



**PROJECT IDENTIFICATION FORM (PIF)**  
**PROJECT TYPE: FULL SIZED PROJECT**  
**TYPE OF TRUST FUND: GEF TRUST FUND/LDCF**

**PART I: PROJECT IDENTIFICATION**

<b>Project Title:</b>	Increasing resilience of ecosystems and vulnerable communities to CC and anthropic threats through a ridge to reef approach to BD conservation and watershed management		
<b>Country(ies):</b>	Haiti	<b>GEF Project ID:</b>	5380
<b>GEF Agency(ies):</b>	UNDP	<b>GEF Agency Project ID:</b>	4648
<b>Other Executing Partner(s):</b>	Ministry of Environment	<b>Submission Date:</b>	Apr 12, 2013
<b>GEF Focal Area (s):</b>	Biodiversity, Climate Change	<b>Project Duration (Months)</b>	60
<b>Name of parent programme</b>	N/A	<b>Agency Fee:</b>	867,832

**A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK:**

Focal Area Objectives	Trust Fund	Indicative grant amount (\$)	Indicative co-financing (\$)
CCA-1:	LDCF	4,000,000	14,000,000
CCA-2	LDCF	1,112,872	10,000,000
BD-1:	GEFTF	3,565,445	16,800,000
<b>Sub-Total</b>		<b>8,678,317</b>	<b>40,800,000</b>
Project Management Cost	LDCF	269,098	1,300,000
	GEFTF	187,653	900,000
<b>Total project costs</b>		<b>9,135,068</b>	<b>43,000,000</b>

## B. PROJECT FRAMEWORK

<b>Project Objective:</b> Watersheds and coastal areas in Haiti are spatially configured and managed to increase the resilience of ecosystems and vulnerable communities to climate change and anthropic threats						
<b>Project Component</b>	<b>Grant Type</b>	<b>Expected Outcomes</b>	<b>Expected Outputs</b>	<b>Trust Fund</b>	<b>Indicative Grant Amount (\$)</b>	<b>Indicative Co-financing (\$)</b>
1. Increased resilience to climate threats in key watersheds and coastal ecosystems.	TA	<p><b>Improvements of indices of ecosystem health and environmental services</b> in key areas of ecosystems of importance for EBA, connectivity and watershed management, due to improved spatial planning, EIA procedures and governance of economic/productive development initiatives</p> <p><b>Strengthened policy environment, regulatory framework and institutional capacities</b> for adaptation-related technology transfer (indicators, baseline values and targets to be determined during PPG phase)</p>	<p><b>1.1 Governance framework—policies, plans and decision making for ecosystem-based adaptation (EBA):</b></p> <ul style="list-style-type: none"> <li>- <b>National strategy and spatial prioritization documents</b> aimed at optimizing the delivery of EBA benefits nationwide</li> <li>- <b>Definition of arrangements for inter-institutional collaboration and responsibilities in relation to EBA</b>, and relations with existing land use planning processes.</li> <li>- <b>Improved mechanisms for environmental decision-making in support of EBA</b>, including information management systems and improved EIA/SEA processes.</li> <li>- <b>Territorial land use plans</b>, taking into account spatial variations in CC vulnerability and EBA potential.</li> <li>- <b>Plans for environmental management and investment in support of EBA</b>, by companies involved in major infrastructure projects in priority areas</li> <li>- <b>Permanent multi-stakeholder platforms</b> to negotiate and coordinate EBA initiatives at regional and local levels.</li> <li>- <b>Strengthened organizations and norms at local level</b> to support EBA-friendly production practices, sanction incompatible activities and mobilize resources for sustainability</li> </ul>	LDCF	1,112,872	10,000,000
	INV	<p><b>Climate-resilient soil- and water-conservation practices</b> adopted in communities (number to be determined) of three target landscapes, reducing the vulnerability of local people and their production systems to climate change</p> <p><b>Increases in coverage and quality of mangroves</b> in target areas, providing improved protection of local communities against sea-level rise and wave impact, as a result of reforestation and/or restoration activities</p>	<p><b>1.2 Conservation and effective management of ecosystems to promote EBA including models for climate-resilient natural resource management developed and applied at site level</b>, which favour EBA, CC risk reduction and watershed management, e.g. construction, maintenance and/or restoration of terraces and structures for capturing run-off and promoting infiltration, mulch-based production systems, and agroforestry systems.</p> <p><b>1.3 Assisted rehabilitation—to recover ecosystem functionality in support of EBA including reforestation and restoration of vegetation in watersheds and mangroves</b> to promote water infiltration, regulate stream flows, protect against mass movement and buffer against sea level rise and wave impact</p>	LDCF	4,000,000	14,000,000

	<p><b>Ecosystems restored and protected in ecologically-sensitive parts of target watersheds</b> of importance for EBA, enabling effective adaptation and thereby protecting local communities, downstream populations (rural and urban) and downstream ecosystems of importance for EBA against the impacts of climate change (between 2,500 and 5,000ha restored and 200,000ha with improved protection – figures to be confirmed during PPG phase)</p> <p><b>Reduced economic losses</b> due to safeguarding of soil and water resources against CC-related impacts, buffering of agricultural production against climate change, and reduction of risks of CC-related natural disasters for rural and urban populations</p>				
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2. Establishment and management of PAs in the marine and coastal zones of target watersheds	TA	<p>Increase in the coverage of coastal and marine ecosystems that have been declared and gazetted as protected areas (by category), by around 110,000ha:</p> <ul style="list-style-type: none"> <li>- Baraderes-Cayemites-Macaya Complex (46,826ha)</li> <li>- Three Bays Complex - Caracol Bay (17,481ha), Acul Bay (15,000ha), Fort Liberté Bay (3,245ha)</li> <li>- Marigot – Massif La Selle – Anse a Pitre Complex (minimum 15,000ha)</li> </ul> <p>10% increase in the average management effectiveness rating of target PAs (including improvements in infrastructure and enforcement), measured through the GEF Management Effectiveness Tracking Tool (METT) (baseline values to be determined during the PPG phase)</p> <p>Areas and intactness indices of mangroves, eel grass beds, reefs and bay habitats in target PAs remain stable throughout the life of the project (baseline values to be determined during the PPG phase)</p> <p>Stable catches and sizes of selected fisheries species by project end, due to improved protection of mangroves, governance of fisheries and availability of fishing options which protect stocks.</p>	<p><b>2.1 Refined proposals for the PA estate in the MCZ</b>, including:</p> <ul style="list-style-type: none"> <li>- <b>Legal declaration of additions, expansions or modifications of MCZ PAs</b>, in accordance with the priorities proposed by the SNAP</li> <li>- <b>Declaration of additional landscape/seascape units</b> for controlled use.</li> <li>- <b>Precise delimitations of the external boundaries of new MCZ PAs</b> proposed by the SNAP project, and of internal boundaries between different management zones, based on confirmed and updated data on biodiversity, threats, socioeconomic conditions and climate change scenarios.</li> </ul> <p><b>2.2 Strengthened instruments and capacities for the effective management of PAs</b> in the MCZ, including:</p> <ul style="list-style-type: none"> <li>- <b>Management plans for MCZ PAs</b>, incorporating considerations of marine biology, biological connectivity at local and regional levels, the condition and sustainability of populations of species of socioeconomic importance, the nature and magnitude of threats, the needs and conditions of local communities, and the existence of alternative strategies for conservation and for sustainable economic activity.</li> <li>- <b>Programme for training and strengthening local organizations</b>, to enable them to support the planning and oversight of PAs, including adaptation to climate change and management of buffer zones.</li> <li>- <b>Financial mechanisms</b> to support PA management, linked for example to national environmental fund(s), corporate responsibility programmes and aid agency provisions for environmental safeguards and mitigation.</li> </ul>	GEFT F	3,565,445	16,800,000
Sub-Total				8,678,317	40,800,000	
Project management cost			GEFT F/LD CF	456,751	2,200,000	
Total project costs				9,135,068	43,000,000	

**C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, (\$)**

Sources of Co-financing	Name of Co-financier	Type	Amount (\$)
Other Multilateral Agency(ies)	Interamerican Development Bank	Grant	13,000,000
Bilateral Aid Agency(ies)	USAID	Grant	8,000,000
Other Multilateral Agency(ies)	World Bank	Grant	18,000,000
National Government	Ministry of Environment	Grant	2,000,000
National Government	Ministry of Environment	In kind	1,000,000
GEF Agency	UNDP	Grant	1,000,000
<b>Total Co-financing</b>			<b>43,000,000</b>

**D. GEF RESOURCES REQUESTED BY AGENCY (IES), FOCAL AREA(S) AND COUNTRY(IES)<sup>1</sup>**

GEF AGENCY	TYPE OF TRUST FUND	FOCAL AREA	Country name/Global	Grant amount (a)	Agency Fee (b) <sup>2</sup>	Total c=a+b
UNDP	LDCF	CCA	Haiti	5,381,970	511,287	5,893,257
UNDP	GEF	Biodiversity	Haiti	3,753,098	356,545	4,109,643
<b>Total GEF Resources</b>				<b>9,135,068</b>	<b>867,832</b>	<b>10,002,900</b>

**E. PROJECT PREPARATION GRANT (PPG)**

Please check on the appropriate box for PPG as needed for the project according to the GEF Project Grant:

	Amount requested (\$)	Agency fee for PPG (\$)
• (upto)\$200k for projects up to & including \$10 million	180,000	17,100

**PPG AMOUNT REQUESTED BY AGENCY(IES), FOCAL AREA(S) AND COUNTRY(IES) FOR MFA AND/OR MTF PROJECT ONLY**

Trust Fund	GEF Agency	Focal Area	Country Name/Global	(in \$)		
				PPG (a)	Agency Fee (b)	Total c = a + b
LDCF	UNDP	CCA	Haiti	97,482	9,261	106,743
GEFTF	UNDP	Biodiversity	Haiti	82,518	7,839	90,357
				180,000	17,100	197,100

**PART II: PROJECT JUSTIFICATION**

**A. PROJECT OVERVIEW**

**A.1. Project Description**

1. The current project will deliver help to reduce the vulnerability of poor people in Haiti to the effects of climate change, while at the same time conserving threatened coastal and marine biodiversity. These benefits are highly interdependent: investments in climate-proofed BD conservation strategies will enable coastal and marine ecosystems to continue to generate Ecosystem-Based Adaptation (EBA) services; while additional investment of adaptation funds in the watersheds which drain into these ecosystems will serve to maximize BD benefits and ecosystem functions, as well as generating EBA benefits for the populations living in the watersheds themselves.

2. In the coastal and marine zone in particular, there is a pressing need to improve BD conservation through further strengthening of the PA system in this area; however this will be unsustainable in the long term if actions are not taken to address the threats to these areas posed by the poor management of the watersheds which drain into them, which are strongly determined by the effects of climate change (such as erosion, which is related to storm frequency and intensity, and deforestation, which is related to climate-related farming system collapse). Significant investments are underway in Haiti at present in support of watershed management, and furthermore GEF is investing in the strengthening of the National System of Protected Areas (SNAP); however these investments do not address the implications of climate change and may themselves be undermined by CC if adequate adaptation measures are not undertaken. It is therefore necessary to apply an integrated, ridge-to-reef approach which recognizes these relations between coastal and mountain areas, and between BD conservation and EBA, while at the same time taking into account the development and livelihood support needs of local people in the design of PAs. As well as delivering BD benefits, improvement of the protection of coastal ecosystems (both directly, through improved PA management and indirectly, through improved watershed management) will in turn safeguard their role as buffers against the impacts of climate change on people in the coastal zone (such as sea-level rise, wave impact and coastal erosion). Furthermore improvements in the management of the watersheds will generate on-site EBA benefits for the poor people living on the hills, by increasing the climate resilience of their farming systems.

3. The adoption of a landscape-wide EBA approach, with a particular focus on watersheds and coastal ecosystems, will be more cost-effective than infrastructural solutions such as physical soil retention structures and sea walls, and will also generate additional biodiversity benefits by making ecosystems more resilient upstream and enhancing BD downstream.

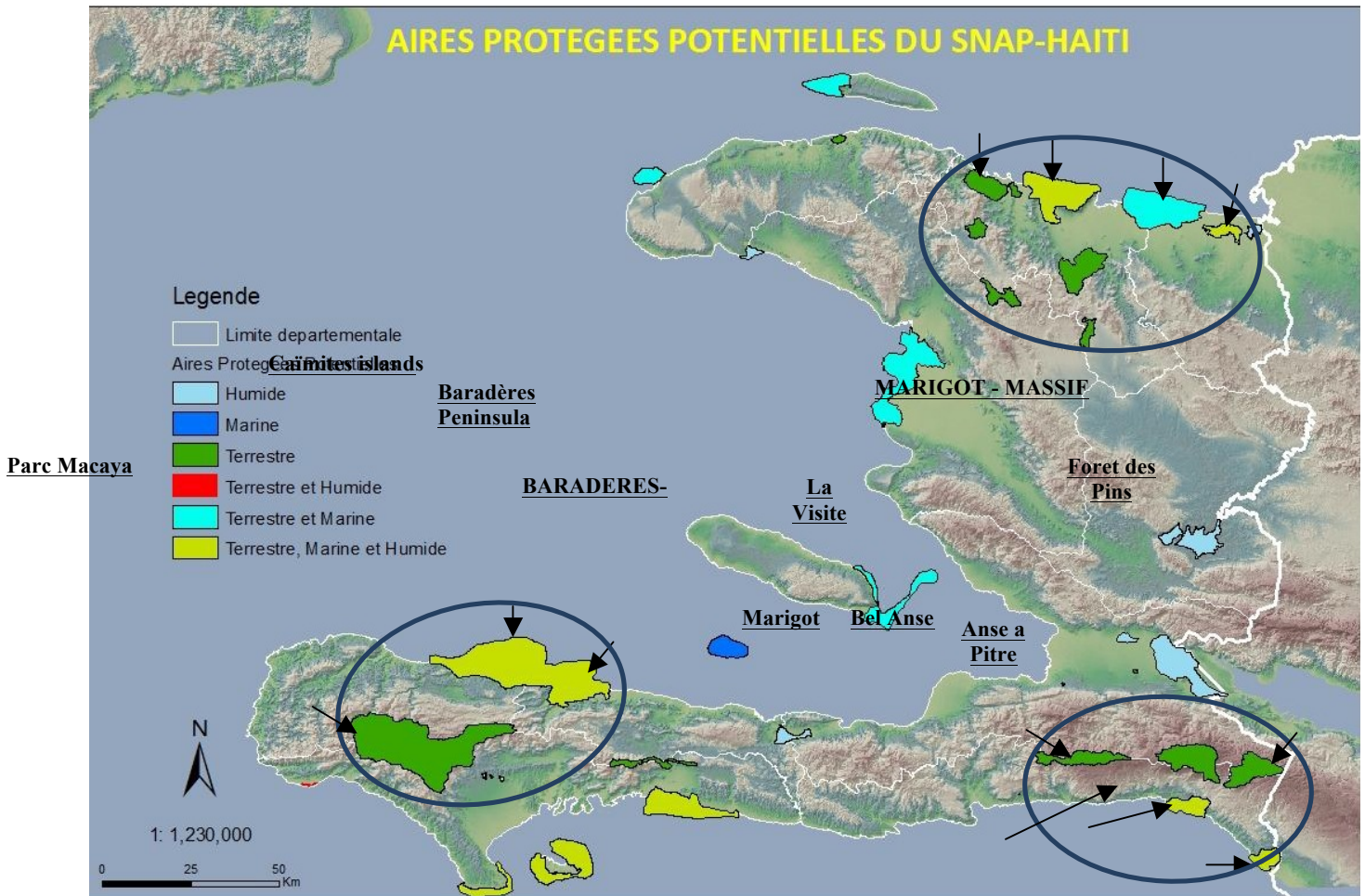
4. The Republic of Haiti shares with the Dominican Republic the second largest island of the Caribbean, Hispaniola. Haiti occupies one third (27,750 km<sup>2</sup>) of the territory on the western side of the island. It is located between latitudes 18° and 20°N and longitudes 71°30' and 74°30'W. It is surrounded by the Atlantic Ocean to the north, the Caribbean Sea to the west and south, and by the Dominican Republic (DR) to the east. The total length of the Haitian coastline is 1,535km and the total area of its relatively narrow continental shelf is around 5,000km<sup>2</sup>. The country also includes five satellite islands: La Gonave (670km<sup>2</sup>), La Tortue (180km<sup>2</sup>), Ile-à-Vache (52km<sup>2</sup>), Cayémites (45km<sup>2</sup>) and Navassa island (7km<sup>2</sup>).

5. Haiti's population is estimated to be 8 million, with a 2.08% annual growth rate. The country is one of the most densely inhabited regions in the Caribbean, with an overall population density of 286 inhabitants/km<sup>2</sup>. The population is heavily skewed toward the younger age groups: 40 % of the population is younger than 15 years of age and the median age is 20 years. Haiti is the poorest country in the western hemisphere with a GNP of USD 250. Because of Haiti's topography more than 90% of the population (over 8 million people) lives in coastal areas or in adjacent watersheds. 150,000 families rely either directly or indirectly on coastal resources for income. More than 80% of the population (over 6 million people) receives at least part of their protein requirement through consumption of seafood. Fish also provide 50 percent of the protein for the country

THE “THREE BAYS”

Labadie Acul Bay Caracol Bay Fort Liberté Bay

Figure 1. Target areas of the project



6. Watersheds and coastal/marine areas in Haiti face multiple environmental challenges. High levels of historical deforestation and degradation of soil and vegetation resources on steep agricultural lands have made the livelihoods of the poor smallholders who dominate the hill lands highly vulnerable to the vagaries of climate, such as variations in the rainfall rhythms on which their cropping systems depend, and periodic extreme rainfall events. Poor watershed management also has major implications for populations living downstream, increasing the risk of devastating floods and generating high sediment loads which interfere with the biological and productive functionality of the aquatic ecosystems on which large numbers of people in the coastal and marine zones depend. Marine and coastal ecosystems are in addition directly affected by degradation and deforestation, due to extractive activities such as overfishing and the harvesting of firewood and poles, and elimination for agriculture and infrastructural development. This further increases the vulnerability of people in the coastal and marine zone to the impacts of climate change, given the important role that these ecosystems play in buffering variations in sea level and wave impacts. It also generates negative impacts of global importance, as, despite the high levels of environmental degradation that coastal and marine ecosystems have suffered to date, they still contain remarkable levels of globally important diversity (including many endemic and migratory species); they also contribute significantly to regional-level processes of biological connectivity, and in general are still in a condition where ecosystem health and biodiversity is capable of undergoing significant recovery if the current pressures are removed.

7. In recognition of high levels of social and biological interdependence between mountainous watersheds and the marine and coastal ecosystems into which they drain, and the crucial role which both terrestrial and coastal/marine ecosystems play in protecting local people against the impacts of climate change, this project will apply a “ridge-to-reef” approach to natural resource management in three priority areas of Haiti. This will generate synergies which will enable the simultaneous delivery of local benefits (in the form of reduced vulnerability to the effects of climatic change and variability, strengthened and climate-resilient livelihoods, and increased and stabilized access to natural

resources) and global benefits (in the form of improved conservation of globally important and threatened biodiversity, and enhanced biological connectivity at regional level). The project will focus at field level on three selected areas, the precise limits of which will be defined during the PPG phase:

- The Three Bays Area in the northeast of the country and the catchments of the tributaries of each bay (including Labadie, Acul, Caracol, Fort Liberté and possibly Lagon des Boeufs);
- Iles Cayemites and the coastline of the southwest peninsula which faces it (including the Baraderes peninsula), together with the mountains behind, at the centre of the peninsula, which are dominated by Macaya National Park.
- Massif la Selle Biosphere Reserve<sup>1</sup> (which includes Foret de Pins, Jacmel and La Visite mountain PAs) and the Anse a Pitre and Marigot coastal/marine PAs and their catchments.

8. Despite its site-specific focus on these three areas, the project will generate systemic benefits by generating lessons and systems for the effective management of watersheds and coastal and marine ecosystems, which will be replicable throughout the country. It will therefore place a strong emphasis on the systematization and institutionalization of experiences and the strengthening of institutional capacities in key Government ministries and NGOs who are capable of replicating the lessons and experiences nationally.

9. The project will complement and build upon the advances of the existing UNDP/GEF project in support of the National Protected Areas System (SNAP), which is strengthening national level capacities for the management of the PA system, and has defined priorities for PA establishment throughout the country. This project will carry this further by supporting the implementation in practice of priority PAs in coastal and marine zones, in accordance with the recommendations of the SNAP project, and by expanding the conceptual focus of the SNAP to incorporate considerations of regional connectivity and of the biological and social interrelations between PAs and the landscapes which surround them. These are innovative concepts in Haiti and are particularly important there given the high dependence of local people's livelihoods on continued access to and use of natural resources. Taking into account this dependence, the model of PA management to be applied by the project will focus also on reconciling conservation and sustainable livelihood support, rather than on strict exclusion or displacement. UNDP will put particular attention to this point and social and environmental safeguards will be carefully monitored based on the environmental and social screening tool that was used to support the design of this PIF and which will be further applied during the PPG phase.

#### **Climate change and vulnerability**

10. As a consequence of its geographic location and its geological features, Haiti is exposed to many natural risks such as hurricanes, droughts, landslides, earthquakes and tsunamis; its vulnerability to the impacts of these events is exacerbated by a combination of fragile infrastructure and high levels of poverty (associated with low levels of resilience of livelihood support systems). According to the National Action Plan for Adaptation (NAPA), 63% of the land in the country has slopes of greater than 20%, and 40% of land used for farming in mountainous areas has slopes greater than 50%. The NAPA specifically recognises four aspects of vulnerability to climate change: soils and desertification; the agricultural sector; coastal zones; and water resources.

11. In recent years (between 2001 and 2008), storms and floods have had major human and economic impacts, with losses for the period 1997-2006 averaging 0.05% of GDP – 1.8 million people have been affected by storms (5 events) with the cost of damages estimated at US\$101 million, and almost 300,000 people have been affected by floods (4 events) with the cost of damages estimated at US\$1 million. In August and September of 2008, Haiti was hit by four major storms and hurricanes (Fay, Gustav, Hanna and Ike), with total damage and losses estimated at around US\$900 million, or around 15% of GDP. Hydro-meteorological hazards (storms, floods and drought) have significantly adverse effects on agricultural production, leading to soil erosion, aridity and salinity. Currently, soil salinity affects nearly 40,000ha of land throughout the country. Climate change predictions for 2050 and beyond suggest that more than 50% of the total area of Haiti will be in danger of desertification due to climate variability and change. Of particular relevance are the following predicted aspects of climate change:

- a) Increases in temperatures: it is probably that temperatures will increase by 0.8-1°C by the year 2030 and by 1.5-1.7°C by the year 2060, with the highest increases expected in the months of June or July.

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<sup>1</sup> <http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/latin-america-and-the-caribbean/haiti/la-selle/>



- b) Decreases in precipitation: precipitation is expected to decrease by 5.9-20% by 2030 and by 10.6-35.8% by 2060, with the greatest decreases also expected in the months of June or July. The coincidence of increased temperatures and decreased precipitation, especially in these two months, is likely to impose particularly severe stresses on agricultural systems, especially given the highly degraded nature of soils and vegetation in the target watersheds.
- c) Extreme weather events: according to the IPCC, the Caribbean region is likely to be exposed in the future to more intense and frequent extreme weather events.

12. Few data are available to allow predictions to be made with any confidence of the magnitude of the implications of climate change for marine and coastal areas, or for the watersheds which drain into them. In neighbouring Cuba, however predictions of sea level rise by the year 2100 range from 16 to 62cm, depending on the climate change scenario assumed. Sea level rise is of particular concern for the five main coastal cities in the country (Port-au-Prince, Cap Haïtien, Port-de Paix, Les Cayes and Les Gonaïves).

13. The direct impacts of climate change on coastal ecosystems are expected to include the **flooding and consequent recession of the seaward edges of mangrove forests** (opportunities for corresponding migration of their landward margins are likely to be limited by the high level of existing anthropic pressure there); **coral mortality due to reduced light penetration**, coupled with bleaching due to increased water temperatures; and **physical erosion of beaches and cliffs**. In addition to further pressuring the biological functioning of these ecosystems, these processes will result in **undermining of the livelihoods** of the thousands of poor people who depend on them for subsistence and income (given, for example, the importance of mangroves as nurseries for fish populations) and **exacerbation of their vulnerability to the effects of climate change** (given the importance of mangroves as a buffer against sea level rise and wave impact). In addition to their direct impacts, such events have the effect of stimulating migration from the affected areas, resulting in increased pressures on natural resources in the receiving areas, as explained above in the case of the Three Bays area.

14. These climatic pressures also have major impacts on the sustainability of natural resource management in the watersheds which drain into the coastal and marine ecosystems, and the social vulnerability of the poor farmers who cultivate them. Agriculture on the hill lands which dominate the watersheds is principally rain-fed, and therefore highly vulnerable to **variations in the timing of the rainfall rhythms** which determine sowing and harvesting times. Throughout Haiti, watersheds have historically suffered extreme rates of **deforestation**, resulting in **exposure of the soil to erosion and slumping** in the case of extreme rainfall events (Hispaniola is regularly affected by tropical storms and hurricanes, the frequency and intensity of which is likely to increase with climate change). Scarce vegetative cover also results in reduced **rainfall infiltration and increased exposure of soil moisture to evaporation**, which further increase the vulnerability of rain-fed agricultural to variations in rainfall regimes.

15. The environmental and social processes of coastal and marine ecosystems and the watersheds which drain into them are therefore closely interdependent, and the relations between them are likely to become increasingly critical under conditions of climate change. Runoff from poor watershed management undermines the productivity of the coastal ecosystems (already stressed by climate change and *in situ* pressures) on which coastal populations depend, as well as exposing coastal populations to flooding (such as the 2010 floods in the town of Gonaïves), while the poor management of coastal ecosystems increases the exposure of coastal population to seaward threats resulting from climate change; in both cases natural resource degradation resulting from poor ecosystem management leads to livelihood collapse and migration, which places further stresses on the ability of natural resources to sustain livelihoods.

## **Biodiversity**

### ***Marine and coastal ecosystems***

16. A total of 31 Key Biodiversity Areas (KBAs) have been identified in Haiti<sup>2</sup>, of which 14 are marine or coastal. **Mangrove forests** (covering an estimated 134km<sup>2</sup>) occur principally on the north and northeast coasts (Baie de Fort Liberté, Baie de Caracol and Baie de l'Acul), the Artibonite estuary, Les Cayes, L'Ile à Vache, La Gonave and the Grand Cayemites. These form part of the Critical/Endangered Greater Antilles ecoregion<sup>3</sup>. Because of their location on large islands, these support relatively high levels of endemic flora and fauna. There are close interrelations of dependency between coastal mangroves, coral reefs and seagrass beds: together, these form highly diverse and

<sup>2</sup> "Key Biodiversity Areas of Haiti:: Audubon Society of Haiti, Critical Ecosystem Partnership Fund, Conservation International, Birdlife International and Rexo Ekolo (December 2011)

<sup>3</sup> <http://worldwildlife.org/ecoregions/nt1410>

structurally complex ecosystems in which the reefs act as a barrier that shelters seagrass beds and mangroves from high wave energy and strong coastal currents typical of the Caribbean environment; these in turn provide foraging and nursery habitats for many reef species. **Coral reefs** are distributed along important coastal zones in Haïti. They provide food and shelter for resident and migratory species, play a protection role for coastal property from tropical storm damage and offer a storehouse for potential valuable species (pharmaceuticals, commercial species). A recent survey by Reef Check showed that the seabed in study areas was covered with between 50 and 80% living coral, with a high biodiversity and excellent structure to serve as fish habitat: the reefs surveyed are in better condition than those in Florida, and included large stands of the Elkhorn coral, now on the US Endangered Species List. **Seagrass beds** occur along the North Coast, Les Cayes in the South, La Gonave, Les Cayemites and l’Ile à Vache areas. They represent a great source of primary productivity providing oxygen and nutrients to marine species and a mean of stabilizing substrates. **Coastal wetlands** (deltas, estuaries, coastal plains and coastal lagoons) provide diverse, renewable natural resources which support mixed traditional economies based on capture fisheries, the use of forest products and gathering. Grasslands and mangrove forests support useful plants. Coastal lagoons are commonly associated with mangroves and act as nursery grounds for many species of aquatic fauna, both benthic and pelagic.

### ***The Three Bays***

17. The Bays of Caracol and Fort Liberté in Haiti, together with the Monte Cristi in the neighbouring Dominican Republic, form one of 22 Ecologically or Biologically Significant Marine Areas (EBSAs) that have been identified throughout the wider Caribbean and western mid-Atlantic<sup>4</sup>. The Bays of Limonade, Caracol, and Fort Liberté and the Important Bird Area of Lagon-aux-Boeufs, Caracol Bay have been proposed by the Ministry of Environment for the establishment of a new marine protected area, which would be a component of the Caribbean Biological Corridor under the protocol concerning specially protected areas and wildlife (SPAW). Caracol Bay area includes an estimated 3,900ha of healthy mangroves (approximately 18% of the remaining mangrove in Haiti), eel grass beds, and a sheltered bay protected by a coral reef that extends over 20 km. The mangroves are harvested for charcoal and cleared for salt pans but are still extensive and relatively well conserved.

18. The combined mangroves, eel grass beds, reefs, and bay habitats are important nurseries for economically important fish, crustaceans (including lobster and shrimp), and mollusks (including conch). This area is crucial for subsistence fisheries for local communities and provides several additional provisioning and protective environmental services. The mangroves and reefs serve to protect the low lying plains from storm surges. In particular, the mangrove forests of the Caracol and Fort Liberté Bays play an important role in the reproduction cycle of numerous coastal and pelagic fish species, including those important for human consumption such as the pike (*Centropomus undecimakis*), prawns and lobsters (*Penaeus* spp. and *Panulirus argus*) and mollusks (*Strombus gigas*). At least 13 species considered either threatened or seriously in danger of extinction have been identified as inhabitants of mangrove forests and lagoons of the area. Among those are the American crocodile (*Crocodylus acutus*), the Atlantic leatherback sea turtle (*Dermochelys coriacea*), the Atlantic Hawksbill sea turtle (*Eretmochelys imbricata*) for reptiles, and the Flamingo (*Phoenicopterus ruber*), the black-crowned palm tanager (*Phaenicophilus palmarum*), the northern mockingbird (*Mimus polyglottos*) and cave swallow (*Hirundo fulva*) for avifauna. Of these, the black-crowned palm tanager is endemic to Hispaniola and the cave swallow is endemic to Haiti. Caracol Bay and its offshore area are also important for whales, manatees, sea turtles, and migratory birds. The environmental services provided by Caracol Bay have been estimated to have a total value of US\$110M per year.

### ***Cayemites-Barradères-Macaya Complex***

19. Barradères is a small peninsula located in Nippes Department, on the north coast of Haiti’s southern peninsula. It has been proposed to establish a terrestrial/marine National Park on the peninsula, to conserve broadleaved moist forest, mangroves, coastal moist forest and beach vegetation. It has been identified as one of Haiti’s Key Biodiversity Areas<sup>5</sup>. The Gray-Crowned Palm Tanager (*Poliocephalus phaenicophilus*), the only bird endemic to Haiti is found in this KBA. Several live-bearing fish species of the *Limia* genus are Hispaniola island endemics that occur in fresh and brackish water bodies including *L. dominicensis*, *L. meloanogaster*, *L. melanotata*, *L. nigrofasciata* and *L. tridens*. Two reptiles are endemic to the Cayemite islands: *Amphisbaena caudalis* and *A.*

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<sup>4</sup> “Report of the Wider Caribbean and Western Mid-Atlantic Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas”: UNEP/CBD/SBSTTA/16/1

<sup>5</sup> Key Biodiversity Areas of Haiti, December 2011. Société Audubon Haiti, Critical Ecosystem Partnership Fund, Conservation International, Birdlife International, Rezo Ecolo.

*caymite*. The purple copepod, *Mastigodiptomus purpureus*, VU, is found in freshwater systems of Haiti, but the extent of its range remains uncertain. This KBA also borders onto the Massif de la Hotte KBA.

#### **Marigot- Massif la Selle – Anse a Pitre Complex**

20. The Massif de la Selle, located in the southeast of the country near to the border with the Dominican Republic,, contains Haiti’s highest peak 'Pic la Selle' (2684 m) and the second most biodiverse region of the country after the Massif de la Hotte. It was declared as a Biosphere Reserve in 2012. The total area of the Biosphere Reserve is 377, 221 ha (land 360,434 ha; marine 16,787 ha), comprising a core area of 52, 579 ha, a buffer zone of 66,116 ha and transition areas of 258,526 ha (land 241,739 ha; marine 16,787 ha). The area has a great diversity of landscapes and ecosystems: it includes rainforests, mountain pine forests, deciduous forests and high-altitude dry forests. The coastal landscape is dominated by marine coastal ecosystems such as mangroves, lagoons, estuaries and deltas. Most of the endemic species are flowering plants of which 16% are endemic to this region, and the area contains over 60% of the threatened species in the country. The area has 22 species of amphibians and 41 species of reptiles, from which two are endemic to the Massif de la Selle. The Jacmel Depression, which is the geological boundary between Massif de la Hotte and Massif de la Selle, is a significant factor in the distribution of threatened endemic species in Haiti.

#### **Protected Areas in Haiti**

21. The Environment Law of 2006 provides for the creation of a National System of Protected Areas (SNAP) and the National Protected Area Agency (ANAP). The law recognizes different categories of protected areas (PA): National Parks (NP), Forest Reserves (forêts réservées), Protected Zones (aires réservées), areas under protection with no discriminate criteria, National Monuments, and other classified sites. Haiti has 10 Natural National Parks encompassing a total of 12,854ha - equivalent to 0.5% of the country - which include approximately 15% of the remaining forest cover (estimated at 88,000ha). Haiti has 16 other PAs, which legal status will be clarified by the National Center of Geographic and Spatial Information (CNIGS) in the near future.

**Table 1. Draft list of proposed marine and coastal protected areas in Haiti (source: PITDD)**

Name	Values to be conserved	Proposed Status*	Type**	IUCN Category
Grande Saline Lagoon	Mangrove bay, biodiversity reserve	NP	M	4
Navassa island	Endemic flora and fauna, beach vegetation, sub-humid forest	NP	T/M	8
Sulphur springs	Mineral and medicinal thermal waters, ecosystem with high cultural value	SN	M	2
Caïmites islands	Endemic flora and fauna, coral banks, migratory birds	NP	T/M	2
Baradères Peninsula	Deciduous humid forest, mangroves, humid coastal forest, gallery forest, beach vegetation	NP	T/M	2
Labadie	Flora and fauna, geology, beaches	NP	T/M	2
Ara islands and neighbouring corals	Endemic flora and fauna, coral banks, migratory birds	NP	T/M	2
Acul Bay	Mangrove zone, marine species, fauna habitat	NP	T/M	4
Anse de Port Margot	Luxuriant vegetation, endemic fauna	NP	T/M	2
Fort Liberté Bay	Flora and fauna, historic and archaeological value	AP	T/M	7
La Tortue Island	Biodiversity, habitat for fauna, migratory species, cultural and historical value.	ZR	T/M/C-H	7
Moles Saint Nicolas peninsula and fort	Endemic species, diverse mixed forest, , historic and cultural value	NP	T/M/C-H	7
Petit Paradis	Lagoon surrounded by mangroves and native cactus	NP	T/M	4
Haut Fourneau	Fauna and mangroves	NP	T/M	8
Arcadins Islands	Mangroves, sandy beach, marine park	NP	T/M	2
Gonave island	Endemic flora and fauna, coral banks, migratory birds	ZR	T/M	8
Kayalo Island	Coral banks, migratory birds		T/M	8
Duvergé and Maducaque (Aquin)	Dry forest, mangrove, luxuriant vegetation, birds, endemic species	NP	T/M	8
Ile à Vache	Mangroves, historic and archaeological heritage	NP	T/M	8

Name	Values to be conserved	Proposed Status*	Type**	IUCN Category
Marigot to Anse à Pitre, including Bel Anse	Rocky coasts and cliffs, bird habitat	TBD	T/A	2
Limonade and Caracol Bays and Lagon des Boeufs	TBD	TBD	TBD	TBD

\*NP=National Park, ZR=Reserve Zone, AP=Protected Area, SN=Natural Site, TBD= to be determined

\*\*T=terrestrial, M=marine, A=aquatic, C-H=cultural-historic

### Threats to biodiversity in coastal areas

22. Natural resources in the coastal and marine zone are subject to serious overexploitation, as a result of demographic pressures, the nature of demand, and the existence of limited alternatives for livelihood support. **Mangrove forests have been severely impacted by the extraction of timber** for construction, charcoal production (charcoal is the main domestic energy source in the country) and bark for tanning. Draining and filling mangroves for development is taking place for the purpose of housing construction at Cap Haitien, Archain, and other coastal urban areas. Between 1956 and 1977 it is estimated that 7 percent of the mangroves disappeared. In 1987 there were approximately 22,360 hectares of mangroves in the coastal zone of Haiti: currently, that figure has dropped to 17,337 hectares, a decline of 24%.

23. Populations of aquatic fauna have suffered drastic declines as a result of **overfishing**. Haïti produces more than 6,000 tons of fish annually, and the total number of fishers in the country is estimated at around 30,000, using 5000-6000 small artisanal vessels, mostly propelled by sails or oars. Fishing is largely carried out for subsistence and local sale and is mostly limited to near-shore areas, given that few fishers have access to motors or fishing gear that would enable them to exploit deeper water areas offshore. The fisheries resources available to these fishers are also limited by the narrowness of the continental shelf, which often extends less than half a mile from the coast. According to a study in the Artibonite area<sup>6</sup>, artisanal fishing has developed progressively since 1950, but the growth in the number of fishermen has intensified since the 1980s due to the combined effect of high population growth and the migration of farmers from degraded agricultural areas to the coast. Fisheries have also changed markedly over the last 30 years from being of a subsistence nature to being market-oriented. In recent years, a growing number of fishermen have been obliged to explore fishing areas outside their village because of overfishing: this migration along the coast has resulted in competition between fishermen to access the coastal demersal resources which are rarer and are smaller in size.

24. Fisheries governance is virtually inexistent, leading to a ‘tragedy of the commons’ situation that motivates overexploitation of the resources and **the use of damaging fishing practices**, such as failure to respect closed seasons for lobsters, the use of purse seines, compressor fishing, night fishing on drums, and the use of small net gauges which result in the capture of immature individuals that have not reached reproductive age. Thousands of abandoned fishing traps and nets at the bottom of the sea continue fishing and consequently killing important amounts of fish. Despite increasing fishing effort and diversifying their fishing methods, fishers report that catches remain largely stagnant. 90% of fishermen surveyed are unaware of the existence of fisheries legislation.

25. This situation has led to the loss of large, more mature fish which have slower growth rates and are easier to catch; a reduction in the average size of the fish caught (due in part to the elimination of predators), with a corresponding reduction in the unit value of the catch; and changes in species composition and reduction of overall biodiversity, with increases in the relative proportions of elements such as squid and jellyfish. Healthy coral reefs can provide up to 35 metric tons of fish per square kilometre, whereas overfished reefs such as those in Haiti provide only one tenth this amount. A new development in the over exploitation of the mangroves is the **netting and sieving of mangrove pools for large zooplankton and brine shrimp**. These creatures form the base of the fisheries food chain, and with their decline fisheries resources can be expected to plummet. Despite these problems, fishing remains a relatively lucrative alternative, when compared with meager alternatives that are available. In the Artibonite area, the average income of fishers of HTG34,026 (USD800) per year is well above the average annual income of HTG24,784 (USD582) and especially that of the northwest region, which is HTG10,693 (USD251).

<sup>6</sup> Évaluation de la Filière Pêche dans les Régions du Nord-Artibonite et du Bas Nord-Ouest Haiti. ACF International, 2011.

26. The **extraction of sand** from beaches for building is changing the morphology and the landscape, disturbing the hydrology, enhancing erosion and disturbing the whole ecosystem. **Coral mining** for lime production (building material) and potentially resulting in the reduction of areas of reefs is also a threat to be considered in the context of the ecosystem regeneration.

27. Wetlands, coral reefs and mangroves are further affected by **pollution**, which is to a large extent attributable to **poor watershed management practices**: these lead to the choking of coral reefs by sediments resulting from the **erosion of poorly managed watersheds**, mortality of aquatic fauna due to **chemicals from agriculture**; and **eutrophication as a result of fertilizer runoff**, which is reported to have affected fish populations in some areas and led to the smothering coral reefs by algae. Other forms of land-based pollutants which affect coastal and marine include plastic wastes (98% of debris found along coastal zones is composed of plastics, mostly beverage containers); raw sewage, other domestic liquid wastes (“grey water”), industrial effluents (including oils from power station and chemicals from tanneries), due to inadequate or non-existent collection and treatment facilities; and vehicular oil dumped into gullies and watersheds.

28. These threats are the symptoms of more fundamental forces that are driving coastal environment degradation, including population growth, poverty and inequality, social change and pressures for economic development. The north coast, including the Three Bays area, is a particularly clear example of the tensions between economic development and environmental sustainability. This area is proposed by the Government as one of the major geographic poles of the country’s future development: of particular significance for the status of natural resources in the coastal and marine zone there is the construction of a major industrial park just inland from Caracol Bay, which is expected to generate up to 40,000 direct jobs and benefit 500,000 other families through economic multiplier effects. The Initial Environmental Assessment of the industrial park<sup>7</sup>, which will straddle the Trou du Nord river which runs into Caracol Bay, suggests that **emissions of liquid wastes from the industries there will affect the water quality and therefore the health of the aquatic ecosystems** in the bay, even if treatment measures are implemented. The park is in addition likely to lead indirectly to a wide range of other impacts, due principally to the major influx of population that it is likely to stimulate: this is likely to be out of proportion to the actual labour force required by the park, due to speculative migration by others and the generation of diverse service industries of a range of types and levels of formality. These impacts are likely to include **increased rates of deforestation of mangroves** for the establishment of settlements and to supply the growing population of the area with building poles, firewood and charcoal; **increased pressures on fisheries resources** to satisfy increased demand for food; **increased levels of extraction of beach sand and coral** for building; and **increased levels of pollution of coastal and marine ecosystems** by solid and liquid wastes (both **domestic sewage from settlements and industrial wastes from service industries** which are likely to spring up around the park. These impacts are likely to be larger in magnitude than those of the park itself, and much harder to mitigate or control due to their dispersed nature or non-point nature and the existence of limited capacities for enforcement. In addition, the park and its associated settlements will place major pressures on the Trou du Nord aquifer, and there is a risk that **over-extraction of water may lead to saline intrusion**.

#### **Baseline/business as usual scenario**

29. **Climate change adaptation, vulnerability reduction and disaster management**: in response to the numerous natural disasters which have affected the country over recent years, and the recognition of the country’s vulnerability to these disasters and to climate change, there is a major baseline of investments in this area. These include the following:

- The US\$40 million joint World Bank/IADB Pilot Programme for Climate Resilience (PPCR), which will concentrate in the Central Plateau and the Arc of the Gulf of Gonave, and which will generate models for climate resilience and integrated watershed management for nationwide application.
- The US\$59 million World Bank project “Haiti - Disaster Management and Vulnerability Reduction”, the main objective of which is to support the country in improving disaster response capacity, enhance the resiliency of critical transport infrastructure, ensure proper planning of all stages of the involuntary resettlement of families and ensure the development of a clear and timely participatory process of the affected families.
- The US\$90 million World Bank project “Rebuilding Energy Infrastructure and Access” the objectives of which include the improvement of the resilience of the electricity sector.

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<sup>7</sup> <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=36185911>

- The US\$440,000 IADB project HA-T1156: Capacity Building for Sustainable Management of the Flood Early Warning System.

30. Under the baseline scenario, approaches to CC mitigation and adaptation under projects such as these would predominantly focus on infrastructural solutions, and would not take advantage of the potential complementary role of Ecosystem-Based Adaptation (EBA).

31. **Regional development, watershed management and agriculture.** The IADB is also proposing to carry out major investments (of the order of US\$40 million) in the promotion of sustainable agriculture in the northern coastal plains (Programme for Disaster mitigation and agricultural development programme in Artibonite watershed). USAID is expected to continue its investments in support of watershed management inland from the Three Bays area: it is currently in the process of developing a new initiative for the north of the country, which would include biodiversity conservation. The IADB will also support the strengthening of Municipal capacities in Caracol and the engagement of local communities in the broader development programmes in northern Haiti. Development of northern Haiti is supported by US\$100 million from the World Bank for tourism development, as well as by additional IADB projects in tourism and agriculture. Norwegian Cooperation is supporting social development and sustainable natural resource management in the south-west of the country, within the framework of the South Coast Initiative (CSI), in which UNDP is a participant (principally in relation to environmental vulnerability in terrestrial areas). UNEP also participates in this initiative, with a preferential focus on marine and coastal areas. Norwegian Cooperation, in coordination with the United Nations Development Programme (UNDP), the UN Environment Programme (UNEP) and World Food Programme (WFP), is also funding the US\$3.5 million trans-boundary “Green Border” project, which operates in the northeast and south east of the country, in areas adjoining the border with the Dominican Republic (parts of which coincide with the Massif La Selle target area of this project). through its US\$50 million (2012-2016) project “Relaunching Agriculture: Strengthening Agriculture Public Services II”, the World Bank aims to strengthen the capacity of the Ministry of Agriculture, Natural Resources and Rural Development (MARNDR) to define and implement the National Agriculture Extension Strategy, to increase access of small farmers to agriculture extension services and training on animal and plant health in priority regions, and to provide financial assistance in the case of an agriculture sector emergency. The USAID US\$127 million FTF West/WINNER project has promoted soil conservation, ravine treatment and agroforestry systems in the centre/west of the country; that project is due to finish in 2014. With support from UNEP, the municipalities of Fort Liberté and Caracol have participated in the project “Management and protection of the coast of Caracol, Dérac and Fort-Liberté”, aimed at protecting these coastal areas through the planting of mangroves in degraded areas and the cleaning of areas with accumulated solid wastes, in the expectation that this will permit the development of tourism activities capable of generating employment and income.

32. **Environmental and territorial land use planning.** The Inter-ministerial Centre for Territorial Land Use Planning (CIAT) is in the process of finalizing the country’s first regional territorial land use plan, for the north-east coast region within which the Three Bays pilot site is located. Furthermore, UNDP, through the Agenda 21 initiative, in collaboration with the Ministries of Environment, Tourism and Planning and External Cooperation, has developed and Departmental Action Plan for the Environment and Sustainable Development of the North-East Department (PADEDD).

33. **Protected areas:** investments by the Government (through the Ministry of Environment) in the National Protected Areas System are complemented by the support received from the European Union to the Caribbean Biological Corridor (CBC). With the additional support provided by GEF project 3616 “Establishing a Financially Sustainable National Protected Areas System”, under the baseline scenario the SNAP will have a basic operational and financial framework necessary for its long term sustainability; local communities will increasingly participate in PA management; and the area of the PA estate will be expanded, allowing economies of scale and the development of models of income generation, contributing incidentally to the ecosystem coverage of the NPAS. At site level, through the multi-focal FSP 3132 GEF and IADB have supported sustainable land management of the upper watersheds of southwestern Haiti, which coincide with the Macaya/Caimites/Baraderes target area of this project: that investment is being followed up by US\$9 million IADB project HA-G1023 “Environmental Protection of Macaya National Park” (currently under preparation), which aims to contain the rapid environmental degradation of Macaya Park area through the integration of sustainable land and forest management (SLFM) practices. Despite this support, under the baseline scenario little specific attention will be paid in the SNAP to the conservation needs of marine and coastal ecosystems; PAs will continue be managed on a site-specific basis with limited consideration of watershed/landscape-wide processes and threats; and limited specific attention will be paid to managing PAs in such a way as to further EBA.

34. **Fisheries:** since the mid-1990s, the fisheries sector has received occasional assistance from national and international projects. Since 2009, under the leadership of various NGO projects and the private sector, state policy makers have shown increasing commitment to the sector. A national programme for development of marine fisheries was developed in 2009 by a working group of private sector actors, MARNDR officials and professors from the Faculty of Agriculture and Veterinarian Medicine. Its main priorities are to increase production and promote the development of "improved traditional fishing ". In 2010, MARDNR included fisheries in the National Plan for Agricultural Investment. Furthermore, in 2011 MARDNR initiated a consultation process including all actors (private sector specialist, fishermen's organization, NGOs) to identify partnership opportunities for contributing to the development of the sector in the coming years. The Economic and Social Support Fund (Projet Fonds d'Assistance Economique et Sociale) or FAES, which is a public institution, has funded community projects in the villages of Petite-Anse and Petit Paradis since 2009. FAES has provided support to the fisheries sector by installing offshore FADs to these villages. It has also provided training to fishermen and the equipment necessary for fishing on FADs (including 2 motorized boats, lines, hooks and harpoons), as well as support to the establishment of shoppes, fishing equipment and facilities for fish drying in these villages. Budgets to achieve the objectives outlined in the National Plan for Agricultural Investment are not sufficient to generate rapid developments in the sector. Under the baseline project, initiatives in support of the fisheries sector are unlikely to result in its sustainable development. Current initiatives place an undue focus on technical issues and on the donation of equipment to fishermen, on an *ad hoc* basis and without adequate structural support in the long term such as training, organizational development and procedures or governance mechanisms for the joint exploitation of marine resources by competing users.

35. **Environmental mitigation.** The Interamerican Development Bank (IADB) will be investing (through its project HA-L1076) in the mitigation of the direct and indirect environmental impacts of the Caracol Industrial Park (CIP), in which it is one of the main investors, for example through the treatment of liquid wastes, and the reforestation of mangroves (to compensate the expected increases in pressures on these due to the influx of population to the area which is expected to result from the establishment of the Park). These actions of IADB will include the preparation of a cumulative effects assessment of the impacts of the CIP and existing and planned projects in the area, the establishment of a socio-economic baseline for area surrounding the CIP, assessment of local governance, and analysis of local markets and marketing channels for local communities. In addition, the IADB and USAID are supporting the American Institute of Architects in the development of a regional plan for the north and undertaking studies and implementing practices that will ensure that water quality and quantity meets standards required to minimize impacts on the mangroves and marine habitats of Caracol Bay. These investments will constitute a valuable contribution to environmental mitigation, but under the baseline scenario will not be adequately related to the management of the coastal/marine zone or the watersheds which drain into the area in question, resulting in the risk of "leakage" of impacts to elsewhere along the coast, and of the mitigation measures being undermined by environmental pressures (e.g. sediment load, flash flooding, agrochemical pollution) originating from poor watershed management practices upstream.

**Table 2. Key elements of the programmatic baseline**

Sources	Project	Period	Baseline (US\$ million)	Indicative co-financing (US\$ million)
IDB	1. Environmental Protection of Macaya National Park	2013-2016	8.0	13.0
	2. Three Bays Protected Area	2014-2015	1.0	
	3. Disaster mitigation and agricultural development programme in Artibonite watershed	2014-2017	40.0	
USAID	1. Caracol Community Electrification Project 2. Northern Corridor (Housing): Caracol EKAM 3. Plan for compensation and livelihood reestablishment for people affected by Caracol Industrial Park	2014-2017	90.0	8.0

World Bank	1. Relaunching Agriculture: Strengthening Agriculture Public Services II Project (GAFSP)	2013-2016	45.0	18.0
	2. Post-Disaster Partial Credit Guarantee Programme Support	2013-2017 2014-2017	30.5 41.3	
	3. Disaster Management and Vulnerability Reduction	2013-2014	20.0	
	4. Pilot Programme for Climate Resilience			
FAO	Climate Change adaptation for the agricultural sector.	2014-2015	3.0	-
Ministry of Environment	Government recurrent budget	2013	15.0	3.0
UNDP			-	1.0
<b>Total</b>			324.8	43.0

**The long term solution**

36. The long term solution to the threats affecting the vulnerability of local populations to the impacts of climate change, and the role of natural ecosystems in promoting adaptation to climate change, requires an integrated ridge-to-reef approach which recognises the social and environmental interrelations between fragile mountainous watersheds and coastal/marine ecosystems and the interdependence between CC adaptation and BD conservation. This approach must take into account both environmental sustainability in the medium and long terms, and the short-term livelihood support needs of vulnerable, poor local people, as well as recognising the need to transform the economy through infrastructural, productive and industrial development. This solution will involve the following:

- Activities in marine and coastal zones being located and implemented in such a way as to generate landscape/seascape-wide matrices of complementary and interrelated spatial units, the management of each of which is tailored to its vulnerability to CC, its potential role in EBA, and its productive capacity;
- Protected areas (of appropriate categories defined according to the characteristics of their constituent ecosystems and biodiversity, considerations of regional biological connectivity, the nature and magnitudes of threats and the needs of local communities) being integrated into these landscape/seascape matrices in such a way as to permit controlled use where possible and to promote EBA and other environmental services of benefit to the local populations;
- **The active promotion of alternative livelihoods, ensuring that these are resilient to increased climate risk.**
- Local communities being involved in the planning, implementation and governance of protected areas and watersheds, and other forms of natural resource management with implications for EBA.

37. This solution is in accordance with the provisions of the National Action Plan for Adaptation (NAPA), which explicitly recognises the relation between poverty reduction, ecosystem functionality, biodiversity loss and adaptation, and includes in its priorities watershed management and soil conservation (Priority 1) and coastal zone management (Priority 2) and natural resource management (Priority 3).

**Barriers**

38. The following major barriers have been identified that prevent the achievement of this long term vision:

***1. Lack of an integrated ridge-to-reef vision for EBA***

39. Planning and management of the priority watersheds does not take adequately into account the locations, nature and magnitude of environmental values, biological connectivity, threats, the implications of climate change or the livelihood support needs of local communities. The Inter-ministerial Centre for Territorial Land Use Planning (CIAT) is in the process of finalizing the country’s first regional territorial land use plan, for the north-east coast region within which the Three Bays pilot site is located. A limited level of experience has also been generated with the development of watershed-level plans, for example through the USAID-supported WINNER project. However, **the regional plan is “broad-brush” in nature, and mechanisms, capacities and experience are still lacking for putting it into practice at local level, and for integrating it with more specific local level plans.**

40. The application in practice of the provisions of regulations and planning instruments is impeded by the **lack of effective governance frameworks at local level:** the Ministry of Agriculture, Natural Resources and Rural Development (MARDNR), whose dependencies are in charge of the agricultural, forestry and fisheries sectors, has severely limited financial, technical and human resources and as a consequence virtually no field presence for the promotion and enforcement of the regulatory framework.



41. Similar capacity gaps at institutional and local levels result in **limited access by local people to alternative, more sustainable practices** for farming in vulnerable watersheds and for managing and exploiting other resources such as mangroves in a sustainable manner. This situation is compounded by a lack of consistency and harmonization between agencies and institutions and limited clarity on the environmental sustainability of alternative management practices.

42. Systems at central level for development planning, knowledge management and decision-making are insufficient to support the integrated management and conservation of natural resources in watersheds and coastal and marine zones. The current SNAP project is helping to create a favourable overall environment for effective PA management, by developing a strengthened PA governance system, backed by policies, regulations and competent institutions. Still lacking, however, is the incorporation of a more integrated, landscape/seascape wide, approach to delivering environmental benefits of global, national and local significance and addressing the implications of climate change. An **overall planning framework is missing in practice**: a National Action Plan for Integrated Management of Watersheds and Coastal Areas (IMCAWA) was proposed by the Ministry of the Environment (MoE) in 2004 but has yet to be made operational through the plans and programmes of different sector institutions; neither does it adequately incorporate considerations such as tradeoffs and synergies between environmental and development considerations, regional biological connectivity, or the implications of climate change.

43. There are also deficiencies in the mechanisms for informed and balanced decision-making in relation to development initiatives with implications for the status of biodiversity, the sustainability of the natural resource base, and resilience to climate change. Legal provisions exist for Environmental Impact Assessment (EIA) but **technical capacities are virtually nonexistent in the MoE for the development of terms of reference and the review of Environment Impact Statements**. As a result, there is no way of ensuring the quality and reliability of EIA findings, or that the concerns and needs of local communities are taken into account in the processes of scoping and impact prediction, which means that advantage is not taken of opportunities for synergies between local needs and traditional practices on the one hand, and effective environmental management and mitigation on the other. The high level of spatial interactions between social, biological and productive practices at the major watershed level means that a strategic approach to impact assessment is required: at present, however, there is **no provision for or experience with Strategic Environmental Assessment (SEA) in the country**, beyond that applied to the aid programmes of individual agencies (such as USAID).

44. Significant capacities for information management have been developed in the National Centre for Geospatial Information (CNIGS) with support from the European Union. Informed and balanced environmental decision-making (for example through EIA, SEA and territorial land use planning) is further hindered, however, by the **inadequacy of mechanisms for ensuring that decision-makers are aware of and have timely access to the kinds of information that are required** to maximize the objectivity of decision-making.

## ***2. Inadequate capacities to put PA proposals into practice in the marine and coastal zone***

45. The current GEF project in support of the SNAP has defined priorities for the establishment of protected areas in the country, in both terrestrial and coastal/marine areas (see **Figure 1**), on the basis of a range of biological criteria. In order to put these broad brush proposals into practice, however, it is necessary for their spatial layout to be defined, including the definition of their external limits, and of the boundaries between internal zones subject to different regimes of management and protection. At present, there are **inadequate mechanisms, capacities and experience for the detailed spatial planning of individual PAs to be carried out**. Specifically, information is lacking on the precise nature and locations of the biodiversity values to protected, of the local and regional biological processes to which they are related, of the threats that affect them, and on the local people's livelihood support activities. This makes it difficult to determine for example how large they need to be in order to conserve viable populations of the target species, how important a role biological corridors might play in ensuring long term population viability, and in which locations special attention needs to be given to harmonizing conservation with the livelihood support activities of local people.

46. Furthermore, there are **severely limited capacities for developing and implementing management plans**, on which the long term sustainability of the target PAs will depend. These capacity limitations cover areas including the identification and characterization of threats; the formulation of biodiversity conservation strategies (and in particular options for harmonizing local development priorities with conservation goals); the development and application of indicators for the monitoring of biological, social and institutional capacity variables; financial management; and the strategic planning of financial and other resources.

## **Objective, components and outputs**

47. *The objective* of the project is that watersheds and coastal areas in Haiti are spatially configured and managed to increase the resilience of ecosystems and vulnerable communities to climate change and anthropic threats. Its main emphasis will be on promoting Ecosystem-Based Adaptation, through actions and capacities in support of the introduction of a “ridge to reef” approach to the management of key watersheds and their associated coastal zones, in order to address upstream-downstream processes associated with natural resource degradation, resulting in multiple and interrelated benefits in terms of resilience to climate change, sustainable livelihoods and the protection of globally important biodiversity values.

48. The two components of the project will be closely interdependent. Improved management of watersheds under Component 1 will deliver direct EBA benefits to the poor farmers living there, by reducing the vulnerability of their farming systems to the impacts of climate change and vulnerability, while at the same time reducing the risk of CC-related impacts on populations living downstream, and also reducing impacts on the EBA functionality of coastal and marine ecosystems downstream. At the same time, direct investments in improved conservation of coastal and marine ecosystems, under Component 2, will further their capacity to buffer populations living in the coastal zone against the impacts of climate change.

49. This combined LDCF/BD STAR investment will complement the considerable baseline described above, furthering a landscape-wide, ecosystem-based approach to adaptation as a complement to the largely infrastructure-focused approach of most adaptation investments; and helping to realize the adaptation potential of PAs, investment in which has to date largely focused on site-specific BD considerations.

### ***Component 1. Increased resilience to climate threats in key watersheds and coastal zones***

50. Actions under this component correspond directly with the three first priorities of the National Action Plan for Adaptation: 1) watershed management and soil conservation ; 2) coastal zone management; and 3) valuation and conservation of natural resources.

51. Output 1.1 Governance framework—policies, plans and decision making for ecosystem-based adaptation (EBA):

52. Under the *baseline/business as usual scenario*, environmental policies, plans and decision-making will fail to take the implications of CC adequately into account, resulting in the risk that productive and/or infrastructural development initiatives will be located and designed in such a way that they degrade ecosystems which are of importance for EBA (for example by eliminating coastal mangroves, or generating sediment or other contaminants which affect the functioning of aquatic ecosystems), or that they are themselves at risk from the impacts of climate change (for example by being located in sites which are vulnerable to sea level rise, flash floods or erosion). The aim under the *EBA alternative* is that environmental decision-making (and the resulting policies and plans) will favour the perpetuation and/or restoration of ecosystems which contribute to EBA, striking an appropriate balance between the pressing short-term development needs of the local population, the reduction of their exposure to climate-related risk, and the generation of global environmental benefits.

53. The project will generate a more integrated, detailed, updated and comprehensive planning framework than that which is currently provided for by the existing instruments such as the National Action Plan for Integrated Management of Watersheds and Coastal Areas (IMCAWA) or the national Strategic Development Plan which is currently under formulation. A **national strategy document** will be generated, which will set out principles, strategies and responsibilities for promoting EBA, climate risk management, ecosystem restoration, and for integrating these with related considerations of watershed management, sustainable development and poverty reduction in priority watersheds. The prioritization of sites for PA establishment, which has been carried out under the aegis of the GEF SNAP project, will be complemented by the **integration of information on spatial priorities** for the promotion of EBA, watershed management and biological connectivity.

54. The project will support local governments in the formulation of **territorial land use plans**: these will take into account considerations of the location and characteristics of ecosystems, watersheds, human populations and productive activities, as well as “hotspots” of vulnerability to the impacts of climate change, and the nature and magnitude of spatial dynamics between different parts of the area in question – for example current or potential downstream flows of sediments and pollutants into coastal ecosystems, or predicted spatial migration of ecosystems due to climate change. These plans will be of particular importance in areas which are potentially the targets of infrastructural or productive developments promoted by the Government, cooperation agencies and/or the private

sector, in particular the more productive coastal plains: a key case in point is the Three Bays area, where the location of the industrial park has already been defined but there is a risk that much of the related infrastructure and urban development will emerge on an *ad hoc*, unplanned basis. The project will furthermore seek to work with companies involved in major infrastructure projects in the target areas, especially the Three Bays, providing them with orientation on how to develop and implement **environmental management and mitigation plans**, for example through the provision of specific information on climate risk and the locations of areas of high EBA value or vulnerability, and the range of management options that may be appropriate for the conditions identified. This output will be partly cofinanced by IADB project HA-L1076, which will support biological baseline surveys of the area of influence of the Caracol Industrial Park, and socio-ecological baseline studies for fisheries, mangrove use, and salt use in the area.

55. The project will strengthen **mechanisms and capacities for environmental decision-making** in the priority watersheds, facilitating the objective consideration of how to balance and reconcile objectives of EBA, sustainable development and poverty reduction. The project will support the development and adoption by the MoE of **formalized and effective procedures for Environmental Impact Assessment, and the corresponding training of MoE staff** in the development of terms of reference and in the review of Environmental Impact Statements. These processes will be led by the MoE but will provide for participation of local stakeholders at the scoping and review stages in order to ensure that their livelihoods are adequately considered. This will be complemented by the development of procedures for **inter-sector and inter-institutional Strategic Environmental Assessment** of policies and programmes with potential implications for climate change resilience, environmental sustainability and services and sustainable development in priority watersheds and coastal/marine zones, which will take into account the cumulative impacts of the multiple individual development initiatives that will constitute development programmes at regional level, such as that contemplated by the Government in the north-east of the country.

56. The project will also support **the improvement of mechanisms for information flow to environmental decision-making processes** such as EIA, SEA and territorial land use planning. Taking advantage of the research capacities of national and international NGOs, it will help to identify information gaps and support applied research and inventory activities to fill them; and building on the information management capacities that have been established in the CNIGS with support from the European Union, it will provide technical support to ensure that the required information is channeled in a useful and accessible manner to decision-makers and to decision-support processes. Particular attention will be paid to including variables related to climate change resilience, biological connectivity, ecosystem function and environmental services.

57. In order to facilitate the application of the results of these decision-support mechanisms, the project will facilitate the establishment and operation of multi-stakeholder platforms for the **analysis and discussion of priorities and plans in the target areas**. Wherever possible, advantage will be taken of existing mechanisms for dialogue and participation.

58. There is potential for economic and infrastructural development initiatives to mitigate their impacts, or in some cases to have positive environmental benefits, through environmental management plans and investments in mitigation and/or offsets. The project will explore and take advantage of opportunities to advise developers (whether from the Government, private or international cooperation sectors) on how to take into account issues of climate change resilience and/or watershed management in their environmental planning and investment.

59. The project will also work with local communities and municipal authorities in negotiating, developing and applying **municipal and community-based norms for natural resource management and environmental controls** (for example on agricultural practices, NTFP extraction and infrastructural development). These will be developed through participatory multi-stakeholder processes of analysis which will enable participants to characterize conflicts and threats related to natural resource management, which affect their interests, such as the increasing levels of incursion of external fishers into the customary fishing areas of local communities, and the degradation of reefs and mangroves on which local people depend due to demographic changes and economic development.

60. Output 1.2: Conservation and effective management of ecosystems to enhance resilience and functionality

61. Under the *baseline/business as usual scenario*, the pressing needs of poor local people living in fragile watersheds to satisfy their food, energy and income requirements, their limited access to technical and financial support, and poorly developed conditions of environmental governance, will result in the continuation of natural resource management practices which degrade the ecological and productive functionality of steep land

agroecosystems. This will exacerbate the risk of their productive failure under conditions of climate variability and change, and will increase risks of negative impacts downstream on human populations and on ecosystems of importance for EBA (for example through increased flashiness of stream flows, destructive flood pulses generated by landslides, reduced aquifer recharge and increased sediment and pollutant load in water courses). Under the *EBA alternative*, as a result of the combined investment of LDCF and co-financing resources, farmers will have increased awareness of the relation between farming/natural resource management practices and their exposure to environmental risk, and increased capacities to apply EBA-compatible farming systems; while governance and organizational conditions will exist at local levels to support these systems and to sanction practices which undermine EBA.

62. At site level, the project will support the development, application and institutionalization of models for **climate-resilient** natural resource management **and livelihood support**, which promote EBA and watershed management, and are feasible and attractive in social, economic and operational terms. In the context of Haiti, NRM models in support of EBA, watershed management and sustainable development will only be acceptable and sustainable if they generate benefits for local people in the short term, or at the very least generate no net negative impact on their livelihoods. The project will therefore invest in developing and promoting **models of natural resource management and livelihood support** which strengthen or diversify the socioeconomic situations of local people, as well as contributing to these goals. These options may include, for example, reforestation and restoration of vegetation in watersheds and mangroves to promote water infiltration, regulate stream flows, protect against mass movement and buffer against sea level rise and wave impact; and soil- and water-conservation practices in agriculture, including the construction, maintenance and/or restoration of terraces and structures for capturing runoff and promoting infiltration, mulch-based production systems, and agroforestry systems. The identification and implementation of these and other models of natural resource management and livelihood **support, all of which will primarily be focused on increasing the climate resilience of local people**, will be achieved through highly participatory processes involving the members of local communities, in order to maximize the probability of their uptake, sustainability and compatibility with their overall livelihood support systems. IADB project HA-L1076 will provide partial co-financing for the promotion of alternative livelihood options in the area of influence of the Caracol Industrial Park, including the implementation of a participatory livelihoods development plan for Caracol and Jacquezy and capacity building for involvement in alternative sustainable livelihood activities.

63. These EBA-friendly models for natural resource management will be supported at local level by **community-based structures for planning and implementing EBA and watershed management**, including strengthened village organizations capable of recognizing the magnitude and nature of environmental risks and mobilizing local and external resources accordingly, and strengthened local mechanisms for sanctions of NRM activities which undermine EBA and watershed management (such as the felling of mangroves or the pollution of water courses with agrochemicals). Wherever possible, the strengthening of local organizations will be coordinated with and build on the initiatives of NGOs and international cooperation projects and other existing initiatives. The project will work with other existing initiatives to develop strategies for ensuring the sustainability of technical support for EBA and watershed management practices, such as mechanisms for horizontal farmer-to-farmer interchanges, farmer field schools, development of extension capacities in local NGOs and community-based organizations, and the development of capacities in local organizations for attracting extension support from external entities.

#### 64. Output 1.3 Assisted rehabilitation—to recover ecosystem functionality

65. Under the *baseline/business as usual scenario*, large areas of the target watersheds, which fall under open access/common property regimes, will suffer continued degradation of their ecological functionality and their ability to contribute to EBA, as a result of factors such as fire and the indiscriminate felling of trees for charcoal and construction. Given their tenure regimes, it will be outside of the capacity of individual farmers to improve the management of these areas. Under the *EBA alternative*, these areas will be returned to conditions of ecological functionality and sustainability: in the case of mangroves, sufficiently developed to be able to maintain their foothold in the face of wave impact and sea level rise; and in the case of forest vegetation in the upper parts of hills, with sufficient height growth and canopy closure to be able to withstand low-level wildfires, and with sufficient densities of mature trees to be able to regenerate effectively and compensate for ongoing extraction.

66. In recognition of the fact that the promotion of changes in natural resource management practices by local people may take some time to achieve significant coverage and impact, the project will accelerate EBA by investing directly in the **restoration and rehabilitation of degraded ecosystems in order to recover ecosystem functionality and climate resilience**. This will be targeted specifically at areas of maximum vulnerability and in which there is

maximum potential to generate EBA benefits, such as those areas of watersheds which are most at risk of erosion or slumping if action is not taken; areas in the vicinity of water courses, where there is potential to trap sediment in runoff before it is carried further downstream; and mangroves, with potential to buffer the effects of sea level rise and wave impacts. PPG resources will be used to identify appropriate practices and species for different circumstances, and corresponding resource needs, building on lessons learnt from other projects such as the current LDCF projects in Haiti and the Adaptation Fund project in neighbouring Cuba.

67. The perpetuation of these restored ecosystems will be furthered by the community-based governance structures and norms which will be promoted under Output 1.3; the project will invest in raising awareness and capacities in these structures regarding the importance of protecting extant and restored ecosystems on open-access lands, due to their value for the provision of EBA and other ecosystem services.

### ***Component 2. Strengthening of the contribution of protected areas to biodiversity conservation and sustainable development in the MCZ***

68. Output 2.1 Refined proposals for the PA estate in the MCZ. The GEF SNAP project has developed proposals of priority locations for PAs in both terrestrial and coastal/marine areas (see **Figure 1**): this project will help to put those proposals into practice in a limited number of high priority sites. To this end, the project will support:

- **Detailed studies of environmental and social baselines** in each of the proposed areas, including the identity and ecological requirements of key elements of biodiversity and other objects of conservation; the types, magnitudes and implications of interactions between local people's livelihoods and the natural resources of the areas; the corresponding definition of human-induced threats to their environmental values and the possible implications for local people of PA establishment and the introduction of livelihood alternatives; and the nature and magnitude of the likely impacts of climate change. In the Three Bays area, GEF support will complement in the two other bays the work already being financed by IADB to establish environmental and social baselines in the Caracol Bay.
- **Processes of multi-stakeholder discussions** including in particular local community members, in order to discuss the nature of their interactions with, and dependence on, the resource, and the consequent nature and magnitude of any implications that protected area establishment might have for their livelihoods, together with the participatory discussion of resource management and livelihood alternatives with potential for "win-win" or mitigating social impacts.
- Based on the above processes, the development of **specific proposals for the location of the external boundaries of the PAs, additional landscape/seascape units for controlled use** to complement and connect PAs, and **internal boundaries** between zones with different regimes of management and conservation, culminating in their formal legal declaration.

69. Output 2.2 Strengthened instruments and capacities for the effective management of PAs. The project will support the proposal and negotiation of **specific management provisions for the PAs in each of the target areas**, and their translation into **management plans**, incorporating considerations of marine biology, biological connectivity at local and regional levels, the condition and sustainability of populations of species of socioeconomic importance, the nature and magnitude of threats, the needs and conditions of local communities, and the existence of alternative strategies for conservation and for sustainable economic activity which would allow PAs to be compatible with local people's livelihood needs **(and thereby avoid the need for strict exclusion or displacement of productive/extractive activities or population)**. The plans will also including provisions for the **participation of local stakeholders** in their management. They will complement and be integrated with the proposals for financial sustainability that will be generated by the GEF SNAP project.

70. This will be complemented by the **strengthening of capacities in Government institutions, NGOs and/or community groups** operating in each of the target PAs. Specific thematic areas on which this capacity building will focus will include the monitoring of BD status, the nature and levels of threats, and PA management effectiveness; issues of conservation biology of relevance for the development of effective conservation strategies, such as biological connectivity and regional biological processes; management options for reconciling conservation and livelihood support needs; PA management planning, and PA financial planning. Specific needs per institution will be defined in more detail during the PPG phase. The IADB, working with the Ministries of Environment and Finance, will co-finance capacity building and information dissemination relating to the management of the proposed Caracol protected area, patrolling and natural resource management, the development of sustainable

alternative livelihoods for its inhabitants (such as alternative charcoal sources, pelagic fisheries, mangrove fisheries, and sea salt production), and environmental education and awareness raising.

71. The experiences generated at local level in the target sites with the development and implementation of management instruments, and the strengthening of institutional capacities, will be systematized and used as the basis for an **institutional strengthening programme** at national level in relation to the planning and management of coastal and marine PAs. This programme will be aimed at the staff of Government institutions such as MdE and MARNDR, and national NGOs as appropriate; precise activities by institution will be defined on the basis of institutional capacity analyses to be carried out during the PPG phase. Activities within the programme will include training courses and workshops, focused on challenges and options related specifically to the coastal and marine zone, and the development of manuals and protocols for planning, management and administrative procedures in marine and coastal PAs. The programme will be closely harmonized and integrated with the institutional strengthening activities of the current SNAP project, providing a “value-added” on top of these in terms of the specific attention to marine and coastal issues.

72. The project will involve the establishment of new PAs which are additional to those that were considered in the GEF/UNDP project 3616 “Establishing a Financially Sustainable National Protected Areas System”. It will therefore provide support which will complement that project, in order to ensure the financial sustainability of these new PAs, and to generate lessons on strategies for financial sustainability of specific relevance to marine and coastal PAs. This will address not only basic PA operating costs but also the financial resources required to promote and support alternative resource management and livelihood support strategies in PAs. Opportunities for financial sustainability, to be explored during the PPG phase, will include the national environmental fund and corporate responsibility programmes (associated with private investments in initiatives such as the Caracol Bay Industrial Park).

### Adaptation Benefits

Current situation	Alternative to be put in place by the project	Adaptation benefits
Increased resilience to climate threats in key watersheds and coastal ecosystems		
<ul style="list-style-type: none"> <li>- Low levels of natural resource governance and poor natural resource management in watersheds, resulting in increased vulnerability of production systems to climate change, and increased vulnerability of coastal populations and ecosystems to flooding and pollution, which undermine their potential to sustain livelihoods and contribute to EBA.</li> <li>- Inadequate/ineffective provisions for incorporating considerations of EBA and climate risk management into the location and design of economic development initiatives</li> <li>- Limited options available to local people for meeting livelihood needs without undermining CC resilience</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Climate-resilient</b> soil- and water-conservation practices furthering EBA in target watersheds, and protection and restoration of vulnerable ecosystems of importance for EBA, supported by</li> <li>- Integrated policy, strategic and planning framework for CC adaptation approaches to be applied in priority watersheds,</li> <li>- Strengthened mechanisms and capacities for environmental decision-making in relation to CC adaptation in the target watersheds</li> <li>- Planning framework for the integration of considerations of EBA, CC risk management, watershed management, sustainable development and poverty reduction</li> <li>- Governance framework for EBA, CC risk management and sustainable development</li> <li>- Models for natural resource management developed, applied and institutionalized at site level</li> <li>- Community-based structures for planning and implementing EBA, CC risk reduction and watershed management</li> </ul> <p>This will result in livelihood support activities being carried out in ways which promote EBA and resilience to climate risks; productive and infrastructural initiatives being located more appropriately in the landscape; and reduced levels of threats from illegal activities.</p>	<ul style="list-style-type: none"> <li>- Increased coverage of soil- and water-conservation practices which further EBA and climate risk resilience;</li> <li>- Increased biological viability of coastal ecosystems and therefore their contribution to EBA;</li> <li>- Stability in the areas and conditions of key areas of ecosystems of importance for EBA, climate risk management, connectivity and watershed management;</li> <li>- Improvements of indices of ecosystem health and environmental services in key areas of ecosystems of importance for EBA, connectivity and watershed management;</li> <li>- Increases in coverage and quality of vegetation in vulnerable parts of target watersheds, as a result of reforestation and/or restoration activities in order to increase CC resilience;</li> <li>- Increases in coverage and quality of mangroves in target areas, providing improved protection against sea-level rise and wave impact, as a result of reforestation and/or restoration activities;</li> <li>- Reduced economic losses through management (establishment,</li> </ul>

Current situation	Alternative to be put in place by the project	Adaptation benefits
		maintenance, etc.) of climate resilient natural assets.

### Global Benefits

Current situation	Alternative to be put in place by the project	Global benefits
<b>Establishment and management of PAs in the marine and coastal zone</b>		
<ul style="list-style-type: none"> <li>- Low levels of governance in existing and candidate PAs, resulting in overfishing and habitat destruction</li> <li>- Low levels of management capacities for existing and candidate PAs</li> </ul>	<p>Refined proposals for the PA estate in the MCZ (Output 1.1) and strengthened instruments and capacities for the effective management of PAs (Output 1.2), resulting in <b>Increase in the coverage of coastal and marine ecosystems that have been declared and gazetted as protected areas</b> (by category), by around 94,887ha and <b>10% increase in the average management effectiveness rating of target PAs</b> (including improvements in infrastructure and enforcement), measured through the GEF Management Effectiveness Tracking Tool (METT), resulting in reduced threats (such as extraction of timber, overfishing, extraction of sand, coral mining and pollution) affecting biodiversity of global priority and importance for local livelihoods.</p>	<p>Improved coverage and effectiveness of PAs, and corresponding reductions in threats, will result in <b>stability in the areas and intactness indices of mangroves, eel grass beds, reefs and bay habitats</b> in target PAs, allowing these to continue to function as habitat for threatened or seriously endangered species, such as the American crocodile, Atlantic leatherback sea turtle, Atlantic Hawksbill sea turtle, flamingo, black-crowned palm tanager, northern mockingbird and cave swallow. A highly significant additional benefit will be the <b>protection of flows of ecosystem products and services for local communities</b>, including sustainability of fisheries (the mangrove forests of the Caracol and Fort Liberté Bays play an important role in the reproduction cycle of numerous coastal and pelagic fish species of livelihood and commercial importance) and protection from storm surges. The environmental services provided by Caracol Bay alone have been estimated to have a total value of US\$110M per year.</p>

### Socioeconomic benefits to be delivered by the project

73. The environmental and socioeconomic benefits of the project will be closely interlinked. The protection of coastal and marine ecosystems (directly, through the PA strengthening actions proposed under Component 1 and indirectly, through the improved watershed management actions proposed under Component 2) will serve to safeguard their long-term potential to sustain livelihoods in fisher communities located along the coastal zones of the target areas, and to buffer these communities against the impacts of climate change (such as wave impact and sea level rise). The improved management of the watersheds which lie inland from these ecosystems will increase the sustainability of livelihoods in farming communities located in the watersheds, and the resilience of their production systems to the impacts of climate change; it will also reduce the exposure of populations living downstream to environmental threats (related in large part to climate change), such as flash flooding and landslides.

74. The design of the project recognizes the need to combine environmental protection with the satisfaction of the short term livelihood and income needs of impoverished local people. Therefore, rather than attempting an (in the current context of Haiti) impractical and unenforceable exclusive approach to conservation, it will seek to ensure that economic development and livelihood support initiatives are carried out with the minimum of impacts on BD and other natural resources and, where possible, “win-win” options are implemented which allow sound natural resource management to contribute actively to the stability of local people’s livelihoods. Example of ways in which these objectives will be achieved include the following:

- Improved EIA (including social aspects) that will help to ensure that economic development initiatives do not undermine natural capital on which local livelihoods depend (e.g. by polluting aquatic ecosystems of importance for fish reproduction)
- Improved technical options (for example diversifying into pelagic zones) for fishers in order to lessen the risk of them causing the fish stocks on which they currently depend to collapse by overfishing

- Increased access to livelihood support alternatives based on the sustainable use of natural resources, such as the collection and commercialization of small businesses and ecotourism (in both of which there are significant opportunities for women to participate in the resulting benefits).
- Maximization of the participation of local people (including women) in the formulation and implementation of the proposed natural resource management strategies, thereby ensuring their compatibility with sociocultural considerations and the functioning of existing livelihood support systems.

**Institutional and financial sustainability:**

75. The project will place particular emphasis on developing capacities at both local and national levels in the Ministry of Environment and NGO partners, as well as municipal governments and local community organizations in and around the specific PAs which the project will target. This diversified approach, and in particular the involvement and strengthening of institutions at local level, will be of key importance in ensuring institutional sustainability, as they will avoid placing excessive reliance on the still incipient capacities of the Ministry of Environment. The governance frameworks and community-based structures proposed under Component 2 will further complement and support the actions and capacities of Government institutions, while (under Output 2.6) the project will strengthen capacities among community-based organizations to garner further institutional support they may need beyond the life of the project. The project will also help to develop a new generation of natural resource/conservation professionals to staff these different institutions, through its strengthening of curricula and capacities in national universities under Output 2.2.

76. The financial sustainability of the target PAs will be addressed through close coordination between this project and the GEF/UNDP project 3616 “Establishing a Financially Sustainable National Protected Areas System” (see paragraph 79 below). The financial sustainability of the productive options to be promoted by the project will be ensured through analyses to be carried out during the PPG phase, and participatory analyses with local people during the implementation phase itself.

**A.2 Stakeholders**

77. The two most important institutional stakeholders of the project, at central level, are the **Ministry of the Environment (Mde)**, and in particular its **National Office for Protected Area Management (ONAGAP)**; and the **Ministry of Agriculture and Natural Resources (MARNDR)**. The Mde will be the executing agency for the project. It also presides over the **National Environment Council (CONAE)**, in which different coordination and participation structures are represented. The **Inter-ministerial Commission on the Environment (CIME)** is presided by the Prime Minister and involves the Ministers of Environment, of Public Works, Transport and Communication, and of Public Health and Population. The Ministry of Planning and External Cooperation (MPCE) is the lead entity in relation to territorial land use planning, which is however coordinated through an Inter-Ministerial Committee on Territorial Land Use Planning (CIAT).

78. The project will collaborate closely with a number of national and international environmental NGOs which are active in research and conservation activities in marine and coastal areas in the country, including the Nature Conservancy, which has carried out detailed studies of the condition of coastal and marine resources on the southwest peninsula and has developed proposals for their sustainable management; ReefCheck, which has carried out evaluations of the conditions of around 2/3 of the country’s coral reefs; and FOPROBIM, which is involved in mangrove reforestation, sustainable harvesting of alternative products of mangroves such as honey, and evaluations of the status of marine and coastal resources (especially in the southwest Peninsula).

**A.3 Risks**

<b>RISK</b>	<b>RANKING</b>	<b>MITIGATION STRATEGY</b>
Climate change, resulting in changed/increased pressures on marine and coastal ecosystems, for example due to sea level rise and increased frequency/intensity of storm events.	Medium	The project’s emphasis on conserving mangroves will confer benefits on marine and coastal ecosystems in general, due to the buffering and stabilizing effect these have in the face of sea level rise and storm impacts. Through its support to PA design and territorial land use planning the project will ensure that PAs and other spatial units within the landscape provide for CC-related changes, for example by designating zones into which ecosystems such as mangroves (whose limits are naturally defined by sea level and salinity thresholds) can migrate as these thresholds move upwards and inland.
Policy support for economic development initiatives at the expense of natural resource and biodiversity conservation	Medium	A central feature of the design logic of the project is the demonstration to policy makers and planners of how economic development, livelihood support and the conservation of natural resources and biodiversity can be made compatible, and the creation of the mechanisms and capacities required to put this into practice.



Weak institutional capacities for planning, management and governance in the target PAs and watersheds.	Medium	As explained in section B3, the project will invest significantly in filling key capacity gaps, based on analyses to be carried out during the PPG phase: risk will further be reduced by working with and strengthening diverse institutions at national through to local levels, thereby minimizing dependence on any one institution.
Limited capacity, commitment and/or governance among local people in the target PAs and watershed.	Medium	Starting with the design phase, the project will work in a participatory manner with local communities to discuss and define the strategies to be implemented at local levels, in order to maximize the likelihood of ownership and uptake. It will also work as closely as possible with, and strengthen, community-level governance structures (to be characterised in detail during the PPG phase).

#### A.4 Coordination

79. The IADB/GEF project (3132) “SFM Sustainable Land Management of the Upper Watersheds of South Western Haiti” is addressing watershed management issues, but with a “Business as Usual” approach in terms of adaptation; the UNDP/GEF project (3616) “Establishing a Financially Sustainable National Protected Areas System”, meanwhile, will promote biodiversity conservation but without specifically addressing either coastal/marine ecosystems, the implications of climate change on BD and PAs, or the EBA potential of BD. The FAO/LDCF project (4447) “Strengthening Climate Resilience and Reducing Disaster Risk in Agriculture to Improve Food Security in Haiti Post Earthquake” has a specific focus on farming systems, without a watershed- or landscape-wide focus; while the UNDP/LDCF project (3733) “Strengthening Adaptive Capacities to Address Climate Change Threats on Sustainable Development Strategies for Coastal Communities in Haiti” focuses principally on the development of systemic capacities rather than specific field-level solutions. The project proposed here will therefore constitute an essential complement to these existing initiatives, applying a landscape-wide (ridge-to-reef) focus to address the relations between coastal/marine ecosystems and the watersheds that drain into them; realizing the potential for synergies between BD conservation and EBA; and putting field-level solutions into practice within a strengthened framework of planning and institutions.

80. The project will build upon, and be closely coordinated with, GEF/UNDP project 3616 “Establishing a Financially Sustainable National Protected Areas System”, the objective of which is that by June 2014, Haiti will have put in place an integrated operational and financial framework to ensure long term sustainability of the national PA system. That project will develop capacities and mechanisms to increase and diversify funding for the NPAS, ensure that the best use is made of the resources available, and realize the potential of local communities to participate in PA management: it will also lead to an increase in the area of the national PA estate in order to improve economies of scale and to develop models of income generation, which will incidentally contribute to the ecosystem coverage of the NPAS.

81. In the Three Bays area, the project will be closely coordinated with IDB project HA-L1076 (Productive Infrastructure Programme), which will provide the basic infrastructure, industrial facilities, management support and complementary investments required for the expansion and sustainable operation of the CIP. The IDB project will directly co-finance a number of the outputs of this project, including the development of alternative livelihoods, biological baseline surveys, capacity building and information dissemination, patrolling and natural resource management, and environmental education and awareness raising. The managers and technical operatives of the GEF and IDB projects will coordinate closely and regularly on practical and logistical issues, and will develop annual work plans jointly. During the PPG phase, common indicators and a shared monitoring system will be developed for the two projects.

82. Elsewhere in the country, the project will coordinate with other initiatives supported by GEF and/or executed by GEF agencies. These will include the following:

- The existing LDCF/FAO full-sized project “Strengthening climate Resilience and Reducing Disaster Risk in Agriculture to Improve Food Security” (GEF ID 3733), approved in 2010, will generate important experiences and lessons on climate-resilient agricultural practices, which may be applied in the target watersheds of this project.
- The project that is being proposed by the IADB for presentation to the LDCF, which will support adaptation to climate change in the three “adjacent islands” of La Gonâve, Ile à Vache, and La Tortue. The present project will help to generate lessons on natural resource management in marine and coastal areas which will be of utility to the proposed IDB/LDCF project, particularly in relation to the Ecosystem Based Adaptation role of mangroves.

- The respective projects of UNEP and UNDP in the southwest of the country under Norwegian financing, which focus on environmental management, natural resource conservation and the reduction of climate-related vulnerability: the areas of these projects adjoin those of the project proposed here, opening opportunities for collaboration in promoting regional-level biological connectivity as well as addressing the land-based threats to coastal and marine ecosystems.
- The GEF/IDB project in support of Macaya National Park: this covers part of the catchment area of the Aquin and Baraderes target areas, and will therefore help to address land-based threats, most notably sediment-laden runoff affecting coral and other aquatic ecosystems.
- The GEF Small Grants Programme (SGP), implemented by UNDP: opportunities will be sought (during the PPG phase) and developed (during the implementation phase) for SGP to support the community-level alternative livelihood options proposed under Output 2.5, taking advantage of the significant experiences which it has generated to date with the strengthening of local stakeholder groups.

## **B. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:**

### **B.1 National strategies and plans or reports and assessments under relevant conventions**

83. At the international level, Haiti participates in different international conventions. The most important for the present project are the Convention for the protection of the flora, fauna and American natural landscapes (1941), and the Convention on Biodiversity (CBD).

84. Haiti's current environmental legislation provides a basic framework for the conservation and sustainable use of biodiversity. The Government has developed an array of legal measures to facilitate the management of the environment, initiated by several sectoral Ministries. The General Decree on Environment, prepared by the Ministry of Environment, was approved in November 2005 and promulgated to the Official Journal of the Haitian State on January 26, 2006 (161st Year, Number 11). The approval of this Decree represents, in theory, a major step in terms of prospects to solve jurisdictional conflicts in environmental management in the country. It contains a specific Chapter dealing with Biological Diversity (art 135 – 139).

85. In December 1999 the Haitian government, with the endorsement of the Council of Ministers, published the **National Environmental Action Plan** (NEAP). The NEAP is the major policy that offers guidance on all aspects of environmental management. The specific objectives are to:

- Strengthen and rationalize the management of the National System of Protected Areas;
- Restore the ecological balance of watersheds through the implementation of exploitation norms and best practices;
- Improve the quality of life through a better management of urban and rural areas as well the valorization and conservation of natural and cultural heritage;
- Provide a framework to reach a better coherence among plans and programmes within the environmental sector.

86. The **National Action Plan for Integrated Management of Watersheds and Coastal Areas** (IMCAWA), developed by the Ministry of the Environment (MoE)<sup>8</sup> recognises the importance of applying concepts of IMCAWA whereby coastal areas and their associated watersheds are treated as a single unit; the efforts of different sectors are integrated; mechanisms for planning soil and water management are applied to the entire watershed and take into account the ecological needs of coastal and marine systems which they influence; and water resources management and planning are viewed as a multidisciplinary process and included in a framework that seeks collaboration among all relevant agencies at national, watershed and community levels. The IMCAWA plan covers four strategic areas: I: Restoration of critical coastal ecosystems and associated watersheds, II : A new Institutional and Legal framework to address Integrated Management of Watersheds and Coastal Areas, III : Reduction of Communities' Vulnerability to Natural Disasters and IV : Transboundary Cooperation in Integrated Management of Watersheds and Coastal Areas with Dominican Republic.

87. The **National Action Plan for Adaptation** (NAPA), of October 2006, was developed through a highly participatory process involving local communities throughout the country. It specifically recognises four aspects of vulnerability to climate change: soils and desertification; the agricultural sector; coastal zones; and water resources.

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<sup>8</sup> Watersheds and Coastal Areas in Haiti: Haiti Report. République d'Haïti, Ministère de l'Environnement. Regional Consultative Meeting On The GPA Programme Of Work IN The Wider Caribbean. February 10-12, 2004, Colon City, Panama

It emphasizes the links between poverty reduction and adaptation, and prioritizes actions in relation to the sectors of soils and agriculture, coastal zones, forestry and water resources. Specifically, it prioritizes 8 options for adaptation: 1) watershed management and soil conservation ; 2) coastal zone management; 3) valuation and conservation of natural resources; 4) preservation and strengthening of food security; 5) water protection and conservation; 6) construction and rehabilitation of infrastructure; 7) waste management; 8) information, education and waste management. The project is fully aligned with the NAPA, as it will specifically focus on the first three of these options, which are considered in the NAPA to be of highest priority. It will especially focus on priority 1 but will also generate direct benefits for priorities 2 and 3.

88. The project has also been designed to support the GoH’s efforts to address needs identified in the project profiles that were designed during the development of the NAPA. Specifically the project will support the GoH to address priorities outlined in the following project profiles :

- 005: Watershed management and forest conservation/restoration in the watershed stretching from Jacmel to Anse à Pitre including Marigot and Bel-Anse
- 006: Restoration and conservation of coastal areas of the North and Northeast including the areas of Caracol and Fort-Liberté to counterbalance and reduce BD loss including deforestation of mangroves and loss of ecosystem functionality.
- 008: Restoration and conservation of coastal areas and ecosystems of the Southern Department and Grande Anse including the area of Baradères and Cayemites
- 009: Reforestation and restoration of forest cover and functionality in the Southeast Department in the upper watersheds of Bel Anse and Anse à Pitre, including Forêt des Pins.

**B.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities:**

89. The project will contribute to Strategic Objective 1 of the GEF Biodiversity Focal Area, to “Improve Sustainability of Protected Area Systems”. It will also contribute to Aichi Strategic Goal C (To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity) and specifically Target 11, related to the increase in the proportion of coastal and marine areas which are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes<sup>9</sup>. It will also contribute to the objectives of the LDCF

**B.3 The GEF Agency’s comparative advantage for implementing this project:**

90. UNDP provides a comparative advantage for this project given its strengths as a development agency with significant experience in working with the management and climate-proofing of PAs in Latin America, the Caribbean and worldwide as well as with productive economic sectors, specifically including initiatives to mainstream BD into their practices. UNDP’s work on BD and environmental management through past and on-going initiatives at the national and regional level has resulted in a strong relationship with the Government of Haiti that will facilitate effective actions by government executing agencies and stakeholders participating in this project. In addition, UNDP’s extensive experience in developing governance frameworks and inter-sectoral coordination will be of great benefit to the project. UNDP has specific experience with worldwide with climate

91. The project will contribute in concrete terms to Signature Programmes 2 and 3 of the UNDP Biodiversity and Ecosystems Global Framework 2012-2020:

- 2) Unlocking the potential of protected areas, including indigenous and community conserved areas, to conserve biodiversity while contributing to sustainable development.
- 3) Managing and rehabilitating ecosystems for adaptation to and mitigation of climate change.

**PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY (IES)**


**A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S)**

NAME	POSITION	MINISTRY	DATE (MM/DD/YYYY)
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<sup>9</sup> <http://www.cbd.int/sp/targets/#GoalC>

Dr Jean Francois Thomas	GEF OFP	MINISTRY OF THE ENVIRONMENT	APRIL 11, 2013
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**B. GEF AGENCY (IES) CERTIFICATION**

This request has been prepared in accordance with GEF/LDCF/SCCF policies and procedures and meets the GEF/LDCF/SCCF criteria for project identification and preparation.					
Agency Coordinator, Agency name	Signature	Date (MM/DD/YYYY)	Project Contact Person	Telephone	Email Address
Adriana Dinu, UNDP/GEF Officer-in- Charge and Deputy Executive Coordinator		April 12, 2013	Lyes Ferroukhi, Regional Technical Adviser, EBD	+507 302- 4576	lyes.ferroukhi@undp.org