



UNDP PROJECT DOCUMENT

**Government of the Dominican Republic
Government of Haiti**

United Nations Development Programme

OXFAM - QUEBEC

Reducing conflicting water uses in the bi-national Artibonite River basin through development and adoption of a multi-focal area Strategic Action Programme

The bi-national Artibonite watershed on the island of Hispaniola provides vital ecosystem services on which the socio-economic development of the one of the poorest areas of the Dominican Republic and Haiti depends. The long-term provisioning of ecosystem services is curtailed by persistent threats to ecosystem function and stability in the form of deforestation, inappropriate land-use, and harmful agricultural practices, which cumulatively have resulted in severe land degradation and threats to water resources. This situation could provoke conflicts over water resources and affect the social stability of the island. The focus of the proposed GEF intervention will be on assisting the two countries to improve the joint management of this shared watershed, through an ecosystem level approach that will, for the first time, address the upper, mid, and lower watershed as a single unit. The project, a bi-focal area (International Waters-Land Degradation) initiative, will integrate the TDA/SAP methodology with SLM and IWRM approaches. This initiative aims to remove the major barriers and constraints to sustainable land and water resources management, foster bi-national cooperation, and generate national, regional, and global benefits. A Transboundary Diagnostic Analysis of the watershed will enable both countries to better understand priority national and transboundary environmental issues and socio-economic root causes, and develop an agreed program of interventions. Through the formulation of a Strategic Action Programme (SAP), required priority interventions, reforms, and investments will be agreed to thereby laying the foundations for improved watershed governance at bi-national and national levels. Within the SAP process, national integrated watershed action plans will be developed to support implementation of a more comprehensive, ecosystem-based approach integrating IWRM and SLM principles into the management of the watershed. To assist this process, the project will establish a bi-national data and information management system as well as a monitoring and evaluation framework. On-the-ground investments and innovative demonstrations will be carried out in sustainable agriculture, soil and water conservation practices, and decentralized environmental management. The project will also promote the development of sustainable financial mechanisms for implementation of the SAP and the national integrated watershed action plans. These will include the identification of opportunities to support investments in environmentally sound, sector-specific business opportunities, and improvements in market access and transformation. Modalities for increasing access to credit by local producers will be identified to support sustainable practices and improved livelihoods.

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Acronyms and Abbreviations

ADEL	Agencia de Desarrollo Económico Local (Local Economic Development Agency)
AROMA	Association of Municipalities of the Development of the Macasías River Watershed
CA-UCA	Asociación de Granjeros de Loma de Cabrera (Assosication of Farmers from Loma de Cabrera)
CDM	Clean Development Mechanism
CIDA	Canadian International Development Agency
CIP	Comité Inter-institutionnelle de Pilotage (Haiti)
CLME	Caribbean Large Marine Ecosystem Project
CBO	Community-based Organization
CONARE	Council for State Reform (DR)
CTL	Comité Local de Trabajo (Local Working Committee)
DED	German Service for Socio Technical Cooperation
DGDF	Dirección General del Desarrollo Fronterizo (General Directorate for the Development of the Border Area)
DGOT	Dirección General de Ordinamiento Territorial
DIMS	Data and Information Management System
EDF	European Development Funds
ENDESA	Encuesta Nacional Demográfica y de Salud (Demography and Health Survey, DR)
EQOs	Environmental Quality Objectives
FAO	Food and Agriculture Organization
FA	Focal Area
FOGAP	Strengthening of Local Capacities for Environmental Planning and Management (DR)
FSP	Full Size Project
FUNDASEP	San Juan and Elías Piña Development Foundation
GEF	Global Environment Facility
GIS	Geographic Information System
GM	Global Mechanism of the UNCCD
GPS	Global Positioning System
GTI	Inter-institutional Technical Working Group (DR)
GTZ	German Agency for Technical Cooperation
IADB	Inter-American Development Bank
IFAD	International Fund for Agricultural Development
IMC	Inter-Ministerial Comité
INAPA	Instituto Nacional de Agua Potable y Alcantarillado (National Institute for Drinking Water and Sewage, DR)
INARA	National Institute for Agrarian Reform (DR)
INDRHI	National Water Resources Institute (DR)
INRM	Integrated Natural Resource Management
ISAP	Integrated Strategic Action Programme
ITDA	Integrated Transboundary Diagnostic Analysis
IW	International Waters
IWRM	Integrated Water Resource Management
IWCAM	Integrated Watershed and Coastal Areas Management in Caribbean
JICA	Japanese International Cooperation Agency
KfW	German Bank of Reconstruction
LAC-SURF	Latin America and Caribbean – Sub-Regional Resource Facility
LD	Land Degradation
LDCF	Least Developed Country Fund (Adaptation)
LEDA	Local Economic Development Agency
MARNDR	Ministère de l’Agriculture, des Ressources Naturelles et du Développement Rural (Ministry of Agriculture, Natural Resources and Rural Development), Haiti
MdE	Ministère de l’Environnement (Environment Ministry), Haiti
MDG	Millenium Development Goals
MEMU	Municipal Environmental Management Units
MoE	Ministry of Environment

NAP	National Action Plan
NAPA	National Adaptation Plan of Action
NEC	National Environment Council
NIWAP	National Integrated Watershed Action Plan
NWMP	National Watershed Management Program
OAS	Organization of American States
ODVA	Organization pour le Development de la Vallee de L'Artibonite
ONAPLAN	Oficina Nacional de Planificación (National Planning Office, DR)
ONEV	National Observatory for the Environment and Vulnerability
PADF	Pan American Development Foundation
PAGE	Programme d'Appui à la Gestion de l'Environnement
PANFRO	UNCCD National Frontier Action Programme
PCU	Project Coordination Unit
PDF B	Project Development Facility Block B
PES	Payment for Environmental Services
PIF	Project Information Form
POI	Plan of Implementation
PSC	Project Steering Comité
REDD	Reduced Emissions from Deforestation and Degradation
SGP	Small Grants Programme
SAP	Strategic Action Programme
SEA	Secretaria de Agricultura (Agriculture Ministry) (DR)
SEMARENA	Secretaría de Estado de Medio Ambiente y Recursos Naturales (Environment and Natural Resources Ministry) (DR)
SEEPyD	Secretaria de Estado de Economía, Planificación, y Desarrollo
SIDS	Small Island Developing States
SLM	Sustainable Land Management
SO	Strategic Objectives
SP	Strategic Program
SSA	Sub-Secretaría de Suelos y Aguas (Under-secretariat for Land and Water) (DR)
STAG	Stakeholder Advisory Group
STP	Secretariado Técnico de la Presidencia (Technical Secretariat of the Presidency) (DR)
SUREF	Subsecretaría de Recursos Forestales (Under-Secretariat for Forestry) (DR)
SWC	Soil and Water Conservation
TAG	Technical Advisory Group
TDA	Transboundary Diagnostic Analysis
TNC	The Nature Conservancy
TTT	Technical Task Team
UNCCD	United Nations Convention to Combat Desertification and Drought
UNDAF	UNDP/DR Development Assistance Framework
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environmental Programme
WIP	Watershed Investment Plan
WSSD	World Summit on Sustainable Development



Figure 1. *MAP OF THE PROJECT AREA AND PILOT PROJECTS*

SECTION I: ELABORATION OF THE NARRATIVE

PART I. SITUATION ANALYSIS

Context and global significance

1. The Artibonite watershed, on the Caribbean Island of Hispaniola ([Figure 1](#)), is a physically, culturally, and biologically diverse system shared by Haiti and Dominican Republic. This system provides global benefits and vital ecosystem services that are a lifeline for the socio-economic development of some of the poorest areas of the two countries. The island's watersheds are critical, as both nations rely heavily on surface water flow for their domestic and irrigation water, and economic development in general. In both countries, the Artibonite's soils support agriculture and livestock, on which the livelihoods of most of the rural population depend. The Artibonite is vital to the economy and food security of Haiti, the poorest country in the western hemisphere. The river is the only water source for the Peligre Dam, Haiti's only major reservoir, which provides domestic water and irrigation to over 3.5 million persons¹, and between 30 -50% of Haiti's energy needs. Downstream, the Artibonite valley is Haiti's main production centre for rice and staples, with more than 34,500 hectares of irrigated land. Globally important species and ecosystem biodiversity are harboured within the watershed, which is home to numerous endemic species and unique ecosystems.

2. In the absence of an effective integrated water resources management (IWRM) framework, the long-term provisioning of ecosystem services by the Artibonite is threatened by severe environmental degradation arising from widespread deforestation and harmful agricultural practices. The Dominican Artibonite watershed lost over 13,000 ha of forests between 1989 and 2006, while on the Haitian side the forest is all but extirpated. Deforestation combined with the watershed's steep and irregular topography, loose soils, and heavy seasonal rainfall produce high rates of soil erosion, with nearly 60% of the land in the basin affected by erosion (GTZ, 2003). During the last 20 years, the watershed has been increasingly losing its regulatory functions for infiltration and storage of rain water. Land degradation is impacting heavily on soil fertility and on the hydrologic regime through, *inter alia*, soil erosion and increased sediment loads in waterways, reduced fresh water flows, increased run-off, and decreased recharge rates of shallow aquifers. All of these phenomena are compounded by climatic variability. Information on the impacts of sedimentation on the estuarine and coastal ecosystems is sparse, but damage of nearshore coastal ecosystems from elevated sediment loads is evident.

3. Of major concern is the reduction in availability of freshwater for socio-economic uses, including irrigation and energy generation, as well as for environmental flows, and the loss of soil fertility and impacts on agricultural production. Crop yields have been reduced by up to 70% in some areas (FAO, 2007), resulting in loss of income and increased food insecurity for these

¹ It is the primary source of energy and water for the capital city, Port-au-Prince (pop. 2.2 million) with a 2.8% growth rate plus an additional 1.3 million residents within the shared watershed.

communities. Because of sedimentation, the Peligre Dam is predicted to lose 53% of its water storage capacity by 2010 under the current scenario, as illustrated in the following table.

Water storage capacity (million m ³)				Sedimentation rate (million metric tons) (FAO 2007)		
<i>1972</i>	<i>1989</i>	<i>2010</i>	<i>% change</i>	<i>1960</i>	<i>1980</i>	<i>% change</i>
417	319	198	- 53%	8.4	>9.7	+14%

4. At present, the electricity production of the Dam is already insufficient to meet the growing needs of the country’s capital. In order to meet increased demand for water, both nations have plans to explore and extract increasing amounts of groundwater, improve surface water capture and infrastructure. Several large infrastructure projects, such as the elevation of the Peligre Dam and the Dos Bocas project are receiving renewed attention. The original framework agreement for the water regime of the Artibonite dates back to the 1920s and declares illegal the diversion of water without mutual consent.

5. Given that the Artibonite region is one of the poorest regions in Hispaniola and the lower watershed is the breadbasket of the poorest country in the western hemisphere, reduction in water availability and in crop yields is seriously hampering socio-economic development and undermining sustainable development targets related to poverty and hunger reduction, and access to freshwater. The loss of soil fertility and decreasing freshwater availability aggravates the already precarious living conditions of the local population; the absence of alternatives reinforces the pressure on land and accelerates poverty rates.

6. The relationship between water availability and quality, population density and livelihood options is particularly relevant in the border zone where limited access to water is a driver of poverty, as well as potential social and political tensions. In the absence of IWRM, the poverty-land degradation spiral and conflicts over shared water resources are set to intensify in the coming years. With an estimated rate of population expansion of 2.8% and consequent increased future demand for water and energy, the situation is likely to deteriorate given fragmented responses, demographic shifts in Haiti, and search for new lands in both countries that drives cultivation to higher and more fragile slopes. Heightened conflicts over water availability will need to be addressed as a matter of priority.

7. Anthropogenic environmental degradation continues to erode the resilience of the ecosystem and of the society to withstand large climatic events, as demonstrated by the effects of Hurricane Georges in 1998 and recent tropical storms. The characteristic landforms greatly amplify the effects of those events and lead to flooding and mud deposits in the towns in the lower regions. In addition, the removal of vegetation reduces the carbon sequestration function of the watershed, and the use of fire to burn woody debris releases significant volumes of carbon dioxide into the atmosphere, contributing to global warming.

8. Ecosystem management and the restoration of the function and services of the Artibonite will require cooperation at the regional scale. Both nations recognize that joint efforts to address the drivers of environmental degradation in the shared Artibonite are crucial to the island’s long-

term socio-economic development and stability. They have emphasized the importance of the Artibonite Watershed and the need for joint approaches and responses. In 2007, the Ministers of Environment of both countries signed a declaration affirming the common objective of "jointly contributing to maintaining the water resources of the Watershed". However, there are at present inadequate institutional, legal, and policy frameworks or mechanisms for managing shared water resources between the two countries. Moreover, there is a lack of capacity at the national level and information is poor and fragmented, particularly with relation to the transboundary problems, root causes, and impacts in the upper, mid, and lower watershed. These issues represent major barriers to the sustainable ecosystem management of this strategic, shared watershed. When coupled with the lack of an effective mechanism for joint governance, the two countries face significant challenges that must be addressed if the goal of ecosystem management of transboundary resources and achievement of the relevant World Summit on Sustainable Development (WSSD) and Millennium Development Goals (MDG) are to be realized.

9. The project described herein will work to remove policy, management capacity, and financial barriers to sustainable management and development of the watershed. The project has a strong emphasis on capacity building at both national and regional levels, and will seek to develop a joint, agreed framework for management of shared resources. Both countries will be supported in the development of IWRM approaches. The project will apply the validated GEF International Waters Transboundary Diagnostic Analysis (TDA) and Strategic Action Programme (SAP) methodology to achieve project objectives and outcomes.

Physical and environmental context

10. The Artibonite is Hispaniola's largest watershed, spanning 9,550 km², of which 71% is located in Haiti and 29% in Dominican Republic. The upper Artibonite encompasses the headwaters in the Dominican Republic and western Haiti, and is a combination of two major sub-watersheds, the Macasias and the Artibonite proper in addition to numerous micro-watersheds between the Dominican border and the Peligre Dam in Haiti. On leaving the Peligre Dam the system continues into the Artibonite Valley and ultimately to the Artibonite Delta, one of the most important estuaries in the country. There are few studies on groundwater in the Artibonite region. Aquifers on the southern side of the Central Plateau are dispersed and consist of small wells and local springs. Aquifers are practically non-existent or of medium to low production, although there appears to be good potential in the lower basin.

11. The island is characterized by a variable maritime climate, and is vulnerable to late summer tropical storms and hurricanes. There is a mosaic of diverse bioclimatic zones ranging from dry (450 mm/year of rainfall) to wet (>2,500 mm/year) across an altitudinal gradient from 2,200 meters above sea level to sea level. Variation in rainfall patterns, extreme altitude gradient, and rugged topography give rise to a complicated mosaic of 16 distinct micro-bioclimatic regions (*sensu* Holdridge, 1963), ranging from "thorn woodlands" in the lower Artibonite to "Montane wet forest" at the highest point near Nalga de Maco.

12. Globally important biodiversity are found in the watershed, although the flora and fauna of the Artibonite are still not fully studied and documented. **Three Dominican national parks are**

located within the watershed. Two of these (Nalga de Maco and Juan Ulises Garcia Bonelly) are located entirely within the watershed and a third (Sierra de Neiba) is located on the mountain range of the same name that forms the southern flank of the watershed in the DR. These parks protect the water sources for the Artibonito, Rio Cano, and Macasias rivers and are characterized by remaining lower montane broadleaf forest. Within these areas, there are numerous endemic as well as endangered and threatened² species (Section IV Part VI [Table 1](#)). Unique ecosystems include the last remaining pure stands of Caribbean Pine, which are listed in the Global 200 priority eco-regions for conservation in Latin America and the Caribbean (Dinerstein, 1995). The important flora and fauna in the Upper Haitian Artibonite are confined to the remnant coffee stands with naturalized shade species (*Inga spp.*) in the upper watershed where almost all of the original upper montane vegetation cover has been eliminated.

13. The delta has a complex matrix of oceanographic and geomorphological features that support a wide diversity of marine communities and ecosystems. This area is one of the most important in Haiti for migratory waterfowl. Dominant coastal ecosystems include mangroves, coral reefs, and mixed sea-grass/mangrove areas, as well as estuaries, bays, and rocky shorelines. The mangrove stands are severely impacted by human activities.

14. In terms of soil productivity, overall, more than 50% of the soils are in the low to very low potential categories (Section IV Part VI [Table 2](#); Section IV Part VII [Map 1](#)). About 80% of the fertile soils are located in the dry climatic zones where irrigation is needed for agriculture. The delta is comprised of deep, well drained, productive soils.

15. Almost all of the forest on the Haitian side of the Artibonite has been removed for agriculture, grazing, and fuel wood. According to an initial diagnostic study carried out by Oxfam Quebec-CRC-Sogema (2007) as part of the PDF-B process, the forest cover on the Haitian side is only 0.05% of its original area, with heavy agroforestry covering more than 10% of the area. There is also widespread forest fragmentation and reduction on the Dominican side. Forests occupy less than 7% of the lower and upper basin in Haiti, and 47% of the Artibonite-Macasias (Section IV Part VI [Table 3](#)). As previously mentioned, nearly 60% of the land in the basin is affected by erosion (GTZ, 2003). Oxfam Quebec-CRC- Sogema and GTZ estimates of soil erosion rates are 120 tons and 275 tons ha⁻¹year⁻¹, respectively. Both these values are considerably higher than the rate of soil formation or the maximum acceptable erosion rate of 17 tons ha⁻¹ year⁻¹ under the best conditions, which underscores the severity of erosion in the Artibonite (Section IV Part VI [Table 4](#); Section IV Part VII [Map 2](#)).

Socio-economic context

16. Both countries show a wide disparity in terms of socio-economic characteristics, including human development (Section IV Part VI [Table 5](#)). Haiti's Human Poverty Index makes this country the poorest in the western hemisphere (UNDP, 2007). Poverty is even more pronounced in the Artibonite watershed, with the conditions in the frontier zone of the upper basin remaining among the more difficult in the country. Likewise, the level of poverty in the Dominican Artibonite is extremely high. Within the Dominican Elias Piña province, the number of

² Endangered and threatened as per IUCN Red Book

households living in poverty exceeds 90%, with 60% of the total in extreme poverty. For this reason, the region was targeted in the National Poverty Reduction Strategy as a critical area for development. In comparison to the rest of the country, the Human Development Index in this region is 5% below the national level (UNDP, 2005). Access to basic services such as clean water, electricity, education, health care, and sanitation is below the national average in both countries. In Haiti, because of the poor road network and the lack of access to telecommunications and postal services, the communities in the upper basin are more isolated than those in the lower basin. The female population on the Haitian side is slightly higher than that of the Dominican side, as a result of migration by men in search of employment. Women are also more active in agriculture in Haiti, and remain among the most vulnerable groups in the Artibonite region.

17. The watershed encompasses a diverse range of livelihoods, but most reflect the subsistence economy that predominates in the rural areas. In the Dominican Republic a total of 17 different livelihoods were identified, with agriculture accounting for approximately 26%. In addition, a large percentage of workers are government employees and domestic workers, many of whom also have agricultural plots. Most of the population depends principally on rain-fed agriculture in the uplands and on rice production in the lowlands. In the Dominican Republic a small amount of rice is grown in the western San Juan Valley within the Macasias Watershed and in an agrarian reform colony in Rio Limpio within the Dominican Artibonito. Outside of these areas, access to water for agriculture is limited. In Haiti, the lower Artibonite Valley, especially the Artibonite Province, is a production centre for rice and staples and is heavily dependent on irrigation. In 1946 the Organization pour le Development de la Vallee de L'Artibonite (ODVA) was created in Haiti as part of a new agrarian policy aimed at stimulating agricultural production. The valley had little agricultural value until three years later when the government began to plan for a hydroelectric facility to provide electricity and to irrigate the Artibonite Valley. Irrigation facilitated the rapid increase in rice cultivation and production. By late 1970s the Artibonite Valley region (roughly 800 km²) produced 80% of the country's rice across 32,000 hectares.

18. In addition to agriculture, the production and use of firewood and charcoal are important activities in both nations. In the Dominican Republic, a national energy policy to substitute wood charcoal for propane gas practically eliminated large-scale charcoal production. In the Artibonito, 70% of the homes used charcoal in the early 1980s. Today this has reduced to only 4%. However, almost 57% of the households continue to use firewood as their primary source of cooking fuel. Haiti relies heavily on charcoal and firewood for fuel. Production of charcoal in Haiti accounts for up to 390,000 tons year⁻¹, generating incomes of about US\$80 million (IAEA/BME, 2004; ESMAP, 2005) and providing employment to more than 150,000 people throughout the country. According to the Ministry of Agriculture, the Central Plateau represents the second most important zone for charcoal production in the country, after the lower South-East especially Aquin and Côtes de Fer. For the Central Plateau the most important zones of charcoal production are Boucan Carré, Maissade, Thomassique, and Cerca Carvajal. Another important activity for inhabitants of the Lower Central Plateau is fishing in the Peligre Dam, which yields an estimated catch of about 138 tons year⁻¹.

19. The Artibonite Delta (Haiti) currently supports more than 24,200 inhabitants with an annual population growth rate of 2.1%. The ecological systems along the Delta provide

important ecosystem goods and services to support local economic development. In the Delta areas, the main sources of livelihoods are rice production, salt production and fishing in the Gonave gulf. In fact, coastal fisheries are an important economic sector and provide a vital source of protein for local population. The fish catches from La Gonave Gulf represent about 25 - 30% of Haiti's total annual marine fisheries landings of 15,000 tons (valued at US\$54 million). Natural coastal habitats important to fish production and to marine ecosystem health are being destroyed, including through cutting of mangrove trees and sedimentation, leading to increasing poverty in the area. The socio-economic situation in the Delta is similar to that in the lower Artibonite watershed to which it belongs.

20. A significant portion of the Haitian produce such as coffee and fruits is taken to the border towns for sale to Dominican intermediaries. Because of the poor road network, problems are experienced in getting produce to the market and in purchasing goods and basic agricultural inputs. On the Dominican side the economy is more developed and diversified, with agriculture, commerce, and some small-scale industries (HELVETAS, 1998)³. As a result, the Dominican upper Artibonite attracts migrants from the mid and lower watershed in Haiti⁴. Exodus of young workers in the Dominican Republic has also created opportunities for migrant workers. On the Dominican frontier zone, 75% - 80%, and probably more of the workers are Haitians (McPherson and Schwartz, 1998). The consequences for Haiti's agriculture are shortages of workers and rise in the cost of labour in the Central Plateau, both of which have increased significantly in recent years.

21. Land tenure and land distribution in the Artibonite present a complex picture. In the Dominican Republic, three out of five farmers cultivate land that is not their own (INDRHI, 1999)⁵. Ownership of most of the agricultural land (88%) is concentrated in a small proportion (10%) of the owners of larger farms. A total of 28% are considered landless. An additional 27% own their land but do not have official papers⁶, 23% have papers but the land is in "succession" or legally undetermined while heredity issues are being addressed. The remaining 34% have legal titles to the land. An additional 4% are located in agrarian reform communities. As was demonstrated by the GEF-funded Sabana Yegua project, lack of title does not necessarily restrict land use, improvements or commerce. Where communities recognize the rights of the families, many types of arrangements are in place, including share cropping or "terceros".

22. In Haiti, according to a study carried out by CECI/TECSULT/SOCODEVI and PRODEVA in 2005, a high proportion of the land is not owned, and is rented by farmers from the owners (an arrangement called *métayage*). In the lower watershed about 35% of the farmers have this arrangement. The land distribution, land tenure system, and inheritance rights have resulted in a Haitian farmer working numerous micro-plots that are usually considerably dispersed, as opposed to the Dominican farmer who will have his land concentrated into one small farm. However, the impact on land degradation requires further study. Population growth has forced

³ Socioeconomic Diagnosis, HELVETAS, 1998.

⁴ In the Dominican Republic, there were 15,000 temporary agricultural workers in 1995, about 72,000 with immigrant status in 1998, and approximately 250,000 (1995) to 500,000 (1998) without 'papers'.

⁵ Artibonite Watershed – Malasia, Management Plan

⁶ The community authorities and the community recognize ownership amongst themselves, providing group security to the farmer.

many farmers in Haiti to expand production on marginal areas, including on higher slopes with fragile soil and in areas that require irrigation, placing further pressure on land and water resources. Analyses conducted by Oxfam Quebec-CRC-Sogema show that only 29.5% of the Artibonite land is strictly used according to its environmental functionality, indicating that the *status quo* is not the most environmentally sound option, contributing to land degradation.

23. The poor communities within this strategic watershed rely almost entirely on a critically declining natural resource base, and the pressure they exert threatens the long term sustainability of the watershed's environmental services and functions. Unsustainable resource use practices have resulted in impoverished rural areas, particularly in the border region, where poverty is increasing. Reduction in biologic and agricultural potential is resulting in loss of income and increased food insecurity for these communities, and unavailability of water for socio-economic uses.

24. Demographic growth coupled with limited availability of clean water has translated into increasing pollution of the Artibonite watershed. The resultant poor water quality is the cause of frequent water borne diseases that especially target children less than 5 years of age.

25. Given their high levels of dependence on natural resources for their livelihoods, the population is highly vulnerable to environmental shocks; of particular importance in this region are periodic hurricanes and storms, which have led to flash floods that have destroyed valley bottom arable land and increased cultivation pressure on hillsides. Environmental degradation reduces the resilience of these communities to such events. In addition, the high dependence on rain-fed agriculture means that extreme climatic variability resulting from global climate change is likely to have severe impacts on local livelihoods.

Threats, Root Causes, Barriers

Threats

26. Persistent threats to the ecosystem function, stability, and integrity of the Artibonite take the form of:

27. *Conversion of diverse forested ecosystems into other simplified modes of production:* Over the past decades, a significant proportion of the primary forest on the Haitian and Dominican side of the Artibonite watershed has been converted to mainly mono-crop systems, with forest covering only 0.18% of the total area of the watershed. Although forest and vegetative cover is more prevalent on the Dominican portion of the Artibonite basin, the Macasias watershed is almost completely deforested after four decades of traditional hillside farming and grazing practices. Simplified vegetation cover has compromised ecosystem structure and function, which has resulted in the reduction of the provisioning of ecosystem goods and services of the watershed.

28. *Inappropriate land use with respect to the bio-physical characteristics:* Analyses conducted by Oxfam Quebec-CRC-Sogema show that only 29.5% of the Artibonite land is strictly used according to its environmental functionality, while 40.3% has a compatible use and

30.5% a non-compatible use. For instance, more than 31% of the lands that are better suited for fruit production or forest are used for annual crops. Generally, grazing by cattle, goats, and sheep in different zones occurs on lands that would be better dedicated to plantation forestry, conservation forestry, or silvo-pastoral systems. These choices can greatly increase land degradation in the absence of proper soil management. Details of land use compatibility and conflicts are shown in Section IV Part VI Table 7; Section IV Part VII [Map 3](#).

29. *Damaging agricultural practices:* Migratory agriculture, clear-cutting of tree stands, little or no crop regulation/rotation, use of fire for clearing of vegetation, and hillside tillage are widespread, especially in the upper watersheds. Shifting agriculture occurs extensively but to an undetermined extent, and results in removal of the perennial vegetation through slashing and burning. The expansion of invasive, fire-resistant grasses, and the spread of livestock choke out newly sprouted seedlings and reduce natural forest expansion. Within the Dominican Artibonito, this phenomenon also occurs within Nalga de Maco National Park and other sensitive areas. Land tilling is conducted using animal traction on steep slopes, without soil conservation measures, such as contour ploughing. Such practices on the thin soils with sandy/gravel sub-soils (particularly prevalent in Haiti and in the lower Macasias watershed) result in severe soil erosion during the short but intense summer rains, and subsequent sedimentation of the waterways in the lower watershed.

30. *Unsustainable fuelwood use:* As previously mentioned, wood is a major source of energy for both households and small businesses, especially on the Haitian side. For example, the laundries and bakeries in Port-au-Prince together consume about 200,000 tonnes of wood annually. Wood is also a source of income for poor communities. A significant amount of this charcoal for consumption in Port-Au-Prince comes from the Artibonite watershed, specifically from the Central Plateau, which has the highest vulnerability to erosion and land degradation. It is estimated that for each tree planted, seven are cut down. Fuelwood demand exceeds new forest growth by 60% creating both a forest and fuel availability problem⁷.

31. *Poor infrastructure:* Rural infrastructure, such as markets and roads are poorly planned, constructed, and maintained, which contributes to land degradation. Increased runoff from infrastructure also impacts the water flow regime of the watershed and further exacerbates land degradation, water shortages, flooding, and landslides in downstream areas. Expansion of infrastructure also causes changes in settlement patterns, by creating access to rural areas and thus intensifying agriculture, and ultimately exacerbating erosion trends.

32. *Natural environmental variability:* The Island of Hispaniola lies in the Caribbean hurricane belt and experiences seasonal tropical storms and occasional hurricanes. Drought is also a common occurrence in some parts of the island. Periods of drought followed by heavy rainfall, especially on deforested hillsides, could amplify soil erosion. These events are predicted to increase in frequency and intensity, with continuing global warming, climate change, and marked shifts in the El Niño phenomenon. Extreme natural events reinforce the impacts of anthropogenic threats on land and water resources.

⁷ Increasing fuel wood scarcity affects women in poor rural communities who must walk longer distances each day to get this essential resource. Currently in many families only one meal a day can be cooked.

Root causes

33. The above anthropogenic threats are brought about by a number of factors or root causes that act synergistically to increase the pressures on natural resources. Among these are:

34. *Population growth*: Rapid population growth and high population densities result in intense pressures on land resources, as the demand for land and food increases. The present population of the watershed is slightly over 1.5 million inhabitants. With an average annual growth rate of 2.8% at the national level, this is set to double in about 22 years. In some areas of the Artibonite, the population density exceeds the national average, as seen in the lower watershed (600 inhabitants km⁻²). Rising demand for natural resources on the one hand and reduction in available agricultural land through degradation on the other, force the search for new lands and the cultivation on even higher and more fragile slopes.

35. *Poverty*: Poverty is particularly severe in the frontier zone of the upper basin. These poor communities are totally dependent on natural resources for their well-being and livelihoods, and lack of alternatives forces them to continue to exploit an ever declining resource base. The loss of soil fertility and decreasing fresh water aggravates the already precarious living conditions of the local population; the absence of alternatives reinforces the pressure on land and aggravates the poverty-land degradation spiral.

36. *Unplanned and unstable migration and settlement patterns*: There is constant and increasing Haitian migration towards the market areas located along the international highway and potential jobs near Dominican rural communities. There is no information on the social and environmental impact that these informal markets and emerging settlements have on land degradation, but they appear to intensify agriculture and increase demand for forest and wood products, especially on the Haitian side. An adequate understanding of the migration phenomenon is important in order to develop timely responses through appropriate policy frameworks, conflict resolution mechanisms, and sustainable management approaches to the natural resource base that underpins the socio-economic structure of this region.

37. *Lack of integrated watershed management plans*: Integrated Water Resource Management (IWRM) and Sustainable Land Management (SLM) Plans are lacking or not implemented. This situation exists at both at the national level in the two countries as well as at the regional level for the sustainable management of trans-boundary natural resources. As a result, uncontrolled land use and inappropriate agricultural and other practices are widespread throughout the watershed and as already described, have led to severe deforestation and land degradation as well as impaired water quantity and quality.

Barriers

38. There are a number of significant barriers to the implementation of solutions to the above problems and their causes. Based on the results of stakeholder workshops⁸ held in Santo Domingo and in Port-au-Prince in May and June 2007, respectively, and a workshop held in

⁸ Santo Domingo, 27 May 2005, and Port-au-Prince, 2 June 2005

Santo Domingo in August 2007, the following barriers to sustainable land and water resources management in the Artibonite were identified:

39. *Absence of a bi-national governance framework:* Although both countries have signed numerous bi-national agreements, these have not become fully operational. There is no agreed bi-national governance and management framework for achieving a sustainable, ecosystem management process that articulates and integrates upstream and downstream priorities and needs. Such a framework is needed to overcome the numerous idiomatic, historical, political, socio-economic, ethnic, and cultural differences between Haiti and the Dominican Republic, which continue to dominate the relationship between the two nations and limit coordination and decision-making in the management of trans-boundary natural resources. Moreover, although there are many investments and initiatives by a wide array of partners and donors in the basin, in the absence of a planning framework these are fragmented, sometimes overlapping, and cannot provide for adequate long-term sustainability.

40. *Fragmented natural resources policy and regulatory frameworks with poor enforcement mechanisms:* Despite current efforts, the legal and policy framework for natural resources management is inadequate in the two countries, and State agencies are too weak to ensure implementation and enforcement of relevant policies and regulations. This situation is of particular relevance in Haiti, where a past history of political instability has contributed to poor governance frameworks. Haiti is divided into hundreds of communes/municipalities, making both decentralized planning and resource channelling very complex.

41. A wide array of government and autonomous institutions with responsibility for natural resources management exists in both countries, with a multiplicity of legal functions and competencies, conflicting mandates, and ill-defined institutional responsibilities. This has led to fragmented and ineffective efforts in the management of the watershed. Municipal and local government authorities are also generally weak, with little coordination and insufficient understanding by local government members of their duties, roles, and responsibilities regarding SLM and IWRM, which are not mainstreamed into national development planning processes. Linkages/coordination between planning, environmental management, and fiscal frameworks are also inadequate.

42. *Geographically limited management approaches and responses:* The lack of a holistic management framework that is articulated at the regional level has resulted in fragmented and geographically limited management approaches and responses, which are not upscaled or integrated into the overall development landscape. Models for integrated watershed management based on an understanding of ecosystem functions and services do not exist, limiting the options available and leading to fragmented efforts at the national level. There is a marked divide between the mid and lower watershed stakeholders. Lack of stakeholder participation, particularly in the downstream environment, results in the virtual exclusion of the downstream water users as an integral part of the dialogue on the financing and use of the land and water resource base. In the absence of an understanding of watershed dynamics, and due to historical and geographic/topographic factors, communities along the basin exploit the resource base following the precepts of the so-called 'Tragedy of the Commons'. This results in little or no efforts to match downstream needs with those of the upstream population, whose productive

activities determine the amount and quality of water resource available to both nations and the storage capacity of the Peligre Dam.

43. *Inadequate technology, knowledge, and capacity*: These barriers exist from the local to the national levels. At the local level, farmers' knowledge of SLM practices is often limited to traditional techniques and knowledge. Many farmers live and work in isolation, without access to data and information that are essential for making informed choices about sustainable practices. Furthermore, farmers are wary of investing in technologies that do not have an immediate payback and that imply a financial risk. The capacity of stakeholders at the national and local levels to coordinate and undertake a trans-boundary and comprehensive approach to the management of an international watershed is both fragmented and insufficient. Local government shares this limitation, especially with regards to environmental remediation, making it powerless to assert authority over local problems or to participate in the negotiation of local solutions. This is compounded by the limited technical capacities of institutions to develop and promote appropriate technical solutions to land degradation issues in both countries. Extension services often suffer from low technical and operational capacities, which affect their ability to provide the necessary services to land users. Inadequate technical capacity at intermediate and local levels is exacerbated by migration of trained and qualified persons out of the area, particularly in the Haitian upper watershed.

44. *Inadequate data and information for decision-making*: The situation with regards to information is characterized by limited access to information, as well as inadequate information to guide decision-making processes. For instance, basic biophysical and climatic data are limited (e.g. no soil maps, no functioning rainfall data collection system in the whole of Haiti, limited knowledge of changes in forest cover or the precise extent of land degradation). Much of the information at the national level is partly outdated, fragmented, and incomplete, and is not disaggregated, making it of little utility as a baseline. Discontinuity in data collection and the use of non-standard systems and methodologies for collection and analysis of data within and between the two countries mean that the information available to different institutions is typically inconsistent and incompatible.

45. Access to existing information is constrained by the centralization of data collection and the absence of a tradition of information sharing between Haitian and Dominican authorities and planners, as well as by limited access to data by local stakeholders. Information barriers also relate to the dissemination of adequate and timely information to communities to raise awareness and enable their active participation in decision-making and in processes to improve their standards of living, as well as eventually participate in the management of early warning systems.

46. *Economic and financial barriers*: In both countries public and private investments in environmentally sound commercial activities are low. The weak financial capacity of public institutions to commit budget funds, difficulties in mobilization of additional external funds, and in orienting these towards the promotion of sustainable land use systems (public incentive mechanisms, rural credits, financial de-concentration and decentralization, etc.) translates into insufficient financial support at the local level to change actual land and water use patterns, address basic needs, and promote investment in innovative sustainable livelihood options. The

lack of appropriate fiscal policies that consider, among others, the value of ecosystem goods and services as well as the economic cost of mitigation of environmental degradation and its impacts, is also seen as a barrier to SLM and IWRM.

47. Additionally, the lack of a holistic planning mechanism and information on the downstream environment impedes long-range financial planning, necessary for sustainability. There are no models of mechanisms for long-term internal and external financing of sustainable land and watershed management activities. Moreover, the nature of assistance that is available often reinforces classic relations of dependency between target populations and providers. Finally, there is also a strong need to coordinate and harmonize the financial approaches of the different donors to support investment in sustainable production.

48. *Lack of valuation of ecosystem services:* Ecosystem goods and services and the cost of mitigation of land and water resources degradation are not valued in either of the two countries. In Haiti, for instance, would appear that the decision-makers (as well as the donor community) still do not fully realize that ecosystem degradation has economic implications for the country. A major issue is that until now insufficient efforts have been made to evaluate the cost of “no action” and the cost of losing the natural resource base in both countries. Providing information on environmental degradation in terms of economic value and cost to decision-makers and other stakeholders is an effective tool to help prompt actions for improved environmental and natural resources management. Because ecosystem services are not valued, there is insufficient basis to develop economic instruments, including payment for ecosystem services and other measures to help finance sustainable land and water resource use and to cover the cost of mitigation of environmental and socio-economic impacts. Evaluation of the various ecosystem goods and services of the Artibonite should be incorporated into an integrated financing structure.

49. *Limited access to adequate and appropriate finance and incentives:* Community level financial mechanisms to create access to private capital have been experimented within the region through the cooperative system on both sides of the border, but there are constraints in the target populations’ access to these either because of creditworthiness or the cost of finance. Financial organizations have been very reticent to finance agriculture because it is seen as high-risk and farmers as un-creditworthy in comparison to other micro-finance opportunities in the peri-urban and urban centers. Further, the internal rate of return from small farms, of which there are many, is very low compared to that of other activities.

50. Currently, farmers have to meet all the costs of land management, even when these result in externalities which benefit others, such as improved hydrological yield, reduced sedimentation, and increased carbon storage. At the same time, the populations that receive environmental services, such as water for irrigation and electricity, pay little or nothing for them. As a result, upstream farmers typically prefer to apply practices which yield maximum agricultural production or financial income, with little consideration for their positive or negative environmental effects. The limited opportunities for income generation available to rural populations at present, meanwhile, exacerbate poverty and motivate emigration, thereby further weakening social and human capital.

51. The short term time horizons of impoverished farmers preclude any planning for sustainability. Their poverty, lack of expertise, and isolation is also reflected in limited participation in markets for goods, services, and enabling factors (e.g. credit). The establishment of long-term sustainable practices will be difficult in communities marginalized from the modern economy. A deliberate vision is needed for integrating these communities into more formal markets for goods and services.

52. *Insecure land tenure*: Lack of secure land tenure could have a negative effect on productivity and other aspects of farming, including access to credit and implementation of sustainable land and water management. The emphasis is on agricultural production using low technology and unsustainable practices, and within short-term time horizons, resulting in inadequate management of land and water resources, particularly trans-boundary resources. Additionally, short-term tenant farming by Haitian migrants who move on to other areas is prevalent in the region and their time frames are even shorter than Dominican farmers who have provisional titles from Agrarian Reforms.

53. *Limited social capital*: Poorly developed social capital, characterized here principally by the lack of adequate mechanisms for analyzing problems and developing solutions which affect the community as a whole (for example through developing local regulations or lobbying for external technical assistance) is a key barrier to the implementation of SLM and IWRM. A large number of community-based organizations (CBOs) exist but are generally weak, and many of them function solely as social gatherings. Leadership is typically stagnant and ineffective, with low levels of literacy and education in the communities compounding this. “Second order” federations that group together CBOs tend to be more dynamic, but lack the technical capacity to plan and deliver the services that their member associations need. As a result they remain powerless to assert authority over local problems or to participate in the negotiation of local solutions. Currently, young people are marginalized from opportunities to participate in decision-making. Emigration driven by limited economic opportunities and poor quality of life limits the social and human capital available for the planning and implementation of SLM and IWRM.

54. Weak social capital is particularly marked in communities with transient populations, such as the “worker towns”, which are common near the properties of large landowners in the upper watershed; the male workforce typically migrates to these communities on a weekly basis, while women tend to stay in lower villages with the family. Migration and transient populations such as these present a challenge for SLM, affecting the permanency of community governance and making extension logistically difficult.

Institutional, Policy, and Legal Context

Dominican Republic

55. Prior to the year 2000, the policy and legal landscape in the Dominican Republic was characterized by a large number of antiquated, conflicting, and divergent policies and institutions. Between 1998 and 2000, consultations among key stakeholder groups on the country’s outdated and inadequate environmental laws and regulations culminated in a new framework environmental legislation - the Environmental Framework Law (Law 64-00) in 2000.

It has consolidated all environmental legislation and placed national environmental and natural resource management responsibilities under the new Secretariat of Environment and Natural Resources (SEMARENA).

56. The new institutional structure includes 6 Under-secretariats under SEMARENA that assume regulatory responsibilities and services (Section IV Part VI Table 8). In addition, SEMARENA has incorporated the National Hydraulic Resources Institute (INDRHI), which is a semi-autonomous entity responsible for all irrigation, surface water, and groundwater management. There are 11 other public sector Secretariats with responsibilities in land management (Section IV Part VI Table 9). The most important is the State Secretariat for Agriculture (Secretaría de Estado de Agricultura - SEA), whose administrative structure includes directorates for agricultural production, livestock management, planning, extension, and training. SEA maintains regional and sub-regional offices throughout the country, but suffers from budget constraints, shortages in materials, training, and insufficient logistical support.

57. The institutions involved in natural resources management are numerous with a high degree of fragmentation, very little communication in terms of policy and programs, limited internal and external institutional coordination, and without a consolidated policies or agendas. Although the environmental agencies are now united under SEMARENA, their main terms of reference and activities have not really changed. The General Directorate for Border Development was created in 2000, through Decree 443-00. It is responsible for stimulating the economic and social development of the border zone, including the diffusion of the culture and religious traditions of the Dominican people. This institution is very autonomous, depending directly on the Presidency.

58. Decentralization of environmental management in the Dominican Republic is underway and is to be seen as a long-term process. A number of municipalities have created municipal environmental management units (MEMU), which SEMARENA is supporting mostly in the form of training. However, most MEMUs still do not have the equipment and expertise to fulfill their role. Despite legal provision for decentralization in the General Environment Law (Decree 64-00), policies are still largely generated and implemented at the central level. The local and regional stakeholders are generally excluded from policy formulation, planning, and regulation. Policies are also based on inadequate information due to institutional capacity constraints. The new law (64-00) created an inter-institutional coordination structure known as the National Environment Council (NEC), which is not yet operational. NEC is to promote the interaction of environmental institutions with other government organisms, academia, private sector, and environmental NGOs.

59. An Inter-institutional Technical Working Group⁹ (GTI) was established in 2003 as the national coordination body for activities related to the United Nations Convention to Combat Desertification and Drought (UNCCD). A new draft UNCCD National Action Plan (NAP) document has been completed and approved by the Under-secretary for Soils and Water. The GTI is now developing workplans to implement the NAP, but requires institutional strengthening to effectively guide this process. To ground the GTI, decentralized regional committees, called

⁹ Technical Interinstitutional Group (Grupo Técnico Interinstitucional), which is comprised of the UNCCD National Focal Point, a General Assembly, an Executive Committee, and Local Working Committees (CTLs), representatives from government, civil society, and international organizations including UNDP.

CTLs (Local Working Committee - Comité Local de Trabajo) have been formed to act as local steering committees for the implementation of the NAP with special focus on natural resources degradation, particularly watershed management concerns. PAN-FRO¹⁰ is a framework for combating desertification and is a regional version of the UNCCD NAP. It was launched in both countries to coordinate actions and mobilize national and international support to reduce the expanding effects of drought and to achieve sustainable and rational trans-national resource management in the border region. PAN-FRO was established in 2003 with the support of FAO, the Global Mechanism, UNDP, Canadian International Development Agency (CIDA), and GTZ. In the Dominican Republic, PAN-FRO is institutionalized through a Presidential Decree¹¹ and is coordinated by the GTI.

60. SEMARENA has completed norms and standards for waste management, waste water discharges, ground water extraction and discharge, non-metallic mining, forestry development projects, and maritime installations, among others. While drafts have been completed for a General Water Law and a Water Supply and Sanitation Law, an appropriate institutional framework separating service provider functions from policy-making and regulatory functions is needed. Reforming the legal framework for the water sector is the major short-term agenda.

61. The main policy instruments comprise: environmental planning, land use planning, protected areas, environmental impact assessment and permit system (including environmental audits), inspections, strategic environmental assessment, environmental information systems and economic incentives (taxes, subsidies, environmental services and investments). Implementation of environmental policy instruments has until now been partial and uneven. Some of the regulations are not adhered to or enforced, due to insufficient resources, and the regulations being seen as too stringent.

62. The National Development Plan (PND) does not incorporate the concepts of land degradation or land management into the national development objectives. This plan is not currently utilized as the over-reaching guideline for the development of sector policies and varies widely in its use and interpretation and with changes in political administration. The PND will be renewed for the period 2008 - 2011, with a stronger focus on sector development. So far, environmental mainstreaming has been left to the National Planning Office (ONAPLAN), but it is unclear whether it has the technical resources to undertake this key task.

Haiti

63. In Haiti, a large number of actors, ranging from government ministries, autonomous state organizations, municipalities to academia and NGOs, are involved in water resources management and soil conservation. The overall mandate for environmental management lies with the Ministry of Environment (MdE), which was established in 1994. The Ministry of Agriculture, Natural Resources, and Rural Development (MARNDR) has the primary responsibility for watershed management. Other agencies and institutions engaged in environment and natural resources management are shown in Section IV Part VI [Table 10](#), which indicates the level of institutional fragmentation that characterizes the execution of land

¹⁰ UNCCD National Action Programme for the frontier zone.

¹¹ No 146-03, of 13 February 2003

management functions in the country. Each ministry or agency operates under its own legal and institutional framework. The modalities for political integration and administration, and the roles of the various state actors are not clearly defined, especially at the community level. The Government has prepared draft policies to coordinate activities among the many government entities dealing with natural resources management, as the absence of a formal overarching institutional coordinating framework results in overlapping jurisdictions, conflicting efforts, and a waste of scarce resources. The Ministries' implementing capacity remains limited, due in part to inadequate technical and financial resources.

64. All the ministries, particularly MARNDR and MSPP, are represented in the lower basin of the Artibonite, through departmental directorates and community structures. In addition there are 136 municipalities and over 500 NGOs involved in various activities related to watershed and water resources management and soil conservation.

65. The watershed policy of MARNDR, published in 2001, provides for integrated soil and water management through a highly participative process. Haiti's National Watershed Management Plan (NWMP) places improving livelihoods as the top priority through improvements in socio-economic and ecological conditions. The NWMP proposes specific actions for comprehensive and integrated management of both watersheds and coastal areas. Water resources in Haiti have traditionally been managed by the MARNDR's Communal Agriculture Bureau. The M&E has also established a Hydrologic Division. Recently, the Office of the Prime Minister has become directly involved in hydrologic issues with bi-lateral donors. Haitian authorities are now strongly supporting a Local Development Planning approach to ensure that various aspects of watershed management are addressed in an integrated manner. Haiti's irrigation districts are managed by the OVDA, which is responsible for the irrigation water delivery system.

66. In 1999 the M&E published the National Environmental Action Plan (NEAP) with the support of UNDP, USAID, CIDA, and the World Bank. Under the NEAP, in which the watershed is considered as the basic unit for management, specific projects are designed to address key issues related to sustainable energy sources, environmental education, conservation and sustainable use of biological diversity, integrated watershed and coastal management, management of natural disasters and hazards, and management of solid waste. Under UNCCD a comprehensive Desertification NAP for the border region with the Dominican Republic is underway, and Haiti will seek to work closely with the Dominican PAN-FRO. The NAP is in development under the direction of the Comité Inter-institutionnelle du Pilotage (CIP), created through PAN-FRO. In Haiti, PAN-FRO was formed by the M&E, MARNDR, and Ministry of Planning and External Cooperation and Economy. The CIP has made progress in coordinating and cooperating with the Dominican GTI.

67. The Government has also published a set of sectoral policy documents that address desertification issues¹². These include the national water policy, population policy, sectoral policy of the Ministry of Agriculture for watershed management, and a disaster and hazards management national plan. The 2005 New Decree for Environmental Management places major emphasis on decentralized watershed management in the country, and encourages municipalities

¹² With the financial support of Inter-American Development Bank, UNDP and French cooperation

to become more involved in the management of their natural resources. Further, it states that all of the 30 principal watersheds in the country should develop a land use and NRM management plan that will be implemented by the municipalities (*schema directeur d'aménagement et de gestion des bassins versants*). Article 114 of the Decree also recognizes the watershed as the primary unit for IWRM and for the elaboration of development plans. The legal framework related to land use and watershed management includes several published laws and norms regarding slash and burn practices, rural zoning, hillsides farming, etc.

68. In July 2004, Haiti's Government presented international donors with a multidimensional development plan known as the Interim Cooperation Framework. More than US\$1.1 billion was pledged by the international community to help fund this plan for the transition period (2004-2006). Ten thematic groups were formed to assess current issues and priority needs, one of which deals with protection and rehabilitation of the environment. The strategy is to actively promote the replacement of wood as the primary source of energy in order to fight the deterioration of land and natural resources, and to improve risk and disaster management. The Ministry of Agriculture is working on a national plan for watershed management ("Plan National de gestion des bassins versants") with a government loan from IADB of US\$1 million. In addition, under this program US\$30 million will be spent in three watersheds over a five-year period.

69. Despite these efforts however, the legal and policy framework for natural resources management remains outdated and needs to be substantially revised. State agencies are too weak to ensure enforcement of relevant regulations and policies, especially in rural areas such as that of the Artibonite watershed. Furthermore, some laws and regulations seem to be confusing and contradictory, while others are too restrictive. In addition, the roles and responsibilities of stakeholders are not clearly defined in the laws and regulation documents. There is a need to foster adequate enforcement of policies and legislation in order to ensure coherence with SLM principles and requirements.

Bi-lateral arrangements

70. The political commitment of both nations to the sustainable management of transboundary natural resources was confirmed at a meeting held in 1998 during which bi-national agreements were signed to carry out an Environmental Transboundary Program and to develop a common program for fighting desertification and natural resources degradation across the border. In April 2002, both Environment Ministers signed a bi-national agreement for UNCCD implementation and for the joint management of the Artibonite watershed. All bi-national affairs are handled through established diplomatic channels. Bi-lateral communication and agreements exist at the ministry level with the Ministries of Foreign Affairs serving as a conduit for communication and approval. Recently, a joint declaration was made by the Ministers of Environment in establishing, "as a common objective... a joint project for the Management of the Upper Artibonite Watershed" and recognizes the role of the CIDA as a facilitator. CIDA is funding a 7-year, CAD\$10 million bi-national initiative to develop 5 sub-watersheds within the Artibonite. (The CIDA project manager is at CIDA Headquarters.) Through its agreements with both Governments, this project has established a bi-national coordination committee and national coordination committees. The former is comprised of members nominated by each Government and coordinated through the respective Ministries of Foreign Affairs. This committee is dormant,

however, due to delays in the selection of members and lack of agreement on the priority items on the agenda.

71. Within the PAN-FRO framework, multi-lateral donor supported (GTZ, CIDA, OAS, USAID) and national government actions have been initiated to promote on-the-ground actions and capacity building. The proposed project will provide a programmatic framework that will prioritize and articulate ongoing initiatives, as well as develop complementary actions and additional components that will overcome several key barriers and provide support to sustainable resource management in the Artibonite watershed.

72. To ensure bi-national governance mechanisms for the management of shared natural resources, a special environment task force was created under the Mixed Commission (Comisión Mixta) through an agreement between the two Governments in 1996. The Mixed Commission is now dormant, and its revival is crucial for good relations between the two countries. Once this Commission is reactivated, there is a need to link PAN-FRO efforts to the special environment task force.

73. Various collaborative agreements between the respective Ministers of Environment have been undertaken, which are related to the island's environmental management.

Stakeholder analysis

74. A preliminary stakeholder assessment was carried out by IDDI as part of the project preparatory phase. There are five main categories of stakeholders in the Artibonite: resource users (farmers, etc.), community based organizations, local administrative structures, public institutions and private support institutions, and international organizations. Section IV Part V provides a list of the key stakeholders and a brief description of their roles and responsibilities, the Stakeholder Involvement Plan is contained in Annex 5.

75. At the local level, **farmers** represent the largest group of stakeholders in the Artibonite watershed, with over one million individuals engaged in farming. They exert significant pressure on the watershed's natural resources, and engage in multiple activities, mainly agriculture, livestock, and charcoal production. In the lower part of the watershed farmers have intensive diversified-farming systems based on rice. In the upper part of the watershed most of the producers carry out rain-fed agriculture. Harmful agricultural practices adopted by the farmers upstream in the Artibonite have adverse impacts on farmers downstream. There is conflict between farmers of the upper areas, who are deforesting the hillsides, and farmers of the lower part, who experience the consequences of deforestation. These consequences are also experienced by the Electric Company of Haiti (EDH), whose objective is to maintain a minimum hydro-electricity production to satisfy the needs of Port-au-Prince consumers. The diversity and multiplicity of this group present a substantial pool of knowledge and experience available to generate a greater number of ideas and solutions to deal with the diverse, complex, and dynamic nature of natural resource exploitation and management. To ensure wide participation of farmers, the GEF project could develop channels of communication with easy access to information about the project's objectives and achievements. The goals will be to emphasize the potential benefits to these stakeholders and to provide feedback and concerns.

76. Another group of stakeholders are **Community Based Organizations (CBO)**, of which there are hundreds in the Artibonite Watershed. They include producers associations, women's groups, business workers organizations, and other formal and informal economic sector associations that work in many fields, including agriculture, environment preservation, education, health, etc. In both countries (particularly in Haiti) the majority of CBOs are not recognized by the established authorities. CBOs are the best vehicle to involve local communities and direct resource users in the project, but their capacity for specific tasks (e.g. in monitoring and planning) needs to be developed.

77. On the Haitian side, the Peligre Hydroelectric dam provides the country with most of its needed electricity. The **Electric Company of Haiti**, which has the monopoly for electricity distribution in the country, is a key stakeholder in the Artibonite. The **informal industrial sector** is quite developed in the Artibonite watershed. There are many small businesses, shops, and private sector companies, small industries and/or agricultural processing industry. While this group does not have a direct influence on the management of the Artibonite natural resources, they are an essential part of the commercialization of natural resources.

78. There is a set of **public institutions** with a strong presence in the Artibonite watershed. These include **government agencies** such as the (Sub) Ministries of Agriculture, Ministry of Planning and External Cooperation (Haiti), Ministries of Environment, Ministries of Tourism, and Ministry of Public Health (Haiti). Three of SEMARENA's sub-secretariats (soils and water, protected areas and forest resources) and the INDRHI work quite actively in the Dominican Artibonite Watershed. The representation of the ministries at the level of the Artibonite watershed is through **municipalities and local administrative structures** that are responsible for governmental policy implementation at the local level. Municipalities are essential stakeholders for the GEF project and the watershed management. In spite of their current structural difficulties, they are important stakeholders because they have political legitimacy at the local level.

79. The government agencies also function as **regulatory bodies** responsible for the application of governmental policies at the local level. Both governments will have an essential role in the project and in the post-project period, but their capacity and resources are poor, which limits their capacity to carry out efficient public policies in the watershed. The **Bilateral Mixed Commission** is an important stakeholder to develop bi-national mechanisms and to guarantee processes sustainability and effective agreements. The **GTI** and the **CIP** are the only existing public-private structures for coordination under the UNCCD. The Ministries of Higher Education and the universities are part of a key group of **research and advisory institutions**.

80. More than 20 national and international **NGOs** are involved in a number of activities in the watershed. NGOs actions are very limited compared to the area needs. NGOs have an important role in awareness raising, public education, outreach, and implementation of conservation and resource management projects in the zone in collaboration with the government and other entities. They often have well-established linkages to other NGOs and local communities, and as such, could make an important contribution to the project in helping to promote wide stakeholder participation.

81. Many financing institutions (national and international) have invested in the Artibonite. The Agricultural Bank and private sector commercial institutions provide finance; however their attention to small agricultural producers is currently limited. International financing institutions act as providers of funds and technical assistance. The most important international and state donor agencies in the area are GEF, CIDA, GTZ, the Dutch Government, Helvetas, French Cooperation, Italian Cooperation, International Cooperation Spanish Agency, Japanese Cooperation (JICA), USAID, IADB, European Union, IFAD, World Bank and IICA. A number of international organizations support programs and projects related to the Artibonite Watershed conservation and management. Among these are UNDP and FAO.

Baseline analysis

82. The increasing political interest of both countries in the frontier area, in particular in the Artibonite basin, and the strategic importance of the region in terms of national poverty reduction objectives, hydropower energy supplies, and sustainable management of natural resources, has led to a wide range of efforts carried out by the national institutions, international development agencies and local NGOs. Some advances have been made in bi-lateral coordination between the Dominican Republic and Haiti in addition to both international and national investments in on-the-ground actions.

83. There are a significant number of local, national, and bi-national initiatives in both countries that promote sustainable land and water resources management and build local capacities, both within the Artibonite watershed and in other areas within the two countries. Most of the important baseline activities are donor-driven development projects. Many of these efforts have been localized in the proximity of the border region and are providing important experiences and lessons learned in economic development, in SLM, and in cross-border project management and cooperation. However, the localized nature of the projects and the absence of a management and planning framework for the basin, limits their up-scaling and replication potential.

84. An important baseline is provided by ongoing GEF projects, such as the MSPs under the UNDP/GEF *Targeted Portfolio Project for Capacity Building for Sustainable Land Management* (LDC-SIDS), which are implemented in both countries. Each project will enhance national-level coordination mechanisms through the GTI and CIP¹³. In addition, the UNDP/GEF Small Grants Program provides support to build local capacities to address land degradation issues through small projects in both countries, especially within the Artibonite. The Dominican project has a planned coordination with the GEF-FAO-LADA project to provide expert support to the development of a long-term monitoring programme that will serve as the basis for the mid-term financing plan to combat land degradation. The Haiti project is more focused on creating the framework by completing the UNCCD NAP and making the CIP operational.

85. The Agriculture Intensification Project (PIA) is a six-year programme executed by Haiti's MARNDR in the lower part of the Artibonite watershed, with a government loan from the IADB of US\$46.5 million. The objective is to increase farmers' income in the lower Artibonite Valley through intensified agricultural production and increased irrigation efficiency. The project

¹³ Grupo Técnico Inter-institucional (DR) and Comité Interinstitutionnelle de Pilotage (Haiti)

focuses on institutional support and technical assistance to the ODVA and MARNDR. Under this project there will be: (1) support to water-user associations; (2) agricultural intensification and linking with market networks; and (3) institutional strengthening. A separate sub-programme is designed to improve irrigation infrastructure, repair damaged banks, and provide flood control measures. This initiative will be an important input to SAP development.

86. The Inter-American Development Bank (IADB) has also completed the technical feasibility studies of options to improve the water storage capacity of the Peligre Dam, as well as through their future support for the development of the electricity generation infrastructure. The technical and feasibility studies for these projects provide valuable information for the estimation of the long-term demand for ecosystem services as part of the TDA process outlined in Outcome 1. In addition, once online, the new power generation potential and the economic studies undertaken will provide valuable information to determine the potential for environmental service payments vis-à-vis the power sector.

87. The project design team met with IADB on several occasions to seek areas for cooperation. IADB also provided the results of their market or “cluster” studies for Haiti (Fillieres) that will be instrumental for the development of action planning as part of the development of the National Integrated Watershed Action Plans (NIWAP). The studies will be a model for completing similar studies in the Dominican Republic. During the project formulation stage, the Haitian government oriented the IADB program to the southern peninsula in support of watershed planning around the Pik Macaya National Park. This overall initiative includes a GEF PPG to develop a Full Sized Project that will seek to create experiences in grass-roots land-use management planning and the development of carbon tracking tools, all of which will be valuable experiences for cross fertilization into the Artibonite project. The IADB Project Information Form (PIF) specifically mentions linkages to the Artibonite project. Both UNDP and IADB are members of Haiti’s Donor Round Table where discussion on the long-term investment scenario in the Artibonite will occur.

88. A major initiative, supported by UNDP, to improve environmental governance and reduce poverty in Haiti is the PAGE (Programme d’Appui à la Gestion de l’Environnement) project. The immediate objective of PAGE is to contribute to institutional strengthening and development of tools for the sustainable management of natural resources in Haiti. PAGE has three components: (1) Support to institutional strengthening of the environment sector (the main aim is to develop strategies for institutional capacity building); (2) Support to the systematization of environmental information, to be implemented with the National GIS Centre of the Ministry of Planning and External Cooperation. One of the main outputs of this component is the establishment of the National Observatory for the Environment and Vulnerability (ONEV); and (3) Resource mobilization/partnership development.

89. The Canadian International Development Agency (CIDA) is funding a 7-year CAD\$10 million bi-national initiative (Rehabilitation of the Bi-national Artibonite Watershed Project) to develop 5 sub-watersheds within the Artibonite. The project will develop actions to support the sustainable management of the Artibonite watershed in the form of institutional strengthening, improved information and planning, and on-the-ground investments in response to land use problems. The cooperation is characterized by CAD\$6 million investment, 60% of which is destined for institutional strengthening, planning support, and project management. The project

contributed the situation analysis of the upper and mid-range watersheds and, as part of the preparation process for this proposed project, completed a technical study of the lower watershed. The remaining \$3 million (\$1 million executed) contributed to an initial bi-national small project fund that will now support on-the-ground investments compatible with the bio-physical characteristics of the landscape in the 5 micro-watersheds. The cooperation is executed through a technical contractor, Oxfam Quebec, who is developing model projects to support the up-scaling of lessons learned as part of a watershed investment plan. These investments provide important information for potential up-scaling in the watershed and collectively provide co-financing to Outcome 3 of the proposed project.

90. CIDA is also supporting an integrated development project surrounding a man-made lake in St. Michel that will provide increased incomes and livelihoods through the environmental management of the lake and its resources. The CAD \$2.2 million project is an interesting model that will provide experiences on how to develop opportunities generated by man-made lakes and lagoons established in Haiti. The project, to be executed by Oxfam Quebec is approved and is now in the preparatory phase for implementation. This project will provide significant lessons learned for potential up-scaling within the watershed and will also provide co-financing to Outcome 3 of the proposed GEF project.

91. There are several initiatives coordinated by the German Agency for Technical Cooperation (GTZ) as part of their technical cooperation programme in the Dominican Republic (PROMEGEN), which are under execution within the Dominican Artibonito Watershed¹⁴ and upon which this project will build. The Natural Resources Management Project (PROGEREN) is supporting the Sustainable Management of the Yaque del Norte Watershed Project (PROCARYN) and includes several additional activities in the Artibonito watershed:

- *Support to the Management Plan for the Nalga de Maco National Park:* Support is being provided for the development of a co-management model with a local NGO, the Fundacion Frontera Futuro, which is the subject of institutional and organizational development. In addition, technical support is being provided in the form of geographic information. Additional support to the co-management of the protected area will come from a German Reconstruction Bank initiative described below. This activity provides an estimated €20,000¹⁵ baseline for the development of the management plan for the national park.
- *Support to the development of a supply chain for wood producers:* The project is working to form a “cluster” from 111 small-scale forestry operations with management plans. This involves the formation of a cooperative, organizational development, and institutional strengthening. This initiative will also be working on carbon sequestration models as part of a review of the potential for carbon trading as a value added component to the supply chain. This activity is complementary to the CIDA micro-watersheds initiative, which will also invest in supply chain studies for beans and horticultural crops. The CIDA activity does not include saw timber as part of the market support activities.

¹⁴ These activities are implemented in the Artibonite Proper and do not include the Macasias Watershed.

¹⁵ The baseline figures are rounded estimates for the activities undertaken and do not include the costs of project management, contractors, GTZ costs, or co-financing by local or national groups and should not be considered as project estimates.

- Support is being provided to SEMARENA and the Dominican National Electric Corporation for the implementation of a payment for environmental services plan for the Yaque del Norte Watershed. This model, which is in the initial stages, will help create sustainable financing for a high priority watershed in the Dominican Republic. The lessons learned from the experience will be generated over the next four years and will provide important information that may be applicable to the development of payment for environmental services for the Peligre Dam, once the electric generation capacity is restored.

92. The project *Poverty Reduction through Sustainable Use of Natural Resources in the Cross-Border Catchment Area of the Rio Artibonito* is now in a second 3-year phase for GTZ technical support. The phase 1 activities provided support to two work-streams with training in soil conservation, investigation into the use of *Jatropha* as a biofuel, and initial studies of the potential for utilization of marginal areas. The Haiti work-stream included the general analysis of some areas for irrigation, a study/proposal to construct a bi-national marketplace in Los Cacaos/Cerca-la-Source, and initial work on participatory management planning in micro-watersheds.

93. The execution of a second 3-year phase has begun. The draft work-stream will include: (1) improved organizational services, which include the organizational development of larger NGOs to operate in consortia with smaller and less effective NGOs. These actions will provide a good baseline for both the formation of a governance structure and resource mobilization planning; (2) support to grass-roots groups with a common interest and opportunity to work in a bi-national cooperative spirit; (3) marketing of local services and products; and (4) participatory land use planning. The contractor to implement the project, GFA Inc., is now in the process of determining exactly how and where these actions will take place within the Upper Dominican Artibonito. Both Phase 1 and Phase 2 provide important baseline actions in support of the National Integrated Watershed Management Plans. The tentative estimate for Phase II actions is € 675,000 upon which Outcome 2 of the proposed project will build.

94. The German Bank of Reconstruction (KfW) is providing funding to SEMARENA to implement an initiative to support the Protection and Sustainable Management of the Natural Resources in the Upper Artibonito River Watershed and the Jaragua-Bahoruco-Enriquillo Biosphere Reserve through the financing of small projects with local participation. The project is being coordinated by the GTI and executed through GFA. The project will provide an estimated €1.5 Million¹⁶ (US\$2,325,000) for small projects of RD 1-7 Million Pesos (US\$30,000 - 200,000) in the following areas: (1) co-management of protected areas; (2) conservation and improvement of soil productivity; (3) diversification of agro-forestry production; (4) initiatives that establish the hydraulic regime; and (5) reduction of pressure on natural resources through increased incomes in the target group. In addition, the project will produce/complete the following studies/information:

- Baseline information in the geographic zone of the project;
- Completed Management Plan for Nalga de Maco National Park;

¹⁶ Approximate estimate of the amount of support to be directed to the Artibonito Watershed

- Community Development Plans for 10 rural communities;
- System for monitoring the environmental impacts of the programme;
- Monitoring “diagnostics” and surveys.

95. The workplan for Haiti is limited to NGOs with trans-national activities that they can implement. This is considered therefore as a Dominican initiative.

96. The proposed GEF project will work with GFA and the GTI to track the development of the project and establish how the individual projects complement each other. The projects selected will form an important part of the portfolio of projects that will need to be showcased along with the model projects in Outcome 3.

97. There are a number of baseline experiences that support the mobilization of resources. UNDP has sponsored a partnership programme to support the access of local farmers and business-persons to credit within the formal sector through risk-reduction in the form of guaranteed funds. To date, UNDP has promoted four local development agencies (LEDA, or ADEL in Spanish/French) for the purpose of increasing the long-term competitiveness of local development actors, and at the same time to encourage them to meet the MDGs related to social inclusion, gender equity, access to basic services, and environment. The program provides a thorough analysis of local credit conditions and later creates a guaranteed credit fund that provides a guarantee to local lenders who invest in local producers. This is accomplished through (1) development of autonomous legal structures that allow the local authorities to make their own decisions on policies for sustainable and human economic development; (2) skill development for SMEs, credit services, negotiations with local banks, fundraising to finance projects and create jobs; and (3) finance. It is the local reference for international partnerships and foreign investment.

98. In addition to the LEDAs, UNDP was instrumental in developing a guaranteed fund within the GEF-sponsored Sabana Yegua project with the same methodology. As described in Outcome 4, UNDP will complete the studies of local credit conditions within the Elias Piña province. Based on the diagnostic analysis, there exists the potential to capitalize the first local development agency. The international linkages for funding the ADEL are through an ART-GOLD partnership with the Italian government. ART is a French acronym for "support to territorial and thematic networks of human development cooperation", which is an international co-operation initiative that brings together the programmes of several UN Agencies (e.g. UNDP, UNESCO, UNIFEM, WHO, UNAIDS, ILO, UNITAR, UNCDF, and UNOPS).

99. The Dominican National Environment Fund is mandated by Law 64-00 for the purpose of developing and financing programmes and projects for protection, conservation, investigation, education, restoration, and sustainable use of natural resources. The fund is generated through 33% of the resources captured from concessions, permit fees, fines, and from payments for environmental services. It is to be directed through a council of state and private institutions and is regulated by the national controller. The fund was not fully operational up to May 2008 with the development of a trust fund to support protected areas, which will also benefit the protected areas within the Artibonito. The fund is capitalized at US\$10 million with support from the KfW, The Nature Conservancy (TNC), and UNDP. This is the first baseline test of the functionality of

an account within the national fund, which will provide important lessons for the selection and feasibility analysis of financial mechanisms to take place during the FSP.

100. Haiti also has a baseline experience in environmental funding. Currently, the government invests money to bank accounts payable for subsidized Venezuelan oil. The interest on the money provides small amounts of funding for environmental projects. A concept paper has been developed for the creation of a bi-national environment fund, but no action has been taken.

101. There are a number of watershed management projects in the Dominican Republic and Haiti outside of the target area of the Artibonite that are already providing lessons learned, including:

- The UNDP GEF FSP, *Demonstrating Sustainable Land Management in the Upper Sabana Yegua Watershed System Project in the Dominican Republic*, implemented by Fundación Sur Futuro in cooperation with SEMARENA, establishes an integrated, public-private watershed management model with stakeholder involvement, capacity building, and sustainable financing;
- The GEF Integrated Watershed and Coastal Areas Management in Caribbean SIDS (IWCAM) project that strengthens the capacities for integrated “ridge-to-reef” approaches, in which both countries participate. One of the IWCAM demonstration projects is based in the Dominican Republic, and focuses on addressing pollution and contamination in the Rio Haina basin, which is the most important cargo port in the Dominican Republic;
- The IDB financed Ennery Quinte management plan in Haiti;
- Two trans-border projects including the EU funded Trans-border Environmental Management Project in response to environmental disasters affecting Fonds Verette-Jimani region (Enriquillo Basin), and the AECI-SEPyD Auracaria Project. These have provided experiences in managing a trans-national project, and in the integration of geographic systems between the two countries, and working relationships between Mde and SEMARENA.

102. There are also considerable investments through multi-lateral NGO efforts such as World Vision, Save the Children, the Centre Canadien d’Etudes et de Coopération Internationale, and Helvetas.

103. The importance of potential climate change impacts with regard to human vulnerability to extreme natural events and to the provision of environmental services is of concern in the two countries. They have each embarked on initiatives in adaptation, mitigation and disaster preparedness and response related to climate change and natural disasters (Annex 6). For example, with the support of UNDP, they have both developed Disaster and Risk Management Plans. In 2009, the UNDP Global Project on Capacity Development for Climate Policy Options will be implemented in 10 pilot countries, including the Dominican Republic. UNDP-Haiti is supporting the Haitian Government through the Ministry of Interior and Local Authorities and its Department of Civil Protection in implementing the National Disaster and Risk Management Plan released in February 2001. The agencies involved in risk and disaster management will be actively engaged in the SAP and NIWAP elaboration process. These initiatives will provide

valuable information to the FSP on climate change impacts. Further, they will also help in mitigation of the potential risks to the project from climate change and natural disasters.

104. Both nations embrace a participatory planning approach to natural resources in their National Watershed Management Plan (Haiti) and in the Municipal Planning System (DR). There are management plans for a portion of the Artibonite watershed (GTZ), 5 micro-watersheds in the Dominican Republic and Haiti (bordering), and a management plan for the Macasias Watershed (not widely published, incomplete, and no action taken). In the case of the Artibonite, there is no clear management or structure to monitor, organize, and coordinate the watershed development process at the regional level.

105. The proposed project will have no geographical duplication with other similar GEF projects in the two countries. In fact, this GEF intervention is designed to complement interventions from other donors in a very efficient way and will include areas that have received little attention in the past. Haiti, in particular, is currently developing an interesting portfolio of GEF initiatives including the Small Grants Program, a Climate Change MSP which focuses on creating the condition for hydro-electrical microplants (with CIDA co-funding); a biodiversity project that aims to strengthen the national system of protected areas; an adaptation/LDCF project that focuses on increasing the capacities of the Government to better plan coastal development and management; and a land degradation project that focuses on watershed management issues around the Parc Macaya in the southern department. While the latter is being developed by IADB, all other initiatives are led by UNDP. The current project fits well into this portfolio of projects and the potential for cross-fertilization and replication of lessons learnt will be important.

PART II. STRATEGY

Project rationale and policy conformity

Rationale

106. The transboundary Artibonite watershed provides substantial ecosystem services that are crucial for the future socioeconomic development, including alleviation of poverty, of the Dominican Republic and Haiti, the poorest country in the western hemisphere. The provision of long-term ecosystem services is curtailed by persistent threats to ecosystem function, stability, and integrity in the form of deforestation, inappropriate land-use, and damaging agricultural practices especially in the upper watersheds that significantly increase erosion and soil losses. Loss of forest cover and land degradation are impacting heavily on the hydrologic regime, a situation that climatic variability will compound. Already experiencing uneven distribution of water resources, both countries face decreasing availability and quality of freshwater, and an internationally visible vulnerability to climatic events as witnessed by the tropical storms and hurricanes that have impacted the island in 2007 and 2008 with devastating consequences including in the Artibonite watershed.

107. The situation is likely to deteriorate, with an estimated population growth rate of 2.8% and increasing future demand for water, fragmented responses, demographic shifts in Haiti, and

search for new lands in both countries that drives cultivation to higher and more fragile slopes. As noted above, the Peligre Dam will lose 53% of its water storage capacity by 2012, resulting in further reduction in water availability for communities in the lower watershed and for energy generation. Furthermore, discussions are underway in both countries to explore and extract increasing amounts of groundwater and improve surface water capture, including through new infrastructure projects. In the absence of a joint management and planning framework, and of integrated responses that seek to improve ecosystem services and functions, such developments have the potential to provoke further conflict over water resources, including social instability and political tensions between the two countries. As such, the continued peace and stability of the relationship between the two nations depends in part on the recovery of Haiti's impoverished natural resource base, the establishment of sustainable land and water resource management practices, and on a productive and clear bi-lateral dialogue and agreement on the management of the soils and water of this strategically important transboundary region. Only an initiative of the scope of the proposed GEF project can provide for hydrologic unit-based IWRM approaches that will enable stakeholders to address necessary tradeoffs and ensure an equitable distribution of benefits.

108. The strategic importance of the Artibonite watershed for the island is reflected in the substantial investments by bi-lateral partners. Although very significant in their targeted areas, the impacts of these projects are limited by several persistent barriers. No watershed-wide intervention nor planning process has ever been undertaken, and efforts to address the devastating impacts of land degradation and to integrate upper and lower watershed needs and concerns have been fragmented and ultimately unsustainable. The trans-boundary nature of the environmental threats and impacts in the Artibonite cannot be effectively addressed solely through stand-alone national initiatives, and requires a coordinated, regional framework that takes into consideration the fundamental links between human activities, and natural and interdependent processes between the upper, mid, and lower watershed using an ecosystem-based approach. There is widespread agreement among donor and partners on the need for an overarching bi-national Integrated Watershed Management Plan. Both countries recognize that joint efforts to address drivers of environmental degradation, particularly in shared ecosystems, are crucial to the island's long-term socioeconomic development and stability.

109. The GEF increment will provide a long-term programmatic framework and strategy for the watershed that will facilitate a process for assessing the situation in the watershed, prioritizing both sites and approaches, identifying gaps, catalyzing other initiatives or leveraging additional funds, and ensuring synergies between ongoing and planned activities. This strategic project will apply the validated GEF TDA/SAP methodology for integrated land and water resources management to the Artibonite watershed. The application of a TDA/SAP methodology to a watershed affected by severe soil degradation, as well as by water scarcity and conflicts will be key in order to offer to decision-makers efficient roadmaps and planning tools for environmentally sound management practices. The approach is very innovative in that it will apply the validated TDA/SAP methodology and integrate SLM and IWRM concepts to address both the upper and lower basins in one single landscape unit for the first time. This type of project therefore lends itself to scientific innovation and to advancing the state of the art.

110. The diversity of the basin and the various issues that need to be addressed indicate that a TDA/SAP process is required if a comprehensive understanding of the vital linkages between the upper and lower watershed is to be achieved in order to arrive at sustainable socioeconomic models and practices throughout the basin. The proposed project will establish and strengthen national and regional frameworks for land and water governance, applying IWRM and SLM principles and approaches to management of the watershed. The project will also show the trade-offs necessary to produce environmental benefits and better ecosystem services on the long-term. This project would be the first ever initiative in which the lower and upper Artibonite watershed is being jointly addressed using an integrated ecosystem approach.

111. Project outcomes will be achieved through: (i) preparation of a TDA of the watershed, which will enable both countries to better understand priority national and transboundary environmental issues and socioeconomic root causes, and to work collaboratively to address them at bi-national and local levels; (ii) formulation of a SAP and associated Integrated National Watershed Management Action Plans (linked to UNCCD/NAPs), to identify priorities including policy, legal and institutional reforms, actions, and investment and management frameworks; (iii) mainstreaming IWRM and SLM into national frameworks and planning processes; (iv) establishment of an appropriate bi-national governance framework for management of the Artibonite and provision for sustainable national and regional institutions for collective action after project support ends; (v) capacity building at the local, institutional, and systemic levels to utilize a comprehensive approach for addressing transboundary land and water-related environmental concerns; (vi) financial sustainability mechanisms for investments and market enterprises in the basin within the National Integrated Watershed Management Plans; (vii) mobilization of financial resources and implementation of innovative financing mechanisms to scale-up interventions in order to sustain financial, ecological, and socioeconomic benefits; and (viii) on-the-ground investments in stress reduction measures and innovative demonstrations in sustainable agriculture, forestry, and integrated land and water management. These activities will contribute to removal of the major barriers to sustainable management of the Artibonite, as previously described.

Situation without the GEF increment

112. The substantial investments by bi-lateral partners, as noted above, are not articulated through an integrated management plan that spans the entire watershed. In fact, there is a clear divide between the lower and the upper/mid watershed, between efforts concentrated only on the border area, and between country-specific activities. The baseline scenario will provide watershed management planning on only a relatively small area of the watershed by 2012. Land degradation and water resource use will continue to be addressed largely through site-specific projects lacking clear connections to a broader strategic planning and management framework based on an understanding of ecosystem dynamics. Uncoordinated efforts at water management in this geo-politically sensitive watershed may lead to foreseeable but preventable conflicts in the decades to come. In the absence of the GEF alternative the broader political and institutional reforms needed to achieve and sustain progress in promoting sustainable land use practices and IWRM will be lacking. Any investments in the absence of a negotiated and agreed vision for the development of the watershed by all key stakeholders will ultimately be environmentally and economically unsustainable given future water and electricity demand for growing populations

within the Artibonite basin and Port-Au-Prince on the one hand, and increasing threats to water resources on the other. The two countries will continue to lack the national and regional level institutional mechanisms, capacity and knowledge base for effective management of this strategic watershed.

113. Without removing the barriers that impede the development of governance and planning structures, and environmentally and financially sound livelihood opportunities, the baseline actions will continue. The status quo therefore implies continued land degradation, deforestation, ecosystem simplification and reduced connectivity, and erosion of ecosystem services leading to increased poverty, declining food and water security, increased migration, and ultimately to water use conflicts, heightened regional tension, and internal instability. The impact will be greatest at the lowest socioeconomic levels and in rural areas with the least economic alternatives. At the local and national levels, livelihoods will continue to depend largely on subsistence agricultural production, with increasing levels of environmental and social vulnerability. The upstream – downstream divide in the watershed will likely increase, and be reflected at both bi-national and national levels. Continued emigration to urban areas will place increasing demands on infrastructure and services. In the absence of GEF intervention, the potential of international agreements such as the UNCCD and UNCBD to contribute to improved natural resources management and ultimately to sustainable livelihoods will not be realized and efforts to achieve MDG targets related to poverty and water will be seriously undermined. At the global level, threats to ecosystem resilience and functionality will escalate as will biodiversity loss. Vulnerability to fluctuating climatic regimes will be heightened in an island that is already experiencing increased storm intensity and frequency. Carbon reserves will continue to be lost.

GEF alternative

114. The impacts of the project are substantial and wide-ranging. The proposed project will establish and strengthen national and regional frameworks for land and water governance, applying IWRM principles and SLM approaches within an overarching TDA-SAP process. Negotiated and agreed-upon priority strategies and actions are required for integrated water and land management that will halt and reverse the degradation of the Artibonite, address drivers that impact on the land and water resources, and establish capacities and frameworks for implementing IWRM approaches and SLM practices. In turn these must be financed by new mechanisms and schemes that generate incentives for appropriate land use practices and produce sustainable livelihood options. Through a comprehensive SAP with strong national endorsement, cross-sectoral buy-in, and with clearly defined priorities that combine integrated ecosystem management approaches with the development of sustainable livelihood options and poverty alleviation efforts, the current trend of increasing anthropogenic pressures and spiralling environmental degradation in the Artibonite watershed will be halted and reversed.

115. The restoration of ecosystem stability, integrity and function will be underpinned by adequate policy and institutional frameworks, increased overall capacity at national and local levels, sustained financing mechanisms, validated sustainable resource/land use practices, and coordination of other initiatives within the watershed. Financial mechanisms will be designed to support continued investments on a long-term basis. The SAP will deliver an agreed and robust framework for mainstreaming sustainable land management and IWRM principles into relevant

national and sectoral policy frameworks as well as development programs and strategies. Additionally, it will both facilitate and catalyse support from external partners by ensuring more effective collaboration and coordination amongst agencies, and more incentives and motivation for the respective countries to develop more streamlined aid coordination mechanisms, in line with ongoing efforts by GTZ, CIDA, and other agencies.

Conformity

116. This proposed project is presented under the GEF International Waters (IW) and Land Degradation (LD) Focal Areas (FA), given the strong inter-linkages between land degradation and hydrologic regimes. A truly innovative initiative, the proposed project will integrate the TDA/SAP methodology with SLM and IWRM approaches. It is consistent with the respective GEF 4 Strategic Objectives (SO) of these two FAs. Congruent with IW SO1 it will develop foundational capacity by building upon science-based priorities for the definition of the policy/legal/institutional reforms and investments needed to resolve priority transboundary concerns. The project conforms to IW Strategic Program (SP) 3: *Balancing overuse and conflicting uses of water resources in transboundary surface and groundwater*. The process proposed in this project will be critical to creating the necessary conditions, including a bi-lateral watershed governance mechanism, for addressing emerging and potential conflicts over water use, as provided for under SP3. It will support the balancing of competing water uses through application of IWRM at national and regional levels. IWRM has been identified as an effective approach in balancing potentially conflicting uses of water resources, and to inform and consider tradeoffs being made in socioeconomic development objectives and ecosystem protection. Through national-level watershed action planning, IWRM approaches will be promoted by the development of requisite capacities, institutional and policy reforms, and investments in the two countries.

117. Through the SAP, the project will act as a catalyst for the implementation of a more comprehensive, ecosystem-based approach integrating IWRM and SLM principles into the management of a strategic transboundary watershed, and will foster bi-national cooperation. The project would represent the first time that the upper and lower basins are being addressed as a single landscape unit, using an integrated approach. Therefore, in addition to fully complying with SP3 objectives, the project would have high replication potential given the integrated landscape approaches that SIDS require.

118. The SAP process is uniquely placed to generate strong national commitment and stakeholder buy-in for a robust Watershed Management planning process that delivers the enabling environment to “mainstream SLM requirements and principles into regional, national, and local levels”, as called for under LD SO1. The project seeks to include ecosystem principles in the management of natural resources and to build institutional capacity for integrated management in the wider landscape. Through the SAP process, policy, regulatory and planning frameworks and incentives in support of SLM objectives will be incorporated in a more comprehensive manner, not only at the national level through development of national action plans, but in a harmonized manner at the regional level. Land degradation trends will be addressed through sustainable land-use planning at the landscape level and the establishment of financial mechanisms for sustained implementation of the SAP as well as for financial

sustainability of investments in SLM and in alternative livelihood options. The pilot projects undertaken within this project, particularly in Haiti, will explore and validate concrete approaches for promoting land use practices that are not only sustainable but improve livelihood options. It will therefore lay the bases for fostering system-wide change at national and regional levels. In addition to this, the issue of sustainable financing underpins the project, ranging from SAP implementation to targeted on-the-ground mechanisms for rural communities. The project therefore fully complies with GEF4 priorities and will provide important lessons and experience in multi-focal area approaches.

Project goals, objectives, outcomes, and outputs

119. Project goal: To ensure ecosystem stability, integrity and functionality, and the continuity of ecosystem services that support global benefits and sustainable livelihoods in the bi-national Artibonite Watershed.

120. Project Objective: To establish a bi-national framework for integrated management of the Artibonite watershed by 2012 that will promote comprehensive, ecosystem-based reforms, demonstrations and investments, and lay the bases for long-term environmental functionality and socio-economic stability.

Outcome 1. Comprehensive analysis of watershed issues provides a sound basis for prioritization of transboundary problems and agreement on management objectives

121. The project design recognizes that while there has already been a considerable amount of diagnostic activity and assessments relevant to the goods and services provided by the Artibonite in the border area and in the lower delta, the mid-section of the watershed is under-represented. Moreover, the transboundary problems, root causes, and impacts throughout the entire watershed are poorly understood as are the linkages between the upper, mid, and lower areas. These need to be quantified and analyzed in order to develop a comprehensive ecosystem-based management framework for the watershed. Building on the existing baseline, this component will provide a sound scientific and technical basis to enable both countries to define and prioritize the strategic remedial actions required for the Artibonite's integrated management. Outcome 1 will build upon the suite of information on the Artibonite watershed already generated by key partners for the upper bi-national watershed and for the lower Haitian watershed during the project preparation phase. Based on a gap analysis carried out during the preparatory phase, additional bio-physical and socioeconomic information is needed to support the development of the SAP and National Integrated Watershed Actions Plans (NIWAPs). A Transboundary Diagnostic Analysis (TDA) will be prepared, following GEF best practice, based on joint fact-finding and gap filling activities. It will also include a complete causal chain analysis, development of a stakeholder engagement and communication strategy, institutional mapping, legislative review, and a socioeconomic review.

122. The TDA will be formulated by a Technical Task Team (TTT) to be established at the start of the project. The team will receive training in the GEF-approved TrainSeaCoast TDA/SAP methodology including for undertaking the causal chain analysis. The TDA will be a strategic

tool for decision-making at the basin scale, and assist in guiding actions and initiatives at sub-basin and local levels. Validated through the joint fact-finding exercise and bi-national experts on the TTT, it provides for the integration of policies, decisions, and costs across key sectors including agriculture, forestry, urban development, and water resource management, and will also contribute to poverty reduction strategies.

123. The joint-fact finding and TDA development will be important in terms of building up confidence between both countries, and contributing to information sharing, harmonization of approaches, development of appropriate tools, mechanisms for consultations, and a factual understanding of linkages between environmental problems and their root causes. This exercise will enable the definition of training and capacity building needs. The TDA will form the basis for development of the SAP.

Output 1.1. Bio-physical Characterization of the Watershed and Adjacent Coastal Areas Completed

124. The bio-physical information generated through other initiatives, such as technical and feasibility studies by IDB to explore enhanced water storage options for the Peligre Dam, a diagnostic study of the upper watershed by the consortia Oxfam Quebec-CRC-Sogema as part of CIDA's Bi-national watershed management project, and a comprehensive study of the lower watershed by Oxfam Quebec for UNDP as part of the PDF-B process, will be completed, particularly with regard to key parameters:

- Comprehensive evaluation of erosion risks and sedimentation loads and patterns in the total watershed including adjacent coastal areas, that will, *inter alia*, enable the identification of erosion hot spots from inadequate management practices;
- Analysis of the levels of soil degradation;
- Evaluation of land use conflicts and land use changes over the years as a basis for monitoring land degradation trends and improving management approaches, including updated cartography at a scale of 1:10000; harmonization of land occupation information between both countries;
- Hydro-climatology profiling including precipitation distribution, minimum river flow and available rate for irrigated areas, water balance and potential plant growth;
- Water quality evaluation to better assess the potential scale of contamination; assessment of contaminant sources, flows and levels, and of environmental impacts of pollution;
- Assessment of the status of ecosystem remnants in the entire watershed, including from GIS information and aerial photos, field observations and forest inventories data; this includes the need to harmonize the use of the Holdridge Life Zone classification of ecosystems; and,
- Missing socio-economic information on livelihoods and effects of land degradation and poverty on land use, especially with respect to age and gender.

125. Products will include soil potential maps; and a risk map identifying the areas where there are risks for floods and landslide. Linkages will be established with Haiti's CNIGS, ONEV and the Dominican Republic's SEMARENA/DIARENA for this output, and the information generated will feed into the appropriate databases in the two countries

126. It is underlined that these assessments will take into account the potential impacts of climate change both in terms of additional modifications to the water regime as well as of increased vulnerability to extreme climatic events and drought. A cross-cutting theme of the project is the need to provide for improved ecosystem resilience in order to better enable populations and landscapes to respond to the challenges of climatic change. This information is critical to manage, reduce, and prevent conflicts in water use in the Artibonite and to develop disaster preparedness and risk mitigation measures. Additional information on how climate change issues are being addressed by both countries, which will inform FSP development, is given in Annex 6.

Output 1.2. Social, economic, and governance characterization of the watershed completed

127. Comprehensive socio-economic analyses for the whole watershed will be completed, building upon work already carried out for the upper watershed. The results of this output will be presented in a comprehensive report, which will form part of the TDA. Existing data is too aggregated to provide useful information on socio-economic characteristics of the watershed communities (especially with regard to special needs groups, gender considerations, age considerations, and the effects of ethnic and linguistic diversity on business, education, and sustainable livelihoods), making it difficult to identify required response measures to address the major constraints and to achieve well-defined development objectives. Specific socio-economic studies in representative micro-watersheds will be carried out that can be upscaled, and that will also assist in targeting on-site interventions by all actors.

128. A key component is the modeling of demand and availability of water and other ecosystem services by micro-watersheds, by taking into account urban and coastal areas based on projected population growth, demographics, and climate change. This will provide a better understanding of the relationship between current and projected potential capacity and population demand for environmental services in the entire watershed. These models will be vital tools for land use planning and policy development, and to generate awareness among public authorities and stakeholders with regards to the real costs of water and land management in the watershed.

129. Valuation of ecosystem services (including nearshore goods and services) and land degradation processes provides a critical tool for policy-makers and local producers in terms of appreciating the cost of business as usual. Currently, producers in the watershed do not pay for irrigation services and there is no a clear understanding of the real cost of ecosystem services or an accurate estimate of the cost of mitigation of environmental and socioeconomic impacts. This information will also provide the baseline for estimates of future demand for ecosystem services under different population and economic scenarios. Existing IADB and USAID information on Haiti will be updated to include missing areas of the Haiti watershed and to cover the Dominican Republic. In order to reverse the current situation under which there are no integrated and planned management actions among stakeholders, important investments will be needed to progressively restore and improve ecosystems services and water use in the watershed. This is especially evident to both nations following the flooding disasters of 2007 in the Dominican Republic due to tropical storms Olga and Noel, and 2008 in Haiti due to a suite of four tropical storms that struck in consecutive weeks during August and early September. A reliable estimate

of the value of various ecosystem services is needed, which should be incorporated into an integrated financing structure.

130. Market networks, production chains, product transformation, and market access are also important factors that need to be better understood. Under this component a USAID market study and commercial chain for Haiti will be validated for the Artibonite watershed, especially the Dominican Republic. Based on this, specific studies on trade, flow of goods, market networks, productive value chains, agro-transformation units, and market access will be carried out with emphasis on the border area in order to better understand the conditions and benefits of commercial exchanges between the two countries.

131. A land tenure analysis will be completed for the watershed given its relevance for effective and sustained management approaches. Land tenure conflicts, plots distribution, and long term land use security for farmers are required information for resource management planning. Several studies have shown that the type of land ownership is a key element in determining the possibility of land use changes and improved agricultural practices. Security of property rights underpins the viability of establishment of various financial mechanisms and land management choices. As indicated by the gaps analysis, the rice-intensive production in the lower watershed has witnessed conflict following an originally tense land tenure situation and more recent agrarian reform measures. Investments in improved agricultural and forestry practices are closely related to land status for producers and other economic aspects. Land tenure is, however, a complex issue which needs to be taken into account during SAP formulation and implementation and will be investigated in the TDA on a sample basis.

132. The project will assess the measures necessary to strengthen capacity of the National Institute for Agrarian Reforms (INARA) which operates within the Ministry of Agriculture, National Resources and Rural Development in Haiti, and has a mandate for land tenure assessment in support of natural resource management. INARA has been working in the lower Artibonite watershed. The project will work closely with INARA to determine capacity building requirements, and to uptake their experience and lessons learned to date. In the Dominican Republic, the Agrarian Reform Institute is in the process of granting titles and divesting of traditional agrarian reform colonies established in the 1940s and 1950s. The TDA will produce information on the effectiveness of grass-roots land titling schemes and other mechanisms where agrarian reform has been achieved through non-governmental actions in other geographic areas within the DR. This will include a capacity assessment of the land tenure agencies in both nations.

133. A study on migration aspects and effects on sustainable land management in both nations will be updated and completed, and will complement the land tenure analysis, particularly for the upper and mid watershed. The full characterization will provide a basis for better evaluating the viability of diverse financial mechanisms, including payment for ecosystem services.

134. The governance analysis, which will include the institutional, legal, and policy analysis and mapping at bi-national, national, and municipal levels, will contribute to the definition of appropriate institutional and governance reforms required at several scales: at the basin level, to support the establishment of a joint management and planning framework, at the national level to

set in place the domain for effective IWRM and promotion of sustainable land management practices, and at local levels to identify requirements for strengthening municipal authorities. It will be linked to a capacity needs assessment of representative groups of stakeholders, as described below.

Output 1.3. Stakeholder engagement and communication strategy prepared

135. The cornerstone of a sustainable, successful watershed management programme is the active and informed participation of key stakeholder groups, underpinned by strong public awareness and understanding of the requirements for maintenance of ecosystem functionality, integrity and services. Involvement of stakeholders, including NGOs and CBOs, in the governance process and improved regional cooperation are important factors in addressing SLM and IWRM issues. The stakeholder analysis carried out in the preparatory phase has identified a large number and diversity of actors engaged in a range of activities in the watershed, from resource users at the local level, to government agencies, municipal stakeholders, and international donors. This multiplicity of stakeholders represents a significant human resource and a potential for influencing the success and sustainability of the GEF project and its expected outcomes.

136. The development of a stakeholders' engagement and communication strategy will be based on the stakeholder analysis and will ensure that all relevant stakeholders in both the upstream and downstream environments are taken into account in the implementation of the project. A unique feature of this project is that it is the first time in the history of Hispaniola that the entire Artibonite watershed will be addressed. Communities in the upper, mid and lower watershed have evolved largely in isolation from each other. Development of comprehensive governance structures at bi-national and even national levels will therefore require an integrated assessment and mapping of stakeholder relationships and interests, as well as of existing and potential conflicts – building upon the extensive baseline work carried out in the preparatory phase. Group functions and distribution throughout the watershed will be identified in order to determine their involvement in SAP implementation.

137. A capacity needs assessment of representative groups of stakeholders (e.g. municipal authorities,) will be undertaken during the initial stages of the project to define capacity gaps and the focus of capacity strengthening efforts to be implemented under the SAP. This will help to define the requirements for capacity building and institutional strengthening that will enable the involvement of key stakeholders in ecosystem-based, landscape level management. This process will also include the lessons learned from other initiatives in both nations sponsored under the GTZ PROGEREN program particularly in the Yaque de Norte Watershed and in the Artibonite, as well as the GEF sponsored Sabana Yegua Watershed Management Initiative and the IDB PIA project, among others. Based on the results of this assessment, capacity building activities will be carried out under the various components of the project, as appropriate.

138. The stakeholder engagement and communication strategy will be implemented under the SAP (Outcome 2).

Output 1.4. Transboundary problems and root causes identified and options for interventions to address national and trans-boundary problems proposed

139. Under this output the TDA process will be undertaken, and the TDA document will be prepared and approved, including a causal chain analysis to better identify and prioritize critical areas for interventions, investments, and reforms within the SAP. This process will build upon the preliminary but extensive assessments carried out in the lower, mid and upper watershed in partnership with CIDA and OXFAM as part of the PDF-B process and under the auspices of the CIDA Artibonite Bi-national Watershed Initiative. Under this output the TDA process and document will be finalized and approved, including analytical steps, such as a causal chain analysis, to better identify and prioritize critical areas for interventions, investments, and reforms within the SAP. The analytical and interpretive function of the causal chain analysis will reaffirm known problems and articulate others that surfaced during the project design phase but are not described or publicized, such as wetland desiccation resulting from agro-industry. A sector identification process to link sectors to problems and a sector-level review will permit a more objective outlook to the processes contributing to land and water degradation and their solutions. In addition, this will present the opportunity to create cross-border understanding of a range of problems not currently recognized by one nation or the other. The causal chain analysis will facilitate assessment of the geographic scope, severity, and environmental and economic consequences of given issues. This sets the basis for agreeing on priorities, most importantly under scenarios of water scarcity, and for addressing potential trade-offs.

140. The TDA will lead to the identification of priority interventions for inclusion in the SAP, which are needed to address underlying/root causes; filling of knowledge gaps; legal, policy, and institutional reforms; investments; economic instruments; and awareness raising and stakeholder involvement. To assist prioritization during SAP development, the TDA will incorporate a socioeconomic evaluation and pre-feasibility studies of key interventions. The TDA will also identify the gaps in the baseline information necessary for the establishment of the SAP monitoring and evaluation framework.

141. The TDA will be prepared by the TTT and approved by the national inter-ministerial committees and the bi-national steering committee. The final and approved TDA, in Spanish and French, will be disseminated widely, both in full and easy access versions, and will inform the Artibonite SAP development. The project will work closely with the countries to develop the SAP and NIWAPs, based on the scientific, policy, and institutional assessments contained in the TDA.

Outcome 2. Strategic Action Programme and bi-national governance mechanism for sustainable management of the Artibonite watershed negotiated and endorsed by the two countries

142. The SAP is a negotiated policy document that establishes clear priorities for action to resolve the priority transboundary resource management problems. The development of the SAP for the integrated management of the Artibonite watershed and associated National Integrated Watershed Action Plans (NIWAPs) and the definition of the national and bi-lateral watershed management and governance frameworks necessary to implement the SAP are core project

activities. The formulation of the SAP and NIWAPs is a process that will facilitate basin-wide agreement on identified priority interventions to address problems at national and trans-national levels that constrain the environmental sustainability and the long-term utilization of watershed resources. In this context, the SAP will be a platform for addressing the traditional divide between the upper, mid, and lower watershed, hence setting the vision and framework for integrated, comprehensive, and strategic management approaches. Therefore, the SAP will ensure that global environmental benefits are provided in tandem with the facilitation of sustainable and environmentally sound socioeconomic development in the watershed over the coming decades.

143. The development of the SAP and supporting NIWAPs will be underpinned by the initiation of a series of capacity building and institutional strengthening activities, for SAP and NIWAP development and implementation. More focused capacity building will be carried out as part of the activities in Outcome 3. Engagement of stakeholders in the conduct of the SAP will be part of the capacity building exercise.

Output 2.1. Strategic Action Programme for the Integrated Management of the Artibonite Watershed formulated

144. The core of the SAP process is the collaborative formulation and negotiation of a joint integrated management plan for the watershed. It will enable stakeholders to arrive at a long-term vision for the basin and to reach consensus on ecosystem priorities, management objectives, targets, and interventions needed to sustainably manage the basin through an ecosystem-landscape approach that provides for the long-term sustainability of land and water resources. The SAP development process will be informed by the TDA and results of the pilot demonstration projects (Outcome 3), and will focus on priority transboundary issues identified in the TDA. Through wide technical and stakeholder consultative processes, and in conjunction with the National Integrated Watershed Action Plans, priorities will be jointly defined, and priority actions and investments agreed upon, to be implemented at national and regional levels to address identified priority issues. An evaluation will be carried out of the technical and economic feasibility and of the policy implications of the proposed actions. The SAP will also include an estimation of the required financial resources and a strategy to mobilize those resources based on Outcome 4. It will be prepared in accordance with the incremental cost approach. The objective will be to formulate a financially realistic, government endorsed, sustainable program that effectively responds to local conditions and incorporates lessons learned thereby ensuring its long-term implementation. The Artibonite SAP, detailing policy, legal, and institutional reforms as well as priority investments and actions for the watershed, will be prepared, negotiated, and endorsed at the highest levels in both countries. A bi-national inter-ministerial committee will be formed from the existing institutional frameworks and mechanisms in the two countries, for review and final approval of the SAP.

Output 2.2. National Integrated Watershed Action Plans for the Artibonite Watershed to support the SAP developed

145. Output 2.2 is designed to address national level concerns and propose a clear path for the future development of the watershed on each side of the border within a sustainable economic

development context. To achieve this, a strong sector-based participative process will be designed. The SAP will be complemented at national levels by the NIWAPs, given that specific actions at the national level are required to provide responses to ensure ecosystem integrity, structure, and function as well as to provide a basis for sustainable livelihoods. The project will establish/ strengthen national frameworks for land and water governance, and develop NIWAPs applying IWRM principles and approaches. An IWRM approach considers the interrelationships between natural resource systems, biophysical processes, and socio-economic systems and objectives. IWRM seeks to integrate this approach into management of the overall water resource, taking into account factors outside of the water sector such as, for example, agriculture and energy, and such issues as land degradation and climate change. Modalities for responding to the increased frequency and intensity of natural phenomena and climate change impacts will need to be incorporated into planning and management processes. [previously paragraph 153] Assessments of vulnerability of the watershed exist, but have not been followed or utilized as part of an integrated planning process. The impacts of the 2008 tropical storms in both countries are testament to this. The NIWAP planning process will fully integrate all existing planning tools into the development of the NIWAPs. Active dialogue during sector meetings as part of the NIWAP development process will enhance the understanding of climate change scenarios, their relationship and associated effects on productivity, safety and human wellbeing. In addition, results of the TDA with respect to climate change impacts will be taken into account in the development of the NIWAPs.

146. The approach will define sector-level actions that will both stimulate the local economies and create cover; or, in the case of protected areas, define strategies to support and enhance the impact of the PA management strategies. In doing so, the NIWAPs will address the needs as they have been defined by stakeholder groups such as coffee producers, dairy producers, small farmers, and municipalities, among others. Many of these groups in both nations have sectoral development plans or strategies. The NIWAPs will work with these groups in an attempt to develop practical and integrated responses based on the recommended land uses for different geographic areas of the watershed and building off initial positive experiences where available. For example, the Dominican Republic's National Coffee Corporation has undertaken a vigorous effort to identify all coffee areas with "specialty" quality flavor, and to link producers to niche markets. The NIWAP development process will involve the coffee-sector stakeholders to determine the future target for expanded cover within the specialty coffee programme and gauge the infrastructure needs, credit requirements, and other conditions required to achieve the desired outcome of expanded hectareage. The NIWAP will then become a rally-point for a dialogue between agencies, municipalities, banking sector and producers as part of the resource mobilization process proposed in Outcome 4. This approach will facilitate mainstreaming IWRM into national frameworks and planning processes that are often sector-based, into a landscape-level planning framework that integrates all sectors into the fold. This strategy also facilitates the evaluation of the feasibility of the proposed actions. This expanded approach makes possible a transition to adaptive management strategies for water resources through the identification of the requisite capacities, institutional and policy reforms, and identification of required investments.

147. The development of the NIWAPs will build upon the extensive mapping of several micro-watersheds conducted by CIDA and GTZ, and on the geographic information developed by SEMARENA and by CNIGS. The project will fill the gaps in developing the future land use

scenarios for Haiti and harmonize the interpretive criteria for both nations, effectively building on the processes described in the baseline, and on the information generated through the TDA. The aim is to generate a robust planning tool that incorporates socioeconomic factors including demographic patterns, water use trends and demand, sedimentation and erosion rates, and food security issues so as to create a mosaic of detailed information throughout the watershed that will both provide for a full assessment and mapping of the basin as a whole and the prioritization of problems and responsive actions within the mentioned sector context and harmonized with the overarching aim of expanding cover and availability of water resources, which will ultimately be reflected in the long-term stress indicators for sustainable land and water management. The process will also include the inputs from the existing and future management plans for the Dominican protected areas and for Haiti's coastal and marine areas as an integral part of the landscape-level planning process.

148. Through the SAP these actions will be fully harmonized and integrated at the watershed level. The management plans, indicators, and solutions outlined in the NIWAPs will be developed in coordination with the national focal points for the UNCCD, and be compatible with the national action plans developed under this convention. The monitoring and evaluation system must fit within the context of the reporting of the national agencies responsible for the UNCCD. This will enable them to channel information to their planning and development Ministries and Directorates and enable harmonized reporting on communications to the UNCCD. In terms of implementation of the watershed management plan, the involvement of communities and municipal authorities in regulatory and monitoring activities will be important.

149. Institutional elements for national governance structures for integrated management of the Artibonite exist in both countries. However, the framework is characterized by multiple agencies with overlapping mandates and little coordination between them. In developing the NIWAPs, options for an appropriate and effective national, watershed-level coordination and governance mechanism for management of the watershed will be assessed, based on existing institutions and mechanisms. The process will be conducted with full participation of key stakeholders. The project will also help to strengthen the capacity of the identified mechanism for carrying out its functions. Work undertaken in this context will support the development of a basin-wide governance structure, as described below.

150. At the national level there will be national steering committees that will play a key role in disseminating information of the project to public and private sector stakeholders, creating a conduit for upstream comments and issues related to the project, mainstreaming of project outcomes and outputs into national development planning processes, and for high-level endorsement of the SAP for the Artibonite Watershed. These committees will be represented on the SAP formulation team, thus ensuring strong linkages to the respective NIWAPs. The national steering committees will also play an important role in ensuring coordination of relevant national projects (government and donor funded) with the UNDP-GEF project. Representation in these committees would include Environment Ministry and Secretariat delegates, the UNCCD focal point, and the director of the GTI (Dominican Republic –Undersecretary of Soils and Water) and CIP (Haiti has a combined UNCCD focal point for the UNCCD CIP) as well as UNDP, FAO, and CIDA Programme Officers. Both the GTI and CIP, whose role is to coordinate interventions

in the field of watershed management and soil conservation at national and bi-national level, will be reinforced.

Output 2.3. Bi-national management and governance structure for the watershed identified and endorsed

151. One of the major gaps identified to the integrated management of the Artibonite is the absence of a functional bi-national management and governance framework for this strategic, shared watershed. The development of national governance structures needs to be mirrored at the regional level. As part of the SAP development, the project will promote the creation or strengthening of a bi-national management and governance framework that links national development strategies and concerns to identified regional priorities. A study of the options for a regional watershed governance structure will be undertaken as part of the SAP process to determine the most effective and appropriate regional watershed governance structure. Among the functions of the framework or entity to be established, consideration will be given to the need for coordinating, administrative, advisory, and monitoring roles. The study will recognize the increasing competition for use of water resources, both in terms of quantity and quality, and the need to adequately manage required trade-offs and resolve conflicts. It will also propose approaches for effective inter-sectoral coordination that will balance requirements for economic growth with ecosystem functionality and services, and social demands under multiple-use scenarios. From the experiences generated from watershed management projects in the Dominican Republic, including the GEF Sabana Yegua project, effective frameworks should provide for 1) robust public-private alliances; 2) solid fundraising capability; 3) strong planning capacity for the mid and long-term; and 4) ability to support private-sector or commercial solutions to problems and in support of livelihoods.

152. This process will be led by government representatives in accordance with government priorities, and will identify the most appropriate modality for shared management of the Artibonite Watershed. There is recognition that there are many different approaches to integrated river basin management, and that a consultative process, based on sound scientific and socio-economic information, is called for. It is recognized that the development of an Integrated Watershed Action Plan and provisions for its effective implementation are required to reconcile the utilization of natural resources for livelihoods and economic growth, with effective maintenance of ecosystem services and functions, in order to provide for long-term sustainability and to prevent conflict. The aim is to establish a platform for integrated planning and management of the watershed so as to strengthen it as a territorial unit with a view to its balanced development.

153. Once options are determined, a new layer of feasibility studies will need to be undertaken, which will provide an analysis of the legal, social and administrative feasibility, within a strong stakeholder consultation process.

Output 2.4. Awareness raised and capacity strengthened of major stakeholders, including institutional and municipal authorities, for engagement in project activities, IWRM and SAP implementation

154. During the project preparation phase, co-financiers working in the watershed strongly emphasized the need to sustain awareness and knowledge building activities on the specific themes of sustainable land management, sustainable water management, and environmental flows. In response to this need, Output 2.4 will include awareness building activities with the aim of facilitating the development and approval of the SAP, the NIWAPs, and actions in support of IWRM. This output is related to the implementation of the stakeholder engagement and communication strategy developed in Output 1.3, and will provide for the active engagement of the public and private sectors, civil society, farmers, and others in defining and implementing response measures and solutions.

155. The project will survey awareness levels, work to develop interventions at various levels, deliver materials and media events, and evaluate the effectiveness of awareness campaigns. In creating awareness about the watershed, the project will develop and test materials within the primary education system. These actions are fully co-financed by CIDA under the project 'Development of the Bi-national Artibonite Watershed'. The lessons learned from this component will provide important information for the development of an education program that will be included in the SAP. In addition, the GEF project will support activities to reach the watershed's population in each country, many of whom do not attend school and have high illiteracy rates. Information on watershed concepts and the SAP and NIWAP processes will be shared through innovative knowledge management platforms that engage the extensive networks of government extensionists, NGOs, CBOs, and others to ensure that information is appropriately packaged and presented for the various groups of target audiences. These activities will include the development of radio programs, which have proven effective in reaching a wide audience in remote areas, and publicity material that can be distributed through the existing networks. The project would also develop training packages and organize workshops on the above-mentioned themes to enhance buy-in and develop stakeholder awareness. These activities will be coordinated and evaluated with all key stakeholder groups.

156. At the ground level, it is very important to create a sense of belonging as part of the overall watershed and its diversity of conditions. Dominican farmers in the headwaters of the Artibonite have little or no understanding of how their lives are connected to a diversity of ecosystems, cultures, languages, and lifestyles. On another level, the multitude of organizations, municipalities, and NGOs need a rally point to engage their participation. On yet another level, political representatives need to defend the positions and importance of their regions before municipal, provincial/departmental, and national governments. The project will deliver information services that will create identification with and raise awareness of the watershed and its diversity of social, economic, and environmental conditions and services. This type of "branding" will aid in the development of partnerships needed for the development of the larger stakeholder governance structures.

157. Stakeholder forums will be convened, where a wide range of stakeholders can express their views regarding sustainable management of the Artibonite. In order to ensure informed stakeholder participation, the project will establish an easily accessible website (Spanish and French), making publicly available all project documents, contacts, links to partner and affiliated projects, and information on project component activities. The website will highlight inputs from

stakeholders who have access to the internet and will provide a means for the inputs to be reviewed and incorporated as needed and appropriate for the project development.

158. In support of output 1.3, the project will identify means of implementation of the strategy, as part of the SAP. The development of the TDA, SAP, and the NIWAPs will require dialogue and consultation among key stakeholders and an initial structure to engage stakeholder participation and approval of the various documents to be produced under the project while the process of developing a definitive stakeholder engagement structure is being developed. In response to this need, a regional Stakeholder Advisory Group (STAG) will be established and supported to provide early input to the TDA and SAP. Stakeholders from a wide array of groups with diverse interests and concerns will be invited to serve on the STAG. This will enable the project to be fully owned at the basin-level by providing appropriate inputs and support to the project. The capacity of stakeholders will be strengthened for involvement in the project as well as in SAP implementation. The National Inter-Ministerial/Sectoral Committees will play an important role in the exchange of information and enhancing awareness, in addition to their roles as stakeholder coordination mechanisms.

2.5. Project monitoring and evaluation and information system established and maintained

159. The M&E framework will be designed to monitor and evaluate the implementation of the SAP development process and overall environmental conditions as well as the sustainability and efficiency of the watershed management and governance framework. The M & E framework will be structured to respond to changes over an extended timescale in keeping with the long-term programmatic intervention that is planned. Following the TrainSeaCoast TDA-SAP methodology, at the outset of the SAP process, and building upon the TDA, long-term Ecosystem Quality Objectives (EcoQOs) will be defined through a participatory process. These reflect the shared understanding among stakeholders of an acceptable and desirable future environmental status. The TDA-SAP approach calls for developing both short and long term indicators that will make it possible to assess changes over various timescales.

160. The monitoring strategy will therefore incorporate both short and long term indicators (process, stress reduction, and ecosystem status), to enable diligent assessment of progress in terms of project implementation and the SAP development process, lined to the EcoQOs, and most importantly, towards achievement of improvements in environmental conditions and increased global environmental benefits in the watershed over various timescales. Long-term stress reduction and ecosystem status indicators are contained in the Strategic Results Framework, which will be further validated through the TDA, particularly with regards to definition of the baselines. The environmental status indicators will reflect delivery of global environmental benefits. This will be further validated during the TDA-SAP process, and key indicators of global benefits will measure land-use-cover-change and water output. Biodiversity benefits will also be measured, particularly with regards to the increase in vegetative cover by native species, and thereby improved habitat for associated species.

161. Given that monitoring is an integral part of project management and provides stakeholders with feedback on implementation and progress towards attainment of global environmental benefits, the project will lay the bases for developing and establishing a participatory monitoring

and evaluation system that will involve municipalities, NGOs, CBOs, and national-level agencies charged with monitoring of economic, and land and water resources status indicators. Indicators will therefore also respond to a set of management questions determined by key stakeholder groups.

162. All of the above should be consistent with the process of monitoring and reporting of hydrologic indicators in the two countries. Efforts will be made to ensure that the M&E plan is congruent with existing capacities, equipment, and support capabilities as well as with those that will be built up and provided through the project, in order to ensure sustainability. The system design will need to incorporate a smart approach to generate information based on indicators that support decision-making within the financial and administrative context of each nation. The project will work primarily with the two government agencies that have the most installed capacity in terms of skill sets, hardware and information, namely Centre National de l'Information Geo-spaciale (CNIGS) in Haiti and SEMARENA/DIARENA in Dominican Republic.

163. In Haiti, the Ministry of Environment (MdE) manages information that supports the development of indicators and their long-term tracking. MdE is supported by CNIGS, which is the main provider of all geographic information and analyses in Haiti. CNIGS has been equipped through an EU initiative and has the basic hardware, software, and expertise to manage the M&E system with targeted upgrades. Improvements will be needed in MdE for tracking of the project and the watershed indicators. In the Dominican Republic, SEMARENA is responsible for all monitoring and evaluation at the watershed level. This is accomplished through their principal agencies: the Under-Secretariat for Planning and Development, which is the overall coordinator for monitoring and evaluation along with the Under-Secretariat for Soils and Water, with geographic information support through the National Environmental and Natural Resources Information Directorate. These two Under-Secretariats will receive targeted upgrades. SEMARENA is upgrading their M & E capability and increasing their geographic information capacity under the guidance of CATHALAC in Panama. These actors will coordinate the aspects of the M&E system within their own territories and with their stakeholders and in their own languages.

164. Parallel to the TDA, the project will support the M&E system with the design and development of an integrated information and monitoring system capable of responding to requirements for improved knowledge and exchange of information at different levels. A Data and Information Management System (DIMS) for the Artibonite will be developed in coordination with the national environmental authorities and their respective information and geographic information system divisions, and synchronized with the needs of users of information and accessible to agencies, municipalities, and NGOs. It will also incorporate data and information from the M & E framework and will be capable of incorporating information generated by NGOs and donor partners in the watershed. An analysis of DIMS system needs and requirements will be carried out based on existing capacities and gaps in bi-national and national monitoring methods/standards identified through the TDA. Considerable effort will be required to develop the necessary protocols, define hardware and software requirements to support knowledge management platforms in both countries, and to harmonize data.

165. Sustainability of the system will be achieved by strengthening existing government institutions. Technical training in key areas such as land management information systems, GIS, and GPS will be provided. The FSP has budgeted inputs to facilitate face-to-face contact between these actors in order to work out solutions to the issues of incompatibility of the national datasets with respect to biophysical and land use categorization. It should be mentioned that Mde, SNIGS, and SEMARENA have already successfully worked out similar technical issues for a trans-national project in the Enriquillo-Lac Sumatre Basin. In order to avoid potential conflicts, agreements among numerous non-governmental data owners for data and information sharing will need to be negotiated.

166. The system will be a joint, bi-lateral effort with equal responsibility between the two countries, and provide accessibility of information and equal and open benefits to both nations. It will provide information that is synchronized with the needs of users and will be accessible to agencies, municipalities, and NGOs. An important aspect of an effective TDA is its ability to translate and interpret scientific and technical considerations for decision- and policy-makers. Information will need to be tailored to support decision-making and policy processes at both national and local levels.

Outcome 3. Demonstration projects of local economic and sustainable land and water management provide models for up-scaling and replication, and early SAP implementation

167. The project aims to set in place the framework, structures, and capacities to enable both nations to jointly and effectively manage a shared watershed. This process is complemented by the implementation of pilot projects, early in the FSP, that will deliver tangible local and global benefits and measurable impacts. These will provide a window of experience and valuable lessons in responding to the constraints to the implementation of ecosystem-based approaches and will provide critical inputs for the development of the SAP for the Integrated Management of the Artibonite Watershed. The Pilot projects are located in sites indicative of the overall conditions of the watershed and enable comparisons of acceptance, problems, and results of the pilot actions between different socio-economic, age, and gender groups. The pilot projects are models in promoting solutions and actions to mitigate the effects of threats, including climate change, to ecosystem function, stability and integrity. The projects will provide stakeholders with the opportunity to measure the effects of responses to root causes of land degradation and of the effectiveness of the models in reducing stress on the environment, providing environmental benefits, and enhancing sustainable livelihoods. An initial assessment of the ability of the beneficiaries to manage new technologies and new ways of interaction among stakeholders will be carried out. In addition, the projects will produce valuable information on the costs of implementation, and allow environmental, economic, and financial benefits to be gauged. The results and lessons learned from these projects will be taken into consideration in the development of action lines for both the NIWAPs and the SAP. In addition, the models will provide the metrics and methods for analyzing responses to land degradation processes, integrated IWRM, and the development of sustainable livelihoods on a watershed scale.

168. These pilot projects will serve to determine the feasibility of the interventions to reduce stress on the environment and will serve to determine best practices, management aspects, real

costs of implementation, and accurate estimates of financial returns. The scope of the interventions, operational aspects, and the sites for the implementation of each model were defined in coordination with the communities and the selection of zones with a diversity of land-use categories that are representative of the characteristics of the entire watershed. The technical aspects of the production systems, such as selection of varieties of crops, will be defined together with the local producers based on the definition and characteristics of the land-use zones in order to ensure compatibility with the local conditions, livelihood systems and gender considerations.

169. There are two suites of pilot projects that will contribute to the process of establishing basin-wide land and water use practices that are compatible with the principles of IWRM and SLM. With support from GEF financing, three pilot projects will be developed, two in Haiti and one in the Dominican Republic. In addition to these, a fourth pilot project was developed through an active partnership with CIDA, who has actively participated in the design of this project since its inception. The “pilot” project is a compilation of on-the-ground actions¹⁷ developed within the framework of the CIDA-funded *Bi-national project for the rehabilitation of the Artibonite watershed in the border region between Haiti and the Dominican Republic*. The initiative is under management from Oxfam Quebec-CRC-SOGEA. Oxfam Quebec has been selected to execute the GEF FSP lending to the process continuity, compatibility, knowledge, and cost effectiveness in management. The results and lessons learned from said initiative will be incorporated into the SAP and NIWAP process.

170. Although small in comparison to the overall size of the watershed, the pilot projects will provide incremental benefits by promoting land uses that will eventually lead to increased vegetation cover, reduced erosion, and consequently contribute to improved ecosystem integrity and function, and increased provisioning of ecosystem services. Since no methodology or baseline measurements for erosion on local farming systems exist, the pilot projects will develop the methodology and measure the baseline and changes in soil erosion over the life of the project. The risks associated with climate change will also be discussed as a central issue in the production-related pilot projects to be implemented in Haiti, with special attention to the future viability of these model experiences in view of the climate change risk and impacts. Moreover, they will result in improved sub-watershed governance and strengthened capacity for IWRM, and importantly, enhanced livelihoods and income for farmers. Dissemination of the lessons learned from the pilot projects will provide a basis for up-scaling the results at the basin level.

171. Three pilot projects have been selected in coordination with and approval by the national focal points and other relevant persons that will be developed with GEF funding. Each pilot project has a different focus based on its purpose and location in the upper, mid and lower watershed and on the types of lessons needed to support decision-making for SAP development and implementation within the context of the different biogeographical and livelihood conditions characteristic of the watershed. The objectives of the pilot projects are:

- i. Farmer livelihoods, and soil and water conservation improved through adoption of agricultural practices based on a municipal-level participative decision-making process that

¹⁷ These actions are a compilation of 4 separate, targeted programs within 5 micro watersheds. These, in combination with 3 GEF funded pilots, yield the pilots projected in the PIF. As these actions were defined following the submission of the PIF- 4 thematic areas consistent with this project’s logical framework emerged. For the purposes of this project, the suite of actions is considered as one additional “pilot” project.

- are compatible with ecosystem functionality and topography in the Rivière Bois sub-watershed, Commune Verrettes (Artibonite watershed, Haiti);
- ii. Agribusiness development and access to new markets through increased capacity and organic and fair and equitable trade certification for entry of agricultural products into niche markets in cooperation with locally established agri-businesses. Organic agriculture in the St. Michel de l'Attalaye is promoted through establishment of an enabling environment and production chain improvements that result in market transformation in Haiti;
 - iii. Implementation of a watershed-based environmental administration and capacity building model at the agency and municipal levels for the Artibonite Watershed in the Dominican Republic; and,
 - iv. Improvement of the environmental situation of the Artibonite watershed by augmenting the agricultural and forestry revenue streams of communities on both sides of the border, and by promoting a functional bi-national dialogue in support of the management of the Basin-*co-financed and implemented by CIDA.*

172. The models are defined in Section IV Part I and are summarized as follows:

Model 1. Farmer livelihoods, and soil and water conservation improved through adoption of agricultural practices that are compatible with ecosystem functionality and topography in the Rivière Bois sub-watershed, Commune Verrettes (Artibonite watershed, Haiti)

173. The main objective of this pilot is to promote significant “win-win” opportunities that address and reverse the threats posed to a sub-watershed in the Artibonite River. The project’s strategy intends to reduce pressure on land that is most vulnerable to erosion, while empowering local residents and providing enabling conditions for institutional development and improving governance for sustainable watershed management. The specific objectives are to: a) strengthen local skills in helping rural communities improve their livelihoods and reduce degradation through better management of local natural resources and possibilities for co-management arrangements; and b) increase farmer income by adopting intensive production systems in downstream zones and appropriate conservative agricultural practices in high slope areas.

174. This pilot project, with a budget of 400,000 USD, will be implemented over two years by Helvetas, a Swiss NGO that works on agriculture and natural resource management, under an Inter-Agency agreement and supervision of the Haitian Ministry of Environment (MDE) and the Ministry of Agriculture, Natural Resources and Rural Development (MARNDR). Extensionists from Helvetas and the “Communal Agricultural Bureau” will choose appropriate areas through a participative process to establish both the intensive production systems and conservation zones in collaboration with farmers and municipal authorities. Technical assistance will be provided to farmers in intensive production systems and conservative agricultural practices.

175. This pilot project will be executed through a strong participatory approach. Outcome 1 will result in the development of participatory and pre-emptive zoning and land-use planning tool for actions at the sub-watershed level with extensive collaboration that will involve all of the municipal authorities and stakeholder groups within Haiti’s grass roots municipal development framework. Outcome 2 will consist of a community land-use and watershed management plan.

Outcome 3 will contribute to the establishment of a sub-watershed decision-making structure and enhancement of the effectiveness of sustainable management. Lessons learned from this pilot project will allow its replication in other similar areas of the watershed.

176. The expected results are:

- i. Reinforcement of local organizational capacities and methods in land use management
- ii. Compilation of data from the two systems (production and conservation);
- iii. Establishment and effective management of demonstrative conservation actions;
- iv. Increasing farmer capacities in land use management through appropriate training; and,
- v. Compilation of lessons learned for replication of the experience.

177. The pilot project strategy and logical framework are given in Section IV Part I.

Model 2. Mainstreaming niche markets for organic fruit crops in support of a sustainable environment in the Artibonite Upper River Basin

178. The agricultural sector in Haiti is facing a number of challenges, many of which relate to the need for sustainable production methods and high-quality products, as well the need to improve competitiveness of Haitian farmers and extend their participation or facilitate their access to international markets. Organic agriculture has been posited by several civil society organizations and individuals in the country as a mechanism to address these needs. The organic agriculture sector, traditionally led by smallholders, is relatively small but fast growing. While there are many opportunities for the development of the organic agriculture sector in the country, constraints to the marketing and trade of agricultural product in the form of poor business skills, wide swings in the product quality and availability, and the high costs of certification for farmers and local agribusinesses are obstacles to penetration of markets.

179. Several communes in the zone of St. Michel de l'Atallaye have established small-scale agribusinesses for the production of dried fruits, marlélade, and sugar syrup in order to transform their markets for sugar cane and fruits. Presently, few buyers dominate the value chain because of their intolerance for wide swings in quality. A major effort is improving quality and production in order to qualify for organic and/or niche markets for these crops to promote and increase sales of responsibly produced certified fruits and strengthen the competitiveness and sustainability of organic agriculture production in the area. The current GEF/UNDP pilot project philosophy will be therefore to serve as a catalyst to bring new investment and trade in the Artibonite River Basin while supporting practices that benefit the environment. The overall goal is to access new and niche markets for organic fruit crops in support of a sustainable environment in the Artibonite Upper River Basin, by promoting market transformations in the organic agriculture sector. The project objectives are: stakeholder and market niches assessment; access to organic certification, development of standards; promotion of business plans for producers groups; capacity development, information and knowledge sharing and institutional strengthening.

180. The objectives will be achieved by:

- i. Conduction of a series of value chain analyses to identify competitive organic fruit crops, value-added businesses and members of the value chain;

- ii. Development of a certification system for sustainably grown and harvested organic fruit crops in the Artibonite Upper Watershed;
- iii. Provision of technical assistance to farmers for marketing these certified products;
- iv. Provision of planning instruments and mechanisms for competitive business enterprises directly targeted to the clientele and the needs of Artibonite Upper Watershed, for involvement in the pilot project;
- v. Building capacity and awareness raising among relevant resource user groups of organic farming methods and requirements for marketing of products, organic agriculture policy and regulations, etc.; and,
- vi. Training of stakeholders in order to extend organic production to other areas.

181. The pilot project strategy and logical framework are given in Section IV Part I.

Model 3. Implementation of a watershed-based environmental administration model for the Artibonito Watershed in the Dominican Republic

182. The limited presence of public sector authority in natural resources management within the Artibonito watershed presents a significant barrier to sustainable land and water resources management. Enforcement of environmental regulations is difficult with a limited government presence. Moreover, the degradation of land and water resources in the Artibonito watershed is due in part to a complicated institutional framework comprised of many organizations responsible for land and water management. The Dominican Republic has authority concentrated into six Under-secretariats and the National Hydraulic Institute (INDRHI), only three of which have a limited presence in the watershed. The producers within the watershed are therefore removed from programs and incentives that could provide them with assistance in moving towards sustainable management.

183. As a result of recent reorganization and decentralization of State services and management, the Artibonite watershed is now part of two different management units with three different provincial level development committees. An additional layer of responsibility rests with the Municipalities who are responsible for the management of their territories and for maintaining Municipal Environmental Management Units (Spanish acronym UGAMs). Support by various organizations (GTZ, USAID, French Cooperation) and the Dominican Council for State Reform (CONARE) to municipalities in the watershed have highlighted the significant technical and financial weaknesses that prevent them from fulfilling their role in a process of de-centralization of environmental functions and from being effective managers.

184. The pilot project will create an institutionally strengthened and decentralized framework (“Gerencia”, “sub-gerencia” and municipal levels) and build capacities that will lead to an enabling administrative and regulatory environment. This will support a decentralized environmental management model that interacts effectively with local government and other stakeholders within the context of watershed management. The expected benefits of the pilot project are:

- i. Lessons learned for application to other environmental units, especially in resource-scarce areas;

- ii. Tested experience on reducing municipal costs of environmental management through synergies with other municipalities;
- iii. New public-private partnerships to maintain Municipal Environmental Management Units;
- iv. Increased capacities at the “Gerencia,” “sub-gerencia,” and municipal levels for territorial organization and environmental management;
- v. Improved local policy and planning;
- vi. Better accessibility of the population to government services; and,
- vii. More timely and effective enforcement of environmental regulations through local networking.

185. The specific objectives are to:

- i. Increase institutional capacity at the sub-national level (“Gerencia Ambiental”) that is decentralized to the local level to generate experiences that can be replicated and up-scaled to the national level;
- ii. Improve capacity and create strong linkages at the watershed and local levels in support of environmental governance within the watershed, encouraging communication and transfer of information and capacities; and,
- iii. Develop examples of sub-national and local management plans.

186. These objectives will be achieved through the following activities:

- i. Capacity building, including training needs assessment and subsequent training and technical assistance;
- ii. Development of management planning models for different levels (gerencia, sub-gerencia, and municipality);
- iii. Baseline analysis and development of a model for a sub-national environmental management strategy that articulates watershed management plans within the “Gerencia”;
- iv. Development of actions at the “sub-gerencia” level in support of the management strategy and interaction with public;
- v. Development of a pilot territorial organization plan by the Municipal Technical Office with support from the sub-national administration “gerencia” and SEPyD/DGOT and by CONARE;
- vi. Municipal ordinance to support the territorial organization plan;
- vii. Monitoring and Evaluation systems linked to DIMS and national authorities; and,
- viii. Local and national dissemination of results.

187. The pilot project strategy and logical framework are given in Section IV Part I.

Model 4. Bi-national project for the rehabilitation of the Artibonite watershed in the border region between Haiti and the Dominican Republic (co-financed and implemented by CIDA)

188. The goal of the bi-national Project for the rehabilitation of the Artibonite watershed in the border region between Haiti and the Dominican Republic is to support initiatives aimed at the rehabilitation of the watershed and the implementation of viable and sustainable systems of production. Its purpose is to contribute to the overall effort for the rehabilitation of the mid and upper sections of the Artibonite watershed, improvement of the populations’ living conditions in the border and strengthened dialogue between Haiti and the Dominican Republic in management

of the watershed. This project, which encompasses several demonstrative projects, is based on the themes expressed during trans-border consultations in 2004 and on a recent stakeholder consultation process undertaken by Oxfam Quebec for the organization of the model projects. The projects will cover 22 defined land-use zones selected for 5 pilot micro-watersheds (3 in Dominican Republic, 2 in Haiti). These micro-watersheds, land use zones and themes are a microcosm of the upper watersheds and provide a snapshot of the range of conditions throughout this area. The purpose of this arrangement is to facilitate the potential for replication based on the results and lessons learned. Within each micro-watershed, on-the-ground actions in water delivery, testing of production alternatives in harmony with the landscape, commercialization, and capacity building will be evaluated for their collective results and with different groups of stakeholders in both the Dominican Republic and Haiti, as well as for their collective impact on the local economies and environment.

189. The objective of the project is to improve local livelihoods through on-the-ground investments in integrated water and land and water resource management. The project seeks to achieve the following:

- i. Support initiatives aimed at the rehabilitation of the watershed and implementation of viable and sustainable systems of production;
- ii. Strengthen the capacities of partners' organizations and governmental agencies responsible for environmental protection and valuation of natural resources, and of those in charge at the local level for the management of the areas of intervention; and,
- iii. Support efforts towards a permanent mechanism for bi-national dialogue for the management of the Artibonite watershed.

190. This pilot project will test a suite of improved agricultural development schemes in tandem with improved access to water as an environmental service and in improved production practices in combination with agricultural product commercialization schemes. The innovation of the model lies in the delivery of a suite of complementary interventions all oriented to the suggested land-use scenarios. The chosen sites for project implementation are a microcosm of the greater watershed.

191. The main project components are:

- i. Increased local access and management of water resources;
- ii. Sustainable land use through improved local management;
- iii. Increased commerce supported by accurate and updated information;
- iv. Improved infrastructure to support commerce and reduce erosion; and,
- v. Project management, monitoring, and evaluation.

192. The project is divided into two phases: Phase I – project initiation and Phase II – Project implementation. Phase I will be carried out during the first year of the project and will lead to the completion of a diagnostic study, the choice of the area of intervention, the elaboration of a management plan for the selected areas of intervention and the preparation of an implementation plan for Phase II. Phase II will be carried out during years 2 to 7, and concentrate on the implementation of the management plans and institutional strengthening. Close coordination and collaboration will be established between the two projects to ensure that the work undertaken in

the CIDA-funded initiative, such as the management plan, will be fully integrated into the SAP development process.

193. The pilot project strategy and logical framework are given in Section IV Part I.

Outcome 4. Increased capacity for long-term resource mobilization in support of NIWAP and SAP outcomes in support of IWRM and sustainable livelihoods.

194. Currently, interventions in the Artibonite Watershed are ad hoc, often site-specific, and fail to take into account the interactions between the upper, mid and lower watershed. Under this scenario there is little possibility of mobilizing resources to support IWRM or the development of sustainable livelihoods at a landscape level. Outcome 4 responds to this scenario and to the chronic low levels of financing provided by the public and private sectors, which constitute a barrier to increasing and improving environmental protection and sustainable management of the Artibonite River Basin. The long-term interventions necessary for this in the Artibonite must be supported through a diversity of sources and mechanisms that are compatible with the different needs and financial capacities throughout the watershed. Financial, material, and human resources must be generated and channeled in a cost effective way to support positive changes in land and water use patterns and promote investment in innovative sustainable livelihood options. This outcome will build on the results of the TDA, which will provide biophysical and economic information that will demonstrate the impacts of existing land use practices and deforestation trends on the supply and maintenance of ecosystem services, including hydrological services – in short, the cost of business as usual. This will provide the background for targeted mobilization of resources and a greater commitment of public and private funds in support of the project objective. Initial experiences and expertise in both countries to improve financial support and facilitate improved livelihoods for the rural sectors will also provide a basis for this outcome.

195. Specifically, Outcome 4 will develop comprehensive Watershed Investment Plans (WIPs) structured under the bi-national SAP and grounded at the national-level through the National Integrated Watershed Action Plans (NIWAP). The development of the WIPs, together with the other activities listed below, will provide a roadmap and build up capacities for the effective and efficient allocation of resources in support of the SAP and NIWAP implementation. The WIP will provide a basis for increasing budgetary allocations from national treasuries as well as for judicious mobilization of resources from bilateral and multilateral donors. As such it will be an overarching framework for enhanced coordination between donor-funded activities and those furthered by government agencies and the range of actors working in the region including NGOs and CBOs. These outputs have been developed based on an adaptation of the Global Mechanism's procedures for promoting sustainable financing, which provide a roadmap for a process to analyze, develop, and mobilize resources to support sustainable land management.

Output 4.1. Investment and resource planning capability developed to support SAP and NIWAP objectives

196. Within the framework of the TDA-SAP development process, a comprehensive analysis of existing and planned interventions at national and bi-national levels, and associated resources and investments, will be undertaken. Both nations have allocated widely varying levels of

resources in distinct portions of the watershed. National budgetary assignments, in the form of sub-national and municipal budgets, agency budgets, public investment programs, and concessions, will be analyzed, together with existing and projected private sector and donor investments in the basin to complete a comprehensive resource gap analysis for the implementation of the SAP and NIWAPs. This is an unfamiliar process to the existing agencies and constitutes an important step in developing an organic financial planning capability among all actors involved in the development and management of the watershed.

197. The range of schemes that aim to improve access to resources by various stakeholder groups in Haiti include the *Fonds d'Assistance Economique et Sociale*, *Fond de Developpement Transfrontalier* (FDF), and the Haitian Environmental Rehabilitation Fund (FREH) (*PAGE*). In addition, the *Fondation Haitienne por l'Environnement* (FHE) is operating with financial support from USAID, European Commission, and French Cooperation, and the USAID Marmelade and HAP models. The Dominican Republic, for its part, has a border development program under the General Directorate for Border Development (DGDF) and a Border Economic Development Act that provide incentives for investment. There are also efforts for development of private sector cooperatives (small-scale savings and loans), national-level funding mechanisms for clean and sustainable energy initiatives, and a newly formed Protected Areas Trust Fund, all of which will be analyzed for possible opportunities for mobilizing resources in support of SAP and NIWAP implementation. The resource gap analysis will also detail the complementarities between the work undertaken to date in both countries and opportunities for cross-fertilization of lessons learned with regards to the effectiveness and sustainability of existing or tried financial mechanisms for financing both social development and environment objectives. In addition, many lessons learned are to be found in unsuccessful financial schemes, such as de-capitalized NGO credit programs to farmers, which will yield a better understanding of the options available for the WIP. For example, an IADB initiative to support the development of the watershed above the Sabaneta Dam in the Dominican San Juan Province demonstrated wide variations in the ability of different groups to participate in revolving fund schemes in terms of repayment for beekeeping equipment and livestock, based on their economic status. These types of experiences must be recounted across the entire Watershed as part of the financial gap analysis before determining the types and levels of investment to be made within the WIP. This will provide a more precise appreciation of the feasibility and sustainability of existing mechanisms and/or programs for replication or up-scaling in support of SAP implementation.

198. Based on the gap analysis and with information from the following outputs, a realistic, long-term Watershed Investment Plans will be developed and approved at the national and bi-national levels, within the framework of the SAP. The WIP, in tandem with the NIWAPs, will outline the efficient and effective allocation of existing resources (human, material, and financial) from both internal and external sources and will include the identification of potential sources of national and international funding (Output 4.2). This will include incentives and access to credit to support sustainable livelihoods in harmony with the NIWAPs and the SAP. The process will be highly participatory to ensure strong buy-in from resource providers within all relevant sectors and the designation of responsibilities for implementation. The incorporation of mechanisms and modalities for enhanced private sector participation will be a key component. The formulation of strategic, integrated WIPs that facilitate improved coordination at both regional and national

levels, as well as inter-sectorally, will enable the countries to prioritize their own resources and to strengthen the effective leveraging of additional external sources of funding.

Output 4.2. Identification of sustainable financial mechanisms to support implementation of the investment plans at national levels

199. Output 4.2 provides additional inputs to support the Watershed Investment Plans by identifying, analyzing, and determining the feasibility of new financial mechanisms and financing options. The proposed pathway to development of a financing plan for the development of the Artibonite follows the Global Mechanism's proposal for promoting Integrated Financing Strategies. This proposal provides a sequence of actions that begin with an understanding of financing needs and actual financing flows, followed by the identification of financing mechanisms. Once the potential mechanisms are identified, each will be subjected to a rigorous feasibility analysis and modeling before inclusion in the WIP. Mechanisms internal to the countries, and new and potential external financial mechanisms such as payment for environmental services (PES), economic incentive schemes, opportunities in the carbon market (Clean Development Mechanism- CDM and Reduced Emissions from Deforestation and Degradation - REDD), and increasing access to multilateral funding sources such as the Adaptation funds will be analyzed to determine their feasibility and requirements. The possibility of a PES scheme in Haiti will be analyzed based on the planned increase in electric power generation capacity of the Peligre Dam. This is the main source of energy for Port-au-Prince and of water for the downstream rice producers through the new water delivery systems designed for the IADB PIA project. However, the damages to said infrastructure following the passage of 4 tropical storms. In the Dominican Republic, the issue of PES will be analyzed from the point of view of the potential for increasing the provision of environmental services to users through increased domestic water, small-scale irrigation, and/or micro-hydroelectric projects, which could eventually generate economic benefits in support of the environment. At present, too few users in the Dominican Republic have access to ecosystem services, especially water for production, amplifying a social and economic development priority. This output will determine the potential financial contribution for increasing access to ecosystem services on the future development of the watershed. The process will also enable the development of diverse mechanisms based on the characteristics of the legal and financial structures of each country.

200. This process will also analyze the potential for developing an environmental tax base, fines for contamination, extraction fees, and concessions based on local and sub-regional opportunities and/or incentives that are emerging in the energy sector, such as ethanol production, bio-combustible oil production and other sectors slated for expansion, such as road infrastructure. Although GEF funds will not be used for the establishment of any type of funds or fiduciary mechanisms through this project, support will be provided for the feasibility analysis of these types of mechanisms. Hence, the project will provide stakeholders with a clear estimate of the feasibility of these types of mechanisms, building on the best practices and experiences from the international community. It is probable that each nation will present a different matrix of opportunities. Ideally, bi-national financing opportunities will be identified for dialogue and analysis.

201. This output will provide a more in-depth assessment of capacity and of the legal implications of the individual financial mechanisms as part of the feasibility studies in

preparation for SAP implementation. These will include a capacity needs assessment of relevant decentralized government agencies and other potential partners (e.g. municipal authorities, cooperatives, and NGOs) in order to determine the training and skills development needed to effectively enable the implementation of the WIP and execution of the identified financial mechanisms and modalities contained therein. This output will be supported through the TDA governance analysis that will identify the overall legal, institutional and capacity barriers to effective long-term financing.

4.3. Options to support investments in environmentally sound, sector-specific business opportunities and for improved market access and transformation identified

202. Complementary to output 4.2, this output will assess the lessons learned from the pilot projects in outcome 3 and from ongoing and past efforts to generate alternative, profitable livelihood options that reduce impacts and demands on the resource base through market-based initiatives. The output focuses on sector-specific, economic opportunities, supply chain requirements, and the identification and coordination for the best options for environmentally sound development that have the best chance of increasing cover and of promoting investment within the WIP through sector economic development planning within the context of the watershed. A sector approach is necessary, given the inherent differences in business environments and in the potential partners, financiers, relationships with intermediaries, government incentives, opportunities to access credit, and differences in the income levels of producers. These opportunities vary according to geographic location and by sector. Some sectors, such as off-farm, small business development have generated lessons learned in reaching the poorest citizens, while others, such as the coffee sector, are finding success in connecting to national and international markets and thereby mitigating to a small degree the high risk associated with traditional agricultural loans. Both the pilot projects (Outcome 3) and existing projects to improve commercialization of local products and effect market transformation of key products will be reviewed for their economic impacts to determine the best sector strategies to improve livelihoods, and that will generate quantifiable improvements in ecosystem functionality and services (e.g. increased cover, lower sedimentation rates, water availability). This will inform SAP development.

203. Market-based initiatives have been promoted, especially in Haiti, where IADB and USAID have supported baseline market studies for the Artibonite and small-scale projects in cooperation with the Pan-American Development Foundation and CIDA funded initiatives. Most of the sector studies on market support have been completed for Haiti. These will be fully developed for the Dominican Republic where, with only the exception of the coffee sector, very little work has been completed for the Artibonite. The lessons learned, however, will be determined for both countries. In addition, the CIDA pilot initiatives and the demonstration project on promotion of organic agriculture through a market transformation process within the scope of Outcome 3 will be added to the suite of experiences to be included in the WIP based on their economic potential. The identification and analysis of market opportunities for the farmers in the Artibonite will provide the target activities to support the initiatives in output 4.4 on increasing access to credit.

Output 4.4 Modalities for increasing access to credit by local producers identified to support more sustainable practices in the watershed and improved livelihoods

204. Limited access to credit by farmers has been identified as a major constraint to promoting sustainable livelihoods and sound agricultural practices. Access to credit within the farming sector is limited by a high risk ranking associated with a variable and uncertain climate, lower risk alternatives in the small-business and building sectors, and the lack of collateral in the form of land or vehicles. In Haiti, farmers' risk aversion is exacerbated by a local credit environment where the interest rate on "normal" loans commonly exceeds 20% per month, while in the Dominican Republic interest rates exceeding 2% per month are charged without any amortization of principal included. Access to commercial banking services is also limited by illiteracy, lack of collateral, the poor distribution network of commercial banks, fear of high tax rates associated with incorporation, and legal constraints to incorporation that exclude grassroots organizations groups from the formal credit services.

205. Specific activities to be undertaken under output 4.4 are the analysis of the potential mechanisms to improve access to credit for farmers, including a review of the financial results of incentive schemes, micro-credit initiatives, and potential risk guarantee mechanisms in Haiti, with the aim of developing an action plan for the geographic areas and sectors that are important in producing cover and that are currently under-represented in terms of access to credit. In the Dominican Republic, the UNDP will fully co-finance, through the ART-GOLD initiative (described below, see also baseline analysis), the multiple layers of analysis and feasibility studies that will provide the first step in the establishment of a risk guarantee fund in the Artibonite basin modeled on existing, positive experiences in the Dominican Republic and Central America.

206. Operationally, the Local Economic Development Agency (LEDA) is a diverse development platform, including education and economic development. The LEDA will increase the access by farmers to formal credit through a guarantee fund, which is a mechanism to back loans made by commercial banks to local farmers, creating a win-win situation whereby a commercial bank gains access to a new and greater client base, and farmers get access to credits to improve their production systems. Experience has shown that farmers formerly without access to commercial credit will, in time, prove their credit-worthiness to commercial banks and eventually become regular bank clients without the need for risk guarantees. The risk guarantee fund allows banks to reduce its spread and hence the exorbitant cost of credit to farmers. The reduced price of credit makes an increasing amount of potential loans feasible. Once the technicians (paid by LEDA) have analyzed, selected, and approved a farmer's request, the farmer's application is presented to a commercial bank and processed based on previous arrangements with the bank. Loans generally amount to USD\$1,000. Fund technicians train and supervise the farmers so that he/she performs well. The guarantee fund manager and technicians are evaluated on the basis of the number of loans repaid and active assistance to the farmers.

207. Current experiences indicate a very high rate of repayment, which means that the fund retains its capital against inflation and is able to continually guarantee successive generations of credit. To date, UNDP has developed 4 functional LEDAs that provide the transformation needed for farmers to establish credit-worthiness. With the proximity of numerous formal cooperatives and commercial banks within an appreciable distance in the Dominican Republic, the concept of credit development within multiple institutions presents an opportunity for accessing significant capital investments.

208. The analytical phase will be completed during 2009 to determine the financial and social feasibility and conditions for the establishment of a LEDA. If feasible, a guarantee fund of USD\$100,000 to 300,000 will be established for operation by expanding the ART-GOLD (see baseline analysis) initiative into the Elias Piña province within the Artibonite. Note that no GEF funds will be allocated for this purpose. If not deemed feasible, the information gathered through the study will provide information needed to define alternatives under the WIP. The Elias Piña Province is among the poorest sites analyzed for the establishment of a LEDA to date, underscoring the need for an exhaustive feasibility analysis.

Lessons Learned and Adaptive Management

209. Once completed, the four outcomes will result in a Strategic Action Programme that adequately provides for the environmentally sound development of the watershed by building upon the lessons learned from the pilot projects, from sector-specific feedback during the Watershed Investment Plan process, and from stakeholder interaction. These inputs will provide the cornerstone of the National Integrated Watershed Action Plans and the Strategic Action Program. These plans and program are essential tools in defining the development track for this ethnically and socially diverse region. The lessons learned will also be incorporated into the management of the project, incorporating inputs on ethnic, gender, and age diversity into the implementation strategy of the FSP during the formulation of annual work plans (see Monitoring and Evaluation, Section II part IV). This process will ensure adaptive management of the project and the responsiveness of the National Integrated Watershed Management Plans and the Strategic Action Program to the needs of the diverse stakeholder groups within the watershed.

210. The project will also document the lessons in a form that facilitates their replicability (such as IW Experience Notes), and will actively participate in GEF and other activities that seek to promote replication and share experiences, such as the Biennial GEF IW Conferences. The project will also draw on lessons learnt from other GEF IW projects.

Key indicators, assumptions and risks

Indicators

211. The project is a framework capacity building project. As such, the project is the first stage in a consolidated development pathway. For that reason, the logical framework matrix provides a suite of indicators. Given the nature of the project, the process indicators are heavily represented. Stress reduction indicators are present due to the integrated multi-focal nature of the project. These however are not extensive stress reduction indicators at this stage and are limited to the effects generated by the pilot projects. The full suite of indicators, including long-term stress indicators will be developed through the SAP process.

212. For the FSP, the key indicators of successful project outcomes to be recorded through the M&E framework will include:

- Outcome 1: A complete, scientifically credible TDA approved by the national inter-ministerial committees and bi-national steering committee. One of the major outcomes of the project is the improved understanding of the transboundary problems in the

Artibonite and their root and underlying causes, as well as identification of priority interventions to address these problems.

- Outcome 2: An endorsed Strategic Action Programme, representing a firm long-term commitment by the countries to take steps to reverse environmental degradation of the Artibonite and to implement IWRM/SLM approaches; A viable regional and national management and governance framework capable of promoting and overseeing SAP implementation identified and endorsed by the two countries.
- Outcome 3: Increase in area under sustainable land management (new land under permanent cover in the form of permanent cover - trees, tree-crops); Model projects provide practical lessons and experiences in IWRM and SLM for upscaling and replication, incorporated into the SAP; Positive IRR on investments undertaken within model demonstration projects and of investment portfolio; Improved environmental governance frameworks at local levels in the Dominican Republic; Increase in number of rural households engaged in environmentally sound and sustainable economic activities in the pilot projects area.
- Outcome 4: Mechanisms identified and capacities developed for mobilization of resources through various modalities in support of SAP and NIWAPs implementation; The amount of funding commitments received from national and international government and private sources in support of actions detailed in the SAP financing plan (in US\$).
- Long-term indicators include increased freshwater output, increase in area of land under permanent tree cover including with native species, and reduction in sediment loads in the watershed as a whole, using the reduction in sediment loads in the Peligre Dam as a proxy. However, the baselines and targets for long term indicators under specific land-use situations, and socio-economic indicators, such as future levels of education and access to fresh water as defined by the HDI formulations, will be determined and negotiated as part of the TDA-SAP process.

213. Additional indicators will include:

- National inter-ministerial committees established;
- Ministerially-agreed SAP and national IWAPs adopted;
- Regional, national and local policy, legal, and institutional reforms adopted; project evaluations show implementation effectiveness;
- National water resource and IWRM reforms/policies adopted; evaluations show effectiveness;
- Regional agreements and institutions adopted; project evaluations show effectiveness;
- Monitoring improved water use efficiency in demonstrations;
- An operational M&E framework capable of tracking the environmental status of the Artibonite governance and the implementation of the SAP;
- An increased level of involvement of multiple stakeholder groups in management of the Artibonite; and,
- Improved data and information, and knowledge flow.

Assumptions and risks

214. *Political commitment to addressing environmental degradation issues in shared ecosystems:* The long-term success of this initiative depends on the political commitment of both countries to long-term cooperation on regional transboundary issues, and to establishing an appropriate enabling environment at the national level in terms of policy, institutional, and financial frameworks as well as to working jointly within a watershed governance and management framework. Most recently, in November 2007, within the framework of the bi-national CIDA-OXFAM initiative, *Bi-national Project for the Rehabilitation of the Artibonite Watershed between Haiti and the Dominican Republic*, the Ministers of Environment of both countries signed a declaration in which they affirm the common objective of "jointly contributing to maintaining the water resources of the Watershed". The ongoing establishment of bi-national coordination mechanisms such as **the bi-national steering committee to support CIDA's initiative** indicates government commitment to strengthening cooperation to address transboundary issues. Government elections in both countries before and during the implementation of project activities could possibly imply changes in Government agendas, but the economic importance of the Artibonite watershed and the mutual need to strengthen bi-national dialogue and cooperation make drastic policy and priority changes most unlikely. Moreover, the project strategy is to work closely with ongoing processes and programmes in the two countries, such as those of FAO, UNDP, and donor agencies, thereby building upon ongoing efforts, agreements, and commitments.

Rating: Low

Sustained interest by relevant national authorities and agencies in participating in the project:

215. The ongoing work by the GTI and CPI indicate the high priority assigned to land degradation issues in both countries and a willingness to strengthen inter-sector collaboration. Both groups will lead in the project's Steering Committee thus providing for strong country ownership. The Artibonite is listed as a priority watershed in the Dominican Republic, including under the National Action Plan to Combat Drought and Desertification and the National Poverty Reduction Plan. The proposed project is congruent with Haiti's Ministry of Environment and the Ministry of Agriculture, Natural Resources, and Rural Development's National Watershed Management Program Policy and Strategy by targeting the most strategic national watersheds with significant impacts on sustainable livelihoods and ecosystem services. In support of this strategy, the Poverty Reduction Strategy Plan for Haiti recognizes watershed management and reduction of land degradation as key factors in reducing poverty in Haiti.

Rating: Low-medium

216. *Both Governments and their line ministries have the ability to implement progressive integrated natural resource policy:* The capacity of both governments and their line ministries will be strengthened and consultation and communication components will be designed, to ensure that these agencies have the ability to implement the required policies. Key partners are already engaged in the strengthening of GTI and CIP.

Rating: Low.

217. *Continuity of personnel:* The issue of high rotation of staff in municipal and governmental institutions is of potential concern. In the Dominican Republic, the recently elected Government

in 2008 and new environmental authorities will be in force during the life of project, although executive level changes are sometimes made. However, no changes in administration during the project implementation phase are expected in the Dominican Republic. Haiti may have elections and changes in Ministries as a result of the political process. Unlike the Dominican Republic, the Haitian political system allows for a greater continuity of technicians in times of political change, which mitigates the potential impact to some extent. Involvement of the inter-sectoral committees will help to mitigate any problems this situation might cause.

Rating: Haiti: Medium-high; DR: Medium.

218. *Local communities and other stakeholders are willing to fully participate in the project:* The project, through the demonstration projects and by up-scaling successful efforts undertaken by other partners in the watershed, will assign priority to ensuring strong, informed participation by local communities. Efforts to actively bring together stakeholders from the lower and mid/upper watershed, who are largely isolated, will give communities a better understanding of the challenges the watershed faces, and their role in generating effective responses.

Rating: Low.

219. *Political stability and reduced tensions prevail during and following the project:* Although in the past Haiti has experienced political instability, under the current administration the country is experiencing a consolidation of governance structures and reforms which should provide a platform for social and political stability. Moreover, this project could play a critical role in this by strengthening the cooperation framework with Dominican Republic. Improved environmental conditions in Haiti and the border area will contribute to mitigating migratory pressures and generating sustainable livelihood options for local communities, critical issues in terms of security on the Island.

Rating: Medium

220. *Socio-economic conditions on both sides of the border do not deteriorate during the project implementation:* Drastic changes in population and land use pattern might be unavoidable, with an increased migration towards the Dominican Republic, putting more stress on the remaining natural resources and on land and making the SAP related measures inappropriate. However, the permanent consultation process established by and through the GTI and CIP, as well as the SAP implementation governance framework to be established through the project, should provide the governments with a channel for identifying emerging problems, and discussing viable solutions.

Rating: Medium

221. *Climate change impacts affect the conditions in the watershed, accelerate soil erosion and degradation trends and increase the populations' vulnerability:* Given Hispaniola's vulnerability, climate change impacts have been assigned priority in the FSP. As part of the TDA, the biophysical assessment will include an analysis of water availability under projected climate change scenarios (Output 1.1). In Output 1.2, the project will assess the demand for water under future population levels and projected availability of water and other ecosystem services under different climate regimes. The results of these assessments will be incorporated in the National Integrated Watershed Action Plans (NIWAPs). While assessments of vulnerability of the watershed exist, they have not been followed or utilized as part of an integrated planning process. Therefore, the NIWAP planning process will fully integrate all existing planning tools

into the development of the NIWAPs. Also building upon the assessments carried out as part of the TDA, response and adaptation measures for increased frequency and intensity of natural phenomena and climate change impacts will be incorporated into the NIWAPs. The responses to climate change issues will be addressed in the dialogue process during NIWAP development, and recommendations will also be integrated into the NIWAPs and the SAP. In addition, both nations – with the support of UNDP – have developed robust Disaster and Risk Management Plans, and are implementing other measures to address climate change impacts. The FSP will establish close links with these initiatives (Annex 6).

Rating: Medium

222. *The two countries and the numerous stakeholder organizations/institutions are willing to work together under a bi-lateral watershed management and governance framework:* Currently there is a large number of national and international stakeholders, most of who operate largely independently with relatively weak coordination and communication. The project, through wide stakeholder consultations and implementation of a robust stakeholder engagement strategy, will provide a platform for bringing together all key stakeholders within a coordinated and coherent framework. Furthermore, a Data Information and Management System will be established under the project and maintained through cooperation by specialized agencies in both countries to facilitate access to data and information for planning and decision-making in the watershed.

Rating: Low

223. *High level of donor interest to support NAP and SAP implementation.* Major donors have recognized the importance of the Artibonite, as evidenced by the large number of donor-funded projects in the watershed. Therefore, some of the major donors already have a vested interest in the watershed. Moreover, the project strategy is to work closely with ongoing processes and programmes in the two countries, such as those of FAO, UNDP, and donor agencies, thereby building upon ongoing efforts, agreements, and commitments, which will help to mitigate this risk. Watershed investment plans will be developed to determine the financial objectives and targets for NAP and SAP implementation and on-the-ground investments to increase cover in the Artibonite. It is also assumed that the value of national currencies, inflation, and interest rates will remain within predictable levels.

Rating: Low

Expected global, national, and local benefits

224. The project aims to remove the major barriers and constraints to sustainable land and water resources management and generate global, national and local benefits by stimulating political commitment to collective action and then scaling up with innovative policy, legal, and institutional reforms, demonstrations, and sustainable financing. Because this is a framework project with a focus on foundational capacity building, the majority of the project actions are process oriented with corresponding indicators. While large-scale global environmental benefits are not expected to be achieved during the life of the project, the concepts it will promote and the enabling conditions it will create constitute major requisites for the two countries to re-establish a balanced approach to ecosystem management and ultimately achieve global benefits. This project is therefore a pre-condition for effective and sustainable achievement of long-term global

environmental benefits in this highly strategic bi-national watershed. Small-scale global benefits will be achieved through the pilot projects and in the national integrated watershed action plans, which will contain sector-based strategies to improve maintenance of ecosystem services and functions as part of the SAP implementation phase.

225. Global benefits will accrue from within the pilot projects in the short-term and on the long-term through integrated land and water management approaches, including implementation of environmentally-sound development proposals, appropriate use of water resources, and the establishment of structurally diverse forest-crop/pasture systems. The long-term benefits of the project include increase in area under permanent vegetation cover in the upper watershed, including with native species, reduction in sediment loads and increase in freshwater output. As a result, at the global level the project will contribute to the stabilization of soil, biological, and water resources, which will result in enhanced ecosystem resilience and productivity. This will increase the ecosystem provisioning services (such as water), as well as regulating services (such as flood regulation). Indirect benefits will also be generated through reduced CO₂ outputs, due to decreased burning and increases in carbon absorption and storage in permanent crops and tree systems. The promotion of a spatially and structurally diverse landscape and the protection of habitats of several globally important species, including endemic and threatened migratory bird species, will result in biodiversity benefits. Although there is very little systematic experience in measuring these in the participant nations, the project will set in place the mechanisms for diligent assessment of global benefits through the TDA process and the definition of a robust suite of IW and LD indicators to monitor long-term SAP implementation. This will also include efforts to quantify GHG emissions with a view to setting the basis for future access to carbon markets as part of the exploration of innovative financing mechanisms under Outcome 4. The pilot projects will provide opportunities for gauging this potential and for identifying and adjusting methodologies for this. The IADB initiative in Pico Macaya will also provide important lessons learned in this regard.

226. Regionally and nationally, mitigation of land degradation will help to ensure the continuity of the supply of environmental services (including water), and will reduce the motivation for rural urban emigration, which would otherwise place an ever-increasing strain on urban infrastructure and support services. The project will contribute to improvements in the hydrologic balance, and address problems of water scarcity and water quality, especially in the mid and lower watershed and coastal areas. As such, future water use conflicts and tensions will be averted. Improved environmental conditions in Haiti and the border area will contribute to mitigating migratory pressures and generating sustainable livelihood options for local communities, critical issues in terms of security on the island. Multiple benefits will be generated because of inter-linkages such as with sustainable forest management. Stabilization of land use patterns will also result in reduced pressures on the remaining natural vegetation of the watershed, especially the remaining forested areas. The project will also indirectly contribute to increased resilience to fluctuating climatic regimes and to reductions in sediment and pollution loads threatening both transboundary freshwater and marine environments as SAP implementation and financing advances.

227. The project will strengthen the capacity of the two countries to govern the shared watershed based on agreed actions and will introduce ecosystem-based management approaches to protect

and rehabilitate degraded ecosystems. The project will foster improved understanding of the linkages between the upper, mid, and lower watershed, which will be incorporated in the integrated management of the watershed. The increased knowledge base and increased institutional capacity to use that knowledge at national and regional levels that will result from the proposed project will contribute to sustainable management of the Artibonite, and halt and should even reverse land degradation trends.

228. At the local level, the population will enjoy increased access to the natural capital on which the sustainability of their livelihoods depends, and will also receive direct economic and social benefits through the provision of compensation for the costs of carrying out sound land management. The population downstream of the watershed system will also enjoy increased access to water for domestic uses, power generation and irrigation. Investment in local organization will contribute to social cohesion and empowerment, with benefits that will go beyond land management issues. Increased resilience to natural disasters will reduce the disruption of social and farming systems, and help maintain the local agro-biodiversity. Reduction in sediment loads in critical coastal ecosystems will contribute to their recovery and increased provisioning of ecosystem goods and services to coastal communities.

Country ownership, eligibility and drivenness

Country Eligibility

229. The two countries are eligible under para. 9(b) of the GEF Instrument, and have ratified or adopted the following global conventions and action plans:

Convention/Action plan	Dominican Republic		Republic of Haiti	
	<i>Date signed</i>	<i>Date Ratified</i>	<i>Date signed</i>	<i>Date ratified</i>
UNCCD ^{18/}	16 June 1997	16 June 1997	15 October 1994	25 Sept.1996
UNFCCC ^{19/}	June 12, 1992	7 October 1998	13 June 1992	25 Sept.1996
CBD ^{20/}	13 June 1997	25 November 1996	13 June 1992	20 April 1996
Barbados Declaration and of Plan Action and Mauritius Declaration on SIDS ^{21/}	✓		✓	

Country Drivenness

230. The proposed project is consistent with the national priorities and plans of both countries, which reflect country commitments to responding to the root causes of water and land degradation in the Artibonite watershed. Haiti's NEAP assigns priority to the restoration of the ecological balance of the watersheds through the development and implementation of norms and best practices, with a strong focus on inter-sectoral integration. The project is congruent with the Ministry of Environment (MoE) and the Ministry of Agriculture, Natural Resources, and Rural Development's (MARNDR) National Watershed Management Program (NWMP) Policy and

^{18/} United Nations Convention to Combat Desertification

^{19/} United Nations Framework Convention on Climate Change

^{20/} Convention on Biological Diversity

^{21/} Declaration of Barbados and Plan of Action, adopted at the Barbados Conference from 25/04 to 06/05 1994

Strategy by targeting the most strategic national watershed with significant impacts on sustainable livelihoods and ecosystem services. It is also the first priority listed in the NAPA. Haiti's Poverty Reduction Strategy Plan recognizes watershed management and reduction of land degradation as key factors in reducing poverty in Haiti. The NWMP, which is partly developed and supported by UNDP, requires participative processes for watershed management, for which this project will be a model.

231. The project responds to the Dominican Republic's National Action Plan to Combat Drought and Desertification (UNCCD/NAP) in the following strategic lines of action: (1) strengthening of institutional and development of local capacities; (2) social and economic development of the affected zones; (3) education and environmental information; (4) scientific investigation and innovative technologies; and (5) resource mobilization of economic and technical resources.

232. In addition, the proposed project fits the UNDP/DR Development Assistance Framework (UNDAF) for 2007-2011 in the strategic area for Sustainable Environmental Management whose overall result is, *"by 2011, have in place national and local policies and capacities for the protection and sustainable management of the environment, including the management of environmental risks and response to emergencies and disasters"*. The project will count towards completion of result 2.1, *"Practices of sustainable land management adopted and expanded through the strengthening of national policies and the implementation of pilot projects in watersheds with land degradation problems"*. The project also responds to UNDP/Haiti's Results Oriented Annual Framework under the Energy and Environment for Sustainable Development Objective that embraces upstream policy advice, technical backstopping, partnership building, and resource mobilization.

233. The TDA-SAP process will promote stakeholder governance consistent with the Dominican Republic's General Law on Environment and Natural Resources (64-00) and the National Municipal Law (176-07) that provides for decentralized and participatory management of natural resources for which the watershed is considered the management unit of focus. The project also supports the participation of decentralized regional environmental units; it will include a process that will enable adaptation to sector legislative reforms to the Code of Water when approved, and will consider the 3 Dominican national parks within the Artibonito as an integral part of the management of the landscape. The project will also support awareness building and education as indicated in Law 64-00 for environmental education.

234. In both countries, national commissions (GTI and CIP) have been established for watershed management and bi-national communication on technical issues, in addition to the high-level diplomatic "Mixed Committee" for bi-national affairs. The project will work within these frameworks, utilizing the established structures as part of the project management arrangements and will work to extend the framework to include the entire Artibonite. The project responds to both nations' efforts to achieve the Millennium Development Goals within MDG 7. In addition, it responds to the Poverty Reduction Commitments for both countries. The implementation of the project will create a pathway for poverty reduction and sustainable development by providing a framework for multi-sector development within the environmental context of the watershed, which is consistent with the WSSD.

235. The political commitment of both nations to cooperation in trans-boundary natural resources issues was confirmed at a bi-lateral meeting in 1998. Subsequent meetings in April 2002 and in January 2004 led to agreements for a regional approach to addressing land degradation and for cooperation in projects for the development of the Artibonite watershed. Within this context, the PAN-FRO²² framework, an ongoing bi-national initiative that has served to channel investments by multi-lateral partners (CIDA, GTZ/KfW), was established. These agreements were reaffirmed in November, 2007 with a joint inter-ministerial declaration “Joint Declaration for the Administration of the Upper Artibonite River”, re-establishing the Artibonite as a priority for both nations and recognizing the vulnerability of the watershed's water resources, the loss of biodiversity and its impacts on ecological functionality, and the need for a coordinated effort in the rehabilitation of the upper Artibonite watershed through support to an CIDA trans-border project for the management of 5 micro-watersheds and capacity building for broader watershed management, setting the stage for this project.

Sustainability

236. The GEF alternative is designed to increase the sustainability of the current baseline actions in the watershed. These investments do not respond to any articulated framework for the entire watershed and do not currently provide a clear pathway that catalyzes long-term actions that will both improve sustainable livelihoods and enhance ecosystem structure, function, and integrity. The GEF alternative will complement the existing efforts and increase their sustainability by providing the required pathway for sustainable development of the watershed's landscape through a joint integrated water resources management framework and developing a long term vision and pathway for IWRM at both the national and international levels. The project will work with local governments and other existing local institutions, including NGOs with long-term presence in the Artibonite, ensuring that it is well-grounded in the field. The core elements of this proposal will provide the conduit linking development of stakeholder capacity, completion of missing information, as well as the development of tangible actions and financial planning for their implementation. Each project outcome contains actions for capacity building and for promoting the institutional, social, and environmental sustainability of project outcomes.

237. *Institutional sustainability* will be ensured through the development and endorsement of a clear administrative model for the watershed in each nation. The absence of such a model for the entire watershed in each country contributes to the fragmented development and management approach. This is currently one of the most significant limiting factors to the sustainable development of any initiative targeted at the landscape level. At present, the development of a stakeholder structure as proposed on Outcome 2 will unite existing management and governance frameworks, including the existing GTI-CIP structures, hence developing long-term public-private sector partnerships between key actors. This process will build on the experience accumulated in management of land and water resources in the Dominican Republic and Haiti. The establishment of a bi-national structure or commission will add a very important international-level institutional framework that currently does not exist.

²² A sub-regional action plan to combat drought and desertification

238. The sustainability of the project will also depend on the efficiency of the capacity building process that will take place at various levels and on the level of awareness-raising achieved. The project considers capacity building actions at the local and municipal level and formation of water users groups within the scope of the pilot projects proposed in Outcome 3. These stakeholder groups will be incorporated, as appropriate, into the watershed management committees. One of the pilot projects will specifically test an institutional model that is articulated at the sub-national and municipal levels with a focus on watershed management. The experience generated will significantly contribute to the understanding of how to approach continued institutional and organizational capacity building as part of the SAP implementation processes while providing realizable tangible results in the short-term.

239. *Social sustainability* will be achieved by including the diverse private sectors in the TDA process outlined in Outcome 1, specifically the causal chain analysis, as well as within the proposed governance structures in Outcome 2 and the development of the NIWAPs. A robust stakeholder analysis and engagement plan, to be prepared in the early phase of the project, will enable an appropriate governance structure to be developed. This structure will take into account the specific roles of diverse stakeholder groups, and will better respond to their needs and interests while providing avenues for the resolution of conflicts between them. This process will especially speak to the dichotomy of interests between stakeholders in the upstream and downstream environments. The social and institutional sustainability of the governance structure will be promoted by demonstrating its value to all stakeholders early in the process, including national agencies and local governments. Linking the governance structure to the existing municipal, provincial/departmental, and national management frameworks and gradual transfer of responsibilities from the executing agency to the governance structure will also enhance social and institutional sustainability of project outcomes. Within each nation, the NIWAPs will be developed with inputs by all relevant stakeholders, which will enhance the social sustainability of the plans and of the actions to be taken during SAP implementation.

240. There are a number of obstacles to *financial sustainability* in this resource-starved region. None of the existing systems, public or private are financially sustainable nor will they be in the short-term. The project includes a resource mobilization outcome that will develop a resource mobilization strategy for subsequent SAP implementation. Outcome 4 provides resources specifically for gap analysis, investment planning, development of human and material resources, and steps for mobilizing resources and diversifying resource opportunities in support of SAP implementation. The identification of resource gaps and potential financial mechanisms will take place parallel to the SAP process. This will enable an appreciation of the compatibility of the identified mechanisms with the capacity of local and national agencies to manage financial instruments and schemes.

241. The proposed project will promote environmental sustainability of the Artibonite watershed. As discussed in the situation analysis, the current situation is not environmentally sustainable. The project will determine the trade-offs necessary to produce global benefits in a functionally and geo-politically strategic watershed. It will provide the information (Outcome 1) and planning (Outcome 2) needed to determine the actions required to enhance ecosystem structure, integrity, and function. The project will promote improved land-use planning and develop stress reduction indicators within a monitoring and evaluation system to guide the long-term process of SAP

implementation. The landscape approach will embrace the range of land uses, from protected areas in the Upper Dominican watershed to agricultural exploitation in the grain-producing lowlands of Haiti. This process will also be supported by the implementation, monitoring, and evaluation of production alternatives within the pilot projects to be implemented in Outcome 3. The results of these pilot projects will provide information on environmental sustainability of the production alternatives, needed to determine their validity for upscaling. On the longer term, these actions will result in increased level and maintenance of vegetation cover as well as in enhanced water capture and absorption in natural and production systems.

Replicability

242. The project will apply the validated TDA-SAP methodology to a bi-national watershed characterized by high levels of degradation and in which water quantity and quality are already
243. issues of priority concern and sources of potential conflict. Allocations have therefore been requested from both the GEF International Waters and the Land Degradation focal areas with a view to adapting the TDA-SAP approach to a landscape in which sustainable land management practices are critical. It is expected that the project will generate significant lessons and best practices that will be relevant for the many other river basins in Latin America and the Caribbean and other regions that exhibit advanced land degradation trends. Moreover, given that the SAP for the Integrated Management of the Artibonite Watershed will become a framework for coordinating the range of diverse interventions and initiatives in the watershed, the process will have potential for cross fertilization to the development of other priority watersheds within each country. Additionally, the project will work closely with ongoing GEF and donor projects in Hispaniola such as the GEF-UNDP-SEMARENA Sabana Yegua Project (DR), the GTZ-SEMARENA PROCARYN project and the EU-SEMARENA-MARNDR PMT project to share experiences and identify further lessons on stakeholder participation, technical management, and payment for environmental services. In Outcome 3 the project includes support for disseminating the lessons learned from the pilot projects, including through publications and an interactive website.

244. At the *national level*, the lessons learned from all UNDP-GEF financed projects are exchanged at quarterly meetings. Each nation has prioritized the watershed unit as its focus for natural resources management. The participation of the SEMARENA and Mde in the process will ensure that project experiences and developments are incorporated or contribute to other national initiatives and frameworks for watershed management. Both SEMARENA and Mde are working to strengthen the GTI and CIP, which are established national inter-sectoral committees for exchanging lessons learned, promoting new ideas, and working within the member agencies to promote collaboration. At the *international level*, the project will ensure dissemination of information, good practices and lessons learned through established mechanisms such as IW Experience Notes. In addition, the GEF-UNEP-UNDP-IWCAM project platform and the IW-LEARN technical platform provide opportunities to exchange lessons learned. Moreover, the watershed is a complete system from the ridge to the Gulf of Gonave, and will complement the IWCAM network with an interesting scenario of land and water management across different geographies, languages, and ethnically diverse regions.

245. To enhance replicability, the innovations and lessons learned in all areas of land and water management will be show-cased to raise awareness. In addition, provisions will be made for summarizing, interpreting, and translating from the large base of information and making the lessons learned available to all stakeholders, especially public institutions and NGOs who are in a position to promote the expansion of the positive experiences.

Financial Plan

246. The overall cost of the project is US\$11,416,000, including preparatory funds. The GEF project financing for the Full-Size Project is US\$3,080,000 and the co-financing²³ from National Governments, bi-lateral development cooperation agencies, and NGOs is US\$7,258,000. The GEF contribution for the Full-Size Project amounts to 27% of the cost of the total cost. A detailed budget is presented in Section II, on page 89.

²³ http://gefweb.org/Documents/Council_Documents/GEF_C21/C.20.6.Rev.1.pdf

Table 1: Summary Budget of GEF Grant

PIMS 2890 IW/LD FSP Reducing conflicting water uses in the Artibonite River Basin through development and adoption of a multi-focal area strategic Action Programme						
Award Title:						
Award ID:		00051264				
GEF Outcome/Atlas Activity	Source of Funds	Amount (USD) Year 1	Amount (USD) Year 2	Amount (USD) Year 3	Amount (USD) Year 4	Total (USD) All Years
1. Trans-boundary Diagnostic Analysis	GEF	339,800	295,000	49,000	0	683,800
2. SAP Development	GEF	88,900	317,150	262,250	86,900	755,200
3. Demonstration Projects	GEF	248,000	304,000	277,500	170,500	1,000,000
4. Resource Mobilization	GEF	0	53,000	105,000	103,000	261,000
5. M&E	GEF		30,000		50,000	80,000
Project management	GEF	92,000	83,000	66,000	59,000	300,000
Total		768,700	1,082,150	759,750	469,400	3,080,000

Table 2: Co-financing Sources

<i>Name of co-financier (source)</i>	<i>Classification</i>	<i>Type</i>	<i>Amount (\$)</i>	<i>%</i>
Government of Dominican Republic	Nat'l Government	In-kind	800,000	10.91
Government of Haiti				
Ministry of the Environment	Nat'l Government	In-kind	347,000	4.75
CNIGS	Nat'l Government	In-kind	600,000	8.22
CIDA	Bi-lateral Agency	Parallel*	4,643,000	63.54
Oxfam Quebec	NGO	In-kind	200,000	2.75
Helvetas	NGO	In-kind	150,000	2.05
UNDP	Multilat. Agency	Cash	380,000	5.20
UNDP	Multilat. Agency	In Kind	60,000	0.82
Sub-total co-financing			7,180,000	
Preparatory phase	Multilat. Agency	Cash	78,000	1.07
	Nat'l Government	In-kind	50,000	0.69
Total co-financing			7,308,000	100%

* This is parallel co-financing in the form of separate projects implemented in the same watershed. However, the two projects have worked together from the preparatory phase, and OXFAM-Quebec will be the executing agency for both projects, thereby ensuring maximum synergies between the two initiatives and cost-effectiveness throughout. The pilot projects carried out through the donor-financed projects will effectively constitute pre-SAP implementation activities and will inform the SAP development process. Although the CIDA project has a CAD\$10 million budget, only \$4,643,000 of this is being claimed by the GEF project for two reasons: 1) the CIDA project has a duration of 7 years and 2) an assessment of the CIDA investment was made and only on-the-ground investments in the project area, in addition to the required management support, are being considered.

Cost-effectiveness

247. There is widespread support for such a Management Programme given that the multiple of interventions in the watershed are largely uncoordinated, do not provide for upscaling or replication strategies, and are unable to provide for sustainability of achieved results once donor

cooperation concludes. The GEF project, which in keeping with the TDA/SAP methodology will be highly participatory, will develop the first coherent and cohesive programmatic framework for coordinating and articulating ongoing and planned activities in the entire watershed. This will enable identification of synergies and collaborative opportunities as well as upscaling of ongoing efforts throughout the watershed to address a wide range of barriers, thereby achieving cost-efficiencies that have been impossible to attain to date. As an example of these potential savings, the preparatory phase has already worked closely with CIDA, building its baseline analysis on the excellent biophysical studies undertaken and has since selected Oxfam Quebec as the executing partner. This relationship will allow cost effectiveness of project management, provide consistent execution with CIDA's initiatives, and enable a timely launch of project activities and utilization of existing facilities.

248. One of the critical barriers to the effective and sustainable management of the watershed has been the fact that it has never been fully recognized as a hydrogeological unit, and there is a marked divide between approaches in the upper, mid and lower areas. Watersheds constitute a vital landscape unit that demand comprehensive approaches in order to address often differing upstream and downstream priorities and threats, as well as the coastal and marine impacts of sedimentation, run-off and industrial/domestic pollution. This is recognized by partners and entities working in the area. The GEF project represents the first time that a basin-wide effort will be undertaken to address the priority transboundary environmental issues and root causes, which argues for the need for a bi-national project. A shared watershed cannot be effectively managed without a comprehensive understanding of its biophysical processes, and jointly defined actions on both sides of the border that support an agreed vision for the river basin. The watershed is highly degraded and faces increasing constraints on water quantity and quality. There are proposals for addressing water constraints through infrastructure developments that, in the absence of a comprehensive understanding of watershed dynamics, could exacerbate conditions along the basin and generate conflict. However, currently information and data on the watershed is not harmonized and in many cases not comparable. The project will minimize the economic risks associated with non-cooperation by establishing a regional watershed management and governance framework within which the countries can effectively develop and manage the resources of the Artibonite, including sharing data and information.

249. Both governments consider that it is imperative to work together to manage the island's shared natural resource base, particularly in view of challenges such as demographic trends and climate change; some climate change scenarios indicate that water scarcity will be a growing challenge over the coming decades. Both governments recognize that the sustainable management of the island's natural resources is a matter of national security. Indeed, on 22 November 2007, both Ministers of the Environment signed a joint declaration that states that, "...given the geomorphologic features and the insular condition of the island, it is necessary that the governments work together in the sustainable management of water resources." However, collaboration, in the absence of shared environmental and management objectives and of a coherent programmatic framework, will at best be piecemeal. Only an initiative like this one, supported by neutral organizations such as GEF and UNDP, working closely with trusted agencies and partners in the area, will be able to lay the bases for tangible and effective cooperation in terms of, for example, shared and compatible information systems, capacity building, and harmonized policy frameworks and a long term vision of financing sustainable

development. Only a validated process like the SAP will provide the mechanisms and support that will enable both nations to arrive at a common strategy for managing the lifeline that the Artibonite watershed represents.

250. Despite these substantial considerations, the different capacities in both countries have been flagged as a possible concern. This appreciation, however, reflects incomplete information regarding the level of professional expertise in the two countries. Haiti, for example, has a developed geographic information system with better access to more complete sets of digital information and more recently updated equipment. The number of high-level trained professionals and technicians in both countries is comparable, and Haiti has a great number of technicians capable of communicating in Spanish. Moreover, Haiti has slightly more autonomous municipalities which lends itself to a greater possibility for sustainable responses based on robust local decision-making processes, whereas in the Dominican Republic there is more extensive agency-level presence that has advantages in terms of institutional level coordination. Both countries therefore stand to benefit and learn from this bi-national project.

251. Additionally, a regional project will provide additional efficiencies, such as cross-fertilization between projects in each nation in best practices in land and water management that would otherwise be unknown to the partners, such as the IADB water management initiative in Haiti or the UNDP/GEF Sabana Yegua project. UNDP and FAO participation will bring additional experiences in water and land management through their networks and projects, such as IWCAM and LADA initiatives respectively. The mentioned agencies already have established structures in each nation. The project will also liaise with other GEF projects that have focused on integrated management of watersheds in LAC, such as the São Francisco basin. The project would also partner with the GEF project, “Sustainable Land Management of the Upper Watersheds of South Western Haiti”. In addition to this, over the past three decades there have been efforts in many LAC countries (e.g. Brazil, Chile, Colombia, Mexico) to put in place watershed management programmes that evidence significant differences in terms of scope, institutional structures, and emphasis on water resources management and investments. ECLAC has studied these processes closely, and the project proposes to work closely with countries and partners that can provide lessons learned and guidance.

252. In addition to this, the project will work with other investment partners to provide for financial sustainability modalities that could potentially shift the current focus from non-reimbursable development activities to a more private-sector approach with initial and progressive returns of investments into a mechanism that could allow for re-investment in diversification of agriculture and environment systems. To complement leveraged financing and co-financing, the UNDP is working with each of the partner governments to explore the issue of sustainable and long-term financial support to the continued development of this important sub-region. The project itself aims to establish a financial unit for the purpose of identifying and developing continued investments in the region through new public and private sector partners.

PART III. MANAGEMENT ARRANGEMENTS

253. The project will be implemented by UNDP Dominican Republic with co-implementation support, consultation, coordination, and cooperation with UNDP Haiti. The project will be executed by OXFAM-Quebec, selected after a participative international recruitment process. The project governance structure will be closely aligned with that of the ongoing CIDA Bi-national watershed management project in the Artibonite, which is also executed by OXFAM-Quebec. The project will be guided by a bi-national steering committee and two national inter-ministerial committees. FAO will be the lead technical agency of the project. Technical execution of the project will be enhanced by an integrated technical task team that will support communications among stakeholders and dissemination of information through existing inter-sector committees that support the implementation of the UNCCD.

Project Execution Modality

254. The project will be executed by Oxfam-Quebec, an international NGO registered in both Haiti and the Dominican Republic that was selected after an international recruitment process based on their track record and experience in watershed management, and their active engagement with relevant stakeholders in projects throughout the entire area of the watershed. An external, independent assessment has been made of their institutional capacities. The fact that they are already executing the CIDA Artibonite Bi-national Watershed Management Project with existing formal arrangements with both governments to implement the counterpart funded activities that support this project was considered an asset. This selection will enable both projects to benefit from cost-effective options and to ensure full synergies between the two projects, which will contribute to the development of the Strategic Action Program for the Integrated Management of the Artibonite Watershed. Oxfam Quebec will manage the project's workplan and finances and have responsibility for project execution including accountability for project resources, as well as other project execution responsibilities in keeping with GEF and UNDP guidelines, under the direct supervision of the UNDP Country Offices in the Dominican Republic and Haiti and with backstopping from UNDP's Regional Coordination Unit located in Panama. In terms of the pilot projects, Oxfam will execute the Organic Niche Market Pilot Project in St. Michel, Helvetas Haiti will execute the Pilot on Promotion of Soil Conservation efforts in Verrettes, while the Dominican Government through SEMARENA will execute the development of a watershed administrative model in the Dominican Republic. For the latter two projects, detailed execution arrangements will be developed between UNDP Haiti and UNDP Dominican Republic respectively. The performance of these Pilot projects will be monitored by UNDP Haiti and Dominican Republic in coordination with Oxfam Quebec. In the technical execution of the outcomes, Oxfam Quebec will also receive technical backstopping from FAO, including through specialists selected from their bank of qualified consultants.

255. The project will be coordinated by a Regional Project Specialist with strong project management experience, multidisciplinary skills, and preferably with a background in environmental management, environmental sciences, natural resources management, or related field. The candidate will be expected to be proficient in French, Spanish, and English. The Regional Project Specialist will be selected through a competitive process in coordination with UNDP, CIDA, and FAO representatives in both countries. The Regional Project Specialist will

be responsible for the timely achievement of all project objectives. His/her duties will include overseeing and coordinating project implementation at the operational level and will be the key contact for UNDP in regards to operational aspects (contracts, equipment, procurement, etc). The Regional Project Specialist's responsibilities will also include development of work plans and corresponding budgets that enable the project objectives to be achieved within frameworks outlined in the project's strategic results framework. He/she will also be responsible for developing national-level work plans and budgets and providing these to the National Project Specialists (described below) in agreed formats that enable them to be aggregated into the overall project work plans and budgets. The Regional Project Specialist will be responsible for informing the multi-level governance structure (also described below) of the project of project progress and obstacles.

256. Two national-level Senior Project Specialists will support the work of the Regional Project Specialist and provide technical guidance, oversee the GEF-funded pilot projects, and assist in coordinating with other initiatives in the watershed. These specialists will support the Regional Project Specialist in completing project activities at the national levels, within the bi-national framework project. Together with key consultants, they will provide support with specific tasks and components (including public involvement, training, Transboundary Diagnostic Analysis gap-filling, and preparation of the National Integrated Watershed Action Plans). Administrative support staff, including an office manager, secretary and accountant will be hired locally. The PCU will be provided additional basic equipment necessary for the functioning of the project, including computers, copy machines and other materials as needed and appropriate.

257. The PCU will be supported by international, regional and national consultants, and will include experts from the FAO roster. The Regional Project Specialist, with the support of the project team and Oxfam-Quebec, will have primary responsibility for implementation of the outcomes and outputs per the Project Strategic Results Framework Matrix, including fine-tuning and tracking of indicators. In addition to execution of the main project Outcomes, the RPS, with the support of OXFAM-Quebec, will have direct oversight of the three GEF-funded pilots: Development of Niche Markets for Organic Products (Oxfam-Quebec), Soil Conservation (Helvetas), Development of a governance structure in the Upper Artibonito Watershed in Dominican Republic (SEMARENA). The RPS will work closely with the project team of the CIDA project in order to identify lessons learned and good practices for replication and upscaling from their investments in the 5 watersheds, and to mainstream project results into the development of the SAP. The three GEF-funded pilots will be executed under contract by the organizations identified above, and will report technically to the PCU.

258. To execute their duties, the PCU will have the support of FAO as the lead technical agency. As mentioned above, the FAO will provide suggestions on the implementation of the outcomes through their participation on the project steering committee described below. In addition, the project will draw from qualified FAO consultants for its execution.

Project Implementation Modality

259. The project finances will be executed through the UNDP Dominican Republic office in coordination with UNDP Haiti in a manner similar to the implementation of the PDF-B process.

The Regional Project Specialist will request expenditures from UNDP-DR which, once approved by the UNDP Program manager, will authorize disbursements of GEF funds through UNDP-DR or UNDP-Haiti to Oxfam Quebec. In the case of the two Verrettes and Dominican Republic pilot projects, UNDP DR will disburse to SEMARENA's Undersecretariat of Administration and Finance for the execution of the Pilot Project on Developing an Watershed Administration Model while UNDP Haiti will disburse to Helvetas for the Soil Conservation Pilot Project in Verrettes. In these two cases, Oxfam will assist UNDP in the tracking of performance and reporting. For disbursement of UNDP TRAC funds, the program manager in the country of origin of the expenses incurred will authorize the expenditure and disbursement through their national financial system. To support the co-implementation, agency fees will be divided between both countries to support this process. The UNDP-DR office will manage all financial and technical reporting to the GEF.

260. Disbursements of project funds to the PCU will be made through request to UNDP on a quarterly basis. Funds for the first quarter will be advanced, according to the operational plan, and funds for the following quarters will be transferred after reports that duly comply with requirements are submitted to UNDP. Disbursements will be made in national currency with the exception of international consultants and their related expenses or in the purchase of specialized equipment to support Outcomes 1 and 3, which will be in US Dollars.

261. In order to accord proper acknowledgement to GEF for providing funding, a GEF logo should appear on all relevant GEF project publications, including among others, project hardware and vehicles purchased with GEF funds. Any citation on publications regarding projects funded by GEF should also accord proper acknowledgment to GEF. The UNDP logo should be more prominent – and separated from the GEF logo if possible, as UN visibility is important for security purposes.

Project Governance

262. Bi-National Steering Committee: The project will be guided by the Steering Committee comprising representatives of the participating states, FAO, CIDA and other key international partners and donors. The Steering Committee will review and approve all technical documents, review budgets and financial reports and provide general strategic and implementation guidance to the PCU. It will meet once a year and all its decisions will be made on the basis of consensus. The project will be guided by a structure consistent with that established for the CIDA bi-national project with participation of the partners at the bi-national and national levels.

263. National-level Steering Committee: In a similar fashion, the technical aspects related to project execution will be guided by a national steering committee that will advise the bi-national representatives, and provide guidance to the UNDP and the executing organization, Oxfam Quebec. The respective committees would include representatives of the Secretariat of the Environment and of Agriculture, of the Office of Planning of DR and the Ministries of the Environment, of Agriculture and Rural Development, and of Planning of Haiti, UNDP, FAO and CIDA national representatives as well as the focal points of the UNCCD in each country, respectively, the directors of the GTI and the CIP. The National Steering Committee may decide

to invite add agencies and stakeholders to participate either permanently or as observers as the project progresses based on the needs of the TDA and SAP processes.

264. The bi-National Steering Committee will review and approve all technical documents, review annual operational work plans and budgets and financial reports, and provide general strategic, political, and implementation guidance to the PCU. It will review and approve the Transboundary Diagnostic Analysis and the Strategic Action Program, the latter with a view to ensuring broad, highest-level endorsement. The PSC will also ensure that project activities are in line with those outlined in the approved project documentation and with national policy frameworks. It will meet twice a year and all its decisions will be made on the basis of consensus. If so decided by the countries, its periodicity can be increased and extraordinary meetings may also be called. Meetings will be convened in tandem if possible with events scheduled by CIDA –Oxfam Quebec. Oxfam Quebec will set-up meetings, circulate documentation for review, take minutes and prepare reports.

265. In keeping with the GEF International Waters Methodology, the technical execution of the Outcomes will receive assistance from a bi-national technical task team, comprised of qualified technicians from the pertinent technical agency and departmental counterparts, such as representatives of CNIGS, MARNDR, MdE in Haiti and the Under-secretariats of Forest Resources, Protected Areas and Bio-diversity, INDRHI, DIARENA, etc. The conformation of the Technical Task Team, the representatives, and modus operandi will be agreed upon by the national-level steering committees during the inception phase. The Technical Task Team will provide guidance, agency inputs and overall support to the TDA development and SAP development process outlined and in the review of the execution of pilot projects. They will work in coordination with Oxfam Quebec and with FAO consultants.

266. The established inter-sectoral committees for the implementation of the UNCCD, namely the GTI and CIP, will be important in disseminating information of the project to public and private sector stakeholders that may not be directly involved in the technical task team. To prepare both groups for this task, the key agencies involved will be trained in the TDA-SAP methodology as part of outcome 2. Ultimately, this will create a conduit for upstream comments and issues related to the project, mainstreaming of project outcomes and outputs into national development planning processes, and for high-level endorsement of the Strategic Action Programme for the Integrated Management of the Artibonite Watershed. The ministries of environment of both countries as the respective chairs of the GTI and CIP, will also play an important role in ensuring coordination of relevant national projects (government and donor funded) with the UNDP-GEF project.

267. The National Steering Committees (NSC) will provide support to development of the TDA, the National Integrated Watershed Action Plans, the SAP, and the national-level financing plan internal to the SAP and product of Outcome 4. The National Steering Committees, through their Focal Points, will also provide advice, information, and materials to the Bi-National Committee on issues related to the approval of the TDA, SAP, and any international resource mobilization issues. The NSC will meet on a quarterly basis but meetings can be held more frequently if the parties consider it necessary.

PART IV. MONITORING AND EVALUATION PLAN AND BUDGET

268. Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures and will be undertaken by the project team and the UNDP-RCU. The Strategic Results Framework Matrix in Section II provides performance and impact indicators for project implementation along with their corresponding means of verification. These will form the basis on which the project's Monitoring and Evaluation system will be built.

269. The following sections outline the principal components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities. The project's Monitoring and Evaluation Plan will be presented and finalized in the Project's Inception Report, following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

MONITORING AND REPORTING

Project Inception Phase

270. A Project Inception Workshop will be conducted with the full project team, relevant governments' counterparts, co-financing partners, UNDP-COs and representation from the UNDP-GEF Regional Coordinating Unit.

271. A fundamental objective of this Inception Workshop will be to assist the project team to understand and take ownership of the project's goals and objectives, as well as to finalize preparation of the project's first annual work plan on the basis of the project's logframe matrix. This will include reviewing the logframe (indicators, means of verification, assumptions/risks), imparting additional detail as needed, and on the basis of this exercise finalize the Annual Work Plan (AWP) with precise and measurable performance indicators, and in a manner consistent with the expected outcomes for the project.

272. Additionally, the purpose and objective of the Inception Workshop (IW) will be to: (i) introduce project staff with the UNDP-GEF expanded team which will support the project during its implementation, namely the responsible Regional Coordinating Unit staff with support from COs; (ii) detail the roles, support services and complementary responsibilities of RCU staff vis-à-vis the project team; (iii) provide a detailed overview of UNDP-GEF reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the Annual Project Implementation Reviews-Annual Project Report (APR-PIRs) and related documentation, Tripartite Review Meetings, as well as mid-term and final evaluations. Equally, the IW will provide an opportunity to inform the project team on UNDP project related budgetary planning, budget reviews, and mandatory budget rephasings.

273. The IW will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff and decision-making structures will be discussed again, as needed in order to clarify for all, each party's responsibilities during the project's implementation phase.

Monitoring responsibilities and events

274. A detailed schedule of project reviews meetings will be developed by the project management, in consultation with project implementation partners and stakeholder representatives and incorporated in the Project Inception Report. Such a schedule will include: (i) tentative time frames for Tripartite Reviews, Steering Committee Meetings, (or relevant advisory and/or coordination mechanisms) and (ii) project related Monitoring and Evaluation activities.

275. Day to day monitoring of implementation progress will be the responsibility of the Regional Project Specialist based on the project's Annual Work Plan and its indicators. The Project Team will inform the UNDP-RCU of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

276. The Project Regional Project Specialist will fine-tune the progress and performance/impact indicators of the project in consultation with the full project team at the Inception Workshop with support from the UNDP-GEF Regional Coordinating Unit. Specific targets for the first year implementation progress indicators together with their means of verification will be developed at this Workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the Annual Work Plan. The local implementing agencies will also take part in the Inception Workshop in which a common vision of overall project goals will be established. Targets and indicators for subsequent years would be defined annually as part of the internal evaluation and planning processes undertaken by the project team.

277. Measurement of impact indicators related to global benefits will occur according to the schedules defined in the Inception Workshop. The measurement of these will be undertaken through subcontracts or retainers with relevant institutions or through specific studies that are to form part of the projects activities or periodic sampling such as with sedimentation.

278. Periodic monitoring of implementation progress will be undertaken by UNDP through quarterly meetings with the Regional Project Specialist, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities.

279. UNDP Country Offices and UNDP-GEF RCU as appropriate, will conduct yearly visits to projects that have field sites, or more often based on an agreed upon schedule to be detailed in the project's Inception Report / Annual Work Plan to assess first hand project progress. Any other member of the Steering Committee can also accompany, as decided by the SC. A Field Visit Report will be prepared by the project team and circulated no less than one month after the visit to all SC members, and UNDP-GEF.

280. Annual Monitoring will occur through two modalities. The Steering Committee, as the highest policy-level meeting of the parties directly involved in the implementation of a project, will meet at least once every year to review project implementation. The first such meeting will be held within the first twelve months of the start of full implementation. The harmonized APR/PIR will be used as one of the basic documents for discussions. The project proponent will

highlight policy issues and recommendations for the decision of the SC members, as well as any agreement reached by stakeholders during the APR/PIR/RT preparation on how to resolve operational issues. Separate reviews of each project component may also be conducted if necessary.

281. *Terminal Steering Committee Review.* The terminal Steering Committee meeting is held in the last month of project operations. The CTA is responsible for preparing the Terminal Report and submitting it to the UNDP-GEF Regional Coordinating Unit. It shall be prepared in draft at least two months in advance of the Steering Committee meeting in order to allow review, and will serve as the basis for discussions at the meeting. The terminal Steering Committee meeting will consider the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader environmental objective. It decides whether any actions are still necessary, particularly in relation to sustainability of project results, and acts as a vehicle through which lessons learnt can be captured to feed into other projects under implementation or formulation.

282. The Steering Committee review has the authority to suspend disbursement if project performance benchmarks are not met. Benchmarks will be developed at the Inception Workshop, based on delivery rates, and qualitative assessments of achievements of outputs.

Project Monitoring Reporting

283. The Regional Project Specialist with support from the UNDP COs and UNDP-GEF will be responsible for the preparation and submission of the following reports that form part of the monitoring process. Items (a) through (d) are mandatory and strictly related to monitoring, while (e) through (g) have a broader function, and the frequency and nature is project specific to be defined throughout implementation.

(a) Inception Report (IR)

284. A Project Inception Report will be prepared immediately following the Inception Workshop. It will include a detailed First Year/ Annual Work Plan divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project. This Work Plan would include the dates of specific field visits, support missions from the Project Coordinating Unit (PCU) or consultants, as well as time-frames for meetings of the project's decision making structures. In addition to this, an Operational Work Plan for the duration of the project will also be prepared, that will be reviewed and updated on a yearly basis. The Report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 months time-frame.

285. The Inception Report will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may effect project implementation.

286. When finalized, the report will be circulated to project counterparts who will be given a period of one calendar month in which to respond with comments or queries. Prior to this circulation of the IR, the UNDP-GEF's Regional Coordinating Unit will review the document.

(b) Annual Project Report – Project Implementation Review and IW Results Template (RT) - APR/PIR/RT

287. The APR-PIR and the International Waters Results Template are an annual monitoring process mandated by the GEF and UNDP. It has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the project has been under implementation for a year, an APR –PIR and RT must be completed by the project team with support from UNDP-GEF. The APR/PIR/RT is part of UNDP's central oversight, monitoring and project management. It is a self-assessment report by project management to the RCU as well as forming a key input to the Steering Committee meeting. An APR/PIR/RT will be prepared on an annual basis to reflect progress achieved in meeting the project's Annual Work Plan and assess performance of the project in contributing to intended outcomes through outputs and partnership work.

288. The individual APR-PIRs and RTs are collected, reviewed and analyzed by the UNDP RCU prior to sending them to the focal area clusters at the UNDP/GEF headquarters. The focal area clusters supported by the UNDP/GEF M&E Unit analyze the APRs and RTs by focal area, theme and region for common issues/results and lessons. The focal area APR-PIRs and RTs are then discussed in the GEF Interagency Focal Area Task Forces in or around November each year and consolidated reports by focal area are collated by the GEF Independent M&E Unit based on the Task Force findings.

(c) International Waters Tracking Tools

289. The project will complete on an annual basis, the new International Waters Tracking Tool in order to contribute to results based management reporting at a program level.

(d) Quarterly Progress Reports

290. Short reports outlining main updates in project progress and delivery rates will be provided quarterly to the UNDP-GEF regional coordination unit by the project team.

(e) Project Terminal Report

291. During the last three months of the project, the project team will prepare the Project Terminal Report. This comprehensive report will summarize all activities, achievements and outputs of the Project, lessons learnt, objectives met, or not achieved structures and systems implemented, etc. and will be the definitive statement of the Project's activities during its lifetime. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the Project's activities.

(f) Periodic Thematic Reports

292. As and when called for by UNDP, UNDP-GEF or the Implementing Partner, the project team will prepare Specific Thematic Reports, focusing on specific issues or areas of activity. The request for a Thematic Report will be provided to the project team in written form by UNDP and will clearly state the issue or activities that need to be reported on. These reports can be used as a

form of lessons learnt exercise, specific oversight in key areas, or as troubleshooting exercises to evaluate and overcome obstacles and difficulties encountered. UNDP is requested to minimize its requests for Thematic Reports, and when such are necessary will allow reasonable timeframes for their preparation by the project team.

(g) *Technical Reports*

293. Technical Reports are detailed documents covering specific areas of analysis or scientific specializations within the overall project. As part of the Inception Report, the project team will prepare a draft Reports List, detailing the technical reports that are expected to be prepared on key areas of activity during the course of the Project, and tentative due dates. Where necessary this Reports List will be revised and updated, and included in subsequent APRs. Technical Reports may also be prepared by external consultants and should be comprehensive, specialized analyses of clearly defined areas of research within the framework of the project and its sites. These technical reports will represent, as appropriate, the project's substantive contribution to specific areas, and will be used in efforts to disseminate relevant information and best practices at local, national and international levels.

(h) *Project Publications*

294. Project Publications will form a key method of crystallizing and disseminating the results and achievements of the Project. These publications may be scientific or informational texts on the activities and achievements of the Project, in the form of journal articles, multimedia publications, etc. These publications can be based on Technical Reports, depending upon *inter alia* the relevance and scientific worth of these Reports, or may be summaries or compilations of a series of Technical Reports and other research. The project team will determine if any of the Technical Reports merit formal publication, and will also (in consultation with UNDP, the government and other relevant stakeholder groups) plan and produce these Publications in a consistent and recognizable format. Project resources will need to be defined and allocated for these activities as appropriate and in a manner commensurate with the project's budget.

Independent Evaluation

295. The project will be subjected to at least two independent external evaluations as follows:

(a) *Mid-term Evaluation*

296. An independent Mid-Term Evaluation will be undertaken at the end of the second year of implementation. The Mid-Term Evaluation will determine progress being made towards the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the project team based on guidance from the UNDP-GEF Regional Coordinating Unit.

(b) Final Evaluation

297. An independent Final Evaluation will take place three months prior to the terminal tripartite review meeting, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The Terms of Reference for this evaluation will be prepared by the project team based on guidance from the UNDP-GEF Regional Coordinating Unit.

Audit Clause

298. The project will be audited following UNDP Financial Regulations and Rules and audit policies. Refer to the attached “Standard project cooperation agreement between UNDP and a Non-Governmental Organization”.

Learning and Knowledge Sharing

299. Results from the project will be disseminated within and beyond the project intervention zone through a number of existing information sharing networks and forums. In addition:

- The project will participate, as relevant and appropriate, in UNDP/GEF sponsored networks, organized for Senior Personnel working on projects that share common characteristics. UNDP/GEF shall establish a number of networks, such as Integrated Ecosystem Management, eco-tourism, co-management, etc, that will largely function on the basis of an electronic platform.
- The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation through lessons learned.
- The project will participate in and contribute to IW:LEARN, the GEF’s International Waters knowledge sharing programme, including (self-funded) participation in biannual GEF International Waters Conferences (2009, 2011), preparation of IW “Experience Notes” documenting important lessons and good practice, and contributions to various IW:LEARN-type regional and thematic knowledge sharing activities, both virtual and in person.
- The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. This is an on-going process, and the need to communicate such lessons as one of the project's central contributions is a requirement. To this end a percentage of project resources will need to be allocated for these activities.

Table 3: Indicative Monitoring and Evaluation Work plan and corresponding Budget

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team Staff time</i>	Time frame
Inception Workshop	<ul style="list-style-type: none"> ▪ Regional Project Specialist ▪ UNDP COs ▪ UNDP GEF 	None	Within first two months of project start up
Inception Report	<ul style="list-style-type: none"> ▪ Project Team ▪ UNDP COs 	None	Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	<ul style="list-style-type: none"> ▪ Regional Project Specialist will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members 	To be finalized in Inception Phase and Workshop.	Start, mid and end of project
Measurement of Means of Verification for Project Progress and Performance (measured on an annual basis)	<ul style="list-style-type: none"> ▪ Oversight by Project GEF Technical Advisor and Regional Project Specialist ▪ Measurements by regional field officers and local IAs 	To be determined as part of the Annual Work Plan's preparation.	Annually prior to APR/PIR and to the definition of annual work plans
APR/PIR/RT	<ul style="list-style-type: none"> ▪ Project Team ▪ UNDP COs ▪ UNDP-GEF 	None	Annually
International Waters Tracking Tool	<ul style="list-style-type: none"> ▪ Project Team ▪ UNDP COs ▪ UNDP-GEF 	None	Annually
Steering Committee Meetings	<ul style="list-style-type: none"> ▪ CTA and Project Team ▪ UNDP COs ▪ UNDP-GEF 	None	Every year, upon receipt of APR
Periodic status reports	<ul style="list-style-type: none"> ▪ Project team ▪ UNDP COs 	None	To be determined by Project team and UNDP
Technical reports	<ul style="list-style-type: none"> ▪ Project team ▪ Hired consultants as needed 	7,000	To be determined by Project Team and UNDP-GEF
Mid-term External Evaluation	<ul style="list-style-type: none"> ▪ Project team ▪ UNDP COs ▪ UNDP-GEF ▪ External Consultants (i.e. evaluation team) ▪ 	30,000	At the mid-point of project implementation.
Final External Evaluation	<ul style="list-style-type: none"> ▪ Project team ▪ UNDP COs ▪ UNDP-GEF ▪ External Consultants (i.e. evaluation team) 	50,000	At the end of project implementation
Terminal Report	<ul style="list-style-type: none"> ▪ Project team ▪ UNDP COs 	None	At least one month before the

			end of the project
Lessons learned	<ul style="list-style-type: none"> ▪ Project team ▪ UNDP COs ▪ UNDP-GEF Regional Coordinating Unit 	4,000 (average \$1,000 per year)	Yearly
Audit	<ul style="list-style-type: none"> ▪ Project team ▪ UNDP CO 	20,000 (average \$5000 per year)	Yearly
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	<ul style="list-style-type: none"> ▪ UNDP COs ▪ UNDP-GEF ▪ Government representatives 	10,000 (average one visit per year)	Yearly
TOTAL INDICATIVE COST			
<i>Excluding project team staff time and UNDP staff and travel expenses</i>		US\$ 121,000	

PART V: LEGAL CONTEXT

300. This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement between the Government of Dominican Republic and the United Nations Development Programme, signed by the parties on 11 June 1974 and ratified by the National Congress through Resolution No. 73 on 5 November 1974. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.

301. The UNDP Resident Representative in Dominican Republic is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto by the UNDP-GEF Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes:

- a) Revision of, or addition to, any of the annexes to the Project Document;
- b) Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
- c) Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility, and
- d) Inclusion of additional annexes and attachments only as set out here in this Project Document.

SECTION II. STRATEGIC RESULTS FRAMEWORK (SRF) AND GEF INCREMENT

Strategic Results Framework²⁴

Project Title: Reducing conflicting Water Uses in the Artibonite River Basin through development and adoption of a multi-focal area Strategic Action Programme.

Logical Framework Analysis and Objectively Verifiable Impact Indicators

	Objectively verifiable indicators				
Goal	<i>To ensure ecosystem stability, integrity, functions and the continuity of ecosystem services that support global benefits and sustainable livelihoods in the bi-national Artibonite Watershed.</i>				
Objectives/ Outcomes	Indicator	Baseline	Target	Sources of verification	Assumptions
Project Objective: <i>Establish a bi-national framework for integrated management of the Artibonite watershed by 2012 that will promote comprehensive, ecosystem-based reforms, demonstrations and investments,</i>	A Bi-national Strategic Action Programme (SAP) for the sustainable management of the Artibonite watershed endorsed at highest levels (IW SP 3).	No watershed-wide planning and management framework for regional co-operation in the management of the Artibonite. No watershed-wide intervention has ever been undertaken. Efforts to address environmental degradation have been fragmented and ultimately unsustainable.	A viable bi-national management and governance framework that links national development strategies and concerns to identified regional priorities, underpinned by an achievable, joint long-term vision for sustainable development and management of the Artibonite watershed is endorsed by both countries. Ratification of SAP by relevant Ministries and	Report of ministerial conference for SAP adoption. Record of SAP endorsement by both countries. Midterm and final evaluations.	Continued political commitment to jointly address environmental degradation in the Artibonite Both countries are willing to work jointly within a watershed governance and management framework. Continued political and social stability in

²⁴The project will actively engage in IW LEARN activities such as IW LEARN Experience Notes that document lessons and good practices in a form that facilitates their replicability, and will actively participate in GEF and other activities that seek to promote replication and share experiences, such as the Biennial GEF IW Conferences. Funds for these activities and participation have been included in the project budget. The project will also draw on lessons learnt from other GEF IW projects.

<p><i>and lay the bases for long-term environmental functionality and socio-economic stability</i></p>			Secretariats, government agencies and key resource user groups by Q 13		<p>both countries. No large-scale or catastrophic natural events (hurricanes, deluges, or diseases) that destroy investments or additional cover.</p>
	Increase in freshwater flow (m ³ /sec) at the Peligre Dam	<p>Extensive deforestation and harmful agricultural practices in the upper areas of the watershed have resulted in severe soil erosion and sedimentation of waterways, and reduction in freshwater output.</p> <p>Baselines are as follows: Freshwater flow: 45 m³/sec;</p>	<p>Freshwater flow: No decrease from current level of 45 m³/sec, and optimally increase to 65 m³/sec by 2030 to meet needs of future population;</p>		
	Increase in area under permanent tree cover (ha) in the entire basin	<p>Area under tree cover in the Artibonite (1999 levels): 120,000 ha;</p>	<p>Area under permanent tree cover: DR: Increase by new cover above baseline by 20,000 ha by year 2030 and 40,000 ha by 2050; Haiti: Increase in area under new cover by 30,000 ha by year 2030 and by 60,000 ha by 2050.</p>		
	Ecosystem diversity (increase in area with native tree species cover)	<p>Native tree species nearly extirpated or highly threatened in some areas in the watershed. (Baseline will be determined during the TDA).</p>	<p>20% of area under new cover to be with native species (target to be refined during TDA)</p>		
Reduction in sediment load (tonnes/ha/year) at Peligre dam site	<p>Sediment load at Peligre Dam site: 120 tonnes/ha/year (2006)</p> <p>Baselines and targets by sub-watersheds will be validated during the TDA process.</p>	<p>50% reduction in sediment load in Peligre dam site from 120 tonnes/ha/year to 60 tonnes/ha/year, by year 2030</p>			

	Beneficiaries in pilot project areas report an improvement in standard of living in the form of increased access to ecosystem services and increased commerce within demonstration areas.	Limited access to water for domestic use and production. 84 families in DR target communities with access to fresh water. (Las lagunas) Producers of peanuts, root crops, and fruits selling home processed or unprocessed foodstuffs to local markets	1,900 families with access to fresh water from 2 water delivery systems and one tubular well by Q8. 2,000 producers in 8 associations with improved access to markets. By Q12	Field surveys and production records by executing agencies and local extensionists. Stakeholder surveys Records from agribusinesses	
Outcome 1. Comprehensive analysis of watershed issues provides a sound basis for prioritization of transboundary problems and agreement on management objectives.	A Trans-boundary Diagnostic Analysis (TDA) completed and approved.	Outdated and incomplete biophysical and socio-economic information on the watershed; inadequate understanding of the transboundary problems and their socio-economic root causes and impacts.	Approval of TDA by national, inter-ministerial committees and bi-national steering committee by the end of Q7 including: -Completed biophysical and socio-economic characterization of the watershed and adjacent coastal areas; - Institutional, legal and policy analysis at national level and comparatively -Analysis of requirements to improve productive value chains and market access -Causal chain analysis clearly identifying root causes of major problems and priorities for SAP intervention.	Final TDA document Reports of analyses undertaken as part of the TDA Meeting minutes and record of approval by inter-ministerial committees and bi-national steering committee. QORs, PIRs, midterm and final evaluations. Information available on official websites at UNDP, project website, and national government websites.	Cooperation between multiple technical and scientific working groups is maintained throughout the TDA process. National-level budgets for participating ministries are not significantly reduced. Countries and data owners agree to contribute data and information, and to make data freely available.
	Accurate model of the availability of ecosystem provisioning services for future population and	No consolidated information on future demand for water, food, wood and other ecosystem	A 50-year projection of wood, water, and soil demand and availability	Final TDA document Reports of analyses undertaken as part of	

	demographic scenarios and climate change scenarios developed	services under projected population and water demand and availability and climate change scenarios.	projections stratified by decade for future population and migration scenarios, and considering climate change impacts by Q7	the TDA Published information Information available on official websites at UNDP, project website, and national government websites. PIR	
	Stakeholder implementation plan enables effective dialogue between upper and lower watershed.	No mechanism to facilitate stakeholder communication between distant areas of the watershed or trans-nationally.	1 st consolidated stakeholder dialogue that facilitates the development of governance structures providing a forum for stakeholder issues of from all geographic regions within the watershed on land management, trade-offs and ecosystem services by Q6		
Outcome 2. Strategic Action Program and bi-national governance mechanism for sustainable management of the Artibonito watershed negotiated and endorsed by the two countries	National Integrated Watershed Action Plans (NIWAP) that effectively mainstream SLM and IWRM approaches, approved at the ministry-level (IW SP3; LD SP1)	No agreed nor harmonized national integrated watershed management plans for the Artibonite have ever been developed even at national levels. To date, interventions have been fragmented, site specific and largely uncoordinated. Specific actions at the national level for management of the watershed are limited in the two countries. SLM and IWRM are not fully mainstreamed into national planning processes.	The NIWAPs incorporate socioeconomic and biophysical factors to generate a robust planning tool that effectively enables each country to update land-use policies, adopt IWRM reforms, streamline IWRM and SLM approaches into productive sectors, and facilitate stakeholder dialogue (agencies, municipalities, private sector, banking sector, etc), approved by Q9. NIWAPs will include an evaluation of the feasibility of the proposed actions and be compatible with UNCCD NAPS.	National integrated watershed action plans. Reference to the NIWAPs in related sector plans in the two countries. Approval of NIWAP by the SEMARENA (DR) and by MoE (H). PIR, Midterm and final evaluations.	Continued commitment and interest of key stakeholder groups.

<p>Agreement on bi-national governance framework to support SAP implementation, operational by end of the project (IW SP 3).</p>	<p>Baseline efforts to collaborate in specific aspects or areas for the management of the Artibonite watershed have not been comprehensive nor resulted in a functional bi-national initiative for effective cooperation, action, and joint management of this shared watershed.</p>	<p>Permanent bi-national governance framework agreed to for SAP implementation, with clearly defined institutional arrangements, by Q15</p>	<p>A signed agreement by both countries, on the structure and mandate of a bi-national governance framework. Documents detailing the governance structures, roles and responsibilities. Midterm and final evaluations.</p>	<p>Continued political support to bi-lateral development efforts. Countries agree to the establishment of a joint governance structure.</p>
<p>National-level inter-ministerial committees and bi-national steering committee established and strengthened (IW SP3)</p>	<p>National Inter-sectoral committees (GTI in DR and CIP in Haiti) exist. The capacity of these committees needs to be strengthened for participation in the TDA/SAP process.</p>	<p>GTI and CIP fully engaged in the project with strengthened capacity for overseeing the TDA/SAP process for future implementation of the SAP, by Q4</p>	<p>Reports of national and bi-national committees. Evaluations of training QORs, PIR. Midterm and final evaluations.</p>	<p>No unforeseen governmental or structural changes to the cross-sector committees.</p>
<p>Updated information available in the bi-national data and information management (DIM) system, maintained through cooperation by specialized agencies in both countries. (LD SP1)</p>	<p>No bi-national data and information management system, and limited sharing of data between the two countries. Existing data are scattered among a number of institutions.</p>	<p>Bi-national DIM system developed and fully operational, and facilitates access to information for planning and decision-making in the watershed by the two countries by Q14.</p>	<p>Inventory of hardware and software DIM standards and protocol document; GIS products. DIM system populated with data and information from the two countries. MoUs, LoAs with technical institutions for data and technical assistance. PIR, midterm and final evaluations.</p>	<p>Countries and data owners agree to contribute data and information and to make data available on a continuous and timely basis. Technical institutions are supportive of project objectives and contribute to project outputs.</p>
<p>% increase in awareness of importance of SLM and IWRM approaches in enabling the</p>	<p>GEF/UNDP LDC-SIDS MSPs in global Portfolio Project will survey awareness of SLM at the</p>	<p>High level (>80%) of responses to awareness survey by Governmental and</p>	<p>Results of awareness surveys at the watershed level with</p>	<p>All targeted groups in awareness survey actively and honestly</p>

	development needs of different sectors and stakeholder groups to be met.	national level. Level of awareness to be documented during inception phase of the project through a baseline Awareness Survey Awareness of, and the need for, IWRM and SLM approaches is recognized as limited in both countries to small extension services and specialized units within line ministries. Resource users largely unaware of integrated land and water principles.	NGO partners and 50% of general public demonstrate increased awareness by Q16. Information materials and knowledge building activities developed that respond to the needs of stakeholders in the watershed, who range from municipal authorities to farmers with limited education, to NGOs and CBOs by Q8, and widely disseminated by Q14. Building upon a CIDA project, the primary education system will also be targeted by Q4.	stratification at the agency level. Surveys undertaken twice, at Q2 and Q15. Information materials	respond to survey questions.
Outcome 3: Demonstration projects of local economic and sustainable land and water management provide models for up-scaling and replication, and early SAP implementation	Positive IRR on investments undertaken within model demonstration projects and of investment portfolio.	No systematized local investments to support improved production for local markets in harmony with landscape values.	A positive IRR on local investments in sustainable agriculture, livestock management, or forestry (projected). Positive portfolio IRR of 5% above administrative costs and inflation.	Economic analysis to establish baseline Independent audits. PIR, midterm and final evaluations.	National inflation rates remain within 4 - 6% during the project implementation period. No catastrophic climatic events or diseases (crop, livestock, forest pathogens) that set-back production.
	Improved environmental governance frameworks at local levels in support of ongoing decentralization process in the Dominican Republic.	Divergent and inefficient institutional framework for land and water management at local level in DR; Significant technical and financial weaknesses in municipal government and local representation of agencies responsible for land and water management.	An institutionally strengthened and decentralized governance framework for land and water resources management, and strengthened capacities that will lead to an enabling administrative and regulatory environment. Opportunities for replication in Haiti explored.	Progress reports from execution of DR governance pilot project. Midterm and final evaluations.	Continued and active participation of key stakeholder groups Population levels do not radically change in the pilot micro-watersheds.

	<p>Increase in area under sustainable land management (new land under permanent cover in the form of permanent cover - trees, tree-crops) through demonstration projects. (LD SP 1)</p>	<p>Productive activities are inconsistent with local topography and ecosystem functionality, resulting in severe erosion and land degradation, and threats to rural livelihoods. Anecdotal evidence indicates declines in soil fertility and crop yields.</p> <p>The area under permanent land cover in the form of trees and tree crops in the pilot sites is 12,061 ha.</p> <p>No methodology or baseline measurements for erosion on local farming systems exist.</p>	<p>By Q12, a 5% increase in new land committed to permanent tree cover (trees, tree crops) within the pilot projects from 39% to 44% cover, assuming no other significant losses.</p> <p>Targets are:</p> <p>1,720 ha reforested or rehabilitated with sustainable forestry and agroforestry systems or for protection, bringing the area under permanent tree cover to 13,781 ha:</p> <p><i>(Haiti: 500,000 woody trees planted on 450 ha for sustainable harvest and for protection</i></p> <p>- 120,000 fruit and coffee trees planted on 500 ha for production</p> <p><i>DR Hondo Valle: 50,000 shade coffee trees planted to rehabilitate 200 ha of coffee plantations</i></p> <p>- 35,000 fruit trees planted to establish agroforestry plantations on over 145 ha</p> <p>- 100,000 woody trees planted on 90 ha for sustainable harvest and for protection</p> <p><i>DR Las Lagunas</i></p> <p>- 35,000 fruit trees planted to establish 84 agroforestry plantations on over 145 ha</p> <p>- 100,000 woody trees</p>	<p>GIS, field surveys, production records by executing agencies and agency local extensionists.</p> <p>National economic statistics; development reports.</p>
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			<p>planted on 90 ha for sustainable harvest and for protection)</p> <p>990 ha of soil conservation systems established in Haiti & DR (500 ha in Haiti; 490 ha in DR)</p> <p>Methodology tested and baseline established for erosion measurements in pilot sites. While the target is to reduce erosion by 50% in the watershed, this will be validated or adjusted through the pilot projects.</p>		
	No water users associations exist in the pilot areas. There is limited understanding of opportunities for improving water use efficiency options.	Four water associations formed in Haiti and the DR covering 12 sections (5 in Haiti and 7 in the DR)	<p>Statutes of establishment of the associations</p> <p>Minutes of meetings</p>	Increase in number of water users associations functioning	
	Increase in number of rural households engaged in environmentally sound and sustainable economic activities in the pilot projects' area (LD SP 1).	<p>0 Families connected to supply chain for organic fruit products and root crops.</p> <p>In general productive activities are not economically profitable or environmentally sustainable, resulting in declining incomes and increasing poverty levels among the watershed population</p>	<p>900 producers marketing through new supply chains by Q12</p> <p>6000 families have registered business relationships through 4 improved and certified agri-businesses by Q12.</p> <p>750 families benefit from 12 km of roads repaired by Q8.</p>	<p>Organic certification certificates from certifying organizations.</p> <p>Records from fruit packing business and sugar syrup businesses in Saint Michel de l'Attalaye</p>	
Outcome 4: Increased capacity for long-term resource mobilization in	Watershed Investment Plans determine the financial objectives and targets for SAP implementation and on-the-ground investments to increase cover in	No strategic investment programs for productive sectors coupled with long-term projections to increase effective cover and increase water yield	Investment plans (to be integrated into the SAP) that promote SLM and IWRM and extend cover in the form of trees, pasture, and fruit	<p>Watershed Investment Plans approved by sector-level task groups.</p> <p>Sector plans referenced</p>	Ability of sector-level stakeholders to reach agreements on mid and long-range targets for expansion.

support of NIWAP and SAP outcomes in support of IWRM and SLM approaches, and sustainable livelihoods.	the Artibonite. (IW SP3; LD SP1)	<p>in the watershed.</p> <p>Partial investment planning in the DR and Haitian coffee sectors with no agreed-upon investments for setting long range targets for expansion.</p> <p>Market studies for fruits and vegetables completed for Haiti with no agreed upon long-range targets.</p> <p>Energy and livestock management sectors do not have consolidated information or long-range targets for investment.</p>	<p>tree plantations through economic development of the coffee, forestry, livestock management, fruit, agriculture, energy, and transportation infrastructure.</p> <p>For each sector, targets for expansion, a financing gap analysis, and action plan for environmentally sound sector-expansion in bi-physically appropriate areas of the watershed.</p>	<p>to the NIWAPs in related sector plans in the two countries.</p> <p>Targets for environmental benefits referenced in the SAP.</p> <p>PIR, Midterm and final evaluations.</p>	<p>Continued willingness of the governments to maintain investments in rural development in balance with the demands of the politically significant urban development needs.</p>
	Options to increase access by rural producers to formal credit facilities are determined to support credit programs for SAP implementation (LD SP1).	<p>Limited capacity for long-term resource mobilization and poor access to credit by farmers for sustainable land and water management practices.</p> <p>Many experiences in cooperatives with small business and real estate sectors. Farm loans have generally de-capitalized with income groups similar to those in the Aribonite.</p>	<p>Building upon the lessons learned, a plan to mitigate the risks associated with agriculture loans is developed and presented to financiers by Q14</p> <p>Watershed investment plans provide the basis for financing SAP implementation and on-the-ground actions within the watershed by Q14.</p> <p>Financial mechanisms and resources to support the investment plan identified by Q13.</p>	<p>Approved Watershed investment plan;</p> <p>PIR, project mid-term evaluation.</p>	<p>The value of national currencies, inflation, and interest rates remain within predictable levels</p> <p>The private sector accepts responsibility for SLM financing. The government and key institutions will commit the resources needed to maintain the effort beyond the life of the project.</p> <p>High level of donor interest to support NAP and SAP implementation.</p>
	The amount of funding commitments received from national and international government and private sources in support of actions detailed in the	Actions are funded specifically through government budgets whose % of support based on investment needs of the watershed is undetermined and	Initial funding commitments to support SAP implementation from all sources for 20% of the value of the financing gap as	<p>Letters of Commitment from donors.</p> <p>National economic</p>	<p>Inflation remains within 4 - 6% during the project</p>

	financing plan (in \$US)	<p>recognized as very low in comparison to needs and as expressed by 2008 HDI for DR.</p> <p>Bi-lateral support of approximately 40 Million USD from 2009 through 2011 committed to the Artibonite watershed.</p>	<p>outlined in the financing plan for the period 2012-2016</p> <p>Increase in government budgetary allocations in support of sustainable activities in the watershed by 20% over base year 2008 in US dollars by Q16</p> <p>Increase in Bi-and multi-lateral donor activity to support the Artibonite by 20% over base year 2008 by Q16</p>	<p>statistics; development reports.</p> <p>Project Proposals developed.</p> <p>PIR, project mid-term and final evaluations.</p>	implementation period.
	% increase in funding and the diversity of funding sources (LD SP1).	<p>Funding for on-the-ground actions through 2 recognized sources:</p> <p>Governments disburse fund actions in the Artibonite but these are not in response to any long-range investment plan. The percent contribution of these in relation to the needs of the watershed is not known.</p> <p>Bi-lateral support of approximately 40 Million USD from 2009 through 2011 committed to the Artibonite watershed.</p>	<p>At least 2 new financial mechanisms in addition to government budgets or donor projects for funding of on-the-ground investments determined feasible for SAP implementation by Q14</p>	<p>Letters of Commitment from donors.</p> <p>National economic statistics; development reports.</p> <p>Project Proposals developed.</p> <p>PIR, project mid-term and final evaluations.</p>	

SECTION III. TOTAL BUDGET AND WORK PLAN

Award ID:	00051264
Award Title:	PIMS 2890 IW/LD FSP Bi-national: Reducing conflicting water uses in the Artibonite River Basin through development and adoption of a multi-focal area Strategic Action Program.
Business Unit:	DOM10
Project Title:	PIMS 2890 IW/LD FSP Bi-national: Reducing conflicting water uses in the Artibonite River Basin through development and adoption of a multi-focal area Strategic Action Program.
Project ID:	00063758
Implementing Partner (Executing Agency)	NGO – OXFAM-QUEBEC

GEF Outcome/Atlas Activity	Responsible Party/	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	See Budget Note:
	Executing Agent										
OUTCOME 1: Completed information base to provide a scientific base to support prioritization of trans-boundary problems, root causes, and management.	NGO	62000	GEF	71200	International Consultants	25,000	30,000	10,000		65,000	1
				71300	Local Consultants	40,800	50,000	27,000		117,800	2
				71400	Contractual services – Individuals		6,000	2,000		8,000	3
				71600	Travel	34,000	14,000	5,000		53,000	4
				72100	Contractual Services- companies	190,000	180,000			370,000	5
				72300	Materials & goods	45,000				45,000	6
				74200	Audio Vis/Print prod.	5,000	15,000	5,000		25,000	7
					Sub-total Outcome 1	339,800	295,000	49,000	0	683,800	
OUTCOME 2: Strategic Action Programme and bi-national governance mechanism for sustainable management of the Artibonite watershed negotiated and endorsed by the two countries.	NGO	62000	GEF	71200	International Consultants	22,500	27,500	22,000	8,500	80,500	8
				71300	Local Consultants	40,000	65,000	50,000	33,000	188,000	9
				71400	Contractual services – individuals		5,000	15,000	5,000	25,000	10
				71600	Travel		25,000	40,100	20,000	85,100	11
				72100	Contractual Services- Companies	26,400	134,650	97,150	20,400	278,600	12
				72800	Inf Tech Equip		40,000	20,000		60,000	13
				74200	Audio vis & print		20,000	18,000		38,000	14
					Sub-total Outcome 2	88,900	317,150	262,250	86,900	755,200	

OUTCOME 3: Targeted Projects Aimed at Strengthening the Policy Cycle and Early SAP Implementation	NGO	62000	GEF	71200	International Consultants	8,000	9,000	9,000	7,000	33,000	15
				71300	Local Consultants	10,000	20,000	30,000	35,000	95,000	16
				71600	Travel	10,000	20,000	18,000	10,000	58,000	17
				72100	Contractual services – companies	220,000	255,000	220,000	110,000	805,000	18
				74200	Audio Vis/Print prod.			500	8,500	9,000	19
					Sub-total Outcome 3	248,000	304,000	277,500	170,500	1,000,000	
OUTCOME 4: Resource Mobilization	NGO	62000	GEF	71200	International Consultants		5,000	14,000	14,000	33,000	20
				71300	Local Consultants		28,000	30,000	26,000	84,000	21
				71400	Contractual services – individuals			10,000	22,000	32,000	22
				71600	Travel			13,000	11,000	24,000	23
				72100	Contractual services-companies		20,000	30,000	20,000	70,000	24
				74200	Audio Vis/Print prod.			8,000	10,000	18,000	25
					Sub-total Outcome 4		53,000	105,000	103,000	261,000	
Monitoring and Evaluation	NGO	62000	GEF	71200	International Consultants		18,000		27,000	45,000	26
				71300	Local Consultants		2,000		7,000	9,000	27
				71600	Travel		7,000		13,000	20,000	28
				74200	Audio Vis/Print prod.		3,000		3,000	6,000	29
					Sub-total M&E		30,000		50,000	80,000	
Project management	NGO	62000	GEF	71200	International Consultants	19,000	20,000	15,000	14,000	68,000	30
				71300	Local Consultants	25,000	28,000	29,000	25,000	107,000	31
				71400	Contractual Services-individuals	8,000	8,000	8,000	8,000	32,000	32
				71600	Travel	5,000	5,000	5,000	5,000	20,000	33
				72200	Equipment	30,000	15,000	2,000		47,000	34
				72500	Office supplies	3,000	2,000	2,000	2,000	9,000	35
				74200	Audio Vis/Print prod.	2,000	5,000	5,000	5,000	17,000	36
					Total Management	92,000	83,000	66,000	59,000	300,000	
PROJECT TOTAL						768,700	1,082,150	759,750	469,400	3,080,000	

Budget notes:

- (1) 33 weeks of international consultants: (a) Regional Project Specialist - 30 weeks to coordinate and oversee Outputs 1.1 through 1.4 up through completion of TDA document within output 1.4- see ToR; (b) specialist in conflict resolution with expertise in land tenure issues – 3 weeks. (See budget note 9 for TDA-SAP specialist who will provide guidance on the TDA process including elaboration of the CCA and identification of priority interventions).
- (2) 133 local consultant-weeks including:
 - (a) 2-Senior Project Specialists – one per country - 104 weeks- to support field work, provide technical expertise and coordinate the TDA development process within each country and bi-nationally, oversee service contracts under Outputs 1.2 and 1.3, and lead in development of output 1.4 as per ToRs;
 - (b) Geographer/cartographer – 1 per country- total 5 weeks to support GIS work on output 1.1;
 - (c) TDA prep support: 6 weeks to support Sr. Project Specialists in preparation of TDA document per Output 1.4. given large number of agencies and stakeholder groups in both countries that need to be engaged and consulted.
 - (d) 8 staff- weeks of a pool of national experts forming the TDA Technical Task Team responsible for development of TDA
- (3) (11) (24) Translation services: output 1.4 and 2.1 TDA and SAP documents respectively. All documents will need to be available in French and Spanish, and many will need to be in Creole.
- (4) Travel: This is a bi-national and highly participative project, and travel between countries is necessary to connect technicians, harmonize geographic and scientific criteria, and enable participation of stakeholders in remote regions. The project area spans over 9,550 km², most of it with very poor road infrastructure sometimes requiring days of travel to cover a few hundred kms. Project consultants will need to travel within the watershed and between the two countries. Efforts have been made to maintain travel to a minimum and not sacrifice participation. Travel includes: inception workshop, TTT meetings, development of harmonized geomorphological criteria, and support to ecosystem evaluations. Airfare- DR-Haiti- is less expensive than driving for bi-national coordination: 6 Island air-fares for TDA process. Teleconference or other electronic means will be preferred whenever possible. When actual meetings or workshops must be held in order to support project objectives, all efforts will be made to keep costs at a minimum and to hold meetings back-to-back. M&E field visits will be programmed jointly with other missions to achieve greater cost efficiencies.
- (5) Contracts including to undertake:
 - (a) Socio-economic characterization of watershed: Completion of socio-economic baseline- deliverables include: improved baseline for Haiti; migration trend analysis and effects on land degradation/SLM, analysis of land tenure and implications, valuation of ecosystem services and costs of land degradation, and modeling of demand for ecosystem services.
 - (b) Water quality analysis of representative streams to determine hotspots: development of sampling methodology, sampling, field and laboratory analysis, interpretation and publishing of results.
 - (c) Validation of the USAID market study and commercial chain for Haiti for the Artibonite watershed, and specific studies on trade, flow of goods, market networks, existing agro-transformation units and potential and existing market access with emphasis on the border area
 - (d) Stakeholder analysis and governance structure: Advanced stakeholder analysis: institutional mapping, relationships and conflicts; capacity needs assessment for fulfillment of roles within SAP process; further development of stakeholder engagement plan; proposal for governance structure in each nation and bi-national; management of a participative process and feedback on proposed models.
- (6) Materials: Images for GIS and cartography materials for 9,500 Km²
- (7) (14) (19) (25) (29) (36) Audio-Visual and Print Production Costs: Respectively, Output 1.4 publication of TDA results, Outputs 2.2 and 2.4 NIWMPs and SAP documents published, Outcome 3 Information material and publication of the results of all pilot projects, Output 4.1: Watershed Investment Plan; information materials, newsletters, posters on the project to advocate for project objectives and disseminate project results, including, inter alia, at events such as the GEF IWCs; web-site creation and up-keep, telecommunications and internet connection.
- (8) International consultants total 41 weeks: (a) Regional Project Specialist- 34 weeks - to manage the bi-national aspects of the SAP process and facilitate bi-national dialogue in outputs 2.1 and 2.3, ensure coherence and coordination in development of output 2.2, guide and oversee output 2.4, provide technical

guidance on development of M&E system and DIMS; (b) TDA-SAP specialist – 2 weeks - to provide advice and facilitate the TDA- SAP development process including CCA and identification of priority interventions, development of vision, integrated watershed management objectives, and governance framework options, and SAP M&E framework; and (c) Watershed management specialist -2 weeks - (FAO roster) to provide quality control and mentoring in the development of IWMPs and SAP; and (d) information expert — to assist in establishment of the DIMS. 3 weeks

(9) 212 local consultant weeks, which includes:

(a) Sr. Project Specialists (one per country) 104 weeks provide National-level support to SAP development (output 2.1), facilitate and oversee development of the NIWMPs (output 2.2) in particular in terms of ensuring broad and effective inter-sectoral engagement, provide for national-level support to SAP development, and provide guidance and oversee awareness raising strategy, in particular in terms of ensuring that materials are designed to effectively reach the wide array of stakeholders in the watershed and at national levels; provide technical guidance and supervise development of M&E system and DIMS.

(b) 38 weeks of pool of national consultants forming the SAP formulation team and to support the Reg. Project Specialist in the development of SAP document for discussion and negotiation.

(c) Sector specialists: 40 weeks (4 specialists x 2 countries x 5 weeks) to support the development of sector-specific action plans as part of the NIWMP.

(d) Watershed Management Development Specialists: 15 weeks (2 x 9 weeks) National-level experts to support output 2.2 for development of NIWMPs.

(e) Public participation specialist to provide input into the SAP and Governance strengthening processes ensuring - 15 weeks (2 x 9 weeks): National experts to support output 2.3. Deliverables include: completion of stakeholder analysis, participation plan, and development of a proposal for a watershed governance structure.

(11) Travel: Stakeholder participation in outputs 2.1-2.3 estimated at 920 pers-days over a two year period; per diem for project officers; regional project specialist, and sector specialists in development of SAP and Sector Action Plans for IWMPs respectively. Per diem for international consultants plus 3 international airfares (\$2,000 each). Island-local airfares for Output 2.1 for Regional project specialist and national authorities (3 per trip) (18 airfares x 450) over 3 years. The decision to drive or fly will be made during the development of annual work plans based on an analysis of local prices for airfare v. fuel v. time-per diem needs. Teleconference or other electronic means will be preferred whenever possible. However, there is no internet access in most of the watershed and stakeholder engagement and consultations will require travel within the watershed. When actual meetings or workshops must be held in order to support project objectives, all efforts will be made to keep costs at a minimum and to hold meetings back-to-back. M&E field visits will be programmed jointly with other missions to achieve greater cost efficiencies.

(12) Includes:

(a) Awareness and public outreach: Deliverables include implementing baseline awareness surveys, development and publishing of information kits, municipal level presentations, and re-evaluation of effectiveness of messages.

(b) Development of Radio programs/shows in each country/language.

(c) Monitoring and Evaluation System Development: Analysis of DIMS system needs, construction of baseline and identification of gaps; design of DIMS including extent and frequency of monitoring, parameters measures, standardized methods; installation and functioning of hardware and software; training. Development of interactive website and selection and uploading of technical information and system supervision.

(13) Computer server to host IMS and web-site. GIS plotter and printer. Statistical and GIS software and other specialized software for support of the IMS.

(15) International Consultants total 17 weeks for the Regional Project Specialist to provide technical guidance to pilot project implementation; ensure full feed-back loops between TDA development and pilot execution; supervision of pilots to ensure coherence in overall project implementation; review and assess pilots for identification of lessons learned and best practices; identify strategies and requirements for upscaling and replication; and incorporate results of the pilots into the SAP development process

(16) Sr. Project Specialists (one per country) 107 weeks to provide national-level support and backstopping and technical assistance to implementation of 3 pilot projects and facilitate reporting on progress to UNDP and partners; ensure synergies between TDA development and pilot execution; assist in review and assessment pilots for identification of lessons learned and best practices; assist in identification of strategies and requirements for upscaling and replication; and assist in incorporation of results of the pilots into the SAP development process

- (17) *Travel includes: Stakeholder participation in DR Pilot project est. 240 pers-days over two year period; Per diem and expenses for regional project specialist and Sr. Project Specialists in monitoring pilot projects and coordinating with donors. Island-local airfares for Outcome 3 Reg. proj. specialist is 6 airfares x \$450.00. over 2 years. The decision to drive or fly will be made during the development of annual work plans based on an analysis of local prices for airfare v. fuel v. time-per diem needs. M&E field visits will be programmed jointly with other missions to achieve greater cost efficiencies.*
- (18) *Includes:*
- (a) *Verrettes commune pilot project for soil conservation (for detailed outputs see draft project document in Part IV-Appendix 1 of this document) to be executed by Helvetas under an inter-agency agreement.*
 - (b) *Organic agriculture in the Upper Artibonite Watershed pilot (for detailed outputs see draft project document in Part IV-Appendix 1 of this document) to be executed by Oxfam-Quebec under an inter-agency agreement.*
 - (c) *Watershed-based environmental administration model for the Dominican Artibonite watershed (for detailed outputs see draft project document in Part IV-Appendix 1 of this document) to be executed by SEMARN under a NEX agreement.*
- (20) *17 staff-weeks for Regional Project Specialist- to provide technical guidance and oversee: resource gap analysis for SAP and NIWAP implementation (output 4.1) ; development of baseline diagnosis; development of Watershed Investment Plan; identification and review of potential financial mechanisms at the national level (Output 4.2); identification of sector-specific business opportunities (output 4.3) ; linkages to lessons and results of pilots; requirements for improving access to credit by local farmers (output 4.4).*
- (21) *Sr. Project Specialists (one per country) 95 weeks to provide national-level support to financial specialists and development of local information and local interaction on market chain analysis.*
- (22) *Resource Mobilization expertise to provide assistance in the development of integrated financing strategies and the Watershed Investment Plan*
- (23) *Travel includes: Stakeholder participation costs in the development of action plans and sector-specific resource mobilization activities in output 4.1 (est. 350 pers-days). Island-level airfares (6 x \$450.00) and per diem (6 trips) for reg. project specialist. Teleconference or other electronic means will be preferred whenever possible. However, there is no internet access in most of the watershed and stakeholder engagement and consultations will require travel within the watershed. When actual meetings or workshops must be held in order to support project objectives, all efforts will be made to keep costs at a minimum and to hold meetings back-to-back.*
- (24) *Includes:*
- (a) *Development of financing mechanisms: evaluation of financial performance of existing mechanisms, identification and analysis of new options and mechanisms, institutional/policy requirements for accessing new mechanisms as well as capacity building needs, and feasibility studies.*
 - (b) *Market and Credit Assessments: Review of credit programs and current market mechanisms for agriculture, livestock, coffee, forestry, and small business enterprise. Review of credit programs and success in increasing access to credit.*
- (26) *International consultants 22 weeks to undertake the independent Mid-term and Terminal project evaluations*
- (27) *11 weeks national consultants to provide support to the independent Mid-term and Terminal project evaluations*
- (28) *Travel for the international - and national consultants - undertaking the external independent evaluations both from their home base as well as within the project area. Given the expanse of the project area in some cases it may also be more cost-effective to bring groups of stakeholders together for interviews.*
- (30) *International consultants total 40 staff-weeks for Regional Project Specialist- for project management duties. Any additional staff-weeks required by the Regional Project Specialist to fulfill his/her project management duties will be co-financed by UNDP.*
- (31) *364 staff weeks for a Project Administrator to provide project management and logistical support to the management team and to Sr. Project Specialists. Support also provided by an administrative assistant that also provides extra language support and logistics in the French Language.*
- (32) *Contractual Services Individuals: Part time accounting and yearly audit*
- (33) *Watershed level travel facilitated for members of steering committee and key stakeholder representatives to Bi-national and national steering committee meetings; CTA to attend GEF IW conferences.*
- (34) *Equipment: Hardware and software equipment for PCU, including servers and GIS, software.*
- (35) *Office supplies including furniture*

Indicative Quarterly Work Plan

Indicative Work Plan	Q1 2009	Q2	Q3	Q4	Q1 2010	Q2	Q3	Q4	Q1 2011	Q2	Q3	Q4	Q1 2012	Q2	Q3	Q4
Outcome 1- Comprehensive Analysis of watershed issues- Prioritization of transboundary problems-agreement on management objectives																
Evaluation of erosion risks		■	■													
Evaluation of land use conflicts		■	■	■	■	■	■									
Land use change analysis		■	■	■	■	■	■									
Water quality evaluation			■	■	■	■	■									
Ecosystem assessments			■	■												
1.2 Socio-economic and governance characterization																
Socio-economic review		■	■	■	■	■										
Gauge availability of ecosystem services and demand		■	■	■	■	■										
Institutional mapping and legal review			■	■	■	■										
Market, production chain, and transformation and access studies		■	■	■	■	■										
Land tenure analysis and capacity assessment		■	■	■	■	■										
Governance analysis: legal policy and institutional mapping		■	■	■	■	■										
1.3 Stakeholder engagement and communication strategy																
Full stakeholder analysis		■	■	■	■											
Capacity needs assessment-key stakeholder groups		■	■	■	■											
Development of governance structures					■	■	■	■	■	■	■	■	■	■	■	■
1.4 Interventions Proposed																
Causal Chain Analysis			■	■												
Sector-based studies		■	■	■												
Identification of interventions and pre-feasibility studies					■	■										
TDA Review, publication and dissemination							■	■								
Outcome 2-SAP development and identification of reforms and investments																
2.1 Development of SAP																
Development of Vision and EcoQOs									■							
Setting targets										■						
Prioritization of interventions											■	■				
Draft SAP												■	■	■		
Finalize and endorse SAP														■	■	
2.2 National Integrated Watershed Management Plans to support SAP developed																
Development of sector-based Action Plans			■	■												

Consensus on national-level “hotspots” and priority locations for action																			
Dissemination of Plans, stakeholder dialogue and revision based on stakeholder inputs																			
Detailed institutional diagnosis to support proposal for revision based on stakeholder inputs																			
Endorsement of the NIWMP by Inter-ministerial/intersectoral steering committee in each nation																			
2.3 Bi-national management and governance structure for the watershed identified and endorsed																			
Analysis of potential stakeholder structures																			
Proposal for national and bi-national stakeholder governance structure disseminated																			
Validation by national stakeholder groups																			
Validation by bi-national stakeholders																			
Bi-national agreement for bi-national structure																			
2.4 Awareness raised and capacity of major stakeholders for watershed management increased																			
Awareness surveys																			
Public information campaign: radio, information kits, local talks, instructive video																			
2.5 Information Management System (IMS)																			
System design																			
System development and testing																			
Training																			
Data collection, collation and processing																			
IMS launch																			
Outcome 3. Demonstration Projects of local economic and sustainable land and water management																			
3.1 Developing Niche Markets for Organic Fruit Crops																			
Training in organic practices and certification																			
Contracts with International Certification Organizations																			
Value Chain Analysis																			
Implement improvements																			
Producer data-base and network system																			
3.2 Sustainable Land Use and Productive Systems in Riviere Bois/Verettes Commune																			
Production of training materials based on local conditions																			
Implement training in production systems																			
Installation of demonstration farms																			
Information gathering on results																			
3.3 Pilot Governance Project in the Dominican Republic																			
Establishment of “Gerencia” and “sub-gerencia” and site conditioning																			

Detailed institutional diagnosis to support proposal for government administrative management structure																			
Proposal for administration management plan approved																			
Managerial capacity building: EMU, sub-EMUs established and equipped																			
Mancommunal environment units established and equipped																			
Localized MIS developed and connected to Artibonito DIMS																			
Outreach programs implemented																			
Outcome 4: Increased capacity for long-term resource mobilization in support of NIWMP and SAP outcomes in support of IWRM and sustainable livelihoods																			
4.1 Investment and Resource Planning Capability developed to support SAP and IWMP objectives																			
Detailed resource gap analysis for IWMP and SAP implementation																			
Case studies of performance of financial mechanisms and credit schemes																			
Bi-national seminar for dissemination of information and conclusions																			
Watershed Investment Plans developed and approved																			
4.2 Identification of sustainable financial mechanisms to support investment plans																			
Feasibility analysis of new internal financial mechanisms																			
Identification and engineering of fiduciary mechanisms																			
Feasibility analysis of external mechanisms																			
Results published and disseminated for discussion and adoption in WIP																			
4.3 Opportunities to support investments in environmentally sound, sector-specific business opportunities and improved market access and transformation identified																			
Sector market studies (Dominican Republic)																			
Economic evaluation of current market mechanisms																			
Sector proposals for market transformations and improvements to sustain livelihoods																			
4.4 Modalities for increasing access to credit by local producers identified to support sustainable practices in the watershed and improved livelihoods																			
Economic and capacity review of credit access programs (Haiti)																			
Feasibility study for LEDA establishment (Dom. Rep)																			
Outcome 5- Project Management																			
5.1. Establish and maintain PCU																			
5.2. Establish and maintain website																			
5.3. Stakeholder Advisory Group, partners of the Project meetings																			
5.4. Inception and Steering Committee meetings																			

SECTION IV. ADDITIONAL INFORMATION

PART I. DEMONSTRATION PROJECTS DOCUMENTS (see separate file)

- Model 1. Farmer livelihoods, and soil and water conservation improved through adoption of agricultural practices that are compatible with ecosystem functionality and topography in the Rivière Bois sub-watershed, Commune Verrettes (Artibonite watershed, Haiti).

- Model 2. Mainstreaming niche markets for organic fruit crops in support of a sustainable environment in the Artibonite Upper River Basin.

- Model 3. Implementation of a watershed-based environmental administration model for the Artibonite Watershed in the Dominican Republic.

- Model 4. Bi-national project for the rehabilitation of the Artibonite watershed in the border region between Haiti and the Dominican Republic (co-financed and implemented by CIDA).

PART II. CO-FINANCING LETTERS (see separate file)

PART III. TERMS OF REFERENCES FOR KEY PROJECT STAFF

1. Regional Project Specialist

General Responsibilities:

The Regional Project Specialist (RPS) shall be responsible for the overall coordination of all aspects of the UNDP-GEF project. He/she will head a multidisciplinary team of professionals and consultants working in the Project Coordination Unit (PCU). The RPS shall be responsible for the preparation and implementation of the workplan in accordance with the allocated budget and timetable. He/she shall be responsible for the overall coordination and management of all aspects of the UNDP-GEF Artibonite project. In doing so, he/she shall liaise with designated officials of the two participating countries, other members of the Bi-national and National Project Steering Committees (PSC), the UNDP Country Offices, the Executing Agencies of the pilot projects, potential additional project donors, National Focal Points, and others as deemed appropriate and necessary by the PSC or by the RPS him/herself. The RPS will be also responsible for the delivery of a number of technical activities by maintaining a productive and harmonious relationship with the Senior Project Specialist in each country and with contractors and stakeholder groups. The budget and associated work plan and annual work plans will provide guidance on the day-to-day implementation of the approved Project Document and inception report as well as on the integration of the various donor-funded parallel initiatives. The Regional Project Specialist will have general responsibility for ensuring the Project's high quality technical output. The RPS will provide oversight of the pilot projects within the overall project framework, and guidance and orientation with a view to ensuring that these are fully harmonized within the context of the main project and incorporated into the SAP development process. He/she shall be responsible for delivery of all substantive, managerial and financial reports from and on behalf of the Project, including the pilot projects. He/she shall provide overall supervision for all staff in the PCU, as well as guiding and supervising all external policy relations, especially those related to other projects within the Artibonite Project.

Specific Duties:

- Manage the UNDP- GEF Components of the PCU, its staff, budget and imprest account;
- Prepare Annual Work Plans of the project on the basis of the Project Document and inception report, under the supervision of the PSC and in consultation and coordination with related Projects, National Focal Points, GEF Partners and relevant donors;
- Provide technical inputs to, and oversight of, all technical components of the project;
- Coordinate and monitor the activities described in the Annual Work Plans;
- Recruit, coordinate, facilitate and supervise the work of the Senior Project Specialists, consultants, including preparation of TORS, contracts and stakeholder inputs;
- Coordinate and facilitate the work of the Bi-national and National Project Steering Committees in coordination with CIDA country representatives;
- Oversee the Senior Project Specialists in the coordination of the TDA, Pilot Projects and in the development of National Integrated Watershed Action Plans and Investment Plans;
- Lead on and coordinate the development of the Strategic Action Program and the development of the governance framework;

- Oversee the monitoring and evaluation process;
- Liaise with the PSC chairperson and act as the Secretary for all PSC meetings and activities, including preparation of documents and reports;
- Ensure project compliance with all UN and GEF policies, regulations and procedures as well as reporting requirements;
- Ensure consistency and coordination with other projects being implemented in the Artibonite Watershed;
- Coordinate and enhance relations among relevant bodies at the national and bi-national level;
- Organize the technical aspects of workshops and meetings as required;
- Liaise, consult, and network with national and regional stakeholders;
- Ensure consistency between the various program elements and related activities provided or funded by other donor organizations;
- Undertake all reporting activities in fulfilment of the requirements of the Executing and Implementing Agencies, the GEF and the PSC, and ensure adherence to the Implementing and Executing Agencies' administrative and technical reporting requirements;
- Promote the Project and seek opportunities to leverage additional co-funding; and,
- Represent the Project at meetings and other project-related fora within the region and globally, as required.

Qualifications and experience:

- Postgraduate degree in Natural Resources Management, Environmental Management or a directly related field (e.g. forestry, rangeland management, agriculture within a watershed management context, water resources management, etc.);
- Demonstrated experience in management of multi-disciplinary projects, preferably of bi-national or regional scope, including team-building skills; experience in GEF International Waters/Land Degradation projects will be an important asset;
- At least 10 years experience in fields related to the assignment;
- Demonstrated understanding of rural sustainable development issues;
- Demonstrated diplomatic, interpersonal, networking and negotiating skills;
- Familiarity with the goals and procedures of international organizations, in particular those of the GEF and its partners (UNDP, CIDA, and regional organizations related to Project activities, and the Ministries of Environment of both nations);
- Written and oral fluency in Spanish/French and solid knowledge of English, especially written; and
- Previous work experience in one or both of the participating countries, and previous work experience in the region on issues related to the Project will be favorably considered.

Other Skills: Proven leadership skills and ability to facilitate the work of multi-disciplinary teams in a large-scale project is essential. Effective oral and written presentation skills. Experience in administration for budget and human resources management required. Good professional knowledge of main office computer applications also required.

2. National Senior Project Specialist (2)

General Responsibilities:

Under the supervision of the Regional Project Specialist (RPS), the Senior Project Specialist (SPS) shall assist the RPS in coordinating the activities of the project at the national level. He/she will report to the RPS and is responsible for the preparation and successful implementation of the annual workplans, in accordance with the allocated budget and workplan. The Senior Project Specialist will have general responsibility for ensuring the Project's high quality technical output. The responsibilities of the SPS will include:

- Work closely with the Government, in particular the Ministries of Environment and of Agriculture as well as other partners to ensure their active participation in the project;
- Assist the RPS and the respective UNDP-CO in managing the project budget at the national level;
- Assist the RPS in preparing and supervising the detailed annual workplan and budget;
- Coordinate the TDA activities and technical support with the various government agencies and stakeholders;
- Participate in the development of the National Integrated Watershed Action Plan and Investment Plan and in the SAP development processes at the national level as directed by the RPS;
- Supervise the execution of the pilot projects to ensure consistency with the approved strategy, and to identify lessons learned, good practices, and opportunities for upscaling and replication;
- Assist the RPS in the recruitment, coordination, facilitation, and supervision of national-level consultants, including preparation of TORS, contracts and stakeholder inputs;
- Maintain good working relationships with government and NGO partners in the day-to-day implementation of the pilot projects, reporting directly to the RPS;
- Organize national workshops and meetings as required;
- Liaise with donor agencies working in the project area;
- Ensure consistency and coordination with other projects being implemented in the Artibonite Watershed;
- Ensure adherence to the Implementing and Executing Agencies' administrative and technical reporting requirements and assist the RPS with reporting;
- Liaise, consult and network with national stakeholders; and
- Oversee the development of information management tools to ensure evaluation, monitoring and replication activities.

Qualifications and experience:

- Postgraduate degree in Natural Resources Management, Environmental Management or directly related field, or combination of qualifications and equivalent experience;

- At least 10 years working experience in fields related to natural resource management issues at national and regional levels, and demonstrated understanding of rural sustainable development issues;
- A good knowledge of the Caribbean context, particularly Haiti and the Dominican Republic, is a strong asset; experience in implementing UN or GEF funded projects is also an asset;
- Familiarity with the goals and procedures of international organizations, in particular those of the GEF and its partners (UNDP, UNEP, the World Bank, and regional organizations related to Project activities, and currently identified Project donors);
- Demonstrated management, interpersonal, networking and team building skills;
- Experience with GIS and IT is highly desirable;
- For this post fluency in oral and written Spanish for the (Dominican Republic), oral and written French (Haiti) and solid knowledge of English in particular written, are requirements. A working knowledge of the other country's language (French/Spanish) is an asset.

Other Skills: Proven leadership skills and ability to facilitate the multidisciplinary work on a large-scale project is essential. Effective oral and written presentation skills. Good professional knowledge of main office computer applications required.

3. Administrative Assistant

General Responsibilities:

As part of the Artibonite Project Coordination Unit (PCU), the Administrative Assistant (AA) will perform a variety of secretarial, coordinating, monitoring and administrative services to ensure the efficient daily running of the PCU and in support of project/programme activities. The AA will work within the PCU, ensuring the smooth functioning and continuity of the projects/programmes and will receive directions from the Regional Project Specialist (RPS) on technical matters.

Specific Duties:

- Draft correspondence and documents of an administrative nature in consultation with the RPS;
- Coordinate the procurement activities for the PCU and support the financial control and monitoring activities of the PCU;
- Establish and maintain the filing system of technical documents and general internal and external correspondence;
- Make administrative arrangements with regard to recruitment of additional consultants or experts for the Project; and
- Assist in the organization of meetings held by PCU (Steering Committee, working groups, etc) and provide administrative and secretarial support during the meetings.

Qualifications and experience:

- Equivalent to graduation from secondary school or equivalent technical or commercial school;
- Specialized training in secretarial/administrative training, or equivalent work-related experience including typing and proven skills on standard office software;
- Fluent in Spanish/French and a good knowledge of English, particularly written;
- At least 5 years relevant experience;
- Demonstrated managerial and communication skills;
- Sound computer skills and experience with computerized systems and databases; and,
- Previous experience within the UN system or with GEF projects will be an asset.

PART IV. SUMMARY OF STAKEHOLDER INVOLVEMENT PLAN

Major stakeholder groups in the Artibonite watershed and preliminary stakeholder involvement plan (For the complete Stakeholder Involvement Plan, please refer to Annex 5)

Resource users	
Farmers	<p>I. To design actions at the level of the CBOs (e.g. farmers associations).</p> <p>II. To develop alternative options of communication with an easy access for regular information dissemination, such as periodical reunions, printed materials, training groups, and diffusion of messages by radio.</p> <p>III. To offer concrete actions to farmers to demonstrate with examples instances of ‘good practices’ in sustainable land management, and their benefits for the farmer.</p> <p>IV. To develop experience exchanges with other successful projects.</p>
Community based organizations (CBOs)	<p>I. To form alliances with community leaders, which can bring people together and promote their participation in the project.</p> <p>II. To support CBOs to define priorities and long-term strategies to develop their groups in function of well-defined objectives (through workshops).</p> <p>III. To finance, in the pilot projects, the implementation of priorities defined by CBOs themselves in order to show concrete results and to define an action plan.</p> <p>IV. To develop, in the pilot projects, the capacity of CBOs for specific tasks (e.g. assistance in monitoring and planning) and to forge strategic partnerships among the major stakeholders establishing the institutional and legal basis for active stakeholder participation at all levels.</p> <p>V. To improve dialogue opportunities between stakeholders groups in both countries through CBOs meetings and to carry out awareness campaign and regular stakeholder meetings for dialogue (mainly at local level).</p>
Production Cooperative Sector	<p>I. To explain the anticipated benefits of the project as well as the expected outcomes, and explore with them how they could most effectively participate in the project.</p> <p>II. To create a website to provide information services, project updates and education materials.</p> <p>III. To develop a program with cooperatives to update their mission and vision in their provincial context (capacity building in strategic and operative planning, objectives definition, lobbying tools and negotiation).</p> <p>IV. To provide education about cooperative principles, democracy and the political parties’ role in the community organizations in order to help the cooperative sector to overcome the image that associates a cooperative to a political party.</p> <p>V. To promote model users from among the various groups (energy sector, industrial sector, agricultural sector, etc.).</p>
Energy Sector	<p>I. To reinforce the mechanisms of dialogues between all stakeholders directly affected by electricity management, in order to identify complaints and suggestions of the different sectors, to propose amendments and to follow their evolution.</p> <p>II. To create a joint committee, with a decision-making power and chaired by the Ministers for Agriculture (MARNDR) and Public Works (MTPTC), with the purpose of defining and implementing a management policy for the dam.</p> <p>III. To create an ecological tax in order to preserve the Artibonite watershed.</p>
Industry I Sector	<p>I. To study this informal sector to design a program adapted to its criteria and to develop direct actions for this group.</p> <p>II. To regulate this sector and promote synergies between both countries in the commercial area.</p>

Tourism Sector	To develop a plan to promote ecotourism in Dominican Republic (through JICA project) and in Haiti, resolving the difficulty of access to the zone and its limited tourist facilities.
Management and regulatory bodies	
Bilateral Mixed Commission	<p>I. To provide some technical assistance to the environmental ambassadors in specific subjects to have all the elements to take decisions for the Island.</p> <p>II. To have a budget dedicated to Commission meetings, in particular for the elaboration of the SAP, the negotiation and formalization of required mechanisms for implementing bilateral and international agreements.</p>
GTI and CIP	To help the CIP for the Haitian PAN elaboration.
Haitian regulatory institutions	<p>I. To define with each ministry (ME and MARNDR) its responsibilities in the GEF project with the elaboration of a concrete action plan with clear steps.</p> <p>II. To build capacities of key functionaries in the ministries for the realization of a diagnostic of Haitian regulatory bodies in watershed management issues.</p> <p>III. To allocate GEF funds for the Secretariats for lobbying, to promote bi-national agreements for the watershed management.</p>

SEMARENA	<p>I. To execute a detailed evaluation of capacity followed by targeted capacity building and financing support for Government agencies.</p> <p>II. To establish an action plan with the representatives of involved institutions.</p> <p>III. To convene workshops and seminars for the appropriate Government agencies on sustainable land management and natural resources management, in order to build capacity of government members to develop the watershed action plan and the SAP during the GEF project period.</p> <p>IV. To allocate GEF funds to the Secretariats for lobbying and promoting bi-national agreements for the watershed management with the Congress.</p> <p>V. To create a link to the GEF webpage in the SEMARENA web page for more visibility.</p>	
	SEA	<p>To ensure the SEA participation in this process, it is necessary to articulate clearly the anticipated benefits of the project to key representatives of the relevant government ministries, as well as the expected outcomes.</p>
	IAD	<p>To involve this stakeholder is fundamental because it would be essential to address problems of land tenure during SAP implementation.</p>
Municipalities and local administrative structures	<p>I. To build capacity of decentralized structures in order to attain a better understanding of their mandate. In particular, to strengthen UGAMs administrative and technical capacities about environmental regulations.</p>	
	<p>II. To support the municipalities to formulate a long-term action plan and to name qualified and independent technicians to assure that plan will be executed.</p>	
	<p>III. To establish measures for better involvement of these actors in development projects.</p>	
	<p>IV. To promote the creation of associations and <i>mancomunidades</i> with the aim of CONARE and build their capacities, to reorganize the natural resources management as well as territorial organization, and to coordinate actions.</p>	
	<p>V. To involve UGAMs and CONARE in the administration of the watershed in the Steering Committee of the project through the election of representatives of each structure to be the link between other stakeholder and themselves.</p>	
	<p>VI. To let the SEMARENA, CONARE, and the SEEPYD (DR) and the MdE and choose a specified unit or process to give assistance to the Artibonite Watershed municipalities based on the Project's results.</p>	
Institutions acting for the Artibonite watershed development		
GOs executing projects in the watershed	<p>I. To hold seminars for NGOs on the project's objectives and activities specifically outlining where their inputs would be most effective</p>	
	<p>II. To form a Watershed-level Steering or Administration Committee, representing every watershed stakeholder (in particular NGOs), and to involve it in project action. An enlarged Committee, with a Steering Committee should be taken into consideration. (At the moment, the key NGOs for the Committee are: AROMA, FUNDASEP, FUDECO, IDDI, MOSCTHA, GTZ, Helvetas, CIDA, JICA, and PNUD.)</p>	
	<p>III. To organize training to improve NGOs capacities, in order to make their participation in the project more effective, in particular in the pilot projects.</p>	
	<p>IV. To establish synergies among NGOs, and to take advantage of the well-established linkages between NGOs and local communities in order to promote wide stakeholder participation.</p>	
	<p>V. To enhance involvement of key NGOs in public education, awareness, and outreach campaigns, in particular improving collaboration among NGOs, scientists, and the private sector, including universities.</p>	
	<p>VI. To inform bilateral donors of the project's activities involving civil society and seek collaboration with them to improve the operational process.</p>	

International financing institutions

- I. To develop mechanisms to share experience, networks, databases, and capacity in order to bridge gaps and to facilitate greater collaboration between Haiti and the DR (through workshops, website and newsletters).
- II. To disseminate their technical assistance, since they have good capacities in natural resources and watershed management, agricultural, cattle and forest production, health and hygiene, education, communitarian development, and infrastructures.
- III. To give them a role not only as donors, but also assisting CBOs, NGOs, municipalities, etc., in executing project and improving capacities (e.g. through international experiences exchanges).
- IV. To involve international financing institutions in the promotion of a dialogue between Civil Society and government.
- V. To conduct assessments of past projects developed by international financing institutions in order to identify strengths and weaknesses, and to evaluate activities and results of the GEF Project to correct problems and achieve the objectives.
- VI. To work with the responsible organizations for the relevant regional and international environment agreements (binding and non-binding) in order to integrate the GEF project in the national priority and public policies.
- VII. To seek parallel financing to increase the project size and its positive impacts in the watershed.

Institutions for decision-making support

- I. To identify more precisely key academic and research institutions with capacity in watershed management, and to identify opportunities to build on this existing capacity.
- II. To involve Ministries like the ministries of Health to have access to scientific data and information indirectly related to space management and natural resource uses.
- III. To strengthen partnerships between academic and research institutions and government agencies, as well as with resource user communities, and to create mechanisms for the sharing and dissemination of information e.g. a platform for the dialogue between GEF project and the scientific community at national level and bi-national level.
- IV. To enhance universities capacities for integrated and multidisciplinary research to provide a better basis for decision-making and management.
- V. To develop programs with universities to create awareness in the population and diffuse the project objectives to involve them. In addition, they can identify capacity-building needs and opportunities in the inhabitants of the project area, and help to find alternative financing sources.

PART V. OTHER INFORMATION

Table 1. Artibonite biodiversity (fauna) highlights

Species	Common name	Status
<i>Hyetornis ruficularis</i>	Bay breasted lizard cuckoo	Endemic; endangered
<i>Carduelis dominicensis</i>	Antillean siskin	Endemic
<i>Solenodon paradoxus</i>	Hispaniolan solenodon	Endemic
<i>Hyla hyralprini</i>	Hispaniolan green frog	Endangered
<i>E. montanus</i> <i>E. auriculatoides</i>	Eleuths	Threatened
<i>A. ricardi</i> , <i>A. diniger</i> , <i>A. shrevei</i>	Anoles	Threatened
<i>Dendroica tigrina</i>	Cape May warbler	Migratory species
<i>Dendroica caerulescens</i>	Black throated blue warbler	

Table 2. Area occupied by each class of soil potential in Haiti and DR

(Oxfam Quebec, 2007)

Classes of soil potential		Haiti lower	Haiti upper	Dominican Republic	Artibonite basin
		Area (%)	Area (%)	Area (%)	Area (%)
I	Excellent	1.07	0.00	0.00	0.28
II	Very good	7.59	9.40	5.90	7.92
III	Good	9.79	16.00	10.23	12.72
IV	Medium	5.37	10.60	2.84	7.00
V	Mediocre (except for rice)	9.94	0.00	0.00	2.59
VIa	Poor	10.13	13.30	14.34	12.77
VIb	Poor	0.00		13.38	3.85
VII	Low	39.74	27.00	47.10	36.11
VIII	Very low	16.37	23.70	6.22	16.76

Table 3. Proportion of area occupied by broad types of land uses in Haiti and DR

Land uses Broad units	Haiti lower	Haiti upper	Dominican Republic	Artibonite basin
	Area (%)	Area (%)	Area (%)	Area (%)
Water	0.08	0.70	0.033	0.35
Artificial zone	0.61	0.02	0.13	0.20
Forest zone	5.49	1.78	47.3	15.83
Agroforestry zone	8.78	4.26	1.21	4.57
Eroded soil and scattered vegetation	18.28	34.05	8.72	22.64
Agricultural territory	52.77	33.26	42.55	41.04
Savannas			0.01	0.00
Unspecified	14.00	25.93		15.36
TOTAL	100	100	100	100

Table 4. Proportion of area by erosion risk classes (Haiti) and degradation index (DR)

(Erosion risk presented for Haiti is based on precipitation and slope, except for the values in parenthesis for the upper part which is based on slope, soil erodability, rainfall erosivity, and vegetal cover. The latter parameters with the observation of actual extent of erosion are used for calculating a degradation index in the Dominican Republic (*Oxfam Quebec, 2007*)

Risk classes	Haiti			Dominican	Republic
	Lower basin Area (%)	Upper basin Area (%)	Lower and upper basin Cumulated weighted area (%)	Degradation index	Area (%)
Very small	21.6	20.6 (15.1)	21.0		
Small	5.3	13.9 (12.8)	31.7	Moderate	32.3
Medium	12.1	18.3 (17.5)	47.7	Medium-high	7.9
High	30.2	31.4 (35.3)	78.6	High	59.8
Serious	24.4	12.2 (15.8)	95.4		
Very serious	6.4	3.6 (3.3)	100.1		
Area (km²)	2449.6	4073.1			2770.6

Table 5. Socio-economic characteristics of the populations in the lower and upper Haitian part of the Artibonite basin and Artibonite-Macacias basin (DR)

Area considered	Density (Pers/km ²)	Total watershed pop.	Annual pop. growth rate	Rural pop. (%)	Household size (numbers)	Literacy (%)	Human Poverty index/ Human Dev.	% pop. with drinking water source	% pop. with electricity	% homes using wood fuel for	% land with titles
Haiti		>1.4 million	2.5			>5 years				95	12 (Ctrl Plateau)
Lower basin (10 communities)	118-348			30-99	3.7-4.8	38					
Upper basin (16 communities)	111-214			67-89	4.3-5.8	43		34 (upper basin)	46 (upper basin)		
Frontier zone (7 communities)	111-200			71-89	4.3-5.0	-					
Country	286			60	4.6	-	35.4 / 0.529				
Dominican Republic		160.000				>3 years				57	50
Artibonite-Macacias basin (15 municipalities)	7-104			45-83	3.9-4.8	42-49					
Frontier zone – Province of Elías Piña (7 municipalities)	7-104			55-80	4.1-4.8	43-48		66 (Elías Piña)	59		
Country or District of Santo Domingo	176		1.8	36	3.9	51	10.5/0.779				

Table 6. Preliminary review of environmental problems and causes in the Artibonite watershed

(FAO, 2007. Informe final del estudio del manejo integrado de la cuenca binacional del Artibonito: fase preparatoria)

Problem	Process	Causes
Degradation of hydraulic resources	Reduction in the flow of rivers, springs and other water bodies	Deforestation of the middle and upper basin Unsustainable use of water Scarce rain Extraction of materials Inadequate system of irrigation and drainage Sedimentation
	Lack of water for irrigation and potable use	Inefficient water distribution system Lack of aqueducts (potable water) Trasvase de aguas Scarce rain Drought and climate change
	Drying up of rivers, springs and streams	Scarce rain Drought and climate change
	Deterioration in water quality	Contamination of water by solid and liquid wastes
Loss of soil productivity	Erosion	Deforestation Limited soil conservation practices Elimination of vegetation cover Poor use of hillside soils Overgrazing
	Soil degradation	Deforestation Slash and burn agriculture Overgrazing Poor use of hillside soils Elimination of vegetation cover Poor agricultural practices Loss of natural soil fertility
	Salinization	Inefficient irrigation and drainage Recycling of irrigation water
	Compaction	Poor soil tillage Overgrazing
	Sterilization	Elimination of vegetation cover Unregulated extraction of materials
Degradation of forest resources	Deforestation	Forest fires Migratory agriculture Slash and burn agriculture Production of firewood and charcoal
	Deterioration of forest	Extensive cultivation of forest soils Overgrazing

Table 7. Land use compatibility and conflicts for the sub-basins in Dominican Republic

	(km ²)	(%)	(km ²)	(%)	(km ²)	(%)
Dominican Republic	Underutilized		Use in conflict		No conflict	
Alto Artibonito	2 8.72	5.22	103.00	18.73	418.20	76.05
Joca	6.38	2.24	85.30	29.90	193.59	67.86
Tocino	0.45	0.22	30.69	15.08	172.38	84.70
Yacahueque	19.79	4.20	52.59	11.16	356.16	75.55
Bajo Macasías	13.09	3.50	9.70	2.59	351.43	93.91
Alto Macasías	3.98	3.96	16.09	13.16	102.20	83.59
Caña	22.79	3.96	105.97	18.41	446.75	77.63
Total DR	95.20	4.00	403.33	16.00	2040.72	80.00

Table 8. SEMARENA Sub-Secretariat and major functions

Sub-secretariats	Major Functions
Soils & Waters	Formulates and directs the soil & water national policy regarding its normative use and management; Establishment of rural communities' participation in plans, projects, and programs on watershed management; National Focal Point UNCCD.
Forest Resources	Collaborates in the formulation of the country's forestry policy; Develop the establishment of commercial forestry plantations; Evaluate, approves and monitors the private forestry management plans.
Environmental Quality Management	Guarantees that the human activities are in accordance to the bylaws and rules regarding the established environmental quality criteria; Implement a prevention & mitigation system on natural disasters; National Focal Point UNFCCC
Biodiversity & Protected Areas	Coordinate the design and application of the national policy on development of protected areas and the country's biological diversity conservation; Develop and application of the norms, regulations, and procedures necessary for a sustainable management of the protected areas and the biodiversity; Manage the national protected areas system.
Coastal & Marine Resources	Establish the national marine and coastal policy; Establish the necessary base and coordination to obtain an adequate use and management of the coastal and marine zones; National Focal Point MARPOL
Environmental Education and Information (Directorate)	Promote the national environmental policy among the country's various sectors, through educational and cultural programs; Establishes the environmental education policy to obtain higher consciousness and participation levels from the general public; Generate, actualize, and analyze environmental and natural resources geospatial information to support the policy decision making for the country's development.

Table 9. Dominican Republic Sector institutions involved in land management

Institutions	Areas of intervention and relevant issues
Environment and Natural Resources Secretariat (SEMARENA)	Policy and Strategic orientation, Soil, Water, Forest, Biodiversity, etc. Awareness Campaigns.
Agriculture Secretariat (SEA)	Production, Planning and Trade Agricultural sector
Secretariat for Economics, Planning, and External Cooperation, formerly the Technical Secretariat for the Presidency and the National Planning Office (ONAPLAN)	Economic and social planning Annual national budget development Zoning and Mapping Land use planning , norms and regulation
Public Works, Transportation and Communication Secretariat (SEOP)	Public works, Mines, Energy
Finance Secretariat (SEF)	Public Finances and Taxation
Women's Secretariat	Gender Issues
Education Secretariat (SEE) & Higher Education , Science & Technology (SEECYT)	Formation, Research & Extension
Public Health & Social Assistance Secretariat (SESPAS)	Public Health and Sanitation
Foreign Relations Secretariat (SEREX)	International Agreements for Environmental Conventions, Joint Bi-national Commission
Superior Land Tribunal	Land Legal Matters
General Directorate for Frontier Development (DGDF)	Sustainable development activities along DR-Haiti frontier
National Institute for Hydrological Resources (INDHRI)	Water works infrastructure and regulations Water resources management: Dams, rivers, canals, etc.
National Meteorology Office (ONAMET)	Weather parameters, forecasts, etc.

Table 10. Institutions involved in natural resources management in Haiti

Agencies/Institutions	Areas of intervention and relevant issues
Ministry of Environment (MOE)	Policy and strategic orientation Awareness campaigns Management of national parks and protected areas Responsible for the implementation of various conventions regarding desertification, biodiversity and resource management
Ministry of Agriculture, Rural Development and Natural Resources (MARNDR)	Soil management Forest management Water resources management: Dams, rivers, canals, etc. Watershed management Meteorology Extension
Ministry of Planning and External Cooperation (MPCE)	Zoning Land use planning , norms and regulations Mapping (CNIGS)
Ministry of Public Works, Transportation and Communication (MTPTC)	Mines Energy Hydroelectricity Drinking water Surface water (uses)
Ministry of Economy and Finances	Land tenure and taxation
Ministry of Education	Education Research Extension
Ministry of Public Health and Population	Public Health and sanitation
Ministry of Foreign Affairs	International Agreements for Environmental Conventions
Ministry of Culture and Communication	Management of cultural sites, monuments
Ministry of Interior	Risk and disaster management – administrative divisions – international waters
Ministry of Justice	Legal matters
National Institute of Agrarian Reforms	Conflicts and disputes

PART VI. MAPS (see separate file)

Map 1 - Location and delimitation of the three main subdivisions of the Artibonite basin in Haiti and the Dominican Republic

Map 2 - Distribution of soil potential classes in the lower basin in Haiti

Map 3 - Distribution of erosion risks in the lower Artibonito Watershed in Haiti

Map 4 - Land use conflicts in the lower Artibonito Watershed in Haiti

Map 5 - Land use conflicts in the upper Artibonito Watershed in Dominican Republic

Map 6 - Land use change in the upper Artibonito Watershed in Dominican Republic

ANNEXES (see separate files)

Annex 1 – Oxfam Situation Analysis

Annex 2 – Gap Analysis

Annex 3 – Diagnostic Study of the Upper Artibonite River Basin

Annex 4 - Diagnostic Study of the Lower Artibonite River Basin

Annex 5 – Stakeholder Involvement Plan

Annex 6- Climate change and initiatives to address its impacts in the Artibonite

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Country: Dominican Republic

UNDAF Outcome(s)/Indicator(s): *By 2011, have in place national and local policies and capacities for the protection and sustainable management of the environment, including the management of environmental risks and response to emergencies and disasters*

Expected Outcome(s)/Indicator (s): *Legal/institutional basis for land sustainable management and protected areas revised and updated.*

Expected Output(s)/Indicator(s): *Number of replicable sustainable land management models (environmental, social and financial) established.*

Implementing partner: *UNDP and Oxfam - Quebec*

Other Partners: *Dominican Secretariat of Environment and Natural Resources (SEMARENA), Haitian Ministry of Environment (MDE).*

<p>Programme Period: <u>2007-2011</u> Programme Component: <u>Energy and environment for sustainable development.</u> Project Title: <u>PIMS 2890 IW/LD FSP Bi-national: Reducing conflicting water uses in the Artibonite River Basin through development and adoption of a multi-focal area Strategic Action Program</u> Project ID: <u>00063758</u> Project Duration: <u>4 years</u> Management Arrangement: <u>NGO execution</u></p>	<p>Total budget: US\$10,260,000 Allocated resources: US\$3,080,000</p> <ul style="list-style-type: none"> • Regular UNDP DR US\$80,000 • Regular UNDP Haiti US\$300,000 • Other: <ul style="list-style-type: none"> ○ CIDA US\$4,643,000 <p>In kind contributions</p> <ul style="list-style-type: none"> • Government DR US\$800,000 • Government Haiti US\$947,000 • UNDP DR US\$60,000 • Oxfam-Quebec US\$200,000 • Helvetas US\$150,000
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Agreed by (Dominican Republic Government): _____ Date: _____

Agreed by (Haiti Government): _____ Date: _____

Agreed by (Oxfam - Quebec): _____ Date: _____

Agreed by (UNDP DR): _____ Date: _____