



ADAPTATION FUND

**REQUEST FOR PROJECT/PROGRAMME
FUNDING FROM THE ADAPTATION FUND**

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to:

The Adaptation Fund Board Secretariat
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ADAPTATION FUND

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND**PART I: PROJECT/PROGRAMME INFORMATION**

Project/Programme Category:	Regular Project
Country/ies:	Dominican Republic
Title of Project/Programme:	Enhancing climate resilience in San Cristóbal Province, Dominican Republic - Integrated Water Resources Management and Rural Development Programme
Type of Implementing Entity:	National
Implementing Entity:	Dominican Institute of Integral Development
Executing Entity/ies:	Ministry of Environment and Natural Resources; National Institute for Water Supply and Sewerage; Community-based NGOs
Amount of Financing Requested:	9,954,000 (in U.S Dollars Equivalent)

Project / Programme Background and Context:

Provide brief information on the problem the proposed project/programme is aiming to solve. Outline the economic social, development and environmental context in which the project would operate.

Geographic, Environmental and Socioeconomic Context

- *Geographic and Environmental Context*

Located on the Caribbean region, the Dominican Republic shares with Haiti the island of Hispaniola. Total land area is 48,442 km². Country's topography and geomorphology are very much diversified, including coastal plains, mountain ranges and valleys. The elevation ranges between -46 m (*Lago Enriquillo*) to *Pico Duarte* (3,098 m), the highest.

Surface water covers 0.7% of total area of the country. The three major river systems are the Yaque del Norte System, Yaque del Sur System, and Yuna System. Yaque del Norte, with 296 km, it is the longest river of the Dominican Republic. Its watershed has an area of 7,044 km². Yuna River has 209 km long, and its watershed has an area of 5,498 km². Yaque del Sur has 183 km long and its watershed has an area of 4,972 km².

Dominican Republic is home to a rich variety of plants and animals (over 6,000 species of amphibian, birds, mammal, reptiles, and vascular plants). As 23% of country's land is protected, Dominican Republic presents a significant percentage of protected areas in

comparison with the world (developing world average is 13%, and developed world is 8%) (Ministerio de Medio Ambiente y Recursos Naturales, 2012; World Bank, 2014).



Fig. 1: Map of the Caribbean showing the location of Dominican Republic

- Socioeconomic and development Context

The Dominican Republic has a population estimated to 10.08 million, with a population growth rate of about 1.2%. The country is organized into National District and 32 provinces; which further divide into Municipalities and Municipal Districts in decreasing levels of administration. Population density is 197 habitants per km². Despite high urbanization in recent years still about 25% of the population lives in rural areas. Santo Domingo (Province of Santo Domingo and Distrito Nacional) is the capital of the Country and main administrative center, with almost 35% of the population living there.



Fig. 2: Political Map of the Dominican Republic

Major economic activities in the country lie in the tourism, free zones, agriculture and services, and more recently remittances and mining extraction. After service and industry, agriculture sector is the most labour demanding activity in Dominican Republic, and it is largely based on subsistence farming focusing on rice, fruits, coffee, cacao, legumes, vegetables and livestock. Agriculture sector uses 14% of active population and presents 5.6% of GDP (Banco Central, 2016). Industry is high in weight to the economy and focuses on sugar, mining, textiles, tobacco, among many others.

According to the latest official poverty data, almost 50% of country households lives in poverty, and over 10% are living in extreme poverty. In rural areas poor people overpass 60% (Morillo P., 2014). Such poor rural people include women and men who are heads of households, small-scale farmers, landless farmers, microentrepreneurs, small merchants, agricultural workers and labourers for rural service operators. They are particularly vulnerable, and they suffer not only from low incomes and poor living conditions but also from social exclusion. In all groups, women heads of households and children are extremely vulnerable due the lack of focused opportunities and not being benefit from most types of social assistance programmes (Berigüete, 2015).

The increase in population is resulting in an increase in the demand for food, energy and water resources for both livelihood and economic development in short-time. Accessibility to water is limited in most areas. Agricultural production is mainly rain-fed, such that increase in output is largely linked to the lateral expansion of cultivated lands not on productivity over a unit area, thus, at the expense of other ecosystems such as forest. Extensive cropping and livestock aims to land degradation and put more stress over water resources, reduce soils capacity and increase the needs of agrochemicals.

Climate Vulnerability and Impacts

- *Current climate variability*

Dominican Republic experiences the year-round warm, humid conditions associated the Tropics. Seasonal temperatures range from 20-25°C in the cooler months of December to February, to 25-27°C in warmer seasons (June to November). Wet season occurs through May to November, during which most regions receive 100-200 mm per month.

As many other Caribbean nations, Dominican Republic Inter-annual climate variability is strongly influenced by *El Niño*. *El Niño* episodes bring warmer and drier than average conditions between June and August and *La Niña* bring colder and wetter conditions at this time. Dominican Republic also lies in the heart of the Atlantic hurricane belt, where cyclones and hurricanes occur throughout August to October. Heavy rainfall associated with cyclones and hurricanes contributes significantly to wet season rainfall totals. The occurrence of hurricanes is strongly linked to *El Niño*, with more frequent hurricane activity associated with *La Niña* events, and less frequent events in *El Niño* years.

A recent study about recent climate trends in Dominican Republic from 1960-2003 period (McSweeney et al., 2010) concludes that:

- Annual temperature has increased by around 0.45°C, at an average rate of 0.1°C per decade. This warming is most rapid in the warmest seasons.
- The frequency of “hot days” and “hot nights” increased significantly, annually in all seasons: average number of hot days per year increased by 63 (17.4% of days); and average number of hot nights per year increased by 48 (13.2% of nights).
- The frequency of “cold days” and “cold nights” decreased significantly, annually in all seasons: average number of cold days per year decreased by 30 (8.3% of days); and average number of cold nights per year decreased by 31 (8.6% of nights).
- Mean rainfall over the Dominican Republic has decreased by 5.0mm per month (4.5%) per decade. This decrease is mainly due to decreases in rainfall, of 7.5 and 5.4 mm per month (6.4% and 3.7%) per decade respectively.
- Expected Climate Change Impacts

Several models about long-term temperature in the Dominican Republic points to:

- The mean annual temperature is projected to increase by 0.5 to 2.3°C by the 2060, and 1.1 to 3.6°C by 2090. The range of projections by 2090 under any emissions scenario is around 1 to 1.5°C (being warming projected rate most rapid in winter).
- Substantial increases in the frequency of days and nights that are considered “hot” in current climate. Hot days will occur on 29-72% of days by 2060, and 32-98% of days by 2090. Days considered hot by current standards for their season are projected to increase even more rapidly, occurring on 100% of days in the season.
- Nights that are considered “hot” for the annual climate of 1970-99 are projected to occur on 33-68% of nights by 2060 and 39-98% of nights by 2090. Nights considered hot by current climate standards for their season are projected to increase even more rapidly, occurring on 100% of days in the season.

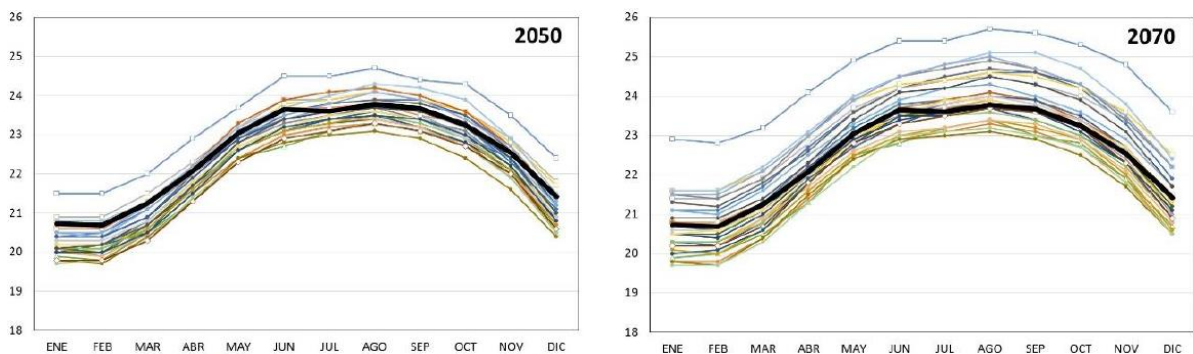


Fig. 3: Expected Changes in Minimal Temperature in 2050 (left) and 2070 (right)

Source: (Ministerio de Medio Ambiente y Recursos Naturales, 2016).

All projections indicate decreases in the frequency of days and nights that are considered cold in current climate. These events are expected to become exceedingly rare, not occurring at all in most projections, meaning warming increase is inevitable.

Regarding precipitation, consulted models about long-term rainfall points to:

- Projections of mean annual rainfall from different models in the ensemble are broadly consistent in indicating decreases in rainfall for the Dominican Republic, largely due to decreases in wet season rainfall. Projected changes in rainfall vary from (-78 to +21%) by the 2090. Annual changes range from -55 to +20%.
- The proportion of total rainfall that falls in heavy events is projected to decrease by most models, with changes ranging from -29% to +8% by the 2090.
- Maximum 1- and 5-day rainfalls tend to decrease in projections, particularly in wet seasons when the largest reductions in total rainfall are projected.

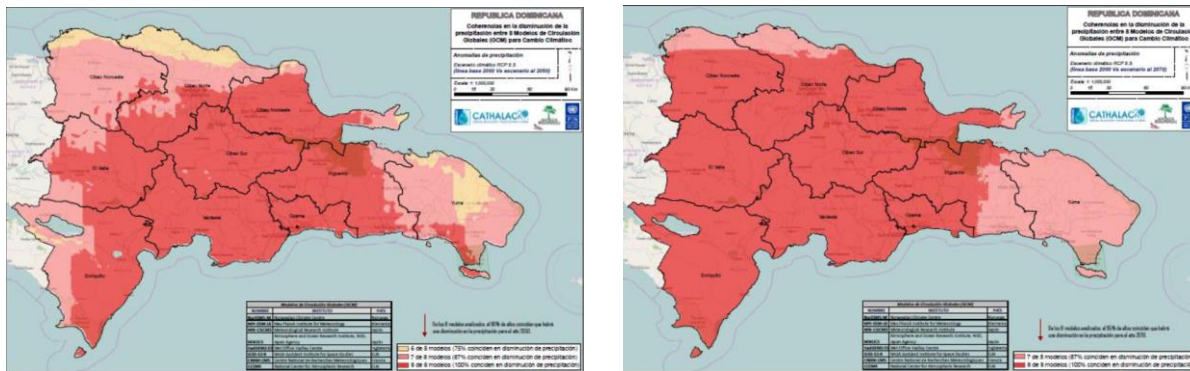


Fig. 4: Expected Reduction in Yearly Rainfall in 2050 (left) and 2070 (right)

Source: (Ministerio de Medio Ambiente y Recursos Naturales, 2016).

Due to climate change, the Dominican Republic can suffer from combined impacts in mid and long term (Christensen et al., 2007). Such impacts are, among others:

- Tropical cyclones are likely to become, on the whole, more intense under a warmer climate as a result of higher sea-surface temperatures, there is great uncertainty in changes in frequency, and changes to storm tracks and their interactions with other features of climate variability (i.e., *El Niño*) which introduces more uncertainty.
- Potential changes in cyclones, storms and hurricanes occurrence contribute to uncertainties in future wet-season rainfall. Potential increases in summer rainfall associated with tropical cyclone activity, which may not be captured in current projections, may counteract the projected decreases in rainfall.
- As all Caribbean Islands, the Dominican Republic is highly vulnerable to sea-level rise. Sea-level in the Caribbean region is projected to rise by the following levels by 2090

(relative to 1980-1999 sea-level): 0.13 to 0.43 m (SRES B1); 0.16 to 0.53 m (SRES A1B); and 0.18 to 0.56 m (SRES A2).

The Ministry of Environment and Natural Resources has made a special effort to contribute to the scientific documentation that supports the decision-making process regarding climate change within *National Communications to UNFCCC*¹.

- *Climate Vulnerability and Exposure*

The Dominican Republic is particularly vulnerable to extreme weather events. As the country is located on the Caribbean, it is affected with variable recurrence of climatic phenomena and seasonally and frequently affected by hydrometeorological situations (as storms, hurricanes and droughts). Country's climate vulnerability is exacerbated due to a combination of human and socioeconomic factors. This vulnerability has to do with the presence of populations on zones that are prone to floods and unstable lands, eroded by subsistence farming and poorly planned settlements (World Bank, 2011).

Several vulnerability studies have been performed regarding the country's coastal zone, water resources, agriculture, tourism and energy, within national communications, as well as for the third one, currently in progress. These such studies show how extreme hydrometeorological conditions have caused damages, disasters and diseases in different sectors, and make some projections based on long-term climate scenarios.

The *Climate Risk Index*, a global overview based on one of the most reliable datasets available on the impacts of extreme weather events and associated socio-economic data, ranks Dominican Republic as eleventh country most vulnerable to climate change impacts (Germanwatch, 2016). According the same source, Haiti is the third nation in the same rank, meaning the island of Hispaniola will be affected by climate change in the long term and a comprehensive and integral adaptation is necessary.



Fig. 5: Effects of Olga and Noel (2007, left) and Impacts of Sandy (2012, right)

¹ So far the Dominican Republic has submitted national communications for 2003 and 2009. Such these documents are available at UNFCCC website: http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php.

According to latest *Natural Disaster Hotspot*, which presents a global view of disaster risks associated with major natural hazards (as drought, floods, cyclones, earthquakes, etc.), the Dominican Republic is the world’s third most exposed country to multiple hazards (World Bank, 2016). According to the report, a total of 97.3% of the total land area and 96.8% of the total population is exposed to two or more hazards. The report also places the country in the second position of the countries having the highest probability of experiencing economic risks as a result of a greater exposure to two or more hazards. Moreover, it is estimated that 90.7% of Dominican population and 92.1% of the Gross Domestic Product (GDP) of the country reside in areas at risks. A similar panorama is reported regarding risks of experiencing three or more hazards.

From 1961 to 2014, Dominican Republic experienced 56 hydrometeorological events (those with greater recurrence, causing significant losses), representing 96% of extreme events from such period. Such events were floods (41%), droughts (2%), and storms (50%). Storms were responsible by almost all economic damages (96%) in such period. For 1979-2007, country experienced losses for a total of USD 5,220.1 MM (of 2005) just by 5 events (David, Federico, Georges, Jeanne, Olga and Noel) (World Bank, 2015).

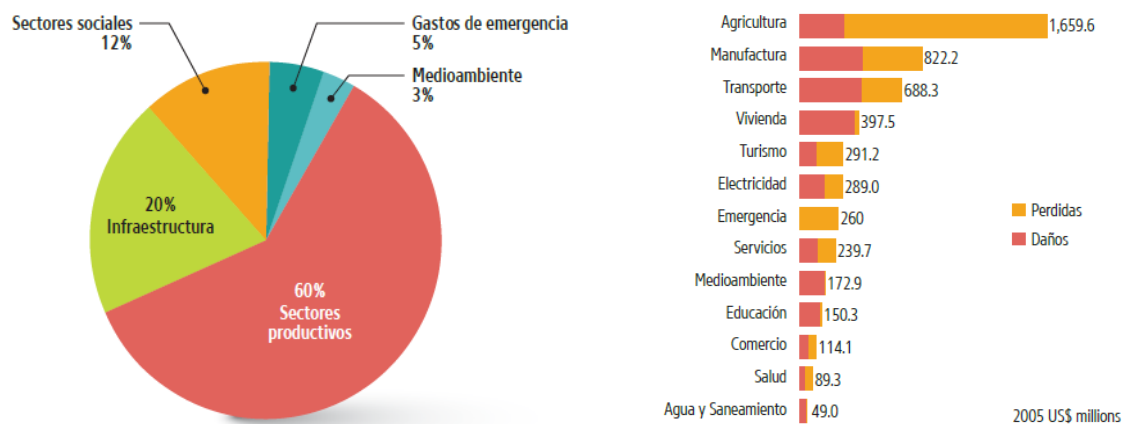


Fig. 6: Damage Caused by Sector for David, Federico, Georges, Jeanne and Noel

Source: (World Bank, 2015).

Currently the economic impact of hydrometeorological extreme events are estimated on USD 420 MM per year (an average from 1961-2014 period). In hurricanes cases, such these damages may exceed USD 1,997 MM (3.3% of GDP) (World Bank, 2015). The agricultural sector has been one of the most severely affected due to its high vulnerability to weather-related events. From 1979 to 2007, the sector has lost USD 1,659.6 MM as a result of the impact of extreme events -about 32% of the total loss from this period- and USD 220 MM from 2007 to 2012 (Ministerio de Agricultura, 2015).

Table 1: Damages to Agriculture by Storms and Hurricanes (2007-2012)

Year	Event	Economic Impact (DOP millions)	% Agricultural GDP	% Total GDP
2007	Noel and Olga	5,829	7.18%	0.43%
2011	Irene	413	0.35%	0.02%

2012	Excessive rains	86	0.07%	0.00%
2012	Isaac	929	0.71%	0.04%
2012	Sandy	993	0.76%	0.40%

Source: Ministerio de Agricultura, 2015

In terms of food security, it is important to mention that countries located in the tropics share the feature that most food crops are in the upper limit of the optimal production temperature, which means that little increases in the average temperature will result in a high decline in crop yields. As well, extreme rains reduces productive capacity of soils.

Water is recognized as a crosscutting resource underlying the National Development Strategy (Republica Dominicana, 2012) with direct linkages to Sustainable Development Goals. The consumptive demand for water resources is projected to increase 13% by 2030. The lack of potable water through incidences of extreme climate events such as droughts and floods, increase the exposure of people especially women and children to waterborne and other hygiene related diseases such as diarrhoea, amoeba, etc.

On the other hand, water resources in Dominican Republic play different key functions for the country's development: hydroelectric power generation (15% of total energy consumed), drinking water supply, irrigation and drainage, among others, have been affected by extreme events. (Berigüete, 2015) Additionally, the occurrence of plagues and diseases (as dengue, cholera, malaria, etc.), modification of biophysical conditions (changes in temperature, humidity, rainfall, wind, etc.) are also consequences of climate changes that are affecting the water resources availability (Hatfield and Prueger, 2015).

Given the multiple uses of water, addressing problems of adaptation to the challenges that climate change poses cannot be achieved by those responsible for only managing water and acting in isolation, so a multi-sectoral and multi-disciplinary collaborative responses are needed. However, given that a substantial proportion of population directly depend on agriculture for their livelihoods, it is particularly important that the relationship between water resources management and land management is cultivated.

It is also important to treat water resources as a natural resource in tandem with forestry and direct land uses, rather than a commodity, as this undermines its judicious use. Not only does the availability of water resources affect socio-economic conditions, but also its variations and especially the extremes (i.e., floods and droughts) present a serious hazard and threat to national growth and development (i.e. increased production costs).

- *Socioeconomic Vulnerability*

The Dominican Republic Human Development Index (HDI) for 2014 is 0.715, which put the country in the high development (ranked 101). However, despite country's progress, the 2015 Report indicates that when the value is discounted for inequality, the HDI falls to 0.546. As well, climate threats may eclipse the achievements reached by the country in its current trends of development (United Nations Development Program, 2015).

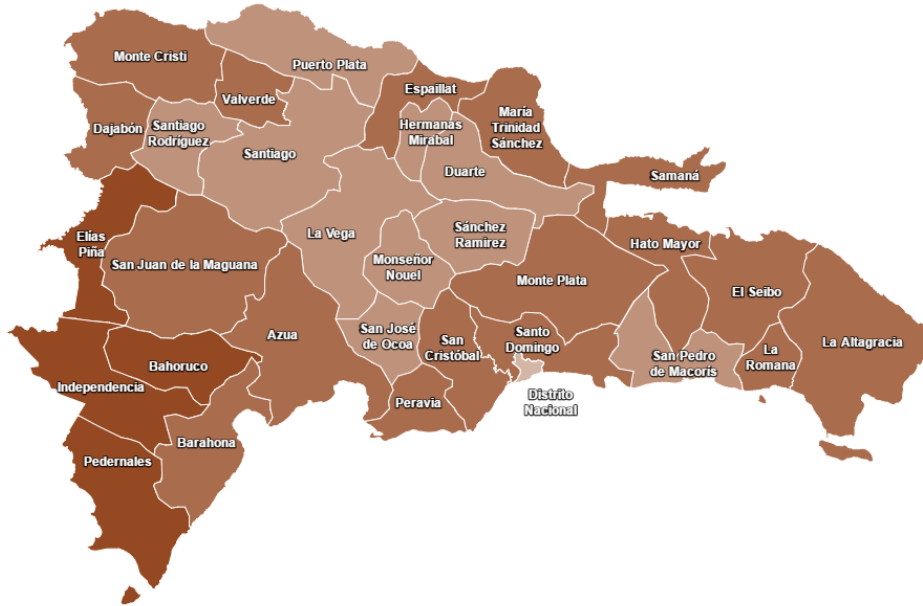


Fig. 7: Human Development Index by Province

Source: (United Nations Development Program, 2015).

An analysis included in the technical report “*The economics of climate change in Latin America and the Caribbean: Paradoxes and challenges of sustainable development*”, states that for the small Caribbean islands, the climate change challenge is particularly formidable because of their geographic, biological and socioeconomic characteristics. For example, some of these islands are in the paths typically taken by hurricanes, and a large portion of the population and their economic activities are located in coastal areas.

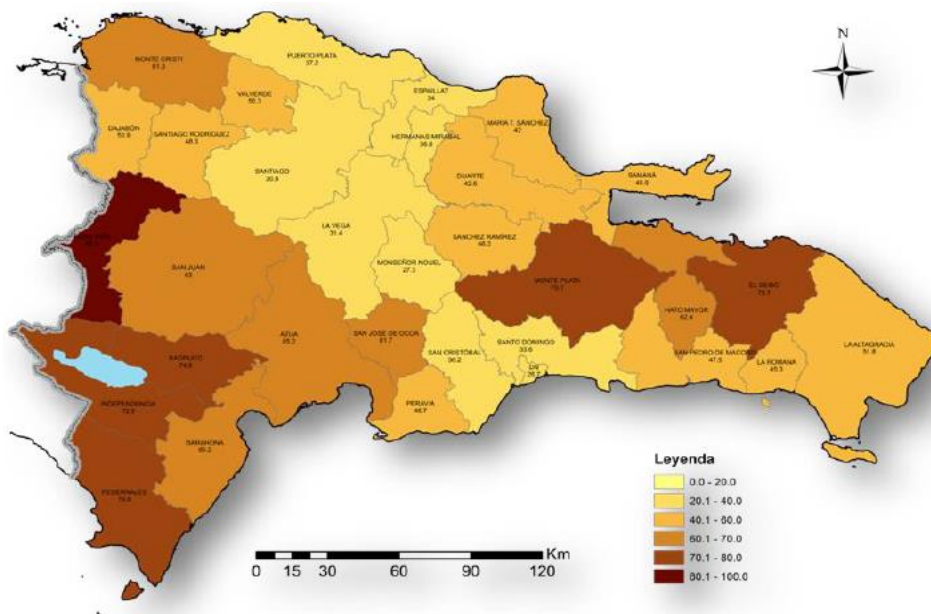


Fig. 8: Share of Households in Poverty by Province

Source: (Morillo P., 2014).

In addition region is highly dependent on just a few types of economic activities, such as tourism and agriculture, which are particularly sensitive to climate conditions (Economic Commission for Latin America and the Caribbean, 2015). As almost 50% of households lives in poverty, climate vulnerability is significant development challenge. Studies on the interrelation between climate change and poverty shows that among 100 countries at greater risk due to climate change, Dominican Republic ranks 33 (Yohe et al., 2006).

- Adaptation Challenges

For the Dominican Republic, top country priorities are related to reach and appropriate and efficient adaptation (Dominican Republic, 2012). In this context, the *Dominican Republic's National Action Plan for Climate Change Adaptation* (National Adaptation Programme of Action or NAPA or PANA-RD) identified the water sources, agricultural and food security, and public health as most vulnerable to climate change (Secretaría de Estado de Medio Ambiente y Recursos Naturales, 2008).

The evidence suggests that health impacts of climate change are transmitted through various channels, such as heat waves, natural disasters triggered by extreme weather events and infectious diseases. The application of a predictive model shows that climate change drives up the number of cases of malaria, dengue, leptospirosis, zyka and gastroenteritis relative to the baseline (Economic Commission for Latin America and the Caribbean, 2013c). This generates a variety of economic costs as productivity losses, hospitalization and medicines. These costs can, however, be lowered by implementing measures that focus on improving primary health care, water quality and sanitation.

Farming is particularly sensitive to weather and hydrological conditions. The results of analyses conducted for specific products vary a great deal and are associated with a high degree of uncertainty, with rice yields, for example, ranging from a 3% drop to a 2% increase by 2050, depending on the climate change scenario used. Declines of between 1% and 30% are expected for crops as cassava, bananas, sweet potatoes and tomatoes by 2050, again depending on the climate scenario on which the projections are based (Economic Commission for Latin America and the Caribbean, 2013d).

These decreases in yields will also have negative implications for employment in the agricultural sector and regional food security, as well as potentially driving up prices, which would, of course, have a disproportionate impact on the poor, and heightening the imbalance in the external sector. A number of different adaptation strategies have been proposed (e.g., water conservation schemes and early warning systems) that would have other positive side-effects as well (Vergara et al., 2013).

Decreases experienced in the duration of the rainy season (5 months in last 36 months) and the overall volume of rain having led to a decline in production often associated with water shortage, acute droughts are identified as the most significant risk in mid and long-term (Arenas, 2016). 2014-2015 drought has caused damage to be calculated².

² A comprehensive analysis of such drought and its impacts is included in “*Drought Boosts Science in Dominican Republic*”. Available at: <http://www.ipsnews.net/2016/01/drought-boosts-science-in-dominican-republic/>.

Due the accumulated impact on climate change on poor populations, it's reasonable to conclude that immediate adaptation shall be focused in water, agriculture and health.

Problem Statement: The Climate Change-induced Problem

- *Scope of Intervention*

There is high agreement in all national and regional scale analyses of vulnerability by various sources including government commissioned reports, studies of international organizations and independent scholastic research, that water resources and food security are especially most vulnerable to climate change. Adaptive capacity of many communities and regions are significantly higher nationwide due to low socioeconomic development on rural areas and heavy dependence of local economies and livelihoods on rain-fed systems such as agriculture and forestry.

Decreasing annual rainfall and increasingly erratic rainfall patterns due climate change, are adversely affecting rural livelihoods in almost all Dominican Republic's provinces especially agricultural and pastoral practices. Such decreases in rainfall and erratic patterns are also expressed as drought and flooding, posing enormous challenges to local communities to deal with such extreme events. Thus, against this backdrop, the problem statement therefore is that the livelihoods of communities are being affected to water-related impacts of climate change, such as reduction in water availability, increasingly erratic rainfall patterns and increased frequency of high intensity events.

Agriculture is a major driver of Dominican Republic's economy, consistently contributing in 5.6% of GDP and employing 14% of the economically active population. Agricultural sector's contribution to national development is highly linked to its potential for poverty reduction. In almost all provinces much of the agriculture is rain fed and on a subsistence scale. Food crops are cultivated mostly in only one season. In addition, since the agricultural practice is dependent upon the availability and distribution of the rainfall over the rainy season months, farmers suffer significant losses when rains fails.

The water storage potential of the agricultural landscape is not at its full potential, which restricts agricultural production potential. Land degradation, high rates of erosion and high intensity rainfall contribute significant volumes of sediment to the existing dams, reducing their water holding capacity (Berigüete, 2015). Efforts to reduce erosion such as reforestation and riparian zone management, coupled with efforts to de-silt and repair infrastructure will be necessary in order reduce the vulnerability of agriculture to increasing rainfall reductions and variability. In addition, a predicted overall reduction in rainfall, coupled with greater rainfall irregularity will have negative implications for the important hydropower component of Dominican Republics' energy sources.

Non-sustainable forest management and high rate of deforestation is amplifying climate change impacts, manifested in form of: scarcity of freshwater, desertification, loss of soil fertility, loss of agricultural productivity, and increased sensitivity to human and natural hazards (Secretaría de Estado de Medio Ambiente y Recursos Naturales, 2008).

- Programme Targeted Area

The study *Critical Points of the Vulnerability to Climate Change and the Variability in the Dominican Republic*, which analyses the climate vulnerability as a function of exposure, sensitivity and adaptive capacity in priority sectors: tourism, drinking water, agriculture, protected areas, energy and human settlements, provide the Country's first map of multidimensional vulnerability to climate change by Province (Izzo et al., 2012). From such maps (and other sources), following data is analysed for San Cristobal Province:

Table 2: Critical Points Related Climate Change for San Cristobal Province

Global Vulnerability		Poverty	DHI	Vulnerability by Sector					
Current	Future			Agriculture	Coastal	Tourism	Energy	Settlements	Water
high	Very high	36.2%	0.441	Very High	High	Mid	Very high	High	Very high

Based on Oficina Nacional de Estadísticas, 2014; Izzo et al., 2012.

As a result of to analyse the vulnerability reported in such study, expected climate changes, and overall adaptive capacity, water management sector is selected for this proposal. As water is a mainstream sector other synergies can be potentially created.

Similar to other provinces of Dominican Republic, in general terms San Cristóbal has a mid-to-high degree of exposure to climate variability and climate change characterized by increasing temperatures and decreasing and erratic rainfall, which, when coupled with low socio-economic development produce as higher vulnerability to climate change and high opportunities areas for climate change adaptation mainly in water sector.

EXPOSICIÓN, SENSIBILIDAD y CAPACIDAD DE ADAPTACIÓN

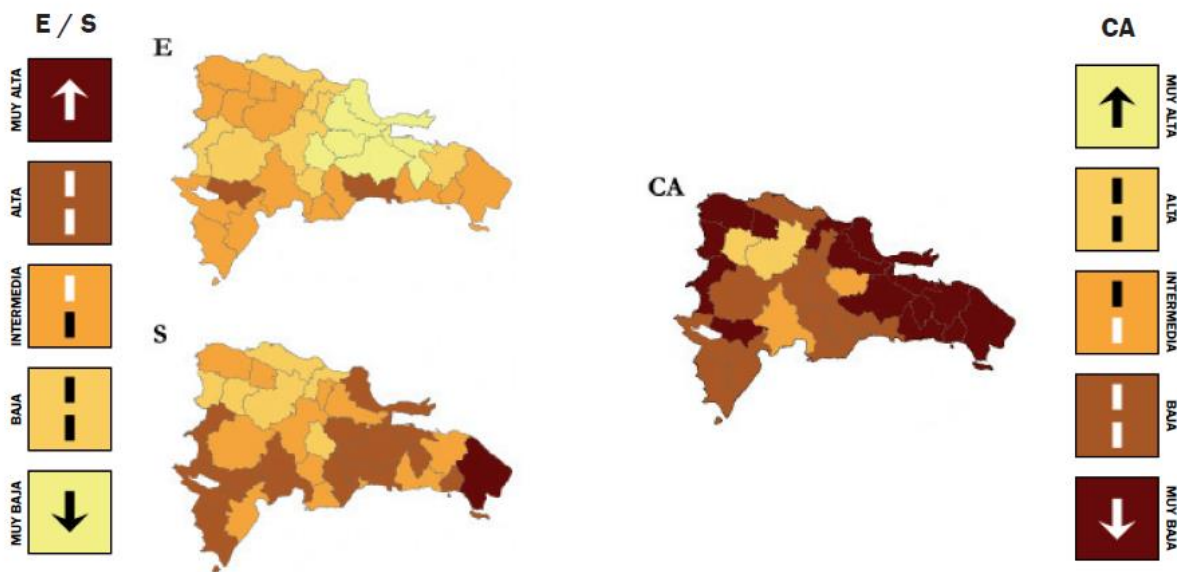


Fig. 9: Vulnerability of Hydric Resources by Province

Source: (Izzo et al., 2012)

- Targeted Area Context

San Cristobal has a population of 0.57 million. According to last National Homes Survey of Multiple Purposes, 36.2% of the population has an income below the upper poverty line, while 6.4% is below the extreme poverty (Oficina Nacional de Estadísticas, 2014). Poverty is predominantly severe in rural areas accounting for more than 82% of poor. In six out of the fourteen municipalities, more than 50% of the population live in poverty.

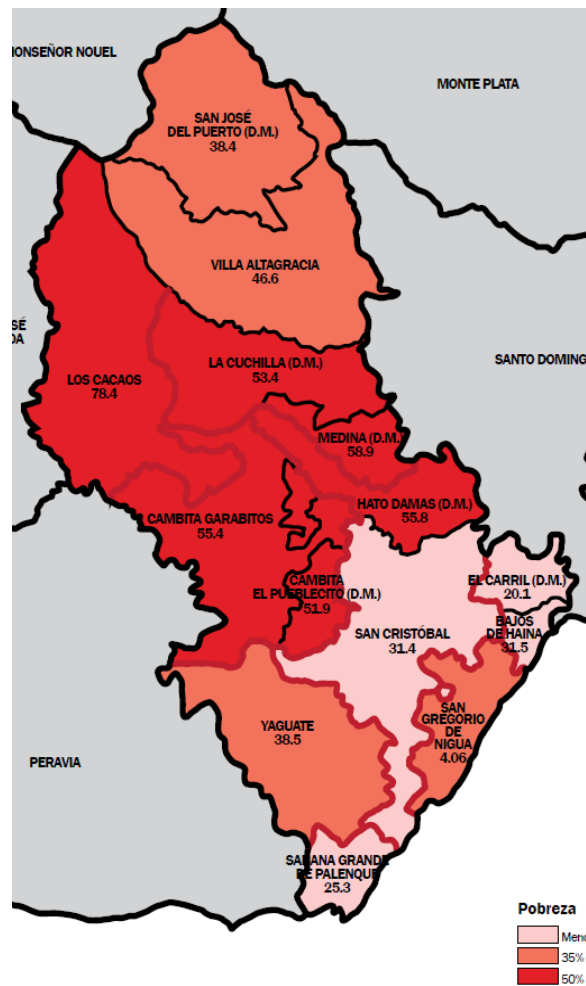


Fig. 9: Poverty by Municipality in San Cristobal Province

Source: Oficina Nacional de Estadísticas, 2014

Comparatively, San Cristobal shows higher attendance rates for all school going ages, which implicates a high turnover of capacity development through formal educational programmes. This constitute an important factor in the adaptive capacity to climate change. According to most recent official statistics, 88% of population is alphabetized.

The dominance of men over women, in terms of land’s ownership and other assets, access to and control of resources, and in decision making, is overwhelming. Although the low access of women to land, women also have limited access to formal employs in

non-agriculture activities (43.3%). All of these impose time constraints on women and tend to limit their awareness about opportunities, participation and development.

The current situation in San Cristobal's ecological belts can be described, in terms of resource endowments (agriculture, water, mineral resources and energy), as affecting risks and vulnerability. The state of agriculture in the Province is characterized by a number of factors including the availability of land; comparative advantage in production of particular crops; untapped potential for livestock production. Despite showing some indication towards commercialization, subsistence agriculture remains prevalent.

San Cristobal comprise about 1,265.77 km², representing 2.6% percent of national land area. Agricultural land currently under usage is 671.5 km² and there are 25,000 m² (2012) dedicated to agriculture under controlled environment. Average land holdings is 44 tares (5.8 hectares). Forest coverage is significant accounts 554.2 km² (2012).

A significant proportion of arable land has soils with poor physical properties and low content of organic matter. Relatively good soils are ground water laterites, which tend to be limited in depth by hardpan. Soils are highly susceptible to erosion because of the thin vegetative coverage and torrential nature of poorly distributed rainfall. There is limited use of soil management practices (i.e., use of fertilizers, water management). This results, under these poor conditions, in low productivity in both crops and livestock.

San Cristobal has received significant public investment in recent years. However, San Critóbal still has a wealth of under-utilized resources to support an intensified agriculture modernization programme. These include a network of river basins with highly fertile areas (i.e., Haina, Nigua and Nizao rivers). These areas can become major agricultural production zones for different more-resilient crops, which can also be produced and marketed competitively over longer seasons than current crops.

In 2010, the percentage of households owning livestock ranges from a 51% percent (pigs, goats, cattle, poultries, etc.). Although generally higher than the rest of the country, livestock numbers per household are modest compared to agriculture land.

There is a visible developmental gap between urban and rural areas of the province with the rural harbouring significantly higher levels of poverty. Almost all rural communities does not account with adequate water and sanitation systems and their economies depended heavily of agriculture (Oficina Nacional de Estadísticas, 2012).

- *Adaptation Challenges and Potential Solutions*

In terms of climate change vulnerability and adaptation needs, water availability is the single most important production and livelihood sector for San Cristobal Province. There is thus a clearly articulated need to counteract the negative impacts of climate change on water resources-reliant development and livelihoods. It is also necessary to look at the efficiency of water use. Likewise the ability to cope water management with floods and droughts is necessary in order to protect people, livelihoods and development.

According to future climate scenarios, all Dominican Republic regions are expected to witness the widest range of temperature variability. One of the greatest influences of climate change on the environment has been desertification. On the other hand, extreme flood events can be relevant for southern municipalities of San Cristobal (which are coastal areas), partly due to the impacts of climate change in the form of extreme rainfall events. Flooding results in a loss of crops, waterborne diseases and loss of life.

Climate change presents societies with a variety of new challenges, especially in the poorest areas as changes in mean temperature affect food productivity and water availability, triggering other burdens of malnutrition, diarrheal illnesses and other water and airborne infections (Huq, 2014). Dominican Republic's water resources and water supply systems are vulnerable to current climatic patterns, its variability and expected droughts and flooding. Similarly, the production sectors (agriculture, forestry etc.) that sustain the livelihoods of the majority of the population, especially in rural areas, are also severely affected by climatic patterns affecting water resources and supply.

Both vulnerability and adaptive capacity are uneven, and in many cases, it is the most vulnerable individuals and communities who are least able to adapt. This further shapes the scale and types of adaptation actions required in response to the nature and context of the climatic vulnerability. The primary problem to be addressed by the proposed program, and that requires adaptation is climate change-induced decreases in the availability and increasing unpredictability of water resources, and associated negative impacts of this on the livelihoods of rural communities in San Cristobal Province.

Under such circumstances, preferred solutions for adaptation should address climate impacts on water availability and well as measures that reduce the vulnerability of sectors (e.g. agriculture, livestock, forestry, etc.) supporting community livelihoods in poorest areas. Although the consequences of climate change effects on water have been well established (República Dominicana, 2012), an understanding on how to cope with the potential impacts at regional, national and local levels is still not properly managed by developing countries due to limited investigation to generate knowledge required for adaptation and resilience of natural or human systems to actual or expected climatic threats (Berigüete, 2015). However, following key elements can be addressed:

- a) Water resource management planning taking into account the impacts of climate change; based on the four principles formulated by the International Conference on Water and the Environment (Dublin, 1992) that includes: i) Freshwater is a finite and vulnerable resource, essential to sustain life, development and the environment; ii) Water development and management should be based on a participatory approach, involving users, planners and policymakers at all levels; iii) Women play a key part in the provision, management and safeguarding of water; iv) Water has an economic value in all its competing uses and should be recognized as an economic good.
- b) Grassroots participation in water management planning and community capacity for the implementation of water resource management activities to reduce vulnerability

to climate change impacts on community livelihoods. To establish community supply and management plans drawing from diverse sources of water supply in addressing shortages under climate change is crucial to achieve this in a large number of communities. Importantly, this will require financial support for the operationalization of community plans, such as an improvement of infrastructure for water harvesting, storage and distribution. Mainstreaming adaptation into water management planning of communities will help those local communities who are usually the most vulnerable, to respond timely to climate disasters and improve the resilience of its water supply sources. Following the predominance of smallholders' community activities, proper coordination systems will be put in place for water management planning, improve on the cost effectiveness and to reduce transaction costs.

- c) Diversification of livelihoods of local communities as safety nets to climate change impacts. There is over-reliance on rain-fed agriculture and livestock that makes communities vulnerable to climate change, with limited capacity to capture, manage and conserve water. Because of erratic rainfall patterns, there is limited ability to increase productivity and low capacity for livelihood diversification. As well, agricultural practices can be adapted to take advantage of any improved supplies to water that are possible, but also to be more resilient to low water conditions, moving away from a reliance on rainwater. Significant financial resources and capacity enhancement are necessary to provide the knowledge and alternative means of livelihood activities and the ability for agricultural intensification.
- d) Institutional and community capacity enhancement to deal with climate risks. As the current knowledge base on the impacts of climate change on the water resources at community level is weak to support institutional processes and development, from a regional to local institutional level. Improving the knowledge base in institutions to support on-the-ground measures in terms of water resource management and livelihood diversification is an important solution targeted in the Programme. Building the capacity of local communities and local and national institutions in addressing climate change will also provide sustainability and required programme's ownership.

- Identified Barriers to Potential Solutions

Above discussed barriers are under the expected outcomes in considered solutions:

Table 3: Barriers to Achieving Preferred Solutions

Considered Solutions	Identified barriers
Improved planning and management of water resources taking into account climate change impacts on surface and groundwater sources	Limited institutional and community capacity in integrating climate change in water resources planning and management; Limited capacity to manage trans-border (with other provinces) sources of risks and vulnerabilities.
Smart-climate resilient management of water resources by communities of San Cristóbal	Lack of incentives and preparedness to manage and oversight the management of natural resources; Income vulnerability accentuated by the limited investment into develop community infrastructure.
Enhanced diversification of livelihoods of communities through better water services	Lack of knowledge regarding on alternative livelihoods as safety nets for communities; deep-seated cultural

	situation in which communities remain rooted in rain-fed agriculture as a means of existence.
Institutional and community capacity enhancement to deal with climate risks.	The quality and potential of human resource still is largely underdeveloped and untapped due to limited investment in the provision of access to good quality education and other capacity development programmes at all levels.

Based on McSweeney et al., 2015; Christensen et al., 2007

Problems to be addressed

The program seeks to address the negative impacts that the forecasted variations in temperature and precipitation will have on San Cristobal in terms of water management, due to the greater number of warmer days, longer dry periods and increase in drought events, greater intensity of rains in a shorter time period. These climate threats will increase the vulnerability of the rural population, especially for small producer and poor households. This is exacerbated by the following underlying drivers of vulnerability: strong dependence on rain-fed agriculture; higher soil degradation due to prolonged use; insufficient soil and water conservation practices; high poverty levels; deforestation and degradation of areas; and lack of adequate water supply and sanitation services.

The proposed program will address specific climate threats over hydric resources and water management in targeted areas. These threats include variations in temperature and rainfall patterns, increasing extreme weather events (as storms), increasing severity of droughts, and the lack of resources and capacities to manage their water resources and public health. This will have other positive impacts on most vulnerable populations of San Cristobal Province, as agriculture, livestock, health care and livelihoods, namely small producers and vulnerable communities, who will be programme target population.

Table 4: Programme Targeted Areas

Community	Population	Poverty	Vulnerability
San Cristóbal (main city)	216,875	31.4%	Medium
Hato Damas (DM)	15,894	55.8%	Very High
Sabana Grande de Palenque	15,466	25.3%	Very High
Bajos de Haina	83,582	31.5%	Very High
El Carril (DM)	40,611	20.1%	High
Cambita Garabitos	20,655	55.4%	Very High
Cambita el Pueblecito (DM)	10,402	51.9%	Very High
Villa Altagracia	53,576	46.6%	High
San José del Pueto (DM)	14,493	38.4%	Very High
Medina (DM)	7,066	58.9%	Very High
La Cuchilla (DM)	9,177	53.4%	Very High
Yaguatae	42,325	38.5%	Medium
San Gregorio de Nigua	30,268	4.1%	Medium
Los Cacaos	9,540	78.4%	Very High
TOTAL	569,930		

Based on Oficina Nacional de Estadísticas, 2014; Izzo et al., 2012.

Building on consultations of civil society and government institutions, the programme will target all San Cristobal municipalities (based on a preliminary assessment). At

specific community level, interventions will be based on its vulnerability, population, poverty, social cohesion and overall programme efficiency, avoiding funds duplicities.

Project / Programme Objectives:

List the main objectives of the project/programme.

The main objective of the programme is to enhance the resilience and adaptive capacity of rural livelihoods to climate impacts and risks on water resources in San Cristóbal Province. This objective will be achieved through key results centered on the improvement of water access and also increase institutional and community capacity and coordination for integrated water management to support other uses of water resources especially for the diversification of livelihoods by rural communities. On the ground, program will put-in practice actions recommended in the *Critical Points of the Vulnerability to Climate Change and the Variability in the Dominican Republic* and the *National Action Plan for Climate Change Adaptation*, aligned with main country's policies, as *National Development Strategy*. Program's total beneficiary targeted population is approximately 500,000 people. Program short name is "*ClimaComunidad*" (a simplified Spanish word to ClimateCommunity).

This program aims to increase resilience to climate change through both immediate and long-term adaptation measures in form of rural development programs, projects and actions. Such outputs are organized according program's three components:

- (1) Community level implementation of water resource management activities;
- (2) Rural development through diversification of livelihoods; and
- (3) Capacity building and capacity development to manage climate-related risks.

Proposed program will follow existing interventions at municipal, province, regional or national level (if any), looking to scaling-up successful initiatives and to create more capacity building synergies at all levels of governance (using bottom-up approach). This will avoid further interventions gaps and/or overlaps (looking or top-down approaches).

The program will address key vulnerabilities of identified areas regarding agriculture and water resources management (Berigüete, 2015), and thus contribute to immediate and long-term development and resilience needs of communities, households and farmers/producers vulnerable, with a particular focus on extremely vulnerable groups: women, elderly, children and young. As such, program is aligned with recommendations of the UNFCCC Nairobi Work Programme (UNFCCC, 2010) and most comprehensive available scientific evidence on climate change impacts, vulnerability and adaptation in agriculture, water resources and food security (Niang et al., 2014; Porter et al., 2014).

Project / Programme Components and Financing:

Fill in the table presenting the relationships among project components, activities, expected concrete outputs, and the corresponding budgets. If necessary, please refer to the attached instructions for a detailed description of each term.

For the case of a programme, individual components are likely to refer to specific subsets of stakeholders, regions and/or sectors that can be addressed through a set of well defined interventions / projects.

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$ MM)
1. Community level implementation of climate resilient water resource management activities	1.1 Community water supply and management plans developed for 8 municipalities to incorporate climate change-related risks	Implemented climate resilient management of water resources by 30 small communities of San Cristobal	0.050
	1.2 Water supply increased for multiple uses and users in 30 communities during period of shortages under climate impacts (as droughts, heat stress etc.)		3.900
	1.3 Small scale irrigation systems installed in 30 communities and water users associations to manage irrigation systems established and/or strengthened to improve efficiency and effectiveness of water usage under conditions of climate induced water pressures		1.500
	1.4 Measures for water conservation under climate impacts (as catchment/river bank, re-forestation schemes) implemented for 400 hectares		0.650
TOTAL COMP. 1			6.100
2. Diversification of livelihoods of rural communities under climate change	2.1 Improve infrastructure (e.g. canals, pipes etc.) for water distribution for adaptation and use in agricultural systems installed in 8 municipalities	Enhanced diversification of livelihoods under climate change by 30 communities of San Cristobal	0.600
	2.2 Dry-season gardening activities, agricultural processing schemes (as honey, orchids or handcraft) by women, improved for climate change adaptation in 20 communities		0.700
	2.3 Tree nurseries and wood lots for climate risks management (i.e., for rehabilitating floodplains, hillsides, watersheds etc.) are established and managed by 20 communities		0.400
	2.4 Demonstrative fish farms are established and supported in 20 communities		0.400
TOTAL COMP. 2			2.100

3. Capacity building and capacity development in key institutions and communities to manage long-term climate change-related risks	3.1 A set of manual and other materials on best practices for water management and resilient livelihood are developed, including a website fully operational	Increased technical capacity of communities and institutions to assess impacts, vulnerability and adaptation needs according their respective competences.	0.044
	2.2 A Provincial Climate Change Adaptation Monitoring Committee established in San Cristóbal		0.032
	3.3 Learning platforms and systems for integrating climate change-related risks into community management of water resources and livelihood activities institutionalized in 8 municipalities		0.102
TOTAL COMP. 3			0.178
6. Project/Programme Execution cost			0.796
7. Total Project/Programme Cost			9.174
8. Project/Programme Cycle Management Fee charged by the Implementing Entity			0.780
Amount of Financing Requested			9.954

Projected Calendar:

Indicate the dates of the following milestones for the proposed project/programme

Milestones	Expected Dates
Start of Project/Programme Implementation	January 2017
Mid-term Review (if planned)	December 2018
Project/Programme Closing	October 2020
Terminal Evaluation	June 2021

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

Component 1: Community level implementation of climate resilient water resource management activities.

Trough capitalizing available information related to water management planning, under Component 1 the Programme will focus on improving community level involvement in the planning and implementation of climate resilient water resource management activities (Ministerio de Medio Ambiente y Recursos Naturales, 2008). Current participation of communities, and in particular women, in planning and decision-making processes is highly limited resulting in lack of transparency, inequity in access and distribution of water resources. Options to integrating water resources management in

communities will be identified and tested and assessed for implementation. This will require monitoring and reviewing these options in their effectiveness. A strong emphasis will be placed on interventions that will ensure integrating water resources management and development with environmental management at the community level, in order to ensure the sustainability of water resources in quantity and quality, as well as resilience.

This component start with a review of existing community structures/ institutions that are capable to develop and implement water supply management plans will be conducted for each community to ensure that the optimal institutional arrangement is adopted. Programme will subsequently support the implementation of the community water management plans by the provision of infrastructure and other physical interventions, together with training and technical support. Regarding this matter, Programme will perform activities that mobilizes community planning and implementation of practices that restore and preserve the natural character and functioning of the water system (as waterholes, dugouts, reservoir, dams, tanks, rain harvesting, irrigation systems, etc.).

Specifics expected outputs from Component 1 are:

- 1.1 Community water supply and management plans developed for municipalities to incorporate climate change-related risks
- 1.2 Water supply increased for multiple uses and users in communities during period of shortages under climate impacts (as droughts, heat stress etc.)
- 1.3 Small scale irrigation systems installed and operating in communities and water users associations to manage irrigation systems established and/or strengthened to improve efficiency and effectiveness of water usage under conditions of climate induced water pressures
- 1.4 Measures for water conservation under climate impacts (as catchment/river bank, re-forestation schemes) implemented in communities utilizing coffee, fruits trees, wood trees and others.

To improve water infrastructure does includes, a preliminary assessment of key local entities and/or community-based organizations empowered in their water management structures (small farmers, local producers, vulnerable groups, etc.), and to produce with them downscaled data regarding climate vulnerability and main risks in targeted areas. In such areas, measures to utilize new water sources and/or to care and upgrading existing sources will be implemented both at household and community-based level.

At house-hold level, potential interventions include -inter alia- systems for water supply, storage, treatment, distribution and disposal. Such systems will include waterholes, pumping, tanks, chlorination, and cesspool and filter pits, and training to monitoring the drinking water quality. At community-scale, this component include rainwater collection and storage facilities, to build irrigation infrastructure, tanks, micro dams, and reservoirs.

As the Programme will invest on community to build and to operate facilities for improved usage of water resources, the strategy for post-project repair and maintenance will be a crucial activity spelled out in the community water management plans drawing upon lessons of existing practices. This will involve training on the community in how to carry out repairs and maintenance. However, achieving sustainable management of water resources for reliability in supply requires measures for water capture, conservation and quality control. This is crucial to ensure equitable sustainable exploitation and utilization in a way that maintains biodiversity and the quality of the environment for future generations. The activities for the realization of this output will include the establishment of appropriate baselines to determine the effectiveness of current water conservation measures in the region.

Expected outcome of Component 1 is related to develop and implement climate resilient management of water resources by at least 30 small communities of San Cristobal. Such communities will be included in all levels of program's governance in order to create other benefits and to identify potential synergies (livelihoods, food security, etc.).

An overall budget of US\$ 6,100,000 is estimated for Component 1.

Component 2: Diversification of livelihoods of rural communities under climate change.

Assisting with the diversification of the livelihoods into sectors that are not dependent completely on rain-fed agricultural systems will be crucial for the resilience of rural livelihoods in targeted communities. As highlighted previously, many communities in are dependent on rain-fed agriculture which is extremely vulnerable to the impacts of climate change. This component therefore seeks to expand climate change adaptation for those people that are most vulnerable by diversifying their livelihoods and increasing their income. The improvement of accessibility to water have the potential of enhancing the resilience of livelihoods of communities by providing opportunities for diversification.

This will be achieved through activities such as the establishment of tree seedling nurseries, fisheries, tourism, construction, river transportation, etc. which could be used by local communities as sources of household incomes. Communities, especially women will be supported by the Programme in the engagement in market activities such as market gardening, flowers, and handicrafts. The Programme will build on existing programmes supporting women's groups through training activities to gain marketable skills (such as food processing) to improve their livelihoods. With 'off-farm' income generating activities to complement their incomes, their resilience is increased.

Very importantly, this outcome will place a high emphasis on activities that improve the capacity of communities across the value chain. (i.e., activities for the identification of actions that enhance market demand of a commodity, marketing of products and financial management and adding value to products will be promoted). This is crucial to ensure the long-term sustainability and success of livelihood interventions and also ensures far better value for money than simply livelihood support activities that provide initial infrastructure/capital but which do not link communities to a market.

Specifics expected outputs from Component 2 are:

- 2.1 Improve infrastructure (i.e., canals, pipes etc.) for water distribution for adaptation and use in agricultural systems installed in municipalities;
- 2.2 Dry-season gardening activities, agricultural processing schemes (as honey, orchids or handcraft) by women, improved for climate change adaptation in communities;
- 2.3 Tree nurseries and wood lots for climate risks management (i.e., for rehabilitating floodplains, watersheds etc.) are established and managed by communities; and
- 2.4 Demonstrative fish farms are established and supported in communities.

With this component, the program will reduce pressure on forest and agricultural resources, will avoid deforestation and soil erosion through promotion of agro-ecological practices and vigilance of community committees. Forestry activities will be focused on middle and upper area of the micro-watersheds in order to protect existing water resources and to create new income sources for involved people. Enormous synergies can be achieved with local NGOS already developing agri-business in such areas.

Participation of women and other vulnerable community members (especially identified young leaders) will be particularly promoted. Early identified local young leaders and empowered women will be granted with combined work and studies scholarships in themes as agribusiness, small enterprises, cultural business, etc. This component have a strong potential to spread a sustainable and resilient development for communities.

Expected outcome of Component 2 are related to enhanced diversification of livelihoods under climate change by 30 communities of San Cristobal, which can to increase their income through handy-innovative practices. Such practices will be enabled as soon as the communities be empowered of the climate-resilient water resources management.

An overall budget of US\$ 2,100,000 is considered for Component 2.

Component 3: Capacity building and capacity development in key institutions and communities to manage long-term climate change-related risks

Dominican Republic still faces significant challenges in terms of the amount and quality of data, information and technical capacity to implement climate change adaptation at community level. Despite progress made, and increasing number of scientific, technical and economic studies elaborated so far, important gaps remain with regards to climate impacts, socio-climatic vulnerability, and effectiveness of climate adaptation actions and planning (at national, provincial, municipal, and community level). In this context, the proposed program proposes a component for building technical and institutional capacity for climate change adaptation planning for vulnerable communities; both long-

term perspectives on adaptive capacity building/policy development and near-term climatic risk management. Particularly this will include participative development of on-site water-management adaptation actions and the development of contingency plans, early warning systems, and climate-risk management. A further focus will lie on the strengthening of interactions between relevant actors for climate change adaptation: government, meteorological services, agriculture sector, research institutions, regional and national government, media, and local and poor communities.

Outputs of this component include a strategy for climate change adaptation for most vulnerable communities; creation –in each targeted areas- of community committees, to address their vulnerabilities and adaptation needs. Identified key stakeholders through such those process will be taken into account to form Provincial Climate Change Adaptation Monitoring Committee (PCCAMC). This committee will be a collaborative management structure to secure program’s long-term sustainability and replicability, to address unforeseen program interventions, and other future community-based projects.

Specifics expected outputs from Component 3 are:

- 3.1 A set of manual and other materials on best practices for water management and resilient livelihood are developed, including a website fully operational;
- 3.2 A Provincial Climate Change Adaptation Monitoring Committee (PCCAMC) fully established in San Cristóbal; and
- 3.3 Learning platforms and systems for integrating climate change-related risks into community management of water resources and diversified livelihood activities institutionalized.

In order to guarantee sustainability and the visibility of the program and its long-term results, under this component a collaborative knowledge management strategy will be put in place. The core dissemination products from the program will be a manual of practical and concrete best-practices in sustainable water management, water and sanitation and community-based climate change adaptation. Key stakeholders, program staff, communities and beneficiaries will further interact with national media outlets (newspaper, internet, radio, etc.) to make the public aware of climate risks and adaptation needs addressed by the program. Other publications with regards to impact assessment of other components are planned. Program results will also be shared through international fora on climate change, including UNFCCC.

An innovative aspect of this component is the establishment of a Provincial Climate Change Adaptation Monitoring Committee (PCCAMC) for the Province of San Cristobal. This committee will be responsible for program long-term sustainability, including early warning, development aid, climate finance, microcredit and public funding. PCCAMC it will be composed of 10 members (5 of them will be female), 5 will be farmers/producers, and 5 will be local young leaders. Other potential key members could be from government agencies, private sector, civil society, NGOs and local governments.

Expected outcome of Component 3 is an increased technical capacity of communities and institutions to assess impacts, vulnerability and adaptation needs according their respective competences to secure programme's long-term sustainability. As well, lessons learned on climate-resilient water management practices and diversified livelihoods in targeted communities and regions, which will be implemented within the programme, are disseminated contributing to resilience and development needs in other places; and recognizing and integration of new knowledge generated by the program.

An overall budget of US\$ 178,000 is estimated for Component 3.

B. Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.

In terms of social benefits, the Programme will provide safe and reliable freshwater supply to a vast majority of the vulnerable population particularly in rural areas in San Cristobal Province. As climate change is expected to have an impact on agricultural production by increasing pressure on water resources. Projection scenarios indicate that in addition to a certain reduction in annual flows of rivers, a substantial increase in the water requirement per hectare under irrigation will also occur in step with an increase in temperature due to global warming.

In this context, the program's components will provide economic, environmental and social benefits to targeted communities of San Cristobal, particularly to households and farmers more at risk, which will receive more and better water supply. Economically the interventions aim to improve and stabilize income from agricultural activities through diversification of income streams to farmers, with secondary economic benefits in the near- to mid-term through the strengthening the Province economy. Socially, the main benefits will be to stop the displacement of people, both by reducing susceptibility to extreme events, as well as through avoiding water shortages, reducing diseases and improving their agriculture practices.

As well, program will help to targeted areas to decrease the vulnerability of the livestock due to low feed availability (caused by climatic events); reduced loss of livelihood security caused by extreme events or overall annual climatic variability would be an additional social benefit of the program. With respect to environmental sustainability, the program will reduce pressure on forest resources, deforestation and soil erosion through promotion of agro-ecological practices and vigilance of community committees.

All activities under Components 1 and Component 2 will be developed jointly with the rural communities and their representative institutions in order to create a shared understanding on climate adaptation and sustainable water management; including the assessment of concerns and needs of the most vulnerable communities identified.

Programme will initiate activities using diagnostic and rural planning techniques common into develop community-based interventions. Besides several government agencies are targeted as institutional executing entities, local NGOs are going to be selected as partners for local execution, due their solid experience in these techniques and/or local communities where they operates.

Principles to be considered for local interventions will include, among other:

- Encouragement of participants to take responsibility;
- Respecting the diversity of the local population;
- Promote full involvement participation;
- Reconciling different interests, if any; and
- Involving multidisciplinary approaches and teams (on the program's technical side).

Children, women and the elderly are frequently amongst the more vulnerable of the poor. As women plays a key role in the family health, education and income, program is heavily interested into include women in most activities and community management structures. However, despite their important role in agriculture, household, and for food security, women participation in economic activities still may be limited/suppressed due to conflictions with traditional or religious believing. Program is aware of these aspects, and will openly encourage women empowerment at all stages of the program; including:

- Discussing the need to integrate women into projects with community leaders;
- Opening subproject grants and specific work packages for women's associations;
- Strengthening their role in community relevant organizations on climate change; and
- Establishing a recognition and/or certified to outstanding women.

At national level, program will also pursue the inclusion of qualified women technical personnel into the program personnel. As such, the project is to make an important contribution to women empowerment in Dominican Republic, not limited to the project region. Identified young leaders can be involved similarly and with scholarships grants.

In order to mitigate and/or avoid negative impacts specific indicators on key economic, social and environmental variables will be integrated in the results-framework, therefore assuring compliance with the Adaptation Fund's Environmental and Social Policy (ESP). These indicators are to be monitored and evaluated regularly throughout the program, and will be reported in order to prevent violation. Field teams will regularly interact with relevant persons and organizations of targeted areas to resolve any possible conflicts.

C. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme.

As vulnerability to climate change is multi-faceted any additionality to a socioeconomic baseline scenario is hard to prove. Furthermore, there are limited options for key institutions and communities of Dominican Republic, in terms of alternative actions to build climate resilience in the water resources management. The program thus proposes a combination of supply more and better water supply and strengthening rural livelihoods with integrated climate risk management that take into account local development needs of the targeted communities. However, based on consultations with government authorities, National Communications, and academic literature, an agro-ecosystem based approach that utilizes smart-agriculture practices and efficient water management is thought to be a cost-effective way to reduce the vulnerability in program's targeted areas.

The *2nd National Communication*, and *Study on Investment and Financial Flows* have stated that on the basis of research and consultation with key stakeholders, cost-effective adaptation to climate change of the food security sector should include the promotion of activities as forest's restoration and conservation, land zoning and proper use of land, increased use of climate-resilient crops with focus on traditional varieties, sustainable livestock actions with focus on ecosystem friendly approaches, sustainable soil management and efficient use of water (Ministerio de Medio Ambiente y Recursos Naturales, 2009; United Nations Development Program, 2011). The program has been conceived on the basis of such elements, which reflect national priorities and strategies.

The proposed interventions are cost effective in that large infrastructural investments are not considered: the selected adaptive measures contained in the program consist mainly of a series of targeted activities designed to restore natural capital and achieve resiliency in water systems as a means to reduce the vulnerability of rural communities and small cities. Restoring the natural capital of any ecosystem has multiple benefits for rural communities, and it is anticipated that the benefits will greatly exceed the costs

Program will also build upon existing best practices and local knowledge, and will make use of instruments that it will develop, to identify cost-effective technologies and practices and design a set of concrete climate change adaptation activities that will be tested in pilot sites. Lessons learned will provide solutions for sustainable climate-smart agricultural production that can be consolidated and replicated beyond the life span of the program, thereby incorporating adaptive technologies into the current spectrum of conservation and development instruments in use. In terms of water supply and sanitation services, a similar approach can be utilized in order to achieve savings.

Stakeholder participation at all program levels will increase to its cost-effectiveness. Participation will ensure adequate planning and implementation of activities in line with the program objectives and with the local development and stakeholder priorities, as well as complementarity with other ongoing and planned interventions.

However, at early stages of the proposed program design, alternatives to this proposal were discussed with government authorities: (1) to establish a small grants facility for specific small adaptation measures; and (2) a support project based on ecosystems services which includes -among others- seeds are more resistant to climate variability and climate change and water conservation in micro watersheds. While relevant in terms of their activities, discussions led to the finding that such activities could be better developed in separate accompanying projects for which funding will be sought later.

At full proposal stage, following strategies will be addressed to secure cost-effectivity:

- Workshops with key stakeholders (individual and/or organizations) will be carried out to introduce the project, conduct assessments, and identify activities and establish goals and commitments. When needed, the workshops can to include some sessions in Creole (for Haitian people who may not be fluent in Spanish). The whole process will include preliminary visits to communities to provide them with sufficient information on the program and to allow the community leaders and its members to discuss the program among themselves first prior to the workshops, thus respecting their own processes and timing regarding internal consultation and decision making.
- After the communities have discussed the expectations and potential benefits of the project, the workshops will be conducted in order to identify and prioritize project activities taking into account their resources and capacities. This process has been proven to facilitate the successful participation of stakeholders, and hence in achieving a proper needs assessment and the establishment of proper goals.
- Communication will be in Spanish with an adequate and respectful cultural approach to ensure proper understanding and contribution. In all cases, participation of women and young's leaders will be fostered to ensure an equitable participation and a more comprehensive vision at the community level.

At field level, the program will benefit from experiences and knowledge of municipalities, government agencies, producers, farmers, local people, NGOs, universities, consultants and other institutions. Program will facilitate the development of community adaptation activities through participatory workshops at the local level to ensure a high level of community involvement, fostering empowerment and ownership of the program, and thereby strengthening its long-term sustainability. Participatory workshops will serve the purpose of identifying local conditions (strengths-weaknesses-opportunities-threats), understanding the needs of the community, especially in regards to vulnerability and adaptation, and identifying and prioritizing concrete adaptation activities on-the-ground.

Short-time community adaptation plans will detail specific goals, adaptation activities, implementation arrangements and commitments by the project, partner institutions and beneficiaries. A key component of the community adaptation will be the monitoring and evaluation plan in order to track the progress and results of the implemented programs activities. As good practices in project management, the monitoring and evaluation plan will include a set of indicators that will be used to measure the outcomes of activities.

Project funds will cover the following types of costs and on-the-ground investments that will be included in the interventions on targeted communities:

- Awareness raising and training of programs beneficiaries (households, producers, communities) and their organizations;
- Technical assistance to beneficiaries and their organizations;
- Project finance investments at different levels: micro aqueducts, waterholes, water storage facilities, micro irrigation systems, etc.
- Community subprojects for farmer committees/organizations, and subprojects for empowered women and identified young leaders.

Local consultative groups will be established in targeted areas to ensure engagement of beneficiaries, to help identify and prioritize activities and interventions as well as to overview the implementation and progress of the targeted activities at field level. These groups will include representatives from each of the beneficiary groups, implementing partners, community organizations, cooperatives, churches, local clubs, and NGOs.

Project activities such as awareness raising, training and technical assistance for implementation of sub-projects will be carried out by relevant national agencies, universities and NGOs. The project will identify those NGOs that are working effectively and directly with local communities in the areas of intervention. Multi-party agreements will be established for the design, implementation and monitoring of sub-projects and specific activities. These agreements will also include the process for ensuring that the project funds are made available and distributed specifically to the local communities.

Regarding to mainstream the climate change adaptation in targeted communities, under Component 1 and Component 2, financial mechanisms will be identified and assessed for their cost-effectiveness. Based on the results, only financial mechanisms that are the most cost-effective and appropriate for the local project area will be piloted, and hence not all of the identified financial mechanisms will be piloted. Such cases could presents an opportunity for proved schemes as microcredit, small grants, or sub-projects.

It should be noted that this program follows the country's NAPA's adaptation priority list, which already considers cost-effectiveness as a key concern for measures prioritization. The measures are furthermore linked to UNFCCC and World Bank concepts such as *no-regrets and low-regrets strategies for adaptation*. The specific project interventions will follow a ranking of costs and benefits, including inputs needed (i.e., labour, materials, finances, time) and positive outcomes (as increased income, house savings, increased livelihood security, better climate protection). Underlying needs or demand for the activity, level of familiarity with, and acceptability of activities (including attention to differing responses by gender) and environmental benefits will also be considered.

- D.** Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

The proposed program is aligned with the National Development Strategy, which states “sustainable environmental management and adequate adaptation to climate change” as one of four pillars. Among 29 actions mentioned under this strategic area, the fresh water receives particular attention (Dominican Republic, 2012). As well, this program is consistent with the National Environmental Policy and National Policy in Climate Change. All these such policies aims to the implementation of several strategies as restoration of protective ecosystems and safekeeping and management of water resources and to promote innovative livelihoods (Dominican Republic, 2010).

Regarding the climate policy, program responds specifically to several of its priority sectors, namely food sovereignty and security, water resources (Dominican Republic, 2015) and includes National Adaptation Programme of Action’s main recommendations:

- Vulnerability of poor communities and vulnerable groups shall be a country priority, due climate change treats human settlements and livelihoods;
- Expected increases in temperature and reduction of rainy seasons are impacting water for agriculture, crops yields are reducing and soils are being degraded;
- Institutional and community capacities shall be to strengthen to provide adequate responses to climate change issues and to increase resilience;
- Its fundamental to foster partnerships that include the private sector and civil society to address climate change in areas with limited or low income; and
- Face climate change and its impacts needs to mobilize additional financial resources and capital to manage risk and to promote technologies and innovation;

The Third National Communication (which is being drafted in 2016) defines as a priority adaptation measures and policies which support vulnerable communities and prioritizes water resources and agriculture-resilient. As the program includes activities in all these sectors is contributing with country’s food sovereignty. With a focus on addressing threats to food production and water access, the program will contribute to putting the Dominican Republic on a more firm path towards food security with better utilization of water and improved public health in vulnerable communities making it more resilient.

- E.** Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

Project appraisal will consider quality programming standards based on current applicable norms and standards for different sectors. The necessary safeguards will be followed and incorporated into the project design. In addition, proposed interventions will adhere to all national technical standards that are in force, particularly those relating to water resources, sanitation services, control structures, construction civil, environment assessment and public health. The program will also identify gaps in appropriate sector technologies aligned with adaptation needs and identify possible solutions including sources of technical assistance and transfer modalities.

As project will be coordinated with key institutions (as Ministry of Environment and Natural Resources, INDRHI, INAPA, JAD and local NGOs) it will be easy to monitoring the programme alignment with technical standards in water management, waters supply and sanitation services, community-based associativity and people labour rights. Entry in force of unforeseen standards shall be part of Programme quality management.

F. Describe if there is duplication of project / programme with other funding sources, if any.

The proposed program is currently the first integrated approach to scale-up sustainable water management and resilient-livelihoods across communities of San Cristobal Province while contributing to its institutional and community capacity. The project components are based on the products of “*The USAID/TNC Environmental Protection Program* (No. 517-A-00-09-00106-00)”, which produced the study *Critical Points of the Vulnerability to Climate Change and the Variability in the Dominican Republic*, but will go beyond in terms of interventions, integration of new climate change adaptation approach for water management and water supply and sanitation services, and the scope of monitoring & evaluation (M&E) and knowledge dissemination as is proposed by Berigüete, 2015 and Berigüete, 2016.

USAID/TNC project 517-A-00-09-00106-00 ended by April 2014 so duplicity of funding sources / interventions can be excluded. Other existing water and agriculture initiatives by government and NGOs in Dominican Republic which integrate climate adaptation and resilience into their overall framework does not cover selected province. Among these interventions, most recent climate change adaptation projects are:

- “*CCRD’s Climate Resilient Infrastructure Services (CRIS) Project*”. A multi-country USAID project focused on to increase resiliency of National District’s infrastructure services (e.g. transportation, water, sanitation and waste management, energy, communications, and housing) to climate change. This project ended in 2014.
- CCCCC/EU “*Vulnerability and capacity assessment (VCA) in climate change in agriculture in the province of San Juan and Subzone Hondo Valle, Elias Piña, Dominican Republic*”. This project ended in 2015.
- Ongoing USAID/DR projects “*CLIMA Plan-Planning for Climate Change Adaptation Program*”; “*Climate Change Implementation and Adaptation Measures (CLIMA-*

Adapt"); and “*CLIMA Info-Improved Climate Information Program*” are focused in Provinces of Santiago, Samaná, San Pedro, and National’s District.

Other reviewed interventions are focused in human settlements, watersheds, and tourism. No other interventions were found in the Program’s targeted province.

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

The project has been conceived as a demonstration mechanism to enhance capacities to implement measures directed to strengthen climate change adaptation at community level. In this regard, identification of lessons learned will be a key activity of the project. The Monitoring and Evaluation Plan will pay special attention to capturing lessons learned to up-scale project results to other areas and vulnerable communities of the country. Component 3 (“*Capacity building and capacity development in key institutions and communities to manage long-term climate change-related risks*”) included in the project, focus on particularly on outreach and information exchange. As detailed in this concept note, different knowledge materials (manual, website, calendars, presentations, etc.) will be produced for specific target groups (policymakers, field workers, communities, scientific community, and partners communication channels, etc.), integrating practical lessons on “how to reach more resilient livelihoods and a more sustainable water management” in targeted communities. Further outreach will also occur at higher national/international level, ministerial dialogues and UNFCCC COPs.

Program will develop a series of tools and instruments that will be applied in the selected pilot sites and will serve as the basis for mainstream climate change to the targeted communities through diversifying livelihoods. Component 1 and Component 2 will create technical instruments to support a wide range of concrete adaptation activities for sustainable water management and resilient livelihoods that will be founded upon the identification of best practices, appropriate technologies and lessons learned that will be mainstreamed into best practice manuals and guidelines. Participatory development of these tools and instruments, as well as in development of pilot activities will ensure the endorsement by stakeholders, therefore contributing to successful future replication efforts, especially in other areas with communities similar to targeted areas.

Several programs and projects has been identified so far, which can mainstream the experiences and lessons learned into their work programs. Up-scaling will be facilitated by Component 2 and Component 3 through training, awareness-raising and on-the-ground activities. As Component 4 include: the establishment and maintenance of a website; a newsletter; training and outreach programs aimed at relevant stakeholders (empowered women and young leaders) that may include field exchange visits, information materials, training workshops and events; as well, events for dissemination of the project results and lessons learned and to promote exchange of experiences. International agencies can share the lessons learned through global/ regional initiatives.

- H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.

The proposed program reflects the main pillars and crosscutting approaches of the *National Development Strategy*, the *National Climate Change Policy* and other relevant instruments. IDDI climate change executives, officers from Ministry of Environment and Natural Resources, and consultants were involved at preliminary consultative process. As results of several meetings, it was established Program's potential intervention areas and the multi-interdisciplinary approach towards the consultative process to ensure that the targets of the Program encompasses key sectors, stakeholders and beneficiaries.

The main issues discussed during such these meetings (May to July 2016) dealt with the future climate scenarios drafted by the 3rd National Communication and Critical Points, areas of the country to be most severely affected by climate change, as well as the criteria to select the areas of intervention. The five criteria taken into account were:

- Climate vulnerability (exposure and sensitivity to climate change)
- Social vulnerability of family producers and poverty (low adaptation capacity)
- Availability of relevant information (production systems, agricultural practices)
- Existence of ongoing programs and projects (to avoid duplicity and/or overlaps)
- Diversity of production systems and target groups (farmers, women, etc.)

San Cristóbal Province have several areas that comply with above mentioned criteria. Within these areas, communities are identified for potential Program's intervention. The specific pilot sites for implementation of project activities will be selected through further consultations during preparation of the full-fledged proposal.

Other relevant institutions consulted about the program potential outcomes and relevant stakeholders are: the Ministry of Agriculture, the Dominican Agrarian Institute (IAD), Dominican Institute for Hydraulic Resources (INDRHI), and the Dominican Agribusiness board (JAD). In these officials' opinion, it's necessary to hold a consultation workshop to aim the stakeholder's engagement at full proposal stage and define specific program's pilot sites. However a first stakeholder's map was drafted.

- I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

Under a baseline scenario targeted areas reported poverty conditions, socioeconomic and climatic vulnerability (lack of adequate water supply and sanitation) will continue. As Dominican Republic is highly vulnerable to climate impacts, under increasing

temperatures it is highly likely that availability (production) and access (prices, income) to food would be further affected. Changes in total precipitation, higher drought or storms frequency would act in a similar direction. Regarding such matters, Programme interventions look for synergies with food security, increase income, and risk management. While there is high uncertainty regarding the precise regional or local consequences of global warming, inaction would surely be detrimental for the Country, both in terms of incurred losses due to current climatic variability and future changes.

Regarding proposed program interventions, there are limited options available in terms of alternative actions to build climate resilience in agriculture and water resources sectors. Additionality to a socioeconomic baseline scenario is hard to prove because of vulnerability's multi-faceted character (environmental, social, economic, territorial, etc.).

Following analysis shows several justification regarding funding request by component.

Component 1: Community Level Implementation of climate resilient water resource management activities.

Currently, community involvement in the planning management activities, particularly by women, is very limited which exacerbates their vulnerability to climate change impacts. There are also no linkages between river basin management plans and community needs limiting the cross-services of water with social and economic potentials highlighted in the National Development Strategy. As a result, the drive and purpose required for integrated, climate-resilient water resources management is lost and unsupported by local communities, or harnessed by civil societies and government programmes to in addressing transformational changes (as SDO, for example). There is lack of information for communities on how to manage their water resources for diversification of their livelihood activities in response to climate change impacts on their water resources thereby limiting their abilities to respond and adapt to climate change.

As occurs in many communities of The Dominican Republic, vulnerable communities of San Cristobal Province currently face significant constraints in implementing water management measures that build resilience to climate change impacts. There is insufficient capacity, within communities themselves and within the government to support communities, to identify appropriate measures and implement and maintain these. Even where infrastructure is in place, such as pumps, lack of resources and effective community organizations, result in insufficient maintenance.

Using AF resources, the Programme will implement extensive training of key institutions and communities, enabling long-term support to be provided to communities in the planning and implementation of climate resilient water management measures. This will be an essential element, both in implementing the proposed AF programme, but also wider support to selected communities. 30 communities, across 8 municipalities will initially be supported in the development of community level water management plans. Essential to this process will be the establishment of appropriate community level institutions, with a target of at least 50% representation by women in these institutions.

A key aspects of this component will convene regular meetings of representatives from these 50 communities, enabling sharing of experiences and assisting in maintaining momentum in implementation of the community level plans, which will enable long-term adaptive management of water resources within these communities. Crucially, resources from the AF are necessary implement an extensive programme of water management infrastructure in the 30 communities. This will primarily comprise boreholes, dugouts/dams, rainwater harvesting, small-scale irrigation and catchment re-forestation. These measures will provide communities with the capacity to manage their water resources at a community level, greatly assisting in their ability to adapt to climate change impacts, including increasing prevalence of droughts and flooding. INAPA will be a key player due its higher authority on the water supply and sanitation.

Mechanisms will be developed via community level institutions to ensure continued maintenance and management of these measures beyond the lifetime of the proposed programme. Lessons learnt from the development and operationalisation of community level water management plans will be documented and disseminated to key stakeholders across all the Province and many others. This will establish a situation whereby the key institutions will have the necessary capacity to support community led climate resilient water management activities across all the entire country.

Component 2: Diversification of livelihoods of rural communities under climate change

Currently, rural targeted communities in San Cristóbal Province are largely reliant on unimodal rain-fed agriculture as a source of livelihood. This is already vulnerable to drought and flood events, both of which are predicted to become more prevalent with climate change. Communities do have the capacity to diversify their livelihood base, due to limited institutional capacity to support networks, limited capacity within communities themselves and limited resources available to implement diversification activities. As the ratio of precipitation to evaporative demand is expected to decrease in the country, rain-fed agricultural production is vulnerable to climate change. Even where erratic increases in precipitation could contribute to increase yields, this often results in crop damage linked to heavy storm events, excessive soil moisture and flooding. Similarly livestock production practices are restricted under traditional practices under reduced grounds and the drying up of important water bodies. Unfortunately, coupling climate change with ongoing agricultural land expansion only leads to an increased vulnerability to climatic shocks. All these have placed different community groups in direct competition with each other over land and water, leading to local-level tension and conflicts.

Using AF resources, Programme will implement extensive training of key institutions, particularly extension officers, enabling long-term support to be provided to communities in the planning and implementation of climate resilient livelihood diversification. As with training under Component 2 relating to water resource management, this will be an essential element, both in implementing the proposed programme, but also in providing wider support to communities. 30 communities, across 8 municipalities of San Cristobal, will benefit from training in issues such as business skills and marketing. These skills

are essential and will result in communities that are better able to maximize opportunities that all livelihood activities present, increasing their resilience to climate change impacts on the traditional livelihood activity of rain fed agriculture.

Using resources from AF the key institutions will implement an extensive programme of livelihood diversification activities in 20 communities. This will primarily comprise dry season gardening for women, community-based fish farms, community-based woodlots/tree nurseries and agricultural product processing facilities. The measures will considerably diversify livelihoods, moving communities away from a reliance on one prime source of climate vulnerable livelihood. Importantly, the livelihood activities supported by the Programme will build on the water management support provided under Component 2, thereby offering an integrated programme of response.

Component 3: Capacity building and capacity development in key institutions and communities to manage long-term climate change-related risks

Under a baseline scenario targeted areas reported poverty conditions, socioeconomic and climatic vulnerability (rain-fed agriculture, extensive livestock, and lack of adequate water supply and sanitation) will continue. As Dominican Republic is highly vulnerable to climate impacts, under increasing temperatures it is highly likely that availability (production) and access (prices, income) to food would be further affected. Changes in total precipitation, higher drought or storms frequency would act in a similar direction.

While there is high uncertainty regarding the precise regional or local consequences of global warming, inaction would surely be detrimental for the targeted communities, both in terms of incurred losses due to current climatic variability and future climate change. In this context, socioeconomic scenarios point at increasing risks of poverty-related problems such as water shortages, food insecurity, health or social welfare. Climate variability and change thus put heavy burdens on family farmers and their communities that will very likely exceed their capacities. The approach of this component does include both concrete strengthening capacities across scales in adaptation planning and climate risk management. While this represents only a first step in scaling-up successful actions and learning, its outcomes of the program for selected areas and country foresee a significantly positive alternative scenario compared to the baseline.

Regarding proposed program interventions, there are limited options available in terms of alternative actions to build climate resilience in water resources management and its utilization. Additionally to a socioeconomic baseline scenario is hard to prove because of vulnerability's multi-faceted character (environmental, social, economic, territorial, etc.) and the lack of strong public policies to manage climate risks in poor communities.

J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project / programme.

The sustainability of the program outcomes relates to “*practice-focused*” Component 1 and Component 2 (sustainable water management and improved resilient livelihoods)

and "*capacity-focused*" Component 3 (institutions capacity building/ development and outreach). At community-based level, capacity building will provide permanent benefits after program ends: trained local personnel will have positions strengthened, and may participate in future adaptation and/or development projects, or continue improving its efforts related to climate change and adaptation. Because of the program's novel but realistic character, its results will likely influence practice and policy beyond project implementation time.

Outcome sustainability of the Programme may be more complicated: even though local interventions may function at program's end, a principal concern would be the long term continuity if the institutions and/or the communities does not take the ownership of Programme products regarding water management and diversified livelihoods. In this regards, a key challenge of the Programme is to deliver outputs with enough quality and transparency to constitute -by itself- the best practices for community-based adaptation (an prove it within the Component 1 and Component 2 implementation on-the-ground). Participative and integrative dialogue processes are key elements to avoid these developments. This includes taking into account needs of the institutions, respecting their cultural and legal frameworks, avoid technical conflicts and be enough useful to creating an end-user ownership.

The program will also monitor and evaluate (M&E) the implementation continuously; therefore reducing the risk that households and/or communities may be unsatisfied with the interventions. Preliminary lessons from other projects seem to indicate that the risk of subprojects terminating after project teams have left is low and manageable.

This program seeks commitment from water authority (Dominican Institute for Hydraulic Resources) and other relevant local authorities to support the communities to maintain the water and sanitations infrastructures built by the program after its completion. Similar with the Ministry of Agriculture, which can contribute significantly supporting communities to scaling-up the good agriculture practices after the program ends.

Households, small farmers, and representatives from targeted communities are to take ownership of small scale infrastructures, and young men and female will be trained by the program to undertake smaller maintenances, thus also contributing to local capacity building and empowerment. This commitment shall be accorded during the full proposal consultation phase, and will be a conditionality for any subproject implementation.

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.

The table below constitutes of a preliminary assessment of environmental and social risks relevant to the program. All items marked as "*potential impacts and risks*" - "*further assessment and management required for compliance*" will be included in the program's results-framework, and compliance with Adaptation Fund's regulations (including the Environmental and Social Policy) will be monitored and evaluated (M&E) during program duration using specific, verifiable and time-bound indicators.

For the full proposal a comprehensive Environmental and Social Impact Assessment (ESIA) will be designed and carried out in order to identify potential impacts and risks to the relevant standards in areas relevant to the proposed program, such as agriculture, water management, small infrastructure, and social and environmental and standards.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
<i>Compliance with the Law</i>	No program component or activity contravenes any laws or regulations currently in force in Dominican Republic. The program complies with the country's legal framework for water, agriculture, and environment protection. For the full proposal an Environmental and Social Impact Assessment (ESIA) will be carried out in order to identify any potential risks related to compliance with the law.	Very low: the ESIA will ascertain whether there are any conflicts with other sectoral laws or policies.
<i>Access and Equity</i>	The intervention logic of the program is to provide potential beneficiaries in target communities with fair and equitable access to program activities and equipment throughout both planning and implementation phases. All producer groups which request participation will have an equal opportunity to benefit from the adaptation activities proposed by the program. Eligibility criteria of the program will be clear and transparent, and defined together with all relevant stakeholders, including traditional authorities. For the program interventions it is planned to include: difficulty of access to water in the area; vulnerability in terms of biophysical and climate risks; social vulnerability as selection criteria. Through these criteria the program will assure the participation of less empowered groups, including women, minorities and particularly vulnerable groups. The program's results framework will measure developments related to 'access and equity for vulnerable groups' throughout the program duration.	Very low: Pilot projects implementation will guarantee access and equity to sensitive groups (including children, gender, elderly).
<i>Marginalized and Vulnerable Groups</i>	The program focuses on marginalized and vulnerable groups (young, minorities, women, etc.) and aims to assist them to improve their agricultural practices and living conditions. As such the program is not expected to have any negative impact on these groups.	Very low: The Full program Proposal will follow relevant social and environmental safeguards for full proposal stage. These include: screening of communities; (b) social assessment of needs and conflicts; (c) free, prior, and informed consultation with the affected groups, if any; (d) preparation of a Vulnerable Group Plan or Framework if required.

<i>Human Rights</i>	The program affirms the fundamental rights of people in the intervention areas, and thus does not affect their freedom. Furthermore, the program does not integrate any activities contrary to custom law or traditions. Participation in the program cycle will be participatory and voluntary.	Very weak. In particular, the 4C and communities heads will be consulted to avoid any negative impacts on human rights.
<i>Gender Equity and Women's Empowerment</i>	The logical framework of the program foresees direct participation for women and women's associations so they can benefit directly from program. In particular, the program proposes to support women to develop sustainable income generating activities and improve thereby their living conditions, therefore also empowering them in the context of a largely traditional and male-dominated society. Participation of women and empowerment will also be a key focus of the program's M&E framework.	Very weak. Progress with regards to women's participation and equity will be measured through the program's M&E framework, but compliance is not a problem.
<i>Core Labour Rights</i>	Core labour rights concern gender aspects, respect for workers; maximum work hours; child labour; etc. The program will ensure that national working standards are respected on production sites. The program will also ensure that appropriate wages will be paid per assigned task, and that no child labour will be employed. Social security standards (i.e., access to first aid) will also be respected and enforced.	Very low. Monitoring on core labour rights will be undertaken throughout the program.
<i>Indigenous Peoples</i>	n/A	n/A
<i>Involuntary Resettlement</i>	Involuntary resettlement due to program activities does not represents a problem. Water storage facilities and irrigation implementation do not require any resettlement. The ESIA will take care of these issues at the stage of the Full Proposal.	Very low. The program will undertake, when the full program will be designed, surveys, studies and assessments for identifying the risks and impacts of each intervention and plan possible mitigation measures. These undertakings will be based on the social and environmental safeguards and regulations.
<i>Protection of Natural Habitats</i>	All program activities will be carried out on areas already under usage, and the program will teach practices to dispense traditional agriculture practices, therefore reducing pressures on ecosystems. Furthermore, the program will work with water-saving irrigation techniques to limit runoff and soil erosion in the selected areas. Nevertheless, the program may cause negative impacts on the biophysical environment, including natural habitats, if program activities are not monitored consequently. For this reason the ESIA (at full proposal stage) and M&E framework will focus on assessing potential risks and impacts on natural habitats.	Low. ESIA and M&E activities in order to identify potentially adverse risks and impacts on natural habitats.
<i>Conservation of Biological Diversity</i>	The program will adopt agricultural practices that increase biodiversity compared to the baseline scenario, including conservation agriculture.	Low. ESIA and M&E activities in order to identify potentially

	Furthermore, the program will not introduce any exotic or invasive species in the targeted areas. However, as noted before, water storage facilities and irrigation may impact biodiversity particularly when areas need to be cleared.	adverse risks and impacts on biodiversity.
<i>Climate Change</i>	Focus of the program is climate change adaptation through sustainable water management, which from a climate perspective incorporates resilience (adaptation) and reduction or removal of greenhouse gases (GHG) (mitigation). All adaptation actions undertaken under the umbrella of this program will need to be assessed constantly in order to understand whether they contribute to building of resilience under increasingly variable climate. The final assessment of the program as well as the socio-climatic vulnerability assessment will support achieving this principle. Potential impacts on land use will also be registered, thus contributing to the assessment of GHG emissions reductions (mitigation).	Low. Program foresees assessments on adaptation and mitigation.
<i>Pollution Prevention and Resource Efficiency</i>	Water resources are currently exposed to various forms of pollution associated with the use of fertilizers and pesticides and manure. The program will work to prevent these types of pollution. There may be further pollution linked to the construction of water storage facilities, including deterioration in water quality downstream, or detrimental effects through limiting access to water by downstream users.	Low. ESIA will be undertaken to identify potentially adverse risks and impacts in this area.
<i>Public Health</i>	By supplying more and better water and sanitation services it is expected a positive impact in selected communities towards public health.	Low. Application of ESIA in order to discern health impacts in communities and disease occurrence.
<i>Physical and Cultural Heritage</i>	No adverse impacts on physical and cultural heritage of the people in the intervention areas is foreseen. The chances of damage to physical assets are zero.	Very Low. Potential impacts will be assessed throughout pilot projects implementation where risks are highest.
<i>Lands and Soil Conservation</i>	The program will have positive impacts on the landscape of the intervention areas through the establishment of agro forestry systems and conservation agriculture. Soil conservation and restoring fertility is a key practice in smart-agriculture.	Very low. Monitoring activities foreseen to identify potentially negative effects.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project / programme implementation.

The Project will be implemented by IDDI with support from other public, private, civil society organizations and selected communities. As Dominican Republic has established a regulatory and institutional framework for climate change, based on (among other policy instruments) the National Development Strategy, program activities will be aligned with Country's priorities and national commitments under the UNFCCC.

IDDI will establish a Project Management Unit (PMU), which will be responsible for implementation of project activities. The PMU will prepare annual work-plans, progress reports and will carry out the project M&E plan. PMU will be in charge of coordinating activities under each component with the different government agencies / local organizations that will collaborate and be involved in the project execution. This unit will also be responsible of ensuring adequate stakeholder participation and involvement.

A Provincial Climate Change Adaptation Monitoring Committee (PCCAMC) will be created and empowered to provide overall guidance and supervision in order to lead the program to its long-term sustainability. Representatives of institutions, communities, farmer, producers, empowered women and young leaders will comprise the committee. Other key stakeholders may be invited to be part depending on their capacities and competences. All potential members will be identified during program full preparation.

At the local level, Community Committees will be established in each pilot site to ensure adequate local level coordination and participation of key local stakeholders and representatives of the target groups. Further details of such community management and attributions will be provided in the full-fledged proposal.

B. Describe the measures for financial and project / programme risk management.

A detailed financial and program risk management framework will be developed during the full proposal development phase. For financial risk management, the framework to put in place will be aligned with Adaptation Fund financial management requirements.

The following table summarizes the key project risks.

Table 3: Program Risks and Risk Management

Identified Risks	Level	Mitigation Measures
Lack of adequate coordination, collaboration and cooperation among the executing agencies	Medium	Operational agreements between implementing partners and agencies with adequate definition of roles and responsibilities. Dialogue and consensus building.
Changes and rotation of staff in local implementing agencies may affect program activities	Low	Training. Information and communication. Interinstitutional agreements that provide a framework for designation of qualified staff. Awareness raising among authorities. Strengthening of target groups for implementation of activities.
Lack of buy-in and participation of key stakeholders and target groups, or differences between groups or stakeholders may weaken and delay activities	Medium	Capacity building, training and awareness raising. Participatory processes to promote engagement and inclusion of all interested parties. Representation of key groups and stakeholders in community committees and field activities. Mediation in case of conflicts.
Instruments to be developed by the program could take longer to provide tangible results than the program's lifetime	Low	Prioritization of activities that can be effectively designed and implemented within project lifetime. Inclusion of long-term research in institutional work plans. Awareness raising and lobbying among authorities for approval of incentives / licenses (if any) within a period that will ensure sufficient timing for field piloting.

Policymakers or politicians prioritize economic benefits over social and environmental	Low	Project activities explicitly integrate social, economic and environmental development needs in an integrative framework of climate-resilient agriculture and water management. The project will prioritize low-regrets strategies for resiliency that prove impact on income.
Congress is discussing a new law that regulates the use of hydro resources.	Medium	This risk is minimized with more coordination and communication with the Ministry of Environment which coordinates environmental policy and among different levels of government.
Lack of local level and down-scaled information on many aspects of climate change.	Medium	To minimize this risk it is necessary to prepare specific studies on targeted areas and/or at community level regarding the threats of climate change. The project foresees the need to start with short-time assessment to priority activities and interventions.

C. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy of the Adaptation Fund.

Monitoring and Evaluation (M&E) of all program activities, including environmental and social consequences, are part of the program management responsibilities of IDDI. This includes tracking the implementation progress, learning (in terms of environmental and social concerns), feedback, and knowledge sharing on results and lessons among the primary stakeholders. The Project Management Unit (PMU) and involved Ministries/technical agencies have built proven capacities in conducting inclusive and consultative processes which will be essential to mitigate any possible social or environmental risks. Participating households, small farmers and their institutions (producers/ women's associations, NGOs, etc.) will be key stakeholders in these processes.

To screen and assess social and environmental risks, as well as to mitigate potentially adverse impacts, a specific, measurable and time-bound set of indicators reflecting these risks will be integrated in the results framework of the project (to be developed in stage two of this proposal). In general, failure in compliance with the Adaptation Fund's Environmental and Social Policy is believed to be a low risk given the program focuses strongly on increasing resilience of social and environmental systems in targeted areas.

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

All program's M&E will be undertaken in accordance with the procedures and rules of the Adaptation Fund, with respect to planning, reporting, monitoring and evaluation procedures for procurement. A cell of IDDI will be responsible for coordination of M&E. A detailed schedule of project reviews will be developed by the Project Management Unit, in consultation with project implementation partners during the early stages of project launch. Such a schedule will include methodologies and tentative time frames.

Monitoring and evaluation (M&E) will be separated into technical M&E (adaptation actions and capacity building) and a financial and project management M&E. For the technical M&E the Project Management Unit (PMU) will develop criteria for participatory monitoring of the project activities. For financial and project management M&E an

appropriate mechanism and methodology will be established at the very outset of the project. M&E activities will be based on the logical results framework (to be developed). The overall M&E format for the project will follow the instructions and guidelines of the Adaptation Fund, including compliance with the Adaptation Fund's Environmental and Social Policy (ESP).

- E.** Include a results framework for the project proposal, including milestones, targets and indicators.

The results framework including all milestones, targets and indicators is to be developed in stage two of the application process. It will ensure compliance with the Environmental and Social Policy Framework of the Adaptation Fund, with a particular focus on gender, vulnerability and environmental protection, investment on-the-ground, among others.

- F.** Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund

To be prepared for Stage Two of the application process.

- G.** Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

A detailed budget, together with breakdown into cost categories, explanations, etc., will be developed at full proposal stage of the program application process.

- H.** Include a disbursement schedule with time-bound milestones.

To be developed at full proposal stage of the program application process.

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government³ *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

Ing. Pedro Garía Brito, M.Sc Director of Climate Change and CDM Ministry of Environment and Natural Resources, Dominican Republic +1 809-567-4300 / +1 809-807-1116 pedro.garcia@ambiente.gob.do	Date: (July, 25, 2016) See annex I (LoE)
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B. Implementing Entity certification *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (<i>National Development Strategy, National Communications to UNFCCC, National Policy on Climate Change, and Dominican Republic's National Action Plan for Climate Change Adaptation</i>) and subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
David Luther , Executive Director, Dominican Institute of Integral Development Implementing Entity Coordinator	
Date: July, 25, 2016	Tel. and email: +1 809 534-1077 dluther@iddi.org
Project Contact Person: David Luther (Executive Director)	
Tel. And Email: +1 809 534-1077 dluther@iddi.org	

⁶. Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

ANEXES

Annex 1 – Letter of Endorsement



ADAPTATION FUND



MINISTERIO
DE MEDIO AMBIENTE
Y RECURSOS NATURALES

Dominican Republic

August 1st, 2016

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Subject: Endorsement for Enhancing climate resilience in San Cristóbal Province, Dominican Republic - Integrated Water Resources Management and Rural Development Programme

In my capacity as designated authority for the Adaptation Fund in Dominican Republic, I confirm that the above national programme proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the Dominican Republic.

Accordingly, I am pleased to endorse the above programme proposal with support from the Adaptation Fund. If approved, the programme will be implemented by Dominican Institute of Integral Development and executed by the Ministry of Environment and Natural Resources; the National Institute for Water Supply and Sewerage; and community-based NGOs.

Sincerely,

A handwritten signature in black ink, appearing to read 'PGB', written over the official stamp.

Ing. Pedro García Brito, M.Sc.
Director of Climate Change and CDM
Ministry of Environment and Natural Resources

