainder of the projects being part of regional initiatives. Nationally focused projects in Haiti are being funded by the Least Developed Countries Fund (LDCF), the Canadian International Development Agency (CIDA) and the Global Environment Facility (GEF). They focus on capacity building, vulnerability assessment and policy integration in the areas of disaster risk management, coastal zone management and agriculture. Haiti is also participating in regional projects funded by the Food and Agriculture Organization (FAO) and the World Bank in the areas of agriculture, disaster risk management and policy integration. This includes Haiti’s participation in the “Pilot Program for Climate Resilience,” a recognition of the country’s particular vulnerability to climate change.

Table 2: Current Adaptation Projects and Programs in Haiti

Name	Objectives	Funder(s)	Implementing Agency(s)	Type of project	Duration	Priority Sector(s)	Geographic focus (if any)
National Projects							
1.	Climate Change Adaptation Initiatives in Haiti ¹¹⁸	Support for climate change adaptation activities in Haiti	CIDA Budget: CND 5 million			2010–?	Haiti
2.	Strengthening Adaptive Capacities to Address Climate Change Threats on Sustainable Development Strategies for Coastal Communities in Haiti ¹¹⁹	To strengthen adaptive capacity of populations and productive sectors in coastal areas to address increasing climate change risks.	LDCF Budget: US\$11.06 million	UNDP	Capacity Building	2010–2014	Coastal zone management Haiti

¹¹⁸ Government of Canada, <http://www.climatechange.gc.ca/Content/5/F/5/5F50D3E9-2ADD-4067-BBE8-CCCAA95D025E/faststart.pdf>

¹¹⁹ ALM, <http://www.adaptationlearning.net/project/strengthening-adaptive-capacities-address-climate-change-threats-sustainable-development-str> and www.gefonline.org/projectDetailsSQL.cfm?projID=3733

Name	Objectives	Funder(s)	Implementing Agency(s)	Type of project	Duration	Priority Sector(s)	Geographic focus (if any)
3. Strengthening Climate Resilience and Reducing Disaster Risk in Agriculture to Improve Food Security in Haiti Post Earthquake ¹²⁰	The objective of this project is to reduce the impact of climate variability and change on agro-ecosystems, vulnerable farmers and their livelihoods in the post-earthquake crises through the integration of disaster risk management and adaptation in the agricultural sector and replication of resilient crop varieties and cultivation practices.	GEF Budget: US\$7.2-million	FAO	Policy formation and integration; Capacity building; Field implementation	2010–2014	Agriculture; Disaster risk management	Haiti
Participation in Regional and Global Projects							
4. Assistance to Improve Local Agricultural Emergency Preparedness in Caribbean countries highly prone to hurricane related disasters ¹²¹	Natural hazards have severely destabilized the socio-economic fabric of the Caribbean region in the last two decades, with the most devastating impacts experienced in 2004. Such events have exposed the socio-cultural and environmental vulnerabilities of the Caribbean basin, and the urgent need to rethink disaster management options.	FAO	FAO	Policy formation and integration; Capacity building	2006–2009	Agriculture, Disaster risk management	Regional: Cuba; Grenada; Haiti; Jamaica
<i>In Haiti: Further information required.</i>							
5. Pilot Program for Climate Resilience–Caribbean Regional Program	The Pilot Program for Climate Resilience is a targeted program under the Strategic Climate Fund which aims to provide incentives for scaled-up action and transformational change in integrating climate resilience into national development planning. Activities in the Caribbean include country-based investments in Haiti, Jamaica, Dominica, Saint Lucia, Saint Vincent and the Grenadines, and Grenada; as well as	World Bank's Strategic Climate Fund	National governments	Capacity building; Knowledge communication; Policy formation and integration	2008–present	Government	Global project with specific Caribbean component: Dominica, Grenada, Haiti, Jamaica, Saint Lucia, and Saint Vincent & the

¹²⁰ GEF, http://www.thegef.org/gef/sites/thegef.org/files/documents/document/02-19-10_LDCF-MSP%20.pdf

¹²¹ FAO, www.fao.org/sd/dim_pe4/docs/pe4_070402_en.pdf

Name	Objectives	Funder(s)	Implementing Agency(s)	Type of project	Duration	Priority Sector(s)	Geographic focus (if any)
	region-wide activities focused on climate monitoring, institutional strengthening, capacity building and knowledge sharing.						Grenadines
<i>In Haiti:</i> Further information required.							

D. Proposed Adaptation Action

The over-arching benefits that are provided by integrated watershed-based management have been recognized by Haitian communities, governments and international donors. Effective watershed restoration and management would pro-actively mitigate climate change impacts across diverse sectors, including water and agriculture, along with the mitigation of flooding, landslides and droughts. Most of the proposed adaptation projects in Haiti therefore focus on needs in this area. Other proposed adaptation actions include coastal zone management and freshwater infrastructure projects.

Table 3: Proposed Adaptation Projects and Programs in Haiti

Name	Objectives	Type of project	Priority Sector(s)	Geographic focus (if any)
1. Haiti: Sustainable Management of the Domestic Energy Sector	To assist the energy sector of Haiti meet the growing domestic energy demands whilst preventing the continued destruction of forests, biodiversity and carbon sequestration through: a) the strengthening of institutions in the energy sector and promoting the participation of civil society in energy sector management; b) the execution and monitoring of a project for community management of fuelwood supply; c) the promotion of private sector activities and non-governmental initiatives in the substitution of traditional energy sources (fuelwood, charcoal, mineral coal, etc.) by new and renewable energy (i.e., solar and wind, etc.).	Capacity building; Research; Knowledge communication; Field implementation	Forestry; Energy; Private sector	Haiti
Notes: Source: First National Communication				
Projects proposed in Haiti's NAPA				
2. Watershed restoration, soil conservation and reforestation in South and Grand-Anse	<ul style="list-style-type: none"> • Increase adoption of soil conservation measures • Remediate degraded and deforested land within watersheds • Train farmers techniques for sustainable land use, 	Capacity building; Field implementation	Agriculture; Watershed management	Aquin, Jérémie, Lazile, Maniche, Vieux-bourg d'Aquin

Name	Objectives	Type of project	Priority Sector(s)	Geographic focus (if any)	
Provinces	agroforestry, pest management and ravine management <ul style="list-style-type: none"> Significantly increase riparian flow through reforestation 	Notes:			
3.	Watershed restoration of River Grise in West Province	<ul style="list-style-type: none"> Reduce environmental vulnerability of watersheds Regulate runoff Reduce soil erosion Mitigate flooding impact on human lives and property 	Capacity building; Field implementation	Watershed management	Plaine du Cul de Sac
			Notes: An ongoing project funded by the United States Agency for International Development (USAID) may be implementing these activities.		
4.	Watershed restoration of River La Quinte (Ravine Durée) and Support to the agricultural production in Artibonite Province against the negative effects of extreme climatic conditions	<ul style="list-style-type: none"> Restore the watersheds of Ravine Durée Protect the outskirts of the northern area of Gonaïve against floods Restore the existing vegetative cover Repair irrigation infrastructure over 200 hectares of land Manage 3,000 hectares of land with appropriate agriculture techniques 	Capacity building; Field implementation	Agriculture; Watershed management	Anse-à-Fleur, Baie de Henne, Bombardopolis, Jean-Rabel
			Notes: An ongoing project funded by USAID may be implementing these activities		
5.	Flood mitigation and improvement of agricultural production through the rehabilitation of watersheds in Northwest and Northeast Provinces	<ul style="list-style-type: none"> Reforestation of watersheds with agroforestry Use anti-erosion structures and riparian forests to protect river banks Educate and motivate rural inhabitants about climate change impacts on the environment and how they may protect themselves 	Capacity building; Field implementation; Knowledge communication	Watershed management	Northwest & Northeast Provinces
			Notes: An ongoing project funded by USAID may be implementing these activities		
6.	Watershed restoration, soil conservation and reforestation in Southeast Province	<ul style="list-style-type: none"> Assist with the restoration of watersheds through the implementation of anti-erosive structures Increase forest cover within watersheds/ ravines with forest and fruit trees Train farmers on how to implement anti-erosive structures and monitor tree plantations Enhance the productive capacity of farmers in the region Seek the involvement of local actors in the execution of the 	Capacity building; Field implementation; Knowledge communication	Watershed management; Agriculture	Bainet, Belle-Anse, Cayes-Jacmel, Côtes-de-Fer, Grand-Gosier, Jacmel, La Vallée-de-Jacmel, Marigot, Plaine Mapou, Thiotte

Name		Objectives	Type of project	Priority Sector(s)	Geographic focus (if any)
		diverse projects <ul style="list-style-type: none"> Educate and empower the entire population concerned about effective environmental management and protection 	Notes:		
7.	Restoration and protection of coastal areas in Northwest and Northeast Provinces	<ul style="list-style-type: none"> Sustainable protection of marine and coastal ecosystems with mechanical and biological structures to reduce the damage caused by waves Conserve coastal biodiversity Improve flood, wave and saltwater intrusion protection for coastal communities Ensure a certain level of safety on the coast 	Field implementation; Knowledge communication	Coastal zone management; Biodiversity; Freshwater supply	Anse-à-Foleur (Nord-Ouest), Fort-Liverté, Caracol, Terrier-Rouge et Ferrier (Nord-Est)
			Notes:		
8.	Restoration and protection of coastal areas in West Province	<ul style="list-style-type: none"> Sustainable protection of the marine and coastal ecosystems with mechanical and biological structures to reduce the damage caused by waves Conserve coastal biodiversity Improve flood, wave and saltwater intrusion protection for coastal communities Ensure a certain level of safety on the coast 	Field implementation; Knowledge communication	Coastal zone management; Biodiversity; Freshwater supply	Port-au-Prince (Ouest), La Gonâve (Ouest)
			Notes:		
9.	Restoration and protection of coastal areas in South and Grand-Anse Provinces	<ul style="list-style-type: none"> Sustainable protection of the marine and coastal ecosystems with mechanical and biological structures to reduce the damage caused by waves Conserve coastal biodiversity Improve flood, wave and saltwater intrusion protection for coastal communities Ensure a certain level of safety on the coast Provide appropriate fishing tools to fishers Educate coastal communities on the necessity of respecting fishing regulations and fishing seasons 	Field implementation; Knowledge communication; Capacity building	Coastal zone management; Biodiversity; Marine fisheries	Baradères, Dame-Marie, Anse d'Hainault, Les Irois
			Notes:		
10.	Reforestation, preservation and protection of fruit and	<ul style="list-style-type: none"> Reforestation especially upstream areas of Pédernales River and the towns of Pichon and Corail Lamothe 	Knowledge communication; Capacity building	Forestry; Watershed management; Biodiversity	Anse-à-Pitres, Belle Anse (Corail

Name	Objectives	Type of project	Priority Sector(s)	Geographic focus (if any)
forest species in Southeast Province	<ul style="list-style-type: none"> • Improve the biodiversity of the region • Educate and motivate the rural inhabitants to reduce the degradation of forest resources, particularly in the Forêt des Pins Reserve • Incorporate community-based management of the Forêt des Pins Reserve and ensure its protection 			Lamothe et Pichon), Thiotte (Forêt des Pins)
Notes:				
11. Restoration and protection of natural sites in Northeast Province	<ul style="list-style-type: none"> • Improve regional biodiversity • Educate and motivate the rural inhabitants to reduce the degradation of forest resources • Develop spaces for tourism and recreation • Increase local art production • Develop greater value for natural sites in the region 	Knowledge communication; Capacity building	Biodiversity; Tourism	Capotille, Ferrier, Mont-Ogranisé, Terrier-Rouge, Trou du Nord, Vallières
Notes:				
12. Improved management of natural resources in Artibonite Province	<ul style="list-style-type: none"> • Promote better soil and residue management • Diversify and improve food production • Increase vegetative cover • Build local-level response capacity 	Capacity Building	Agriculture; Biodiversity	Chenot (Marchand Dessalines)
Notes:				
13. Support to the enhancement of agricultural production capacity in Jean Rabel	<ul style="list-style-type: none"> • Set-up an agricultural input store to respond to the most urgent agriculture needs • Popularize elementary agricultural techniques suitable for local conditions • Make agricultural credit available to farmers 	Capacity building; Field implementation	Agriculture	Jean-Rabel (Nord-Ouest)
Notes:				
14. Construction of reservoirs at household and community level in Grand-Anse Province	<ul style="list-style-type: none"> • Permit families from different communities to access water during periods of drought • Avoid conflict over water resources • Relieve women of their chores by providing them with a close source of water 	Field implementation	Freshwater supply	Montagnac, Fond-Rouge (Jérémie), Lopineau (Roseau) and Jean-Bellune (Pestel)
Notes:				
15. Rehabilitation of 25	<ul style="list-style-type: none"> • Restore the catchments and fountains in 25 sites in the Bas 	Community-based	Watershed	

Name	Objectives	Type of project	Priority Sector(s)	Geographic focus (if any)
water supply infrastructures in 4 Farwest districts	Nord-Ouest area <ul style="list-style-type: none"> • Satisfy the water consumption needs of the inhabitants in the target area • Form local teams to manage catchment areas and water quality 	adaptation; Capacity building	management; Freshwater supply	
Notes:				

E. Assessment

Despite the benefits of integrated watershed-based management and other adaptation actions, there are numerous challenges that need to be overcome to effectively implement adaptation actions in Haiti. The NAPA specifically identified the following obstacles:

- Haiti’s political turbulence and instability has generated fear and despair. Consequently, Haitians are wary and resistant to engage in government programs, which may result in weak participation of NAPA initiatives.
- The acute food shortage affecting the majority of the population displaces concerns about environmental protection.
- The persistent insecurity and turbulent politico-socio-economic conditions can interrupt adaptation activities and increase the reluctance of donors to support projects, further impeding implementation of adaptation initiatives.
- Potential conflicts between partner organization and local authorities, or the lack of local government representatives at adaptation project sites.
- The lack of coordination for environmental projects; there are many institutions involved in environmental management but the roles and responsibilities of each institution are unclear.
- The rugged topography of priority areas, which are difficult access, and the potential occurrence of new disasters during implementation may constitute new obstacles to NAPA implementation.

Moreover, the NAPA was written before the crippling January 12, 2010, earthquake that internally displaced an estimated 2 million individuals (Relief Web, 2011) and left the country even more vulnerable to existing hazards (i.e., hurricanes) and epidemics (i.e., cholera). Urgent reconstruction efforts are needed to restore critical infrastructure and services to the country. As mentioned above, Haiti’s history of political instability could also impede adaptation actions. With such urgent needs and near-term uncertainty, it will be difficult for Haiti to adapt to the long-term uncertainty imposed by climate change. The extent to which the US\$3.4 billion mobilized for earthquake rehabilitation and restoration initiatives (Relief Web, 2010) are considering climate change impacts is unknown. As aid is funneled into the



country and applied, over-arching guidelines could be set for funds to be used in a climate-sensitive manner to avoid exacerbating existing vulnerabilities to climate change (i.e., infrastructure development that considers flooding from climate change).

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