



Strengthening the climatic resilience of the drinking water sector in the South of Haiti

Part I: Project Information

GEF ID

10320

Project Type

FSP

Type of Trust Fund

LDCF

CBIT/NGI CBIT NGI**Project Title**

Strengthening the climatic resilience of the drinking water sector in the South of Haiti

Countries

Haiti

Agency(ies)

UNDP

Other Executing Partner(s)

MDE, DINEPA

Executing Partner Type

Government

GEF Focal Area

Climate Change

Taxonomy

Climate resilience, Climate Change Adaptation, Climate Change, Focal Areas, Least Developed Countries, Influencing models, Strengthen institutional capacity and decision-making, Transform policy and regulatory environments, Stakeholders, Local Communities, Type of Engagement, Consultation, Participation, Information Dissemination, Civil Society, Community Based Organization, Beneficiaries, Communications, Awareness Raising, Behavior change, Gender Equality, Gender results areas, Access and control over natural resources, Participation and leadership, Access to benefits and services, Capacity, Knowledge and Research, Capacity Development, Adaptive management, Learning

Rio Markers**Climate Change Mitigation**

Climate Change Mitigation 0

Climate Change Adaptation

Climate Change Adaptation 2

Duration

60 In Months

Agency Fee(\$)

427,933

Submission Date

7/25/2019

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
CCA-1	LDCF	3,379,563	3,500,000
CCA-2	LDCF	1,125,000	28,100,000
	Total Project Cost (\$)	4,504,563	31,600,000

B. Indicative Project description summary

Project Objective

To improve the resilience of drinking water access in Haiti to the effects of climate change

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
1. Improved understanding and awareness of the vulnerability of the water sector to climate change	Technical Assistance	<p>1.1. Improved awareness, knowledge and information management systems improved for the water sector to plan and respond to the risks of climate change.</p> <p>1.2. Target communities are prepared to effectively plan their responses to the impacts of CC on drinking water access</p>	<p>1.1.1. Analyses with gender specific criteria carried out at national level to have climate change scenarios constructed and show their implications for the availability of water to inform communities and government on adaptive water management options, resilient water supply and implementation of a continued information and knowledge generation system to inform water governance and water related decision-making.</p> <p>1.1.2. Cost-benefit analyses of alternative adaptation strategies under different CC scenarios.</p> <p>1.1.3. Training programmes implemented for regional and national institutions on the magnitude, nature and implications of CC on fresh water availability, including methodologies and application of vulnerability assessments, and adaptation solutions.</p> <p>1.1.4. Scientific and technical studies carried out regarding the implications of CC and options for</p>	LDC F	400,000	5,600,000

management and adaptation in the target area, feeding effectively into decision-making on CC-resilient water supply.

1.1.5. Inventory and quality characterisation of subterranean water resources carried out in the area served by OREPA Sud.

1.2.1. Methodologies and instruments developed for Vulnerability Assessment of drinking water supply at community level.

1.2.2. Participatory Vulnerability Assessments, carried out in 86 target communities.

1.2.3 Integrated water resource modelling exercises carried out of the projected long-term impacts of CC on biodiversity, ecosystems, and urban systems, and the interactions between these aspects and drinking water availability at a landscape level.

2. Strengthening of the framework of regulations, mechanisms, policies and institutional capacities at national, regional and local levels for the rational management of drinking water under CC	Technical Assistance	2.1. Key regulatory and policy instruments take into account the implications of CC for drinking water supply and promote adaptive community-based management. 2.2. Increased levels of capacities in priority institutional stakeholders (DINEPA, OREPA, and 60 CAEPA)	2.1.1. Two regulatory instruments adjusted to take into account the evolving needs and conditions resulting from CC. 2.1.2. Plans (developed by DINEPA OREPA Sud and 60 local Water Supply Action Committees (CAEPA), oriented by the results of evaluations and analyses of CC and its implications for water supply vulnerability, providing for	LDC F	515,000	22,400,000
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in relation to technical aspects of water resource management, territorial land use planning, management and application of information (on water resources, CC and related threats).

2.3. 86 target communities, with 338,728 beneficiary individuals (including 90,000 direct beneficiaries) with instruments and mechanisms that ensure the sustainable management of water resources and associated infrastructure and specific strategies to include / target female-headed households.

adaptation and the prioritization of investments in drinking water supply under conditions of CC.

2.1.3. Frameworks and instruments developed and applied

for planning and coordination between national, regional and community organisations.

2.2.1. Applied programmes implemented for the strengthening of capacities (precise capacity development needs to be confirmed during PPG phase)

2.2.2. Key equipment needs provided (to be defined during PPG phase)

2.3.1. Community-based strategic and operational plans with gender specific criteria developed for ensuring the resilience of drinking water access to the impacts of CC.

2.3.2. Consensus-based community-level territorial planning carried out, providing for permitted land uses in drainage and recharge zones in order to ensure resilience of drinking water access to the impacts of CC.

2.3.3. Programmes applied for the strengthening of the technical and organizational capacities and awareness of community level stakeholders and organisations, effectively reflecting gender-specific differences, motivating and enabling them to manage water resources and supply infrastructure effectively and equitably under conditions of CC.

2.3.4. Water consumption metering systems developed and installed in order to improve water use efficiency and distribution, accompanied with awareness-raising and advocacy programme

2.3.5 Programme for treatment of water supplies with hypochlorate in order to reduce pollution-related health risks.

3. Identification and promotion of practices for the conservation, management and supply of drinking water adapted to predicted CC scenarios	Investment	3.1. Local communities and households with reliable access to drinking water due to the implementation of CC resilience measures.	<p>3.1.1 86 water sources and aquifer recharge zones protected and reforested, covering 700 ha, using CC-resilient and locally-acceptable species.</p> <p>3.1.2. Physical measures established to reinforce protection of water distribution systems in disaster-prone areas (either floodings or landslides) (e.g. gabions, contour bunds), in 120 communities.</p> <p>3.1.3. Roof top water capture and household cisterns installed in 350 households.</p>	LDC F	3,379,563	3,500,000
Sub Total (\$)					4,294,563	31,500,000
Project Management Cost (PMC)						
LDCF					210,000	100,000
Sub Total(\$)					210,000	100,000
Total Project Cost(\$)					4,504,563	31,600,000

C. Indicative sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Government	Ministry of Environment	In-kind	Recurrent expenditures	500,000
Government	DINEPA	In-kind	Recurrent expenditures	600,000
Donor Agency	IDB	Grant	Investment mobilized	30,000,000
GEF Agency	UNDP	Grant	Investment mobilized	500,000
			Total Project Cost(\$)	31,600,000

Describe how any "Investment Mobilized" was identified

IDB finance stands for the investment programming to engage into synergies on institutional strengthening of DINEPA in its regulatory functions

D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
UNDP	LDCF	Haiti	Climate Change	NA	4,504,563	427,933	4,932,496
Total GEF Resources(\$)					4,504,563	427,933	4,932,496

E. Project Preparation Grant (PPG)

PPG Required

PPG Amount (\$)

150,000

PPG Agency Fee (\$)

14,250

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
UNDP	LDCF	Haiti	Climate Change	NA	150,000	14,250	164,250
Total Project Costs(\$)					150,000	14,250	164,250

Core Indicators

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female				
Male				
Total	0	0	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

This is an adaptation project to be financed by the LDCF and its target contributions to GEF7 core indicators will be achieved through the implementation of activities under three components that will promote the adoption of improved practices in an area of 700 ha and will benefit 90,000 direct beneficiaries living in the project target area (the arrondissement of Jacmel in the Southeast region) on different levels such as: economic, social and environmental.

Part II. Project Justification

1a. Project Description

1a. *Project Description*. Briefly describe:

1. The proposed project will focus on increasing household resilience to climate change effects by improving drinking water supply in Haiti. This will be achieved through strengthening capacities and knowledge and by investing in concrete resilience measures at field level in the South-East Department.

1) Global environmental problems, root causes and barriers

Poverty and access to drinking water

2. Haiti is the poorest country in the Americas: over 58% of the population lives on less than \$2 per day (under the 2012 national poverty line)^[1] and 23.8% are extremely poor (cannot satisfy their nutritional needs). Poverty is highest in rural areas where 52% of the population and 63% of extremely poor households reside. GDP per capita stood at US\$730 in 2017. Haiti has a population of approximately 11 million people (55% women) and population is projected to increase to approximately 14.0 million in 2050 (UN, 2017)^[2]. In Haiti, gender-based violence (GBV) is a pervasive problem, and current legal and judiciary structures do not adequately address this vulnerability. It is a major obstacle for the empowerment of women and girls, as it reduces their ability to fully participate in the public and private spheres of life. One in three Haitian women aged 15-49 has experienced physical and/or sexual violence, and the rate of intimate partner violence has risen since 2005. ^[5] Climate and natural disasters only increase the incidence, as violence and sexual assault in displaced persons and relief camps has been reported to be widespread ^{[6],[7]}

^[1] EMMUS (2016-2017)

3. The Sustainable Development Goals (SDGs) global targets and indicators include, by 2030: i) ensuring all men and women, in particular the poor and vulnerable, have equal rights to economic resources, as well as **access to basic services** and; ii) achieving universal and equitable access to **safe and affordable drinking water** for all. According to the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) report under their Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP) ^[3], data from 2014 indicate that only 25% of Haiti's population have access to basic water services as established in the SDGs^[4]; 53% have limited access^[5] and; 22% have no access to water services^[6]. Regarding sanitation, 82% of Haiti's population has access to limited services and 18% have no access to sanitation services at all. This is comparable to some countries in sub-Saharan Africa, but far below the regional average in Latin America and Caribbean where 63% of the population have basic sanitation services available and 65% have access to safely managed water. The overall coverage figures also show disparities between urban and rural areas in Haiti, especially for access to improved water sources. Sixty-two percent of urban and 34% of rural residents have access to distributed water^[7].

4. The South-East Department has a total area of 2,034.10 km². It is bounded to the south by the Caribbean coast and to the north by the Massif la Selle mountain range, which includes the country's highest peak, 'Pic la Selle' (2684 m). It is divided into eight river basins, of varying size, draining into the Caribbean, with mostly steep topography and only a narrow littoral strip. There is a steep rainfall gradient between mountainous and more western areas. In mountainous areas annual precipitation varies between 1,250 and 2,500mm and in the coastal strip, especially the south-eastern extreme of the area, annual precipitation ranges between 500 and 750mm with very pronounced seasonal variations.

5. On the ridge top of Massif la Selle there are two significant forest remnants, Macaya and La Visite National Parks. Besides these two forest areas, higher parts of the Massif are characterized by a largely treeless altiplano, which are used for vegetable production. There are some significant areas of tree cover at lower and middle altitudes, associated in some cases with coffee plantations, while the drier south-east part of the Department is largely dominated by *Prosopis* scrub which is mainly used for the cyclical extraction of wood for charcoal production. Middle and lower altitude areas are heavily impacted by smallholder food production and extensive livestock raising.

6. The population of the Department was 632,601 people in 2015, of which around 85% is rural and 40% is less than 18 years old^[8]. In the South-East Department, 56% of the population obtains their drinking water from springs, 20% from communal water fountains, 12% from household water tanks (connected to piped water systems^[9]) and 6% from rivers. Water is normally free, but the high levels of dependence on springs and rivers means that water supply is typically of poor quality and is highly vulnerable to seasonal variations in runoff and the level of the water table. In rural areas, the water supply systems generally consist of water points equipped with handpumps, while small towns are served with gravity-fed piped systems supplied by spring catchments, from which water is delivered through standposts, kiosks and household connections. A substantial portion of systems isn't functional for lack of sufficient funds for operation and maintenance (O&M) and less than ten percent are equipped with chlorination devices^[10].

7. This lack of water and sanitation services contributed to the severity and rapid spread of the cholera epidemic that began in Haiti in October 2010, and had resulted in approximately 820,000 reported cases of cholera and 10,000 reported deaths as of December, 2018^[11]. The primary means of cholera transmission is through consumption of water contaminated with human waste. With low sanitation coverage and inadequate availability and treatment of drinking water, few barriers were in place to stop the rapid spread of the epidemic, especially in a population that hadn't been previously exposed to this disease^[12]. Haiti therefore has all key risk factors UNICEF cites for cholera transmission^[13]. Increasing temperatures, severe heat waves and prolonged flooding due to climate change are likely to spur cholera and exacerbate health and social conditions of already vulnerable segments of the population. The National Plan for the Elimination of Cholera (managed by DINEPA) established the goal of almost eradicating the cholera rate incidence by 2022. However, no planned or ongoing water sector investment will succeed in sustaining safe water access unless intensified climate variability and long term change are duly taken into consideration.

The effects of climate change in Haiti

8. Haiti has a tropical climate, with some variation based on altitude. The average temperature at Port-au-Prince in January ranges from a minimum average of 23°C to a maximum average of 31°C. In July, it varies from 25–35°C. The average annual rainfall is 1,400-2,000mm, but it is unevenly distributed. Heavier rainfall occurs in the southern peninsula and in the northern plains and mountains. Rainfall decreases from east to west across the northern peninsula. The eastern central region receives a moderate amount of precipitation, while the western coast from the northern peninsula to Port-au-Prince, the capital, is relatively dry. There are two rainy seasons, April–June and October–November.

9. Global climate change is expected to affect Haiti in the following ways:

a) **Increases in temperatures:** climate change projections indicate an increase in the average temperature of 0.8-1°C by the year 2030 and 1.5-1.7°C by the year 2060, with the highest increases expected in the months of June or July^[14].

b) **Decreases in precipitation:** precipitation is expected to decrease by 5.9-20% by 2030 and by 10.6-35.8% by 2060^[15], leading to increased evapotranspiration and water demand, with the greatest decreases also expected in the months of June or July. Agriculture on the hill lands is mainly rain-fed, and therefore highly vulnerable to variations in timing and amounts of the rainfall which determine sowing and harvesting periods. A combination of increasing temperatures and decreasing precipitation, especially in June and July, is likely to impose particularly severe stresses on agricultural systems, especially given the highly degraded nature of soils and vegetation in the target area. Climate change predictions for 2050 and beyond suggest that more than 50% of the total area of Haiti will be in danger of desertification.

c) **Extreme weather events:** according to the IPCC^[16], the Caribbean region is likely to be exposed in the future to more intense and frequent extreme weather events. The impacts of the climate change induced extreme weather events can be exemplified by the 10 cyclonic floods have occurred in Haiti since 2000, resulting in 155 live losses and affecting 277,498 people. In the same period, 16 non-cyclonic floods have occurred in Haiti, affecting 88,466^[17] people and killing 2725. Another example was Hurricane Matthew in 2016, which led to physical damages totaling of US\$1.9 billion (23% of GDP), in addition to substantial loss of lives.^[18]

10. The problem this project aims to address is water stress due to climate change. Projected climate change induced increases in the duration and intensity of drought periods in Haiti are expected to result in reduced water yields in springs, wells and rivers on which the population of rural areas and small urban centers depend. This will further exacerbate existing water supply deficits resulting from increased demand due to population growth and degradation of vegetation in aquifer recharge zones (which in itself may also be exacerbated by climate change due to increased frequencies of drought-related wildfires). Climate change induced floods and landslides will also further impact water stress and exacerbate the risk of water borne diseases.

11. According to DINEPA, there are no regular measurements made on water sources that would enable knowing the seasonal and interannual variations of the quantity of water, which is mainly captured for food production and drinking water supply in the Southeast Department. However, in some observations made by DINEPA-Sud in the region, some sources have dried up completely while for others the flow has dropped considerably. Observed climate effects on water sources has weakened an already worrying structural situation regarding access to water. The scarcity of resources generated by drought has been reinforced by the advanced state of degradation of existing supply systems in both rural and urban areas. In some localities the resources are exhausted or very weak and cannot cover the minimum needs of the population: some communal sections simply do not have access to drinking water. This is the case, for example, of the Bodarie spring which supplies the population of Grand Gosier, the source Domingue in the locality of Lafond in Jacmel, as well as water sources in Bainet.

12. In Haiti, precipitation is expected to decrease by 5.9-20% by 2030 and by 10.6-35.8% by 2060^[19]. In 2015, the Southeast department was the most affected by the great drought which affected Haiti and droughts that occurred in 2013 and 2016 affected 1.000.000 and 3.600.000 people respectively throughout the country^[20]. According to UNDP, due to climate change, precipitation is expected to decrease in several areas of the country by 6 to 20%, which would lead to a reduction in groundwater levels of around 70%, indicating there will be even fewer resources available for the population.

2) The baseline scenario and associated baseline projects

Given a full recognition and urgency of the mounting water stress, accelerated by climate change, a high investment has been made nationally in the expansion and improvement of water supply systems in both rural and urban areas (see baseline description below).

13. The AECID (USD 100,359,000)^[21] bilateral program, implemented in partnership with DINEPA (2009-2021) aims at promoting access to drinking water and sanitation and strengthening of national institutions in charge of reforming the water and sanitation sector. This proposed LDCF project will complement it by strengthening institutional capacity at national, regional and local levels to inform water governance and water related decision making for addressing needs and conditions resulting from CC.

14. GCF-NAP project (USD 2.8 Millions) implemented by UNDP aims at strengthening institutional and technical capacities for iterative development of NAP for an effective integration of CCA into national and sub-national coordination, planning and budgeting process.
15. DINEPA's project financed by the Swiss Cooperation (2018-2030), "Strengthening local governance of water and sanitation in Hait (REGLEAU)" aims to meet citizens' drinking water and sanitation needs by strengthening the local governance in the communes of Bainet, La Vallee de Jacmel, Jacmel and Marigot, in the South-East region. The proposed governance involves local authorities (mainly municipalities), citizens and the private sector engaged for managing the water and sanitation services in each target commune. The proposed LDCF project will fill institutional, information and capacity gaps that CC effects and adaptation needs are taken into consideration in decision-making and to promote climate proofing of water supply infrastructure.
16. Finally, IDB's program implemented by DINEPA "Improved access to water, sanitation and hygiene (WASH) services for urban, peri-urban and rural areas of Northern Haiti" aims at improving the technical and commercial management and works of companies of potable water and sanitation, promoting a PPP for the Cap Haitien water company and; investing in potable water, sanitation and hygiene in urban and rural areas of the department. The objectives of the "Port-au-Prince water and sanitation project III" are to i) improve water and sanitation coverage, quality of service, and hygiene practices in Port-au-Prince; ii) improve water coverage and hygiene in rural areas affected by Hurricane Matthew and in OREPA West; iii) improve the financial sustainability of CTE-MRPP[22] and; iv) achieve an effective regulation of the sector by DINEPA and the deconcentration of the OREPA West[23]. This proposed LDCF project will ensure, through the implementation of a continued information and knowledge generation system to inform water governance and water related decision making, that considerations of CC resilience are adequately provided for the implementation of both IDB projects. Furthermore, the three projects will collaborate for strengthening DINEPA in its regulatory functions as well as the OREPAs. IDB will also support the LDCF project component related to strengthening the Water Platform by providing inputs from lessons learned in the discussion on PPP possibilities for the water sector and its systematic inclusion on discussions and planning.
17. Despite the wide scope of the baseline initiatives, these will not be sufficient to ensure local community's access to clean and reliable drinking water, given the additional stresses that will be imposed by climate change, in particular the impacts of increased drought frequency on water yields in springs, wells and rivers, and damage to vegetation in aquifer recharge zones as a result of increasingly frequent wildfires. However, the existing baseline creates conducive environment for LDCF project to complement and introduce additional adaptation measures for consolidated impacts in water availability and access to particularly climate vulnerable communities.
18. The LDCF investment will be additional and complementary to these baseline investments by using a long term resilience approach that focuses on response mechanisms to the impacts climate change is having and will have on budgets required for guaranteeing water access and water quality. This will be achieved by supporting local communities' empowerment to improve their institutional organization for the management of catchment areas and water sources that are critical for freshwater availability in the long term, in light of climate change impacts. Management practices, informed by climate risks, are critical to reinvigorate and reinforce the water yield capacity and the drainage control functions of the catchment, as well as the protection of water sources that are critical for ensuring local communities' water security and safety.
19. The solution proposed by this project in response to this baseline scenario, aims at ensuring that the location, design and management of local drinking water supply systems are functional and sustainable in order to deliver the required water quantity and quality to local communities in the Southeast Department of Haiti. This will be complemented by restoring and improving the protection of vegetation in aquifer recharge areas, in order to optimize infiltration and stabilize water yield. The social acceptance, sustainability and equity of these measures will be ensured through strong, well-informed and representative local governance structures.

Remaining barriers to resilience in the water sector

20. Despite the existence of this strong baseline investment, in addition to the multiple potential for collaborating with other related initiatives (see Section 6), there are a number of barriers which at present, without additional LDCF funding, impede the realization of the solution described above.

1) *The effectiveness and sustainability of investments in the water sector are limited by the inadequate knowledge at national and local level of the implications of climate change*

21. Despite the existence of national institutions dedicated to the generation and management of information on water and other natural resources (the National Observatory on Environment and Vulnerability ONEV and the National Service for Water Resources SNRE), and ongoing donor support to the development of capacities in this regard, there is limited knowledge and understanding of how expected changes in climatic conditions will affect the availability of drinking water, in quantitative, qualitative and spatial terms, and the relative cost-benefits of different adaptation alternatives. Apart from the generation and management of information, which will, to a large extent, be addressed by these baseline initiatives, there are important deficiencies in capacities for analyzing, interpreting and applying the climate risk information as a support to effective evidence-based decision-making. This situation impedes the definition of the nature, levels and locations of additional investments necessary to guarantee that climate change impacts on the drinking water sub-sector are addressed accordingly.

2) *Regulations and policies affecting the water sector do not adequately take into account the implications of climate change nor gender-related issues*

22. Despite the progressive emergence of favourable regulations and policies in the environmental sector, under the without-project scenario, these will not specifically address the issue of water supply (which goes beyond MDE's mandate); neither will they ensure that the implications of CC are taken into consideration in their formulation, planning and execution. There is therefore a risk that these instruments will progressively lose their relevance and context, not taking into consideration that threats, appropriate strategies, and technical solutions need to evolve in response to changing climatic conditions.

23. Currently, there is no specific legislation to deal with domestic violence or sexual harassment, and while rape was criminalized just over a decade ago, alarmingly the law still does not recognize spousal rape as a crime. Although the Government has made efforts to combat violence against women and girls, with the support of the UN Committee on the Elimination of Discrimination Against Women (CEDAW) and other agencies, recent political crises and natural disasters have obstructed the effective reform and adoption of gender protective legislations. Although Haiti faces challenges with respect to its capacities and resources for watershed governance and climate change adaptation and mitigation, the country is making advances despite significant set-backs related to recent natural disasters and political corruption. There is a wide variety of support from donor agencies, foreign governments, international NGOs, and researchers that aim to strengthen capacities and support Haiti in its commitment to building climate resilience and prioritizing gender equality within its policies and planning

3) *Conditions and capacities at local level are inadequate for ensuring climate risk informed water governance, planning and management*

24. Although Water Committees exist in many communities, as do a range of other community-based organisations (in many cases instigated and/or supported by NGOs or the Catholic church), it is common that these lack technical and organizational capacities, as well as social and institutional sustainability. Therefore these institutions have a limited effectiveness in resolving water-related conflicts or in ensuring the application of existing or proposed norms on the management of water and other natural resources, necessary for the sustainability and resilience of water supplies.

4) *National, regional and community-based entities do not collaborate effectively in the planning and management of water supply taking in to consideration a water stress scenario*

25. Responsibilities for the generation and management of information, as well as for the planning, management and use of water and other natural resources, are divided between different entities including DINEPA, the MDE (including ONEV) and the MARNDR (including SNRE). The World Bank PPCR programme is supporting institutional collaboration for the generation and management of information on water resources. However, significant deficiencies

remain resulting in a lack of effectiveness of inter-institutional collaboration so that information generated is applied in the planning and implementation of adaptation strategies.

5) *Current practices and infrastructure are inadequate to ensure water supply under conditions of climate change*

26. Existing and proposed water supply systems will fail to meet local water needs if the impacts of CC on runoff rates, spring yields and aquifer levels aren't taken into consideration. Communal water fountains may become redundant if they depend on springs that dry up under the expected droughts conditions. Additionally, the capacities of reservoirs and tanks designed on the basis of the current dry season durations are likely to prove themselves inadequate when dry seasons become prolonged as a result of CC and wells may dry up if their depth was calculated without taking into account expected future falls in water table levels. Current levels of household water consumption as well as the agricultural use may also become unsustainable as water yield decreases, as consequence of an inadequate organization among water users for planning and executing adaptive water management options considering the projected scarcity scenario.

3) Proposed alternative scenario

Objective

27. The objective of the project will be to improve the resilience of communities to the effects of climate change by improving drinking water access in Haiti. The project will specifically target vulnerable areas in the south-east of the country, and will also support the development of capacities and tools at national level promoting CC mainstreaming in the planning and management of drinking water and associated natural resources.

Outcomes and components

28. Project results will be achieved through actions structured under three components:

Component 1. Improved understanding and awareness of the water sector vulnerability to climate change

29. The project will make use of environmental information managed by ONEV and SNRE (building on and complementing the CCCD project initiative in relation to the generation and management of environmental information), in order to develop analyses of CC implications for drinking water access. To this end, it will calibrate climate change projections with local hydrogeological and hydrometeorological data, and with the registers of water sources in the south-east. In addition, activities under this component will give strong emphasis on supporting the interpretation and application of existing and new information generated by the project.

30. This will allow the identification, for example, of springs and wells that are likely to dry up and provide guidance regarding different possibilities for guaranteeing quality water access (for example stakeholders - including government and water users - will have the elements to guide their decision of either abandoning and replacing the wells/springs by alternative sources, or making investments to increase resilience through promoting aquifer recharge and the protection of water sources). Information generated and managed will also help identify the most reliable water sources on which it would be suitable to base piped water systems, in order to ensure the sustainability of these investments under conditions of climate change. Such decisions will further be supported by analyses of the cost-benefit implications of these alternatives, and by scientific and technical studies as necessary. These analyses will also feed into participatory community-based Vulnerability Assessments that will enable community members and their organisations to visualize, in locally-understandable terms, the impacts of CC on drinking water access and its implication on their household welfare. The project will support the development of methodologies and capacities for carrying out these assessments.

31. In order to promote sustainability, this support will be complemented by the implementation of a continued information and knowledge generation system as a mechanism to inform water governance and water related decision making. Additionally, training activities will be provided to staff of key institutions on the magnitude and nature of CC impacts under different scenarios and on methodologies for the development and application of vulnerability assessments. This training will focus, in particular, on staff representing key national organizations (DINEPA, MDE and MARNDR), as well as staff members of

regional and local government, and representatives of community organizations such as Water Committees (CAEPAs). The specific priorities for capacity development and strategies to be used for its successful delivery will be confirmed during the PPG phase together with the key institutions and staff members in order to maximize the impact and sustainability of this activity.

32. Integrated water resource modelling of the projected long-term impacts of CC on biodiversity, ecosystems, and urban systems, as well as of the implications of the interactions between these aspects on drinking water availability at a landscape level will be carried out.

Component 2. Strengthening of the Water Platform and institutional capacities at national, regional and local levels for the rational management of drinking water under CC conditions

33. The project will provide technical recommendations, facilitation and drafting support to enable the adaptation of the existing Water Platform to transform it into a responsive instrument to the changing circumstances imposed by climate change. This will address issues such as the normative guidances and approval criteria for the establishment and management of water supply systems and watersheds, as well as priorities for action provided for key water, environment, agriculture and rural development sectors policy instruments. The precise needs for intervention in the Water Platform will be confirmed through detailed analyses, with the participation of Government actors, during the PPG phase.

34. The strategic plans of DINEPA, and of regional and local governments in the target area, will also be the subject of mainstreaming support in order to ensure that they incorporate and respond to a range of plausible climate change scenarios in relation to freshwater availability (component 1), and that the proposed adaptation measures are based on rigorous cost-benefit analysis and technical feasibility studies. The result of this activity will be the optimization of the results to be achieved by these plans in terms of resilience, cost-effectiveness and sustainability.

35. The project will also support improved coordination of planning and investments between the key institutions with responsibilities related to the management of drinking water resources and other associated natural resources, including DINEPA, MDE (including ONEV) and MARNDR (including SNRE), as well as regional and local governments. This support will focus on minimizing the risk of conflicts or duplication between different institutions' approaches to natural resource management in drainage basins and recharge zones (MDE), agricultural land use in these zones (MARNDR), local development and infrastructure initiatives (regional/local Governments and the Ministry of Public Works) and the installation of and management of water supply systems (DINEPA/OREPAs), guaranteeing that involved institutions include climate change adaptation into their approaches and activities in the water sector.

36. A targeted programme of capacity development will be formulated and applied, aimed at strengthening key institutional actors in technical aspects of CC adaptation in the drinking water sector, including aquifer management, land use planning, headwater protection and specific technical practices for water conservation and increased resilience. This will complement the capacity development proposed under component 1 and will similarly be based on specific needs assessments to be carried out during the PPG phase. The project also invest in equipment required to effectively enforce adaptation practices. Such equipment will be used for groundwater level monitoring, rainfall gauges and discharge measurements and other functions that will be additionally identified during the PPG as being essential for the effective planning and enforcement of adaptation measures to secure freshwater availability.

37. Local actions for the conservation and sustainable management of water and target sub-catchment areas to increase resilience to climate change will be carried out within the framework of community-based strategic and operational plans, to be developed under a participatory approach to be facilitated by the project. Community-based strategic and operational plans will define priorities for action and investment, together with corresponding timelines, responsibilities and funding options. Plans focusing on adaptive water management options will be developed on top of and aligned to local land use plans, based on the same principles as those commonly developed at municipal and regional levels, but adapted to the local cultural context. This activity will give particular emphasis on identifying zones of importance for water supply (aquifer recharge zones and water sources and their protection zones), and defining adequate uses for the sustainability of water supply under climate change conditions.

38. A necessary complementary action to the plans that will be developed under this component will be the support to the strengthening of local governance structures in order to promote their effective implementation and improve the control of activities that negatively affect water sources conditions and recharge zones (such as the establishment of dwellings, tree felling, chemical pollution and road construction). This support will also focus on improving mechanisms for consensus-based community-level decision-making and norms, related to the distribution of responsibilities and benefits associated with climate-proofing drinking water supply (for example, in-kind contributions of community members to the construction of water supply infrastructure in collaboration with and under the supervision of trained technicians and workers or the establishment and maintenance of protective vegetation, and the application of governance rules to determine allowable levels of offtake by different stakeholders for domestic, agricultural and other uses). In certain cases, governance strengthening may extend to the facilitation of inter-community coordination and collaboration, in order to address upstream-downstream impacts on water supply. Key entities to be strengthened in relation to such governance roles will include community-level Water Committees. The project will also strengthen their technical and organizational capacities, in order to allow them to manage water resources and water supply infrastructure effectively and equitably under CC conditions. The strengthening of Water Committees will also help them to carry out their roles of overseeing and controlling construction work, O&M requirements, user right enforcement and equitable and fee-based distribution as well as source protection through the enforcement of agreed land use plans.

39. Project support will also promote the discussion on how to address mechanisms for charging for water services and for managing the resulting income to finance the maintenance and improvement of the water supply systems, as well as the reforestation and protection of water sources and recharge zones (including, where appropriate, "payment for environmental services"). This will build on the support provided to date by the existing LDCF project to the installation of water meters and water payment systems, seeking to improve the mechanisms by ensuring that payment levels and systems adequately reflect the additional costs of water supply resulting from the need to adapt to climate change. This approach will necessarily be accompanied by investments in awareness raising among community members on the need for financial sustainability of water supply, especially under conditions of climate change, comparing these costs with those of the eventual alternative which may involve the purchase of water from tanker trucks (an option on which many urban areas already depend). During the PPG phase, analyses will be carried out to compare alternative modalities and mechanisms for charging for water services, taking into account the balance of costs and benefits of each option in terms of, for example, operational and administration costs vs. the economic implications of the health benefits generated through access to reliable clean water. These analyses will also examine how charging systems will be set up and how they will function, based on information sources such as household surveys and discussions with Water Committees (CAEPAs) and other members of the Water Platform (Government, private sector, CSOs)[24].

40. In addition, this project aims at encouraging the dialogue between the government, the civil society and the private sector to explore the possibility of engagement of small and medium local private enterprises in the water management sector. Dialogue will be promoted through workshops organized by DINEPA for ensuring coordination between the different entities and exploring the possibility of an appropriate inclusion of water management PPP[25] schemes in the review of the regulatory and policy framework of the water management sector. Discussion will involve the participation of other partner projects (i.e IDB) and Water Committee representatives for promoting an improved operational performance in the sector and the implementation of a climate change responsive, safe and affordable water service.

Component 3. Identification and promotion of practices for the conservation, management and supply of drinking water adapted to predicted CC scenarios.

41. Under this component, concrete physical investments will be financed in order to promote the CC resilience of communities by improving drinking water access. These investments will build upon the lessons learned in Haiti, for example through the previous DINEPA/AECID/UNDP project and the UNDP/LDCF project on Strengthening Adaptive Capacities to Address Climate Change Threats on Sustainable Development Strategies for Coastal

Communities in Haiti (GEF 3733; 2010-2018), and on international best practice in adaptive water management options and conservation. Activities under this component will also be oriented and validated through participatory analyses of needs and priorities involving the local communities and supported by technical and socioeconomic studies of their feasibility and cost-effectiveness.

42. Subject to validation of these studies and consultations (which will be carried out during the PPG phase), the practices to be implemented are likely to include the following:

- Protection and reforestation of water sources and aquifer recharge zones. This Ecosystem-Based Adaptation (EBA) approach will focus on promoting infiltration of rainfall and runoff water, and consequent aquifer recharge, using local species and management models that are locally acceptable. Systems implemented will be resilient to climate change, capable of facilitating infiltration and providing shade to reduce evaporation, without negatively affecting water yield through evapotranspiration demands.
- Establishment/expansion of cisterns and small storage reservoirs with sufficient capacity to last through extended drought periods.
- Perforation/deepening of wells allowing falling water tables to continue to be accessed.
- Establishment of physical measures to promote aquifer recharge (e.g. percolation tanks, gabions and contour bunds).
- Establishment/improvement of roof top water capture systems, together with associated household rainwater storage cisterns.
- Filters to allow grey-water to be recycled and thereby reduce overall household water demand.

4) Alignment with GEF focal area and/or Impact Program strategies

43. Principally through the Least Developed Countries Fund and the Strategic Climate Change Fund, the GEF focuses its efforts to reduce the vulnerability of people, livelihoods, physical assets, and natural systems to the adverse effects of climate change (CCA-1); strengthen institutional and technical capacities for effective climate change adaptation (CCA-2) and; integrate climate change adaptation into relevant policies, plans, and associated processes (CCA-3). Activities to be implemented under this LDCF project will contribute to CCA-1; CCA-2 and CCA-3.

5) Additional reasoning

Business as usual (BAU) scenario	Climate change (CC) scenario	LDCF alternative
Increases in demand for water in rural areas and small urban centres due to population growth	Increased demand for water in line with population growth, is worsened by CC induced extended drought periods	Increases in demand for water mitigated by improved water use efficiency (due to awareness raising and strengthening water user committees and other enforcement mechanisms) and increased use of alternative sources (e.g. rainwater capture, and grey water recycling for irrigation) planned and implemented considering climate change impacts on water availability
Decline in absolute water yield due to deforestation of water sources and recharge areas likely to be partially compensated by reforestation and catchment management initiatives, but with a per capita yield still significantly declining due to population growth	Declines in water yield further increase during dry seasons due to increases in drought intensity and duration, and increased degradation of vegetation in catchment/recharge zones resulting from CC (including wildfires)	Impacts of CC on water sources are mitigated by reforestation and protection around water sources and in recharge zones, and physical measures to promote recharge (e.g. percolation tanks)
Increased coverage of piped water systems due to investments made by Government with donor support, but that likely lag behind current and projected needs	Piped water systems become obsolete as the water sources and wells serving them dry up	Viability of piped water systems is mapped by basing them on water sources and wells identified as being least vulnerable to CC Increased access to alternative water sources (rainwater capture)

6) Adaptation benefits

44. The project will develop capacities, tools and infrastructure that will enable 90,000 individuals as direct beneficiaries in 86 communities and small urban centers to enjoy reliable access to drinking water throughout the year, despite the increases in the intensity and duration of drought periods that are expected as a result from climate change. In addition to concrete investments to support climate-proofing drinking water supply (such as reforestation and protection of water sources, percolation tanks and rainwater capture systems), the project will contribute to the increased resilience to CC achieved through baseline investments in water supply by ensuring that they are based on water sources that are least vulnerable to CC-related failure, and will develop sustainable capacities for institutional adaptation to climate change through the strengthening of decision-making systems capable of responding to emerging information inputs on CC and water resource status.

7) Innovation, sustainability and potential for scaling up

45. The project will be innovative in as much as it will apply a multi-sector approach to promoting CC resilience to water supply, involving actors beyond the water sector itself. It will confer added value to previous investments by ensuring that decision-making on water supply investments is sound, evidence-based and adaptive, taking into account multiple information sources and by complementing traditional approaches to water supply based on piped water

with alternatives including rainwater capture and grey water recycling to reduce competition in household irrigation demands. Hence the diversification of potential water sources by the protection and mobilization of ground, surface, harvested rainwater and recycled household greywater will maximize local water availability, taking into consideration current and projected climate change impacts.

46. Sustainability of the field-level resilience measures proposed will be promoted by the use of low cost, locally-appropriate technologies that have been subject to prior consultation and validation of engineers and target communities. Institutional sustainability will be promoted through the development of in-house capacities in key institutions for scenario analysis, monitoring and decision-making in accordance with principles of adaptive management, and by promoting inter-institutional collaboration in relation to CC adaptation. Options for financial sustainability to be explored will include the implementation of locally-negotiated and consensus-based systems for water charges to cover the costs of operation and maintenance of water supply systems, taking into account the additional costs implied by CC adaptation and including, when possible, the use of a mechanism of payment for environmental services.

47. The measures to be implemented by the project for increasing the resilience of communities to CC by improving drinking water access will be highly replicable throughout Haiti, given the universally poor coverage and vulnerability of water supply in the country. The project will be of particular strategic value by functioning as a testing ground for models capable of being subsequently applied at larger scale in other areas in the country (such as the North-West and the metropolitan zone of Port au Prince), which face similar and even more severe problems, and which may be addressed in the future, by other projects, once the required institutional conditions and cofinancing opportunities are in place for this to happen.

48. The achievement of the project's objective of generating multiple environmental and social benefits through the preservation of water resources will be achieved by associating GEF resources with significant co-financing. GEF resources will be used to mainstream environmental considerations into a number of the ongoing initiatives described above, with the result that these initiatives will come to contribute actively to the generation of GEBs. These cofinancing sources are as follows:

- Ministry of Environment and DINEPA: Government recurrent budget for building capacities on climate change adaptation, water management, vulnerability and hydrometeorology[26].
- IDB's programme aiming at improving access to water, sanitation and hygiene (WASH) services within the framework of SDGs for urban, peri-urban and rural areas and implementing with DINEPA the water sector reform in the areas of regulation, planning and operation^[27]; along with another programme aiming at improving the quality of life and sanitary conditions of the population of Port-au-Prince and rural communities through the provision of sustainable water and sanitation services[28].
- UNDP: Support to capacity building and local governance strengthening, mobilisation of partners and knowledge sharing towards sustainable development goals[29].

[3] World Bank, Haiti - Systematic Country Diagnostic 2015.

[4] United Nations. 2017. World Population Prospects: The 2017 Revision. Department of Economic and Social Affairs. Population Division. New York: United Nations. https://esa.un.org/unpd/wpp/Publications/Files/WPP2017_KeyFindings.pdf

[5] EMMUS (2016-2017)

[6] Shadow report (2011)

[7] HRW (2018) - <https://www.hrw.org/world-report/2018/country-chapters/haiti>

[8]

[9] World Health Organization (WHO) and the United Nations Children's Fund (UNICEF). Progress on drinking water, sanitation and hygiene: 2017 update and SDG iselines. 2017.P.46. Available at: <https://www.who.int/mediacentre/news/releases/2017/launch-version-report-jmp-water-sanitation-hygiene.pdf>

[9] Water from an improved source is available on premises.

[10] Water from an improved source is available off premises; or an improved source is on-site, but no water is available.

[11] Unprotected dug well or spring, surface water, or no water source.

[12] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6154159/>

[13] http://www.ihsi.ht/pdf/projection/Estimat_PopTotal_18ans_Menag2015.pdf

[14] Between 22 and 40% in three of the communes but in the other 7, between 1 and 6%.

[15] Project Appraisal Document for Sustainable Rural and Small Towns Water and Sanitation Project, World Bank, 2015

[16] Republic of Haiti: Ministry of Public Health and Population. National Monitoring Network Report, December 2018. 2018. <http://mspp.gouv.ht/site/downloads/Profil%20statistique%20Cholera%2050SE%202018.pdf>

[17] Water, Sanitation and Hygiene in Haiti: Past, Present, and Future. Richard Gelting, Katherine Bliss, Molly Patrick, Gabriella Lockhart, and Thomas Handzel. [Am J Trop Med Hyg](https://doi.org/10.1186/s12918-013-0191-1). 2013 Oct 9; 89(4): 665–670. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3795096/>

[18] Water, Sanitation, and Hygiene Sector Status and Trends Assessment in Haiti. Final Report. Mohamed Chebaane, Assessment Team Leader, Stéphanie Maurissen, WASH Sector Expert, December 2014. USAID. http://pdf.usaid.gov/pdf_docs/PA00K9CK.pdf

[19] National Adaptation Programme of Action- NAPA. 2006. https://www.preventionweb.net/files/8526_hti01f.pdf

[20] National Adaptation Programme of Action- NAPA. 2006. https://www.preventionweb.net/files/8526_hti01f.pdf

[21] <https://www.ipcc.ch/report/ar5/wg2/>

[22] NATHAN 2

[23] UN News Centre. "UN calls for support to recovery plan as Haiti loses \$2.7 billion in Hurricane Matthew." <http://www.un.org/apps/news/story.asp?NewsID=56294#.WYseP-nRaUI>

[24] AECID. Spanish Agency for International Development Cooperation. Bilateral Program.

Bilateral Programmes. Partnership with DINEPA. South-East Department. <https://www.aecid.ht/fr/secteurs/eau-et-assainissement>

[25] CTE-MRPP. Centre Technique d'Exploitation of the Metropolitan Region of Port- au-Prince.

[26] IDB. HA-L1103. <https://www.iadb.org/en/project/HA-L1103>

[27] SPIRAL Group; UNICEF; USAID/WATSAN projet; OREPA Ouest; DINEPA/CNRC; Clio-PEPA; DINEPA/Communication; MICT/DCT; Habitat for Humanity; Malteser International; UNICEF Régional; Helvetas.

[28] Public-Private-Partnerships.

[29] A USD 600,000 cofinance is being provided by DINEPA and USD 500,000 from the Ministry of Environment.

[30] IDB. HA-L1135. Approved. To be executed by DINEPA. North Department. A USD 15,000,000 cofinance is being considered from this project.

<https://www.iadb.org/en/project/HA-L1135>

[31] IDB. HA-L1103. Executed by DINEPA. Port-au-Prince and West Department. A USD 15,000,000 cofinance is being considered from this project.

<https://www.iadb.org/en/project/HA-L1103>

[32] UNDP provides a USD 200,000 cofinance for this project.

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

1. Geo-referenced information of specific project intervention areas will be collected at the PPG preparation stage. A map of the Haiti where all Departments are shown and a map of the South-East Department are provided in Annex A.

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Indigenous Peoples and Local Communities

Civil Society Organizations Yes

Private Sector Entities Yes

If none of the above, please explain why:

In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement.

1. The National Directorate of Drinking Water and Sanitation (DINEPA), a dependency of the Ministry of Public Works, is the national lead entity in relation to drinking water and sanitation and will be the principal institutional stakeholder of the project.
2. Regional Offices of Water Supply and Sanitation (OREPA) are the decentralized entities of DINEPA responsible for the provision of water supply services in urban areas and for the administration of systems in rural areas, which in practice are managed by local water committees. DINEPA and the OREPAs have replaced the Autonomous Metropolitan Centre for Drinking Water (CAMEP), which was responsible for the Port au Prince metropolitan area and; the National Drinking Water Service (SNEP), which was responsible for secondary towns and, in theory, for rural areas.
3. The Ministry of Environment (MDE) hosts the Direction of Water Resources, which is responsible for overseeing policies and compliance in the water sector (including the actions of DINEPA and the SNRE – see below) and; the National Observatory on Environment and Vulnerability (ONEV), whose mission includes the promotion of information exchange, data generation and scientific analyses to support rational environmental management and monitoring of vulnerability to natural disasters. The MDE is also home to the GEF Focal Point.
4. The Ministry of Agriculture, Natural Resources and Rural Development (MARNDR) is sector head in relation to agriculture and irrigation, and is home to the National Service for Water Resources (SNRE) and to the National Meteorological Centre (CNM).
5. At community level, hundreds of Water Committees exist (sometimes called Drinking Water Supply Committees or CAEPA), which manage drinking water supply systems in rural areas, as well as in some small towns and marginal urban neighbourhoods. The degree of organisation and effectiveness of the Committees varies: the ones that have a better functioning are characterized by some common factors such as having regular meetings, have close relations with the communities they serve, gather revenues regularly, employ plumbers to maintain the water supply systems and, are registered within the SNEP.
6. DINEPA, OREPA, MDE, MARNDR, GEF Focal Point, IDB, World Bank, Culligan, PSC-CC have been consulted in 2015 and 2016 during the PIF development. Additional consultation took place in 2019 during the revision .
7. Dialogue between government, civil society organizations and private sector actors will be promoted. A participatory analysis will be conducted of existing needs/gaps of the water sector that could be addressed through the participation of existing local small and medium sized private enterprises such as Culligan, Aquafin.
8. Youth will be engaged through their respective communities in awareness raising activities.

9. The stakeholder consultations and engagement of women's organizations will promote gender equality at the local as well as the national level. The involvement of women's organizations in the project design, should aid in identifying relevant gender issues within the country's social context, and implementing and monitoring the gender aspects of the project.

3. Gender Equality and Women's Empowerment

Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).

1. A majority of GBV cases go unnoticed and unreported – as the most recent surveys indicate that 24% sought help and 22% sought help in talking to someone without asking for help, while 54% percent of women did not seek help of any kind. When they do seek help, it is most commonly among family members and neighbors, as official reporting accompanies a fear of revenge violence from abusers and the perception that official avenues are ineffective in terms. Indeed, the prevalence of police violence targeting women and other marginalized groups is inevitably deters the denouncement of aggressors or making formal complaints regarding conflicts of any kind. Among cases of violence reported since 2012, the majority were physical in nature (59.74%), followed by sexual violence (29.80%), while cases of psychological and economic violence constituted a minority (5.88% and 4.58% respectively). Although very few of these cases are investigated or prosecuted.
2. Even when cases that are reported, justice for victims of GBV is hindered by the significant gender imbalance in Haiti's legal system. In 2016, there were only 32 women judges out of a total of 615 and today the percentages remain about the same. Moreover, with women disproportionately represented among the population with low education and living in poverty, they generally have lower access to legal aid and justice systems.
3. The project will confer particularly significant benefits for women, given that water collection is predominantly a female activity and imposes major demands on women's time. Improvements in the resilience of water supply will therefore significantly reduce the distance that women have to walk to reach a reliable water source, thereby reducing the health implications of this workload and also consequently freeing up time that they will be able to use in other activities with potential to improve their social and economic conditions. Improved resilience of access to reliable drinking water access will also reduce the risk of waterborne diseases affecting them and other family members, thereby further indirectly reducing their workload given that women bear the brunt of responsibility for caring for family health.
4. Gender equality is not fully addressed in Haiti's climate change, disaster risk, and water resource management strategies or action plans; as such, measures to promote gender-responsive adaptations and mitigate gender specific impacts are lacking. The achievement of these gender benefits will be optimized by promoting the full involvement of women in decision-making regarding the design and location of water supply systems and adaptation measures. In addition to one-off decisions of this kind, attention will also be paid to promoting the participation of women in water governance and ongoing management, in order to enable distributional issues and gendered conflicts to be addressed in an equitable manner.
5. An in-depth gender analysis, including gender-disaggregated indicators, will be carried out during the PPG phase. The gender analysis will highlight the complexities of gender relations in Haiti and identify barriers to gender equality. The analysis should be a foundation, supporting the identification of opportunities to improve gender-responsive approaches to management activities and water security in the context of climate change adaptation.
6. The project design and implementation will take into consideration the following gender implications:
 - a. Specific strategies to include / target female-headed households;
 - b. Differing conservation incentives faced by women;

- c. Identification of gaps in gender equality through the use of sex-disaggregated data enabling development of a gender action plan to close those gaps, devoting resources and expertise for implementing such strategies, monitoring the results of implementation, and holding individuals and institutions accountable for outcomes that promote gender equality.
- d. Advocacy and awareness is adjusted to most effectively reflect gender-specific differences. Strategies used in the project are then tailored, taking into account such differences;

Inclusion of a Gender Specialist position / provision of advice within the project to implement gender related activities.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes

closing gender gaps in access to and control over natural resources; Yes

improving women's participation and decision-making; and/or Yes

generating socio-economic benefits or services for women. Yes

Will the project's results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Will there be private sector engagement in the project?

Yes

Please briefly explain the rationale behind your answer.

1. In this project, government and civil society institutional capacities in the water sector will be enhanced and a functional, updated and climate oriented regulatory and policy framework will be developed. The institutional dialogue for the development and application of instruments for the planning and coordination between national, regional and community organisations will include the private sector in order to explore its contribution to alternatives for the improvement of the operational and financial sustainability of the water sector.
2. The dialogue between government, civil society organizations and private sector actors will be promoted and a participatory analysis on existing needs and gaps of the water sector that could be filled with the participation of existing local small and medium sized private enterprises will be carried out.

5. Risks

Indicate risks, including climate change, potential social and environmental risks that might prevent the Project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the Project design (table format acceptable)

Risk	Level	Mitigation measures
Inadequate institutional buy-in and coordination in relation to information management and the design and implementation of adaptation strategies	Moderate	<ul style="list-style-type: none"> - Identification of project “champions”, ideally within regional government(s) capable of lobbying for coordination and buy-in among entities of central Government - Use and strengthening of existing and emerging institutional coordination mechanisms - Economic analyses of the costs of non-action, feeding this information to MEF and MPCE in order to ensure that CC resilience is mainstreamed in budget assignments, policies and plans determining the actions of the target institutions - Policy measures (e.g., incentives) to motivate communities to reduce likelihood of risks
Financial unsustainability of water resilience measures due to inadequate buy-in of local community members to water charging systems	Moderate	<ul style="list-style-type: none"> - Participatory design of water charging systems, involving prior awareness raising of the costs of resilience measures, the implications of not implementing such systems, and the relative costs of the alternatives (such as the purchase of water from tanker trucks)
Low survival rates of trees established around water sources and recharge zones	Moderate	<ul style="list-style-type: none"> - Use of vigorous species (ideally native) adapted to local conditions and with high levels of fire resistance and resprouting capacity; - Agreements with and where necessary incentives to landowners for tree protection and careful tending; - Participatory planning of reforestation activities - Strengthening of governance conditions
Uncertainty of climate change scenarios	Moderate	<ul style="list-style-type: none"> - Strengthening of in-house capacities for analysis and adaptive response of resilience measures to evolving CC conditions

6. Coordination

Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.

The project will be closely coordinated with the following initiatives :

1. The Ministry of Environment which manages Government recurrent budget for building capacities on climate change adaptation and water resources protection, and the Ministry of Agriculture which oversees the agriculture sector, a primary user of water resources. The project will provide accurate and update information generated through its first component involving analysis on climate change scenarios and their national implications. The project will make use of the environmental information managed by MDE and SNRE/hydrometeorology in order to develop analyses of CC implications for drinking water access. Analysis carried out by the project will calibrate climate change projections with local hydrogeological and hydrometeorological data, and with the registers of water sources in the South-East. Coordination between the two initiatives (government and this LDCF project) will allow the interpretation and application of existing and new information, generated by the project.
2. Activities from the Ministry of Environment/Environment Directorate-ONEV/Caribbean Development Bank involve monitoring and building capacities on modeling; monitoring hydroclimatic data; hydrometeorology and; knowledge sharing. The project will make use of the environmental information managed by ONEV and SNRE in order to develop analyses of CC implications for drinking water access. Analysis carried out by the project will calibrate climate change projections with local hydrogeological and hydrometeorological data, and with the registers of water sources in the South-East.
3. The National Centre for Geospatial Information (CNIGS) maps water tables and water resources which will be used for the analyses carried out in Component 1 (CC implications for drinking water access) of this project as well as for the implementation of Component 3 involving the identification and promotion of practices for the conservation, management and supply of drinking water adapted to predicted CC scenarios. Results of CC projections and its effects on water resources will be shared with CNIGS.
4. The project will also coordinate with two ongoing projects:
5. The UNEP/GEF enabling activity project (USD 1,298,000) (2016-2020) “Developing Core Capacity for MEA Implementation in Haiti^[1]” (CCCD) focused on building capacities for the development of legislation and policies to enhance the capacities of the Ministry of Environment (MDE) for the implementation and enforcement of environmental laws and policies to develop sustainable financing mechanisms for environmental initiatives. The proposed LDCF project will be complementary to this initiative by implementing a continued information and knowledge generation system as mechanism to inform water governance and water related decision making and by enhancing the technical and institutional capacities at the national, regional and local levels affected by CC and taking adaptation needs into consideration for planning and decision making.
6. The project will also build on the basis established by the ongoing GEFTF/LDCF project (ID 5380)^[2] “Increasing Resilience of Ecosystems and Vulnerable Communities to CC and Anthropic Threats Through a Ridge to Reef Approach to BD Conservation and Watershed Management” that helps optimize upstream-downstream flows of environmental (hydrological) benefits from target catchment areas and also pilots Ecosystem-Based Adaptation (EBA) approaches there. This LDCF project will benefit from contributions on the status of drinking water resources and the management of water catchment and recharge areas under this GEF project in implementation and will focus on climate-proofing water supply and addressing the institutional, information and

capacity gaps in institutions specifically responsible for water supply, which aren't addressed by the GEF project 5380. Furthermore, this project will finance the reforestation of water sources and aquifer recharge zones; the reinforcement of the protection of water distribution systems in disaster-prone areas and roof top water capture and installation of cisterns.

7. The National Adaptation Plan project funded by the Green Climate fund will inform this project on key aspects pertaining to adaptation strategies that will be developed. Institutional barriers to the integration of climate change into development planning and policies will be reviewed and key stakeholders will be sensitized to climate change adaptation and development linkages; a detailed capacity gap assessment will be undertaken to ascertain both individual and institutional capacity (including at sub-national level) on areas such as climate information, tools for integration, appraisal and prioritization of CCA, project development, CCA mainstreaming, etc. A set of adaptation options will be identified and applied using application of tools such as Cost-Benefit Analysis (CBA), Cost-Effectiveness Analysis (CEA), Multi-Criteria Analysis (MCA), etc.;
8. The NAP project will also seek to support the development of a strategy for private sector investment and engagement in CCA strategy in Haiti.

[1] GEF ID 5557. UNEP implementation. <https://www.thegef.org/project/developing-core-capacity-mea-implementation-haiti>

[2] GEF ID 5380. UNDP implementation. <https://www.thegef.org/project/increasing-resilience-ecosystems-and-vulnerable-communities-cc-and-anthropic-threats-through>

7. Consistency with National Priorities

Is the Project consistent with the National Strategies and plans or reports and assesments under relevant conventions

Yes

If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc

- National Action Plan for Adaptation (NAPA) under LDCF/UNFCCC

1. Haiti's National Action Plan for Adaptation (NAPA) includes the water sector as one of the sectors with high levels of vulnerability to climate change. The South-East is one of the regions of the country identified as being at high risk for climate change impacts, particularly flooding and droughts. The adaptation strategies for the water sector proposed in the NAPA are fully aligned to the ones proposed under the present project, including the construction of water capture systems from alternative sources, the strengthening of water capture systems, management and reforestation of watersheds, water sources and recharge zones, and the construction of cisterns to capture excess runoff water.

8. Knowledge Management

Outline the Knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

1. Knowledge management will be a key aspect of the project, which will strengthen capacities for evidence-based decision-making based on the management, interpretation and application of data on hydrometeorological conditions and climate change scenarios. This will be complemented as necessary by specific, and highly applied, technical and scientific studies in order to ensure the appropriateness and effectiveness of the proposed adaptation studies. Given the high potential that the project has to generate lessons and models for future, wider application throughout Haiti, strong emphasis will be placed on systematization and the generation of corresponding dissemination instruments. This will be carried out both in-house, by the project team, and in collaboration with national universities and NGOs specialised in hydrological issues.
2. Additionally, The project supports the participatory process of adaptation of the existing framework of regulatory and policy instruments that climate change is taken into consideration for the water sector management and planning. A targeted programme of capacity development will be formulated and applied, aimed at strengthening key institutional actors and communities in technical aspects of CC adaptation in the water sector and strategic plans of DINEPA, of regional and local governments and communities in the target area will be developed.
3. Continuous monitoring and evaluation (M&E) of the project's activities will also support the systematization of best practices and lessons learned. The M&E process includes the production of knowledge and communication products that will provide inputs for the project's management but that is also expected to be used as information instrument for sharing

Part III: Approval/Endorsement By GEF Operational Focal Point(S) And Gef Agency(ies)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).

Name	Position	Ministry	Date
Moise Jean-Pierre	GEF Operational Focal Point	MINISTRY OF ENVIRONMENT	7/30/2019

ANNEX A: Project Map and Geographic Coordinates

Please provide geo-referenced information and map where the project intervention takes place

Map.1: Haiti's Departments

Source: United Nations, 2016.



Map.2: South-East Department

Source: MSPP. 2011[1].

[1] MSPP. Ministère de la Santé Publique et de la Population. Présentation du Département Sanitaire du Sud-Est par commune. 2011.
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