ADAPTATION FUND

# REGIONAL PROJECT/PROGRAMME PROPOSAL

## PART I: PROJECT/PROGRAMME INFORMATION

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|---|---|
| Project/Programme Category: | Regular Project |
| Title of Project/Programme: | Strengthening the adaptive capacity of coastal communities of Cuba and Panama to climate change through the binational exchange of best practices for climate management and local food security |
| Countries: | Republic of Cuba and Panama |
| Thematic Focal Area1: | Food Security |
| Type of Implementing Entity: | Multilateral Implementing Entity (MIE) |
| Implementing Entity: | Food and Agricultural Organization of the United Nations (FAO) |
| Executing Entities: | **Cuba:** Environmental Agency of the Ministry of Science, Technology and Environment – CITMA (AMA), and the Ministry of Agriculture (MINAG)<br>**Panama**: Ministry of Environment and Fundación Natura |
| Amount of Financing Requested: | USD 14 million (in U.S Dollars Equivalent) |

### A. Project / Programme Background and Context:

Cuba and Panama form part of the Wider Caribbean Region that is made up of 28 countries, both insular and coastal. These States and Territories have coastlines located on the Caribbean Sea and Gulf of Mexico (Figure 1). The wider Caribbean is particularly vulnerable to climate change (CC) due to increased ocean temperatures, sea level rise (SLR), shifting precipitation patterns that will concentrate most rainfall in short periods of time leaving open the possibility for both drought and flooding. The region is highly susceptible to extreme weather from both hurricanes and tropical cyclones that when compounded with rising sea levels provide a high risk of flooding to coastal communities. These threats are currently evidenced in both Cuba and the Caribbean coastline of Panama with effects on food security and rural livelihoods.


**Figure 1**: Map of the Greater Caribbean Region

Coastal communities of Cuba and Panama are currently facing diverse effects and impacts of global CC. For both countries, recent research and modelling indicate changing conditions such as higher temperatures, erratic

1 Thematic areas are: Food security; Disaster risk reduction and early warning systems; Transboundary water management; Innovation in adaptation finance

seasonal rains, more intense precipitation in concentrated time spans and regions, an increased frequency and intensity of tropical storms and cyclonic activity and SLR. These projections will have impacts on coastal ecosystems, livelihoods and communities, particularly those mostly vulnerable such as women and indigenous groups.

According to national communications to the United Nations Framework Convention on Climate Change from both countries, the coastal areas of Cuba and Panama are likely to suffer significant modifications due to flooding caused by the SLR. It is foreseen that an increased ambient and ocean temperatures will affect biodiversity and its ecosystems services, thus in turn impacting livelihoods such as tourism, agriculture and fishing. While both countries have developed national strategies to attempt to manage impacts from CC, capacities at community and municipal levels- where these impacts will be felt most acutely- are currently lacking partly due to a failure to translate climate impacts into tangible costs and losses to local economies and livelihoods. This is particularly a challenge when assessing the impact of slow onset hazards such as SLR that will result in the salinization of soils and water resources or in the case of increasing temperatures that will have cascading effects.

Methodologies for assessing loss and damage are critical inputs in calculating the economic impact of natural disasters and can be used to estimate the potential cost of CC to national economies when projecting more frequent extreme weather. Input from loss and damage calculations are powerful tools for internalizing the impacts of disasters and providing a key baseline to measure the effectivity of risk reduction actions and assess post disaster needs for recovery. These methodologies however, albeit useful, are often infrastructure-focused and respond to specific one-off disasters while failing to aggregate cascading impacts of CC and how they interact with a series of hazards.

International organizations have, hence, looked at improving traditional loss and damage methodologies to include impacts on livelihoods and development, such as the UNDP's Post Disaster Needs Assessment and FAO's Methodology for Damage and Loss Assessment in Agriculture. FAO's methodology, in particular, allows countries to better calculate loss and damage to agricultural related production even in the case of slow onset hazards. This is a key issue in generating resilience as recurrent and prolonged natural hazards and disasters can have a devastating impact not only on agricultural livelihoods, but can in the long term lead to an entire economy into recession. Hence, the methodology developed by FAO is relevant as it addresses a common challenge in post disaster assessment that often results in an under-estimated evaluation of long-term disaster impact to populations, leading to the under-investment in resilient agriculture and adapted livelihoods[2].

The capacity to implement loss and damage methodologies in the face of slow onset impacts, will allow assessing the cost of CC to local economies and implementing adaptive measures that may be required for their reduction in order to ultimately have an impact on protecting local food security. This last point is particularly relevant to coastal communities, who depend on coastal ecosystems for primary production such as fishing, coconut and rice harvesting. Adaptive measures include the implementation of Nature-Based Solutions (NBSs) for the protection of critical ecosystems and the development of alternative and more resilient livelihoods.

This project will, hence, address common challenges to better assess climate impacts and how these will affect local economies and livelihoods through the use of FAO's loss and damage methodology, and will implement a series of adaptive measures that will result in resilient agriculture production while favoring local food security. A bilateral cooperation mechanism will be formalized by the project to allow for knowledge sharing and facilitate the upscaling of lessons learned in both countries, including incorporating baselines and analysis in national and regional databases. This will allow project to bring innovations in accounting for local resilience measures (such as NBSs and the use of technologies/techniques for resilient agriculture) to reduce loss and better evaluate resilient capacity that is both measurable and accountable.

The project will focus on coastal municipalities of both Cuba and Panama located along the Caribbean littoral, whose vulnerability to coastal flooding due to SLR and level of exposure to frequent storms, are aggravated by their limited adaptive capacity. In Cuba, the project will be implemented in the municipalities of Consolacion Sur, San Cristobal, Batabanó, La Sierpe and Baracoa, located along the southern and eastern coastlines of the

[2] Conforti, P., Markova, G., & Tochkov, D. (2020). "FAO's Methodology for Damage and Loss Assessment in Agriculture". *FAO Statistics Working Paper 19-17*. Rome. https://doi.org/10.4060/ca6990en

country. In Panama, the project will be implemented within the municipalities of Santa Isabel, Portobelo, Chagres and Donoso (all belonging to the Colon province located along the Western Caribbean Region of Panama). The project will ensure an inclusive approach to vulnerable populations including women and minority groups who face differentiated needs and conditions to climate adaptation.

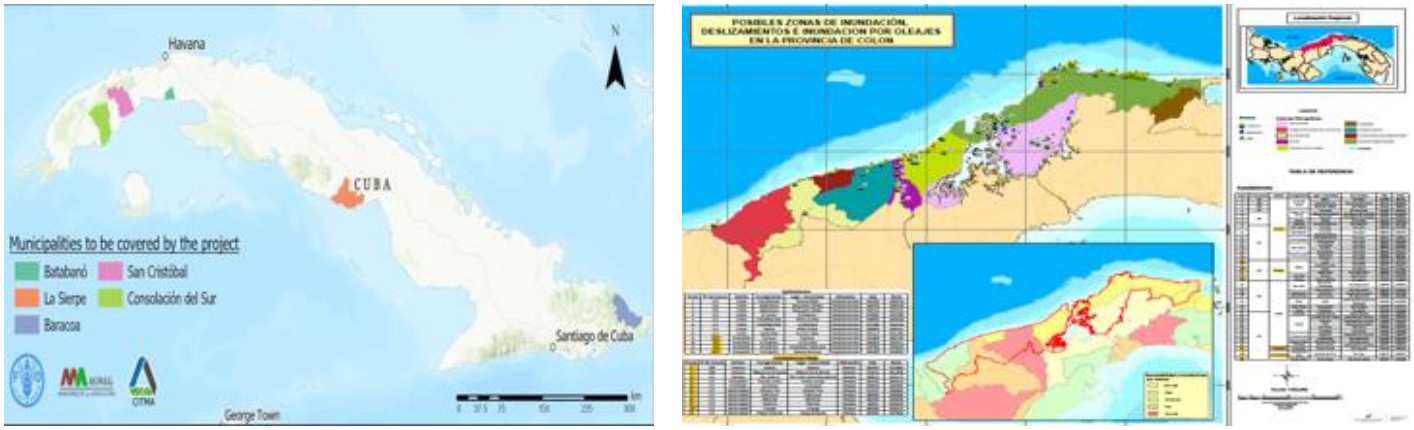


**Figure 2**: Target Areas in Cuba (left) and Panama with Intervention Points Highlighted in Yellow (right)

## Cuba

The Republic of Cuba is a small island developing state (SIDS) located in the Caribbean Sea, at the entry of the Gulf of Mexico, in one of the most active spots of the Atlantic/Caribbean hurricane region. Over the past ten years, Cuba has been hit by 11 hurricanes of large magnitude that have severely damaged infrastructure, housing and communications (PNUD, 2020).

Cuba's irregular coastline extends for 6,073 km with its Northern coastline being characterized by deep harbors, coral lowlands, and sandy beaches and its Southern coastline featuring coral islands, reefs and salt marshes. The island of Cuba is 1,250 km long with its widest part measuring 191 km and 31 km in its narrowest, hence it can be concluded that in Cuba one is never far off from the coast. The population of Cuba stands as 11.167 million people[3], of which approximately 42% live in coastal municipalities.

There are 7,014 human settlements (ONEI, 2012) in Cuba, of which 6,417 (91.4%) are rural and 597 (8.6%) urban. The geographical distribution of the population influences the levels of coverage of public services; therefore, access to services in urban areas that imply greater capacity and social resilience has increased compared to that of remote rural communities. The majority of the rural population relies on primary sectors for their livelihoods. This includes agriculture, livestock, forestry and fishing, which together represent 17.8% of the economically active population.

Cuba's gender equality rates are amongst the best for the LAC region as made evident in the 2017 WEF Global Gender Gap Report that ranks it in the top 25th in the world. Women are represented equally amongst all sectors, occupying 53% of the seats held by in the National Assembly of People's Power (ANPP), the highest legislative body in the country, account for 60% of all higher degree graduates and 67.2% of technicians and professionals nationwide.[4] However, despite these positive indicators, it should be noted that the primary sector provides an exception, indicating a high perception of masculinization within the rural sector and employment. Only 19% of forestry workers in Cuba are women (mainly in managerial positions) and only 18% of women participate in the agricultural sector[5]. Further, while agrarian laws declare the equal right to land for both sexes, in practice many more men own land than women, as well as participate in cooperatives and hold managerial positions in local cooperatives.

An important part of the Cuban population resides along coastal areas making them highly vulnerable to climate impacts in the form of extreme weather and SLR. Most of these coastal communities, particularly those rural in

[3] ONEI (2012). Cuba National Census
[4] Ibid
[5] Ministerio de Agricultura (2016). Estrategia de Genero del Sistema de Agricultura en Cuba. Gobierno de Cuba

nature have a narrow economic base dependent largely on artisan fishing, basic services and tourism; in addition, many members of coastal communities are involved in agriculture and livestock raising in neighboring areas due to limited employment opportunities in their own areas. Coastal communities have been affected by decreasing employment opportunities due to the decline of the fisheries sector and the degradation of productive infrastructure by the weather and extreme climatic events.

Agriculture in Cuba occupies 6.1 million ha (out of a total area of 10.1 million ha), of which 1.2 million are devoted to seasonal crops, 1.5 million to permanent crops and 3.7 million to livestock. The government has placed a high emphasis on increasing agricultural production as part of its social and development planning, to reduce its high reliance on food imports. The main agricultural products produced by Cuba include sugar cane, citrus and other fruits, rice, beans, bananas, tobacco, coconut, coffee and cocoa (particularly in the Baracoa region).

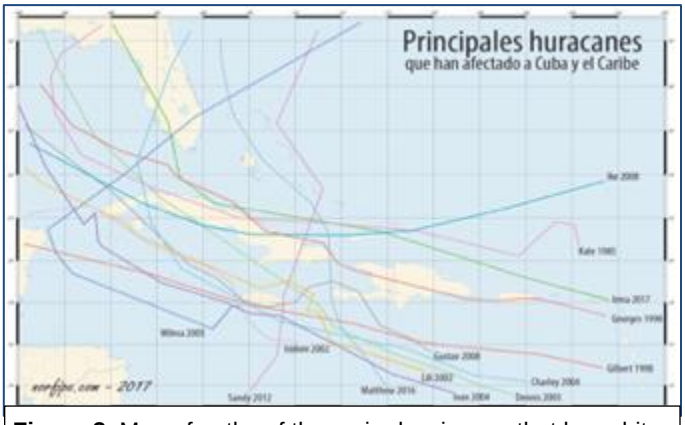


**Figure 3**: Map of paths of the major hurricanes that have hit the island of Cuba between 1985 and 2017

Cuba's climate is tropical, seasonally humid, with maritime influence and semi-continental features. The mean annual air temperature varies from 26°C in the plains to 24°C in the mountainous areas. The average maximum temperature fluctuates between 27°C and 32°C, and the average minimum temperature between 17°C and 23°C (Insmet, 2018). The island's tropical climate is moderated by trade winds and the surrounding waters; however, the warm temperatures of the Caribbean Sea and the fact that Cuba itself almost completely blocks access to the Gulf of Mexico, make Cuba prone to frequent hurricanes (See Figure 3).

The country has a distinct orography that includes extensive low land and coastal plains and mountainous inland territories. Mountains are concentrated along a longitudinal axis of the country and play a fundamental role in its climatic characteristics. Plains represent 82% of the total area of the country, these include typical coastal and river plains; the lowest zones correspond to marshes, both coastal and inland. The geographical characteristics of the archipelago determine the direct relation between fresh and salty waters. Of particular significance for the management of water resources is the existence of a watershed boundary that runs through the main island's longitudinal axis. This watershed fosters the formation of small basins with karst being predominant in deep aquifers; in many of them the karst develops from the surface of limestone massifs under which these aquifers lie. Karst processes are present in 67% of the national territory.

The hydrological regime of Cuba depends on the pattern of precipitation, combined with the geological characteristics of river basins, rivers and aquifers. The average annual rainfall for the period 1961-2000 stood around 1335 mm. Of the Cuban basins, 82% occupy areas less than 200 km$^2$ and the extension of the main river courses is less than 100 km. The exploitable hydrological resources are estimated at around 24 km3 per year, 75% of which correspond to surface water and 25% to groundwater.

The coastal diversity in geomorphology and spatial distribution is responsible for the great biological diversity of the Cuban coastal fringe. The main coastal ecosystems on the Island of Cuba are cays (of sandy and reef origin), coral reefs, sandy or silt beaches in the cays or on the mainland, respectively, seagrass beds, mangroves and swamp forests and swamp grasslands. Mangrove forests are present in over 50% of the national coastline with an extension of 5.1% of the country's surface area and account for 20% of the national forest surface area. Mangroves provide valuable services to the coastal areas in water management, including infiltration and purification, and provide buffering protection from storm surge in the form of wind and wave protection. A recent completed project funded by the Adaptation Fund in the areas of Artemisa and Mayabeque, demonstrated the role of mangroves in sediment retention and coastal stabilization as well as in reducing general salinity rates within target areas.[6]

[6] CITMA (2020). Third National Communication of the Government of Cuba to the UNFCCC

Unfavorable conditions associated with human development such as poor physical planning and environmental management has contributed in the degradation of mangrove forests, particularly along mangrove coastal edges, that has resulted in marine penetration along the coastline and saline intrusion in groundwater. Mangrove loss due to coastal development continues to be a major threat in Cuba (Menendez Carrera, 2013), especially given the anticipated future increases in coastal tourism and tourism-related infrastructure that could further affect mangroves (Spalding et al., 2010; Suman, 2013; Lugo et al., 2014).

Cuba's coral reefs are among the most diverse and best preserved in the Caribbean, growing along virtually the entire border of the Cuban shelf (>98%) and extending inshore across broad areas of the shelf. The continental shelf is 2,150 km long on the North coast and 1,816 km on the South. Inshore patch reefs are dispersed in the western Gulf of Guanahacabibes and the Gulf of Batabanó, as well as on the Eastern Gulf of Ana María-Guacanayabo. Reefs, however, have started showing signs of bleaching and degradation due to acidification that have been attributed to mangrove and sea grass degradation (including natural flows alteration, invasive species, water contamination). Degradation of corals poses a threat to coastal resilience and protection. A recent study published by ECLAC with the support of the University of Cantabria estimated that coral reefs in Cuba provide annual protective services valued at USD 401milllion by reducing physical damage to some 76k $m^2$ that without the barrier effect of reefs would flood. Furthermore, if impacts from storm surge are included, reefs protect a coastal fringe of 1,398 $km^2$ from flooding, thus preventing an estimated 5 billion in physical damages.

**Climate Change in Cuba**

The climate in Cuba has experienced a rapid change, approaching projections made by the IPCC. Cuban research has estimated projections of warmer weather, with mean annual temperatures increasing by 1°C and annual mean minimum temperatures by 2°C within the next 20 years[7]. Meteorological observations have identified that the past three decades have been warmer than previous ones. In addition, while stable precipitation rates have been observed over the last decades, there has been an indication of increasing severe drought events over the last 20 years.[8]

CC will have a profound effect in Cuba, particularly in terms of water availability, increased vulnerability to extreme weather, coastal erosion and retreat, changes in agricultural and primary production patterns and crop viability and changes in critical ecosystems that currently provide valuable ecosystem services, such as water filtration and buffering capacity.

According to projections, flooding of coastal areas due to the impact of SLR will result into the flooding of 537,000 ha of forest land and 32,000 ha of active agricultural zones. Salinization will have significant impacts on soil agro-productivity, including estimated accumulated losses of 40,000 tonnes in harvests of fundamental crops (rice and sugar cane) and other various staple crops (tubers and roots), thus putting at risk the food security not only of the most vulnerable coastal communities,[9] but also of the island as a whole. Shifts in temperature and precipitation patterns may also alter the total length of crop cycles affecting crop yields in basic staple crops such as rice and potatoes, while also having an impact in the reduction of agricultural areas lands due to water shortages for irrigation, increased salinization and soil degradation.

*Coastal Flooding and Sea Level Rise*

Cuba suffers from moderate to strong coastal flooding caused by SLR (meteorological tides) and periods of intense rainfall. Over the period of 1996- 2016, 12 flood events occurred affecting 134,957 people. Future climate projections indicate that mean SLR may reach up to 29.3 centimeters in 2050, and 95 in 2100; values that are in correspondence with the probable ranges estimated by the IPCC for the entire planet.[10] This will result in a gradual but continuous reduction of large low land coastal plains; as well as the gradual salinization of inland aquifers due to the intrusion of the saline wedge of seawater.

The majority of Cuba's aquifers are open, with a free exchange of water with the sea thus making them highly susceptible to saline intrusion. In a scenario of drought, recharge of fresh water is limited which weakens the capacity to counteract saline water incoming from the sea. Also, during periods of sudden storm surges, the

[7] Idem
[8] Idem
[9] Idem
[10] CITMA (2020). Third National Communication of the Government of Cuba to the UNFCCC

saline intrusion pushes its way further inward. During repeated and prolonged droughts without appropriate recovery, seawater enters the aquifer replacing fresh water, thus creating a layer of mixed (brackish) water and making it not apt for human or agriculture purposes.[11]

SLR is aggravated by the impact of extreme storms that result in coastal flooding due to storm surges and peak astronomic tides. Between 2001-2017, the country has been affected by 12 hurricanes, 10 of which have been Categories 4 and 5. This trend is likely to intensify in the coming decades, as seen through the increase in intense storms observed across the Atlantic and related to the high temperatures observed in the Caribbean since 1998. Data from the National Office of Statistics and Information of Cuba[12] and quoted within Cuba's Nationally Determined Contributions, have shown that hurricanes and extreme weather events in Cuba have a great economic impact with losses from hurricanes in the period of 1998-2008 amounting to over USD 20.5 billion in damages.

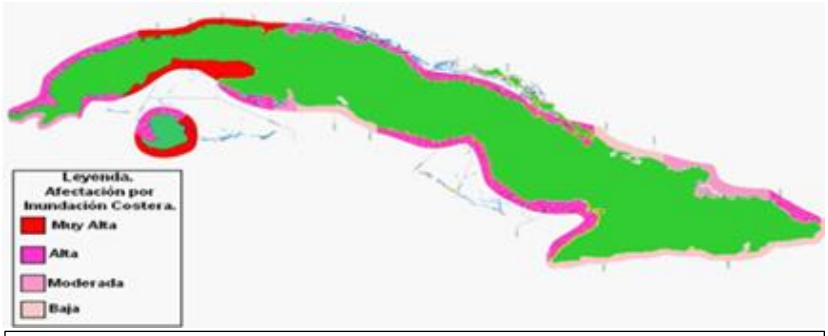


**Figure 4**: Impact/ Danger of coastal flooding in coastal areas by combination of tropical cyclones and storm surge[1]

The main areas with the greatest risk of flooding from hurricanes and associated storm surges are in the western regions of Cuba with large swathes of the southern coast at high risk (Figure 4).

If these projections are maintained, it is estimated that the land surface that would be permanently submerged by 2050 would cover an estimated area of 2,691.47 km$^2$ equivalent to 2.4% of the national territory. With the same tendency, this could reach, by 2100, to 6,371.05 km$^2$ (5.8% of the territory).[13] These projections show that by 2050, some 14 human settlements would disappear and 41,310 people would be displaced. Table 1 presents the SLR projections for coastal communities throughout the Island of Cuba. Some sites, it can be noted, show a negative value due to continued geological processes near coastal communities.

**Table 1**: Projected SLR in selected inland and coastal communities of Cuba (Source: Iturralde-Venet and Serrano, 2015)

| Estaciones | Latitud N | Longitud W | Intervalo de tiempo registrado | Tasa de elevación del nmm (mm) |
|---|---|---|---|---|
| Siboney | 23° 05,6' | 82° 28.2' | 1966-2005 | 2.14 |
| Cabo Cruz | 19° 50,4' | 77° 43,7' | 1993-2013 | 1.71 |
| Guantánamo | 19° 09,0' | 75° 15,0' | 1937-1971 | 1.64 |
| Gibara | 21° 06,5' | 76° 07,5' | 1976-2013 | 1.63 |
| Puerto Padre | 21° 12,1' | 76° 36,0' | 2002-2010 | 1.44 |
| Bufadero | 21° 33,6' | 77° 14,2' | 1992-2013 | 1.23 |
| Punta de Prácticos | 21° 36,2' | 77° 05,9' | 1992-2013 | 1.00 |
| Los Morros | 21° 54,0' | 84° 54.4' | 1973-2013 | 0.52 |
| La Isabela | 22° 56,4' | 80° 00.8' | 1973-2013 | 0.50 |
| Casilda | 21° 45.2' | 79° 59.5' | 1972-1995 | 0.05 |
| Cayo Loco | 22° 09.1' | 80° 27.3' | 1992-2013 | - 0.21 |
| La Coloma | 22° 14,2' | 83° 34,3' | 1991-2001 | - 1.21 |
| Santiago de Cuba | 19° 59.1' | 75° 52.5' | 1993-2013 | - 1.95 |

Vulnerability maps that include water quality along the national hydrological network, estimate that there are currently 574 human settlements vulnerable to saline intrusion in the coastal aquifers of the archipelago.[14]

Sea level is rising and causing coastal erosion and saline intrusion with effects on livelihoods, ecosystems, infrastructure, coastal communities and the salinization of aquifers thus aggravating the problem of water availability. The area of Los Morros (target area of the project) constitutes to one of the five points of the archipelago where SLR has been more evident in regular tidal measurements over the last five years, given its low elevation. As for the salinization of aquifers due to sea water intrusion, it is particularly evident in the South Zone of Pinar del Río-Artemisa -Mayabeque in Cuba, also located along the Southern Cuban Coastline.[15]

[11] Government of Cuba (2021). Green Climate Fund: *Coastal Resilience to Climate Change in Cuba through Ecosystem Based Adaptation - "MI COSTA". May 2021. Website:* https://www.greenclimate.fund/project/fp157
[12] ONEI (2012). Cuba National Census
[13] CITMA (2020). Third National Communication of the Government of Cuba to the UNFCCC
[14] Iturralde Serrano (2015). Peligros y vulnerabilidades de la zona marino-costera de Cuba: estado actual y perspectivas ante el cambio climático. CITMA. La Habana
[15] Idem

*Precipitation Pattern Changes and Severe Drought*

The average annual rainfall of Cuba for the period 1961-2000, was 1335 mm. This represents a reduction of over 38,100 million $m^3$ with respect to the previously reported average annual rainfall of 1375 mm. However, a stable pattern of precipitation has been registered over the last decades with multi-year variation of precipitation anomalies over the period 1961-2017, reflecting a slight increasing trend in recent decades, although not statistically significant. In the dry season, despite the predominance of negative anomalies in recent years, the overall trend has also been observed, though not statistically significant.[16] Projections, however, do indicate a general reduction in rainfall by 2070, with an average reduction in relative humidity between 2% and 6% by 2030 and 2070, respectively. Reduced rainfall is expected to occur during the rainy season in the summer. These changes coincide with an expected increase in wind velocity and a significant increase of potential evapotranspiration, suggesting a drier climate in the future.

The three most significant and severe drought events occurred during the periods of 2003-2005; 2009-2010 and 2014-2015. These events took place mainly in the Eastern Region and in some municipalities of the Central Region. The increased frequency of such events indicate that severe droughts periods may become more frequent thus having a significant impact on populations and ecosystems along Cuba's Eastern Region (where the project target area of Baracoa is located). The drought event of 2003-2005 has been the most critical meteorological event of Cuba in recent the last 100 years, since it threatened the livelihoods of more than two million people (17% of the entire population) by causing agricultural and livestock losses. It also facilitated the invasion and spread of alien species in ecosystems, such as the sickle bushes (Dicostrachys cinerea).

*Increased Temperature*

An evaluation of climatic variation and change in Cuba carried out by the National Meteorological Institute of Cuba[17], provides observation-based evidence that indicates that the climate in Cuba has become warmer, with all regions demonstrating rising trends. Mean annual temperature during the years of 1951-2017 has increased by 1.0°C (Figure 5).

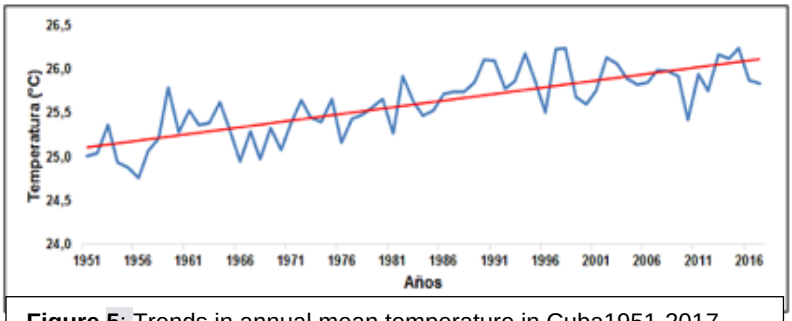


**Figure 5**: Trends in annual mean temperature in Cuba1951-2017

Regional Climate Modeling, including the use of a large multi-parameter ensemble[9], suggests that by the end of the 21st century, the climate in Cuba will be 1.0 °C and 3.5 °C warmer for the periods 2030 and 2070, respectively.

**Target Areas in Cuba**

The project has selected the coastal municipalities of Consolacion del Sur, San Cristobal, Batabanó, La Sierpe and Baracoa, as the target areas in Cuba. The criteria used for the selection of such sites include their vulnerability to SLR, their exposure to storms and hurricanes as well as the presence of valuable ecosystems that provide important ecosystem services and therefore can be linked to nature based adaptive solutions.

[16] CITMA (2020). Third National Communication of the Government of Cuba to the UNFCCC
[17] R. Pérez et al. (2009)

To assess risk and vulnerability to CC of the Cuban coastline, the GoC invested in a national coastline assessment of natural ecosystem protection from projected SLR and storm surge. The assessment identified coastal stretches with immediate risk and high potential for Ecosystem-Based Adaptation (EBA) actions related to coastal resilience. Target municipalities prioritized through this project are located in coastal stretches V (Baracoa), X (La Sierpe) and XII (Consolacion del Sur, San Cristobal and Batabanó) (Figure 6).

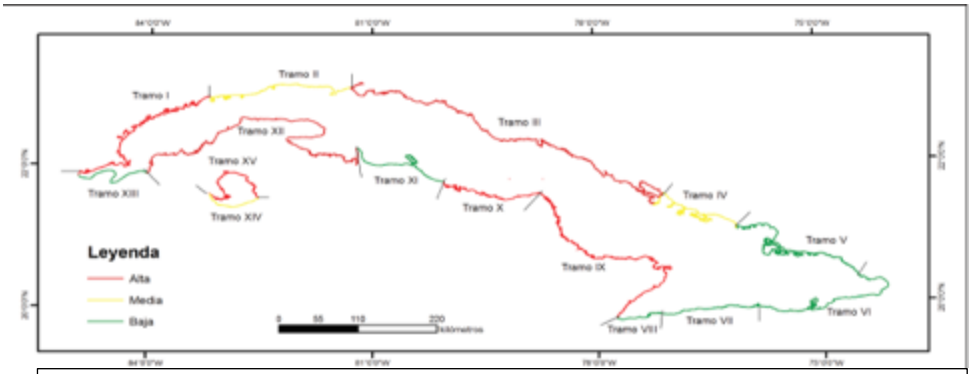


**Figure 6**: Coastal Vulnerability to SLR and Associated Events (Red High; Yellow Medium and Green Low)[1]

High vulnerability coastlines have been identified as those located in low lying coasts where coastal flooding is common and where coastal ecosystems have been degraded thus providing reduced coastal protection. This is the case of the municipalities in Consolacion del Sur, San Cristobal, Batabanó and La Sierpe.

These southern coastlines are characterized by being low, subsident, swampy, cumulative and deltaic coasts hence highly prone to coastal flooding due to their low-lying nature. The municipalities have extensive areas of mangrove and flooded forest as well as a series of salt marshes (San Cristobal) and coastal lagoons of estuarine conditions (brackish) that are vital for a large number of species. The municipalities of Consolacion del Sur, San Cristobal and Batabanó hold important hydrological systems, which are important sources of water supply for human populations, such as the hydrographic basin of the Guama River.

The area also houses various coastal aquifers that have begun to be affected by saline intrusion. For example, in the areas around Consolacion del Sur and San Cristobal, a study developed on the hydrographic basin has indicated that the salinity line (1 gram/l of salts) has advanced in depth. Studies on coastal vulnerability rates indicate that marine intrusion along this coastline as a result of SLR and associated events could reach an average of 8.1 kms inland and a maximum of 47.2 kms in the case of a category 5 hurricane. Various communities have begun to feel the impacts of coastal erosion with some beaches along Batabanó having disappeared. [18]

These areas are also highly vulnerable to extreme storms. Hurricanes Lili (1996), Irene (1999) and Michelle (2001) produced extreme waves that hit the keys around Batabanó, and Hurricane Gustav (August 30, 2008) caused damage by high storm waves on the Southern coast of the municipality of San Cristóbal with penetrations of up to 5 km and wave heights in the Batabanó Gulf of 2.0 m to 2.5 m and sea water intrusion up to 2 km. Hurricane Charley (August 13, 2004) also produced damage by storm waves in the municipalities of Batabanó, temporarily flooding areas up to 2.0 km inland. Hurricane Irene (October 15, 1999) also affected the municipality of Batabanó with sea water flooding up to 1.5 km inland.

Mangroves in these areas have deteriorated due to anthropogenic impacts including extensive and unsustainable fishing practices as well as to agriculture pollution and direct uses of mangrove by the population. The impact on mangrove forests has in turn negatively impacted fishing-dependent livelihoods, as fish stocks have been reduced. Only some industrial fishing remains in Batabanó. The elimination of mangrove has represented the loss of important natural barriers, thus further facilitating coastal erosion and marine intrusion into agricultural productive areas. Rice, root vegetables and banana production are significant in the target areas, with Pinar del Rio being amongst the most productive agricultural areas in the country[19]. A positive example, however, can be found in the outcomes of a prior Adaptation Fund project implemented near the area of Batabanó, that

[18] CITMA (2020). Third National Communication of the Government of Cuba to the UNFCCC

[19] Sanchez, Y (2020). Produccion de alimentos prioridad para Consolacion del Sur. Telepinar. https://www.telepinar.icrt.cu/produccion-alimentos-prioridad-consolacion-del-sur/

demonstrated the protective role of mangrove restoration in coastal stability and the recuperation of the coastline, thus evidencing the positive transformational role of nature-based solutions.

In the case of coastal stretch V, coastal vulnerability is categorized as low, yet it is still present. The municipality of Baracoa is located in an area highly exposed to progressive SLR and to wave impacts, hence it has been prioritized within the Government's State Plan to Manage Climate Change "Tarea Vida". As it can be seen in Figure 7, the coastline lies within a region vulnerable to coastal flooding by meteorological waves in the occurrence of tropical storms and hurricanes. Hurricane Ike (September 7, 2008) caused severe flooding in the municipality as a result of extreme meteorological waves of more than 6 m height that affected the city of Baracoa and surrounding areas.

About 95% of the total area of the municipality features small and low mountains. The remaining 5% is made up of a small coastal strip 2 km wide. The coast along Baracoa is bordered by a mountainous system, with a dense fluvial network that disseminate land-generated pollutants through runoff into the sea from agriculture (Coffee, Cocoa and Coconut) and livestock. Such sediments and organic pollutant not only affect mangroves but also reefs that lie close to the coastline.


**Figure 7**: Map of Coastal Stretch 5 (in red the Municipality of Baracoa, Black lines along the marine shore represent coral stretches, blue lines are rivers, grey shading depicts the marine platforms and the pink dots represents cities)

The municipality includes Alejandro de Humboldt National Park that has an extensive mangrove forest that constitutes an important natural barrier, as well as being the habitat of many estuarine, and the nursery area for many marine species. The insular platform along the coastline is narrow and fringed by coralline ridges, with a few keys and some bays that provide protection from intense wave activity (Figure 7). The stretch is particularly vulnerable, due to its exposure to trade winds and high impact waves.

SLR will have considerable effects as projected by 2100 in urbanized areas, loss of land, homes, networks, infrastructure and displaced people. Infrastructure and construction vulnerability is expected due to insufficient coastal protection against extreme hydrometeorological events. Greater effects on coastal vegetation and erosion of sandy beaches are also expected (most beaches have signs of moderate to intense erosion), affecting the availability and quality of water. Aquifers located along Baracoa are open to sea and hence very vulnerable to saline intrusion. These currently present total suspended sediment rates of > 1 G/L[20].

**Panama**

Panama has an extension of 75,420 km$^2$ and a population of 4.2 million inhabitants. The country is divided into 10 provinces and 81 municipalities. It is bordered by coastlines along the Pacific to the West and the Caribbean Sea to the East. Its coastal littorals extend for 2,988.3 km, of which 1,287.7 km are on the Caribbean and 1,700.6 km on the Pacific. Hence, Panama has the highest coast/area ratio among the continental countries of Latin America. Based on its coastal exposure, it ranks 14$^{th}$ among the countries mostly exposed to multiple natural hazards, in relation to its land surface area. 15% of its total area and 12.5% of its total population are vulnerable to two or more hazards.

The country is predominantly mountainous with coastal plains chiefly on the Pacific side. The bulk of the territory is made up of lowlands that have resulted from the erosion of the mountain ranges. The Central Cordillera extends throughout the Isthmian territory, from the border with Costa Rica on the North, to the border with Colombia on the South, dividing the country into two physiographic regions: the Pacific (the most extensive one) and the Caribbean. 70% of the national territory is occupied by lowlands and hills located at less than 700 m

[20] Iturralde Serrano (2015). Peligros y vulnerabilidades de la zona marino-costera de Cuba: estado actual y perspectivas ante el cambio climático. CITMA. La Habana

above sea level, and is made up of the extensive plains of Chiriquí, Veraguas, the Azuero Peninsula, Coclé and the coastal plains of the Caribbean. The remaining 30% corresponds to lands above 700 m above sea level, which include the central mountain range.

Panama boosts a high biodiversity (ranks 10th worldwide considering its size). Over 65% of its territory is occupied by primary forests, placing it amongst the countries with the highest percentage of forest coverage. Panamanian coasts are also among the most diverse in Central America, with a variety of marine ecosystems that includes mangroves, estuaries, sandy shores and 76 different types of coral species, 58 of which dwell on the Caribbean. These ecosystems provide an important protection from storms and coastal tides as well as other ecosystem services to coastal communities. Such ecosystems and their resources, however, have been seriously threatened by the pressure exerted by human activities including pollution (only 56% of households have access to a full drainage system with important regional disparities) and poor physical planning that has resulted in the construction of housing and public infrastructure along sensitive coastal areas.[21]

Panama's climate is tropical in nature with average annual temperatures ranging from 23-27°C in coastal and inland regions. However, temperatures can drop to 16°C at higher altitudes. Considering its geographical tropical position, historical temperature values reflect thermal uniformity among the different months of the year and locations within the country, with elevation being the principal factor for temperature differences.[22] The country receives a large amount of rainfall with marked variations between its two physiographic regions (Pacific and Caribbean). Along the Caribbean, average rainfall is 3,000 mm per year, with no marked dry season, whereas on the Pacific, rainfall averages 1,500 mm per year, with a very marked dry season from December through March.[23]

The country is particularly prone to climate variability with rainfall and temperature patterns being modified with sudden changes from year to year. The impact from El Niño-Southern Oscillation (ENSO) in both its warm and cold phase (La Niña) influences precipitation patterns according to its intensity. Impacts and modification of these climate patterns have an important effect on both the communities and economy of Panama. According to statistical and meteorological records, since 2004 an increase in the frequency of extreme events has been observed in the country, with hydro-meteorological events having affected mainly ecosystems and vulnerable populations. [24]

In 2019 Panama ranked 67th (out of 189 countries) in the Human Development Index, placing it amongst the highest in the LAC region. While it has progressed in reducing poverty, the country remains highly unequal with marked differences between urban and rural populations, thus making rural areas highly vulnerable. The rural population accounts for 33% of the national population with poverty rates estimated at nearly 40% versus 9.3% of poverty rates in urban areas. The average national poverty rate in 2019 was 20.7%. Economic vulnerability in rural areas can be attributed to climate vulnerable livelihoods such as fishing and agriculture ones, with extreme natural phenomena such as el Niño, tropical storms, hurricanes and droughts.

Rural economies are mainly dependent on the primary sector as a main source of employment, accounting for 14.4% of the employment at national level, despite its limited contribution to the national economy (2.7% of GDP). It should be noted that the majority of primary producers in Panama are men, only 9% of women are employed by the primary sector[25]. According to FAO, over 63% of producers in Panama are reliant on family agriculture, and this accounts for 70% of all the rural livelihoods of the country.[26] Fishing is also an important activity not only for community livelihoods but also in valuable exports that generated 128 million USD in 2019.[27] The majority of

[21] International Organization Forest of the World (n/d). *Forest of the World in Panama*. May 2021. Website: https://www.forestsoftheworld.org/programme/panama
[22] Global Water partnership (2011). *Actions 2011: GWP in Central America, Working together for a sustainable water management.* March, 2021. Website: https://www.gwp.org/globalassets/global/gwp-cam_files/acciones2011.pdf
[23] Global Water Partnership (2015)
[24] Government of Panama (2017). Adaptation Fund project: "Adapting to Climate Change through integrated water management in Panama. March 2021. Website: https://pubdocs.worldbank.org/en/648441532335502221/3059-FN-REQUEST-FOR-PROJECT-January-2017-VF-VC-clean-6feb-17.pdf
[25] *Ibid*
[26] FAO (2019). *Family Farm Review*. June 2021. Website: http://www.fao.org/3/cb4184es/cb4184es.pdf
[27] SICA, 2021

all fishing exports (commercial fishing) takes place in the Pacific area with the Caribbean area being mainly focused on artisanal fishing for the local market.

Panama's population, as per its 2018 Census, stands at nearly 4.2 million, with women representing 49.8% of the population. The society in Panama is highly diverse and includes both a strong indigenous population that makes up 12.3% of the population.[28] Women and indigenous population, particularly those residing in rural areas, have been identified by the Government of Panama as especially vulnerable to CC due their reduced capacity for adaptation that can be attributed to high poverty levels, high underemployment, reduced income levels and reduced access to economic assets that are important for primary production such as land.[29] Only 28% of women primary workers have access to land and the majority of them do not have a deed or a proper title of ownership[30]. These inequalities suggest a situation of feminization of poverty[31]. Panama's Gender Inequality Index averages at 73 indicating a high level of gender inequality in the country, particularly as it relates to indigenous women whose gender inequality rate is 0.87 vs the country's 0.58 for non- indigenous areas. This pronounced difference can also be attributed to extremely high levels of multidimensional poverty for indigenous women: 93.7% of the Gunas women, 89.8% of the Ngäbe Buglé women and 70.9% of the Embera women have been classified as poor.[32]

**Climate Change in Panama**

According to the National Climate Change Strategy 2050, the main effects associated with CC include risks from SLR and extreme hydro-meteorological events. These impacts will result in flooding of coastal plains of both littorals as well as from extreme precipitation events particularly along the Caribbean Central and Eastern Regions (Figure 8). Coastal risk modeling tools suggest flood scenarios in 2050 for critical areas of the canal operation in Panama City as well as for other areas of the country.

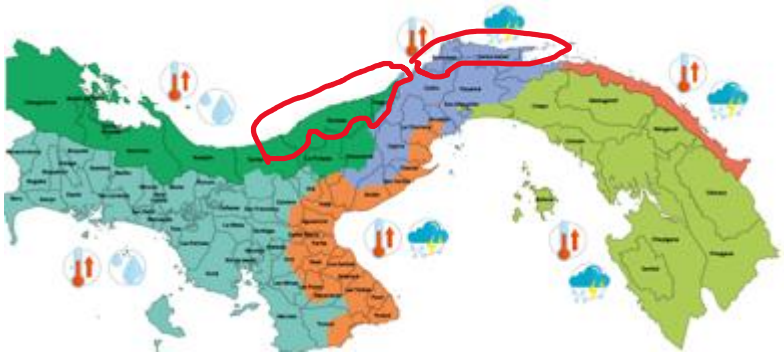

**Figure 8**: Climatic Regions of Panama and National Expected Scenarios 2050 (Western Caribbean Areas facing reduced precipitation in green. Central Region facing increased precipitation in blue. Eastern Caribbean Region facing increased precipitation in red. The Pacific Western Region facing reduced precipitation in turquoise. The Dry Arch Region facing increased precipitation in orange and the Eastern Pacific Region facing increased rainfall in light green)

Furthermore, the recurrence of periods of drought in recent years and the significant losses that they have generated in the agricultural sector (USD100 million losses in the sector only in 2013) have made CC one of the main concerns of the Panamanian agricultural sector. Mapping agricultural vulnerability has indicated national scale vulnerability to CC with the coastline along the Caribbean identified as highly vulnerable.

[28] Ministry of Environment (2020) . Nationally Determined Contributions. Government of Panama. p21
[29] UN Women (2020). June 2021. Website: https://data.unwomen.org/country/panama
[30] NEC. *Censo Agropecuario 2010*. Volumen VII. Enfoque de Género. Panamá
[31] Ministry of Environment (2020). Nationally Determined Contributions. Government of Panama. p23
[32] Ibid p.23

*Coastal Flooding and Sea Level Rise*

Satellite data analysis for the period 1992-2012 indicate an average increase in sea level of 1.8 mm per year, which is equivalent to an increase of 3.65 cm over the 20-year period. Due to the level of exposure, SLR has become a particularly relevant threat to the Western Caribbean region of Panama, especially in Costa Abajo de Colón, located within the municipalities of Donoso and Chagres. According to regional models, the climatic scenarios for the Western Caribbean of Panama rise of the sea level, coastal erosion, marine intrusion and prolonged flooding are expected along the coastal zone.[33] A similar situation occurs in the Central Climatic Region that includes the municipalities of Portobelo and Santa Isabel, whose expected climate impacts include the rise of sea level, an increased recurrence of strong inward winds and prolonged storm-derived flooding with impacts on the rainwater system and port facilities.

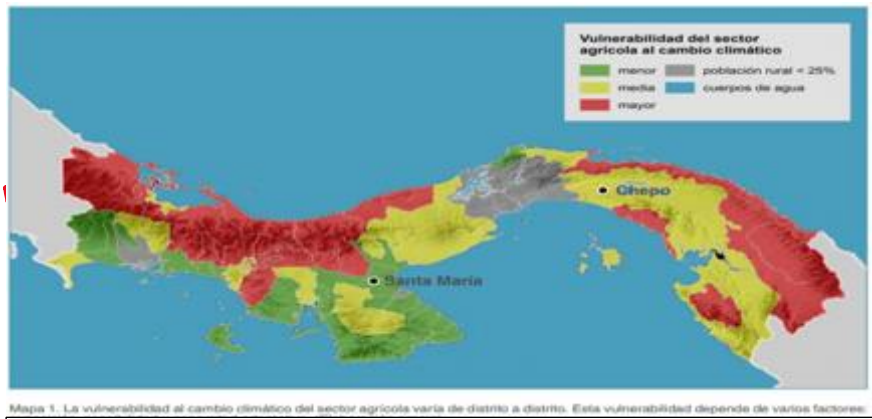


**Figure 9**: Agricultural Vulnerability to CC (green lower vulnerability, yellow medium vulnerability, red high vulnerability)
Source: Bouroncle C., Imbach P., Laderach P., Rodriguez B. Medellin C., Fung E. (2014). *Panama Agriculture and climate change: Where are adaptation priorities?* June 2021, from CGIR, International Tropical Agricultural Center

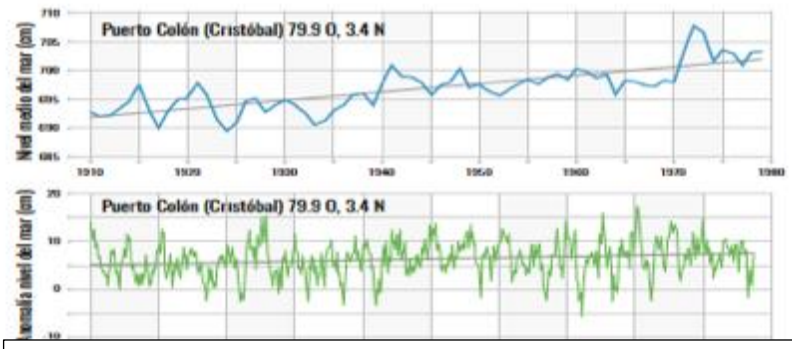


**Figure 10:** Relative Changes in SLR between 1909-1979 (blue line) through oceanographic data and absolute SLR between 1992-2012 (green line) estimated through satellite images in Puerto Colon

In Panama, floods are a consequence of high rainfall caused by extreme events and large amounts of sudden precipitation that surpass the natural draining capacity. Moreover, because of the widely scattered mountainous terrain, flash flooding and landslides are increasingly common. On December 8, 2010, the storm La Purisima brought a historic maximum recorded value of precipitation over a 24-hour period in the Panama Canal Watershed of 292 mm and the second record occurred during the passage of Hurricane Otto, in 2016, with 183 mm of accumulated precipitation over a 23-hour period.[34]

*Precipitation Changes*

In the case of Panama, a relative reduction of accumulated precipitation is expected, particularly during the influence of El Niño[35]. CC scenarios, as demonstrated in the Third National Communication on Climate Change, have allowed to visualize and indicate a significant reduction in precipitation towards different time horizons.

While it is not yet possible to gain a clear picture of annual precipitation change due to large model uncertainties, GCM projects changes in national dry season rainfall from -7% to +7% by 2020, -12% to +5% by 2050 and -20% to +9% by 2080. What is clear, however, is that future climate will increase variability and intensity of extreme

[33] IPCC. (n/d). *Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities.* June 2021, de IPCC Sitio web: https://www.ipcc.ch/srocc/chapter/chapter-4-sea-level-rise-and-implications-for-low-lying-islands-coasts-and-communities/

[34] Ministry of Environment (2019). *Third National Communication of Climate Change of Panamá*. Government of the Republic of Panama. 232 p

[35] Ministry of Environment (2019). *Third National Communication of Climate Change of Panamá*. Government of the Republic of Panama. 232 p

events. Under one particular downscaling study (PRECIS), extreme precipitation events (greater than 40 mm per day) are expected to increase by as much as half under the A2 emissions scenario[36].

The districts of Donoso and Chagres, located within the Western Caribbean Climatic Region, will face significant changes based on national climatic scenarios model that indicates negative changes in precipitation accompanied by an increased frequency of meteorological phenomena that will result in increased flooding and landslides. The municipalities of Portobelo and Santa Isabel, located within the dry Central Climatic region, will face increased extreme precipitation events, which will result in increased flooding and landslides similar to those experienced in 2010 during the "La Purisima"[37].

*Increased Temperature*

Climate change scenarios for Panama point to a potential increase in temperature with temperature changes in recent years already showing an increasing trend despite climate variability. In the case of the maximum values, in recent decades, the average value has increased by around 1°C and 2°C in the months of March and April, climatically considered the warmest ones.

**Target Areas in Panama (District of Colon)**

Colón is one of the 10 provinces of the Republic of Panama. It lies along the Caribbean Coastline with the northern section of the Panama Canal located in its territory. Its territorial extension is 4,868.4 km² with a total population of 294,060 inhabitants (2019). The province is comprised of 5 municipalities (Colón, Chagres, Portobelo, Donoso and Santa Isabel) (Figure 11), with 4 of these (Portobelo, Chagres, Donoso and Santa Isabel) being highly rural with a low population density. Together, these 4 municipalities have a population of 32,891 inhabitants, representing 11% of the total provincial population.

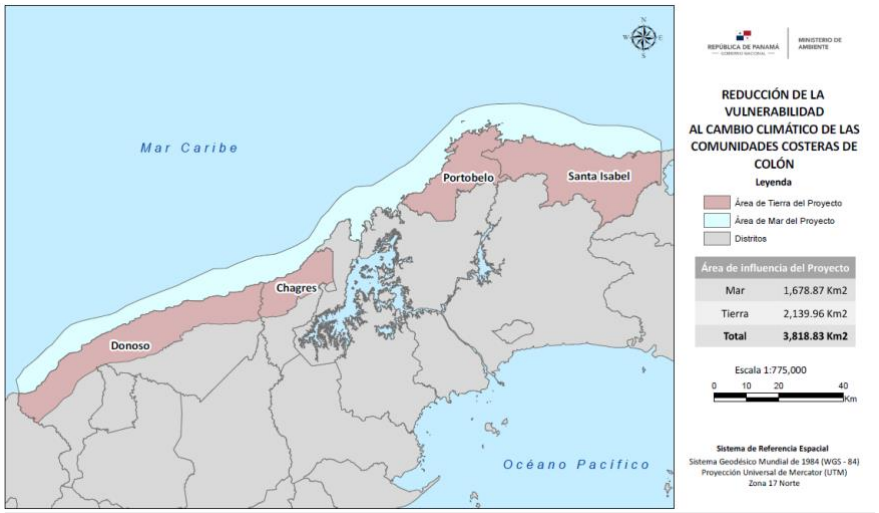


**Figure 11**: Municipalities of Colon (Donoso, Chagres, Portobelo and Santa Isabel will be targeted)

The Human Development Index (HDI) of the Province of Colón was 0.770, below the country's average. Donoso and Chagres are the municipalities with the highest levels of extreme poverty.

The main economy of the province is linked to trade and commerce with 27,500 employments, followed by transportation, warehousing and logistics, which create more than 20,000 jobs associated to operations in the Panama Canal, mostly in the highly urban Colon municipality. There is a high concentration of employment in the service sector and in the more urban districts of Colon (83% of those occupied) and Portobelo (68% of those occupied).

In contrast, in the municipalities of Chagres, Donoso and Santa Isabel the agricultural sector is the main source of employment (46%, 54% and 31%, respectively). In these rural areas, productive activities are linked to agriculture, livestock, fishing and nature-based tourism (Portobelo and Santa Isabella), all of which are highly climate sensitive. The majority of agricultural producers are organized through family farms that produce three-edged coconut, banana, cacao, lowland coffee and yucca, hence depend on their crops not only as a source of

36 Vulnerability, Risk Reduction, and Adaptation to Climate Change, Panama. Climate Risk and Adaptation Country Profile. World Bank. 15 p

37 https://www.prensa.com/impresa/panorama/madre-lluvias_0_3538896143.html

income but also as a pillar of their food security. Artisanal fishing is also widely practiced, and the main target species include spiny lobster, snapper, grouper, and cherna, which are sold in local markets.[38]

These activities depend entirely or partially on natural resources and ecosystems, and are the basis of the majority of livelihoods and food security of the population. Fish production depends on wild stocks and hence their abundance and distribution are a result of the natural productivity and the health of marine and estuarine ecosystems, including in mangrove forests located within the target areas. Most small-scale fishing is practiced in such ecosystems. These habitats are highly susceptible to the repercussions of the SLR, especially when unplanned development has affected coastal ecosystems and their function. Due to their low mobility, small-scale fishers are often not in a position to adapt and follow the species that have modified their zones of distribution in response to CC. Some adaptation actions and strategies for artisanal fishermen due to the SLR and to the damage caused by intensifying storms may include EBA measures, such as wetland rehabilitation and improving information systems that integrate and share knowledge from different coastal sectors whereby appropriate strategies are planned.[39]

As for the agricultural sector, coconut production is an important source of livelihoods for the coastal population of Donoso and its harvesting mainly relies on rudimentary methods practiced throughout generations. Coconut productivity is sensitive to temperature and precipitation, with extremely high temperatures resulting in reduced pollination/germination rates of the coconut fruit as well as creating favorable conditions for plagues and diseases[40]. In Donoso, the coconut industry has faced recent challenges from reduced coconut prices and productivity losses due to diseases to the coconut tree. To increase coconut production, the Ministry of Agriculture has begun to pilot some agroforestry production with coconut with efforts having to be put on pause as a result of COVID 19 mitigation measures. Consultations with coconut producers have emphasized the importance of the industry to local culture and cuisine as well as identifying a concrete need for greater technical assistance in coconut production.

An additional threat to agriculture development occurred in recent years, is represented by the loss of cultivated areas due to changes in land use and land acquisition by large housing and tourism companies. In the Portobelo municipality, this has further impacted coastal ecosystems and various communities have witnessed the loss of beaches due to rising tides particularly along the areas of Puerto Lindo.[41]

The Colon Regional Development plan includes a food security plan, as well as a number of supporting actions for small rural producers to help them improve their competitiveness and to foster innovation and integration of small-scale and industrial scale producers. A key consideration of the plan is the need to reduce environmental impacts by focusing on an adaptative and resilient agriculture. While a potential for alternative and adapted livelihoods has been identified through improved productive practices (e.g. the promotion of a circular economy for coconut, promotion of apiculture and agroecological systems) and the promotion of new touristic activities such as sports fishing, little investment and knowledge exists at the local producers' level to detonate the major change needed to increase sustainability. In addition, when consulted, communities have indicated the need for the construction of sea walls and hard infrastructure for protection against extreme tides, without consideration of the resulting ecosystem fragmentation nor the alternative for ecosystems-based protection measures.

The potential of forest resources in CC adaptation is also a key feature of the target areas. Over half of the territory in the Colon Province is made up of forests, including protected areas such as Portobelo National Park. Protected areas play a key role in both climate effects mitigation and adaptation and in maintaining essential ecosystem services. Conservation of forests and other relevant ecosystems is one of the crucial adaptation

38 Camargo I., Bieberach C., Villalobos A.& Alvarado P.. (2016). The State of biodiversity on food and agriculture in Panama. Panama: s/d

[39] Daw T., Adger N. & Brown K. (s/d). Consequences of climate change for fisheries and aquaculture: an overview of the current state of scientific knowledge., from United Nation Food and Agriculture Organization website: http://www.fao.org/3/i0994s/i0994s02.pdf

[40] Ranasinghe. Climate Change Impacts on Coconut Production and Potential Adaptation and Mitigation Measures: A Review of Current Status. Proceedings of the Workshop on Present Status of Research Activities on Climate Change Adaptations (Ed. B. Marambe), pp 71-82. Sri Lanka Council for Agricultural Research Policy, Colombo and Ewing Cho. "Climate Smart Coconut Agriculture could be the Caribbean's Tree of Life" *Forbes Magazine*. Nov 17, 2019

[41] Government of the Province of Colon. Management plan of Portobelo National Park 2013-2022

measures that should regarded as top priority to secure land and water within forested and protected ecosystems.[42]

Mangrove forests are found along the coast of the Colon Province, covering an estimated surface of 466.55 ha and located within protected natural areas (Portobelo National Park), and extend to areas with greater saline influence at the mouths of some rivers (Rio Indio located in Chagres). While the area of Portobelo has maintained healthy mangrove forests, studies have indicated pressure to forest health as a result of anthropogenic pressure, particularly around Punta Farnesio, Playa Blanca and José Pobre. These mangrove areas have been altered mainly due to poor physical planning along the mangrove ecosystem (buildings located along the shoreline).

The marine area around Portobelo National Park contains coral reefs with elements of platform and the slope with an almost continuous distribution along the coast. The average depth reached by the reef slope to the sandy bottom is usually around 10 m, although there are small patches at a depth of 15 m. Coral reefs provide important buffering services particularly in areas subject to intense wave energy that is particularly acute during dry season (December-April) due to the influence of north and northeast winds and currents. Degradation and bleaching of corals, particularly around the Bay of Portobelo, have been evidenced and mainly attributed to the strong sedimentation[43] that may be aggravated as a result of intense rainfall as projected in climate scenarios. Coral reefs have also been affected by overfishing including underwater fishing and the use chlorine for octopus fishing[44].

**National Capacities to Manage CC in Panama and Cuba**

As evidenced above, both Panama and Cuba are facing a wide range of CC impacts that will affect local livelihoods and agricultural productivity, including progressive SLR, increased temperature and altered precipitation patterns. While impacts will be felt nationally, rural coastal communities will be mostly at risk due to their higher vulnerability aggravated by high levels of poverty and the high dependency of primary sector livelihoods. For these communities correctly assessing these impacts will be paramount to allow for the implementation of adaptation strategies that will result in adapted livelihoods and the incorporation of climate smart productive practices to allow for resilient local development and food production.

Both countries have prioritized CC adaptation in their national development agendas and have introduced a series of government actions including the Politica Nacional de Cambio Climatico (National CC Policy) in Panama and the State Plan for the Management of Climate Change in Cuba (“Tarea Vida”). Both countries have also developed sectoral analysis at a national level of climate change impact on agriculture and water resources. Cuba, in particular, designated target sectors within their NDCs for the adaptation action. The NDCs for both countries have also identified ecosystems-based adaptation solutions as key in achieving mitigation targets.

Climate change impact and disaster risk management are core elements in national planning; however, capacities and social awareness at a local level are still weak. Upon consultation with municipal governments and local producers, there is evidence that very little specific information and knowledge exists at community level on the nature of CC impact and more importantly on the potential adaptation actions that need to be taken. This is a key gap when it comes to implementation action at a local level since municipal governments are the responsible institutions in charge of municipal planning and land use management, fundamental for the protection of valuable ecosystems and their protective services. Local producers whose livelihoods will be directly affected, on the contrary, lack the skills and knowledge required to manage climate impacts and too often recur to traditional and unsustainable agricultural practices to compensate for lost productivity thus paradoxically increasing their vulnerability to climate impacts.

For most local governments, the value of coastal ecosystems remains an intangible asset, dissociated from the climate impact that their communities are already experiencing through diminished livelihoods, reduced access to natural resources such as water, lower productivity and more frequent extreme weather events. In both Panama and Cuba, business as usual solutions to climate impact are preferred as witnessed by initial consultations, which favored the building of seawalls or protective grey structures as the only adaptation solutions.

[42] Ministry of Environment. Climate Vulnerability index of Panama. 2021

43 Government of the Province of Colon. Management plan of Portobelo National Park 2013-2022

44 Idem

Furthermore, local governments are not yet fully aware of the long-term impacts that CC may have on local economies and agricultural productivity. While a sense is beginning to emerge as seen through the Colon Food Security Plan, the links at a practical level remain missing and made tangible. Information regarding sustainable agricultural and fishing production needs to be internalized and made available to vulnerable primary producers to ensure that plans are actionable. Barriers in this sense are not only in human capacity but also in technical knowledge that can motivate appropriate action and facilitate upscale.

A regional approach including Cuba and Panama, differently from a country intervention, will allow for the implementation of innovative accounting measures to evaluate loss and damage to slow onset climate impacts across two similar settings. The regular cross-check of analyses between the 2 countries will enhance the valuable assessment of their use for the evaluation of tangible long-term climate impacts to local agricultural productivity and the identification of potential adaptative measures for long-term resilience. In this respect, providing an opportunity not only to implement but also to enhance the methodology through on ground implementation and long-term evaluation, while at the same time linking its use to identify appropriate adaptive measures to reduce loss and increase local resilience. This will allow the project to measure increased capacity for resilience through the implementation of climate smart agricultural practices and ecosystem management as an EBA measure for food security and potentially evaluate the cost of adaptation to local food productivity. The bilateral mechanism that will be formalized through the project will mobilize bilateral support and knowledge transfer on these accounting measures as well as in the implementation of adaptive practices in similar environments while providing an opportunity for the systemization of best practices and lessons learned. These will be relevant to the wider Caribbean region which houses similar ecosystems and also faces a high risk to slow onset climate impacts. FAO's Loss and Damage Methodology for Agriculture will be instrumental in systemizing this information and disseminating it within a larger setting while incorporating lessons learned.

## B. Project / Programme Objectives:

**Long term solution:**

With current climate scenario, both Cuba and Panama need to implement adaptation measures to face CC challenges, reduce vulnerability, and strengthen the resilience of communities and their livelihoods while protecting sources of local food security and livelihoods that have already been affected as a result of CC. Solutions need to incorporate existing local strongholds, such as coastal ecosystems, to enhance resilience while ensuring that local capacities are sufficient to understand climate change impacts as they will affect local economies and food productivity through consistent methodologies that can correctly estimate and project damages and losses in the face of slow onset hazards.

Current barriers to meet this objective and that will be addressed by the project include:

- Lack of local awareness by communities and government of tangible impacts from CC to economies, agricultural productivity and rural based livelihoods. Although impacts have been largely experienced, they have not been associated necessarily to CC, particularly in the case of slow onset and progressive changes such as SLR and increased temperatures. This in turn has created a lack of local capacity in the creation of policy frameworks, regulations and plans that promote adaptation to CC in territorial planning including the favoring of NBSs for managing climate impacts and ensuring local food security.
- Lack of understanding and knowledge of the environmental services generated by priority ecosystems for adaptation and resilience to CC and strengthening of food security. Lack of awareness of the role of ecosystems in managing climate impacts has generated a negative reinforcement whereby producers feel the need to extend productive areas at the expense of ecosystems or continue implementing unsustainable practices that increase degradation and climate vulnerability without necessarily increasing agricultural production.
- Limited capacity in the development and implementation of tools and sustainable production practices to contribute to diversification and improvement of the resilience of production systems to CC effects. Consultation across both countries demonstrated a need for improved technical assistance to manage climate change impacts to agricultural productivity in specific crops and environmental conditions. Innovations in agroforestry for coconut, including intercropping, have increased the resilience of trees to diseases, increased productivity and carbon sequestration. Such innovations are not generally applied in the target areas. Rice varieties that are more tolerant to saline conditions can also be implemented while

identifying potential thresholds in line with projections. Methods to decrease water footprint in agricultural productivity, promote the use of elevated beds and reduce the reliance on biofertilizers can also provide support to shifting precipitation patterns while reducing the risk for ecosystem degradation in the case of flooding and drought.

- Limited financing for strategic investments in adaptation measures to improve resilience to CC in livelihoods, risk management, and the protection and restoration of key ecosystems to enable local food security. This is often a result of a lack of national mobilization across sectors who fail to understand the tangible impacts of CC to economies and agricultural productivity. Hence investment in what seems like environmental issues is often considered as a nice to have rather than a critical investment for local economies and agricultural productivity.
- Lack of access to knowledge of relevant regional best practices and lessons learned to allow for upscaling and local implementation of adaptation measure and to ensure food security. Bilateral cooperation mechanisms to bring innovatations on technical issues related to CC are limited and often only mentioned within broader cooperation arrangements that fail to materialize into localized actions. Local governments and producers are often crowded out of knowledge exchange.

**Project Objective:**

This project intends to implement strategic actions to strengthening the adaptive capacities of coastal communities for the purposes of CC; as well as enriching, through the exchange of successful practices, those of local decision makers at the municipal and community level, developing tools and guiding strategic investments to face this scenario and protect local food security. The implementation of a loss and damage methodology to better assess impacts to slow onset hazards will allow local governments to better judge the tangible impacts of climate change and develop the measures required to reduce potential losses through adaptive action while creating an opportunity to use this methodology in real time and in two similar scenarios to allow for its evaluation as a tool for disaster risk management and adaptation.

This will be achieved through the project's three components and outcomes. The first component will establish the enabling actions to effectively measure and project loss and damage from sea level rise and increasing temperatures in the face of coastal pressures. Establishing baselines will allow the project to monitor long-term impact while also project future losses as sea level rise and temperatures continue to increase per climate projections, calculating lost potential agricultural and fishing productivity and its effects on livelihoods and local economies hence making climate change a tangible issue to governments, productive associations and communities including international and regional knowledge networks. The project's second component will be focusing on assessing coastal ecosystems in target sites in both countries as measures for resilience for agricultural and fishing productivity and will promote through the use of farmer field schools ecosystem recovery and rehabilitation as nature based solutions for food security and resilience. Sharing similar ecosystems will favor experimentation and assessment across different settings and communities (local contexts) for upscale and systematization. The project's third component will identify and implement adaptive measures for diversified and resilient livelihoods for coastal communities. Actions will include the identification and implementation of adaptive agricultural productive measures and inputs for coconut and rice harvesting as well as to fishing activities. These will include providing much needed technical assistance to local producers, focusing on those most vulnerable and ensuring inclusive approach for women and minority populations. Implementation of actions across the project's second and third component will be evaluated through the project's first component to measure the impact of adaptive measures as factor for enhancing long-term resilience to slow onset hazards and will be incorporated within the loss and damage methodology.

The project intends to implement strategic actions to strengthening the adaptive capacities of coastal communities to adapt to climate change. Moreover, it aims at enhancing; as well as enriching, through the exchange of successful practices, the capacities of local decision makers at the municipal and community level, through the exchange of successful practices, the development of tools and the elaboration of guiding strategic investments to face the challenges addressed above and protect local food security. The implementation of a loss and damage methodology to better assess impacts to slow onset hazards will allow local governments to better judge the tangible impacts of climate change and develop the measures required to reduce potential losses through adaptive actions while at the same time creating an opportunity to use this methodology in real time and in two similar scenarios to and allow for its evaluation as a tool for disaster risk management and adaptation.

The project's outcomes and outputs will be aligned to those of the Adaptation Fund as exemplified below:

| **Project Objective(s)** | **Fund Outcome** |
|---|---|
| Strengthening the adaptive capacities of coastal municipalities and local agricultural and fishing production in Cuba and Panama as well as enriching, through the exchange of successful practices including the use of a loss and damage methodology, the capacities of local decision makers to implement strategic investments to face CC scenarios and protect local food security. | **Outcome 3:** Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level |
| | **Outcome 5**: Increased ecosystem resilience in response to climate change and variability-induced stress |
| | **Outcome 6:** Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas |
| **Project Outcome(s)** | **Fund Output** |
| 1.1. Implemented loss and damage of agricultural and fishing productivity methodology in 9 target coastal municipalities in the face of slow onset climate impacts | Output 1.1: Risk and vulnerability assessments conducted and updated |
| 1.2. Damage and Loss Information Systems for slow onset climate hazards institutionalized at a sectoral and local level and shared binationally for monitoring and evaluation and adaptive planning | Output 3.2: Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning |
| 1.3. Systematization of best practices and lessons learned in assessing loss and damage methodologies for slow onset hazards as a tool for adaptation planning and risk management to food security and agriculture and fish-based livelihoods | Output 8: Viable innovations are rolled out, scaled up, encouraged and/or accelerated |
| 2.1. Local ecosystem based services valued in target municipalities and included as effective adaptive measure into local planning and risk management for local food security | Output 5: Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability |
| 3.1. Climate-smart agricultural and fishing productive technologies and methods adopted by local producers to improve the long term sustainability and productivity of traditional livelihoods in the face of climate impacts | Output 6:<br>Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability |
| 3.2. Diversified-EBA compatible livelihoods identified and supported for agricultural and fishing dependent households | |

**Project / Programme Components and Financing:**

**Table 2**: Project Components

| Project Components | Expected Outcomes | Expected Outputs | Countries | Amount (US$) |
|---|---|---|---|---|
| 1. Incorporating loss and damage methodologies for agricultural and fishing productivity as tools for adaptation planning and disaster risk management to slow onset hazards in coastal communities and livelihoods | 1.1. Loss and damage of agricultural and fishing productivity methodology implemented in 9 target coastal municipalities in the face of slow onset climate impacts | 1.1.1. Loss and damage of agricultural and fishing productivity in target coastal communities is calculated and projected based on vulnerability and climate assessments.<br><br>1.1.2. Socio-economic impacts of SLR on productive systems of targeted coastal zones analyzed with adaptive measures for resilience recommended and incorporated into local plans and loss and damage projections.<br><br>1.1.3. Participatory CC adaptation and natural risk management plans in target areas with a focus on reducing losses to agricultural and fishing productivity and livelihoods developed for resilient local food security. | Cuba and Panama | 2,100,000 |
| | 1.2. Loss and Damage Information Systems for slow onset climate hazards institutionalized at a sectoral and local level and shared binationally for monitoring and evaluation and adaptive planning<br><br>1.3. Best practices and lessons learned in assessing loss and damage methodologies for slow onset hazards systematized as a tool for adaptation planning and risk management to food security and agriculture- and fish-based livelihoods | 1.2.1. Binational cooperation mechanism formalized for the design of an appropriate Damage and Loss Information Systems for Agriculture and Fishing to slow onset hazards in coastal communities at the local and sectoral level in Cuba and Panama to facilitate standardization and knowledge sharing.<br><br>1.2.2. Sub Regional capacity building delivered to binational stakeholders for the operationalization of a Damage and Loss Information System for Agriculture and Fishing Production including data processing capacities created for information products for adaptive planning and risk management.<br><br>1.3.1. Analysis and systematization of the implementation of the FAO loss and damage methodology for slow onset hazards including challenges for implementation, packaging of best practices on adaptation and evaluation of adaptive measures developed to inform the upscale in similar contexts. | Cuba and Panama<br><br>Cuba and Panama | |

| | | | | |
|---|---|---|---|---|
| 2. Ecosystem based adaptation (EBA) measures implemented in key ecosystems to protect local food production and promote resilience and food security | 2.1. Local ecosystem-based services valued in target municipalities and included as effective adaptive measures into local planning and risk management for local food security | 2.1.1. Critical local ecosystems valued against their protective benefits in the management of principal climate impacts (SLR, Flooding, Water Regulation, Storm Protection) to identify areas for protection, restoration and sustainable management to be incorporated into local land planning.<br><br>2.1.2. Farmer Field Schools (FFSs) in target municipalities focused on EBA to execute protection, restoration and sustainable management in targeted areas as effective adaptive measures through damage and loss analysis. | Cuba and Panama | 4,400,000 |
| 3. Improved resilience of nature-based livelihoods and enhanced local food security | 3.1. Climate-smart agricultural and fishing productive technologies and methods adopted by local producers to improve the long-term sustainability and productivity of traditional livelihoods in the face of climate impacts | 3.1.1 Organizational capabilities of producers' associations enhanced to improve the livelihoods of vulnerable communities in coastal areas<br><br>3.1.2 Farmer field school conducted for the implementation of climate smart methodologies and technologies for agriculture including coconut, plantain and rice harvesting and fishing | Cuba and Panama | 4,980,000 |
| | 3.2. Diversified and EBA-compatible livelihoods identified and supported for agriculture- and fishing-dependent households | 3.2.1. Diversified and EBA-compatible livelihoods, including tourism and product processing, identified as viable in target areas with linkages to local value chains<br><br>3.2.2. Local diversified productive value chains developed and made inclusive to women and minority populations to increase cash income and food security of small-scale producers and favour livelihood diversification and resilience in the face of slow onset impacts | Cuba and Panama | |
| 6. Project/Programme Execution cost | | | | 1,330,000 |
| 7. Total Project/Programme Cost | | | | 12,810,000 |
| 8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable) | | | | 1,190,000 |
| **Amount of Financing Requested** | | | | 14,000,000 |

**Projected Calendar:**

**Table 3:** Project Milestones

| Milestones | Expected Dates |
|---|---|
| Start of Project/Programme Implementation | Q1 2023 |
| Mid-term Review (if planned) | Q1 2026 |
| Project/Programme Closing | Q1 2028 |
| Terminal Evaluation | Q2 2028 |

## PART II: PROJECT / PROGRAMME JUSTIFICATION

**A.** Describe the project / programme components, particularly focusing on the concrete adaptation activities, how these activities would contribute to climate resilience, and how they would build added value through the regional approach, compared to implementing similar activities in each country individually. For the case of a programme, show how the combination of individual projects would contribute to the overall increase in resilience.

The project's main objective is strengthening the adaptive capacities of coastal municipalities and local agricultural and fishing production towards CC. Besides, through the exchange of successful practices, including the use of a loss and damage methodology, the project aims at enriching the capacities of local decision makers to implement strategic investments to face CC scenarios and protect local food security. Illustrated objectives will be achieved through the 3 project components that will address identified barriers by developing capacities of local governments and stakeholders, incorporating EBA measures to protect local livelihoods and food security as well as by establishing resilient and diversified livelihoods. All project components will take into account the differentiated impact that CC has on the different population groups, including women.

Binational cooperation will be enriched through the implementation of a loss and damage information system and methodology for assessing losses to agricultural and fishing production from slow onset hazards. This experience will serve to inform and enhance existing loss and damage methodologies through on-the-ground implementation in 9 coastal communities already facing significant climate impacts from SLR and increased temperatures. This system will allow the project to evaluate the impact of adaptive measures in reducing agricultural and fishing productivity loss in the face CC and thus provide valuable information for coastal communities in a wider setting while providing meaningful inputs to international discussions on the full cost of adaptation that often underestimates the role of agricultural loss and its effect on local livelihoods.

**Component 1 Incorporating loss and damage methodologies for agricultural and fishing productivity as tools for adaptation planning and disaster risk management to slow onset hazards in coastal communities and livelihoods**

*1.1. Loss and damage of agricultural and fishing productivity methodology implemented in 9 target coastal municipalities in the face of slow onset climate impacts*

Component one will focus on of the implementation of FAO's loss and damage methodology in target coastal municipalities in Cuba and Panama to assess local agricultural and fishing production loss as a result of slow onset hazards derived from CC. Coastal municipalities are already facing productivity losses and impacts as a result of slow onset hazards (SLR and increased temperatures) that have yet to be fully evaluated and made tangible to local stakeholders for risk management and to guide adaptive planning, also considering the aggravated impacts as climate projections begin to materialize.

Output 1.1 will focus on establishing baselines for loss and damage assessments, including the use of historical trend analysis. Actions will also include vulnerability assessment to slow onset impacts to better evaluate climate impact based on climate projections and analysis as they pertain to agricultural and food productivity. The calculation of tangible impacts to municipal socio-economic indicators such as income and productivity loss as

well as effects on local livelihoods will also be developed. Information derived from these analyses will be socialized and provided to local stakeholders to allow for the development of participatory CC adaptation and risk management plans at the municipal level to include specific actions with a gender perspective across local sectors and will guide adaptive measures implemented through Components 2 and 3.

*1.2. Damage and Loss Information Systems for slow onset climate hazards institutionalized at a sectoral and local level and shared binationally for monitoring and evaluation and adaptive planning*

FAO will provide technical support to governments at a national, sectoral and municipal level to put in place and operationalize a Damage and Loss Information System for Agriculture and Fishing Production that is appropriate for both countries to house loss and damage data. The Information System will also inform the development of relevant information products and guide adaptation planning. It will indicate project-avoided losses as a result of the implementation of adaptation and risk reduction actions to slow onset climate hazards. The Information System will be designed through a binational cooperation mechanism that will also allow both countries to standardize loss and damage methodologies for comparative analysis and binational sharing of relevant information and best practices in its implementation and in the development of information products. Information products will allow governments to better assess the cost of CC to agricultural productivity and impact to local livelihoods and therefore serve as inputs to nationally determined contribution targets and sectoral adaptation plans.

*1.3. Best practices and lessons learned in assessing loss and damage methodologies for slow onset hazards systematized as a tool for adaptation planning and risk management to food security and agriculture- and fishing-based livelihoods*

Output 1.3 will focus on evaluating the on-ground implementation of the loss and damage methodology to slow onset hazards to systematize best practices and incorporate lessons learned for its enhancement. Lessons will be packaged to inform toolkits and methodological guidance notes for replication in similar coastal settings. This output will also evaluate the implementation of adaptation actions based on its potential for reducing local agriculture- and fishing-related losses and its impact on livelihoods. Information from 9 coastal municipalities across two countries with similar ecosystems and slow onset climate drivers will provide the scale required for informed analysis for replication across similar settings within the Wider Caribbean region.

**Component 2 Ecosystem based adaptation (EBA) measures implemented in key ecosystems to protect local food production and promote resilience and food security**

*2.1. Local ecosystem-based services valued in target municipalities and included as effective adaptive measures for risk management for local food security*

Ecosystems in target areas along both countries can provide strategic ecosystem services to manage a variety of climate impacts and protect local security. Mangroves can provide buffering services from waves and storms while also favouring water infiltration and coastal stability that will provide support against the salinization of soils and aquifers as well avoid crop loss. Corals can provide wave buffering services while ensuring healthy marine systems required for fishing livelihoods.

Hence, the project will invest in local ecosystem valuation, using existing international methodologies (i.e. TEEB, TNC's Guide for Incorporating Ecosystem Valuation, Values Methods Database, ARIES, etc.) to translate these services into productive and livelihood indicators to be incorporated into government and productive analysis. The project will also invest in a loss a loss/gain analysis in target areas of the vegetation of these ecosystems with the support of geographic information tools to compare the historical evolution of vegetation cover and land use as an element for determining critical areas for conservation, rehabilitation and sustainable management based on their capacity to provide protective services to agriculture and fishing-based production areas and potential for reducing productivity losses.

Nature based solutions (NBSs) and ecosystem-based adaptation actions identified through this analysis will be implemented along the 9 target municipalities using farmer field school (FFS) approach that promotes collective learning by doing based on the execution of on-the-ground best practices to ensure capacity building. This will provide increased awareness on the role of conservation as a cost-effective adaptive measure for local communities to reduce they vulnerability.

FFS with ecosystem-based approach will prioritize field-based activities, that value experimentation to solve problems (risk management from slow onset impacts that affect agricultural and fishing productivity), reflecting the specific local context within the municipalities. Participants will improve ecosystem management skills through observing, analysing, identifying relations between ecosystems and vulnerability of their own productive systems while implementing specific actions (NBSs) for improved ecosystem management to reduce risk to agricultural and fishing productivity. These efforts will be reflected in the resilience of ecosystems to slow onset climatic events and a community that, knowing their value, protects them as part of a long-term solution.

NBSs and ecosystem-based adaptation actions implemented through the FFS approach includes improved ecosystem management for the recovery/rehabilitation of critical ecosystem such as mangroves protecting agricultural production spots (to reduce exposure to sea level rise and salinization), natural reforestation in specific basins to favour freshwater infiltration (enhance water capture and reduce salinization of coastal aquifers) or soil recovery. Actions may also include sustainable management of coral reefs to favour their rehabilitation to reduce exposure from sea level rise while promoting the recuperation of fish stocks as well as actions such as the recovery of coastal lagoons that are important for fishing-based livelihoods and ecosystem hydrology.

**Component 3 Improved resilience of nature-based livelihoods and local food security**

*3.1. Climate-smart agricultural and fishing productive technologies and methods adopted by local producers to improve the long-term sustainability and productivity of traditional livelihoods in the face of climate impacts*

The project will implement climate smart agricultural and fishing practices focusing on rice, coconut and plantain harvesting and fishing. Techniques introduced will include, but will not be limited to: 1) use of intercropping for coconut harvesting, which has shown to increase carbon sequestration and improve microclimatic conditions; 2) introduction of saline tolerant rice varieties, including identifying those that will withstand current projections for salinization; 3) use of elevated crop beds as well as resilient technologies to protect agricultural productivity to the conditions created through slow onset climate hazards, including water efficient technologies and circular productive practices. Support will be provided to productive associations through extension services as important sources of information for local producers. These will be further complemented through the use of FFSs for the implementation of locally appropriate actions based on projected climate conditions and thresholds. The participation of organized women producers will be prioritized for the generation of inclusive value chains to improve their access to markets.

*3.2. Diversified and EBA compatible livelihoods identified and supported for agricultural and fishing dependent households*

The project will make strategic investments to promote diversification of climate sensitive traditional livelihoods through the identification of viable alternatives to local value chains. Alternative livelihoods will include identifying the potential for nature-based tourism such as sports fishing, the processing and transformation of key products such as coconut oil, plantain chips, coconut fibres, etc. Investments will be made to develop capacities and investments for alternative livelihoods of local producers in target sites and their access to local value chains. Special attention will be provided to women and minority populations to ensure that value chains are inclusive and enhance household incomes that have been affected as a result of slow onset climate hazards.

**B.** Describe how the project /programme would promote new and innovative solutions to CC adaptation, such as new approaches, technologies and mechanisms.

The project promotes a local approach to CC prioritizing local action and capacity building through the use of standardized methodologies that allow the analysis and measurement of climate impact in the face of slow onset impacts. The use of loss and damage methodologies as a tool not only to calculate losses, but also to project them in the face of slow onset and ongoing climate hazards and evaluate adaptive actions. The tool represents an innovative instrument for loss and damage analysis and will result highly valuable to countries in the formulation of NDCs and adaptive planning. It also provides significant inputs to the discussion around the true cost of CC that often undervalues impact to agricultural productivity and rural based livelihoods. The project will provide the scale necessary to test this approach and systematize it within existing methodologies as a proactive methodology to specific disasters and hazards, whereby reactive approaches are more traditionally employed.

On-ground implementation at municipal level will also be innovative and practical as it raises concrete awareness on the impacts of CC to local food productivity, thus providing an opportunity for local actors to materialize costs

of CC. This understanding currently does not exist, and it is required as demonstrated during binational consultations. Hence the use of field schools for the implementation of adaptation measures, particularly in the case of EBA actions, is an innovative and practical tool for ensuring the socialization of adaptive actions and measures that will in turn be evaluated through the standardization of the loss and damage methodology.

Finally, the project binational approach in identifying similar contexts is highly strategic in creating the scale required for the sharing of lessons learned and to enhance international methodologies through their on-ground use. The formalization of a binational mechanism will allow Panama and Cuba to continue innovating through the use of information systems as they are upscaled to other sectors and uses and in the development of valuable information products. These lessons learned will continue to be evaluated, systematized and shared as they progress.

**C.** Describe how the project / programme would provide 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 would avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.

This regional project has been planned to comprehensively generate economic and social benefits to coastal and adjacent populations vulnerable to the effects of CC, while also generating positive impacts on the environment.

**Economic Impacts:**

The project will develop an entire component related to managing the livelihoods of vulnerable populations in the critical areas selected for their food security and generating economic benefits. The inclusion of nature-based solutions, productive diversification and the incorporation of new productive technologies adapted to the new climate scenario, as well as productive model and capacity building on climate-smart agriculture, forestry and fishing, will be part of a sustainable production strategy. The strategy will generate economic benefits with a resilience component. While the project is still in its concept phase, the creation of income will be measured by the project to ensure impact on livelihoods.

In coherence with the FAO policy on gender equality and on indigenous and tribal peoples, specific actions will be developed to improve the livelihoods of these populations, mostly disadvantaged by social gaps, promoting the generation of income, families' and local communities' economic growth as well as their incorporation into value chains that allow them to access inclusive markets effectively and competitively.

The project will also invest in enhancing nature-based value chains for diversified products thus un-tapping economic opportunities within the targeted areas. These include the processing of key products such as coconut into high value products such as coconut oil and coconut fibres that has shown to be promising in Chagres, Donoso and Baracoa. Additional opportunities will exploit the potential of new nature-based tourism activities, such as sports fishing that have high local return rates. A study developed by the IADB in Panama identified the potential for sport-fishing in contributing USD 170.4 million in total retail and business-to-business sales, 9,503 direct and indirect jobs, USD 3.1 million in new tax revenue, and an increase in national GDP of USD 48.4 millions[45] .

Furthermore, the project will provide savings in avoided damages to infrastructure in these areas faced by recurrent flooding and storm impact.

**Social Impacts:**

The project focuses on protecting and enhancing food security among coastal communities, hence looking to generate a vital social impact to vulnerable populations that have been identified by the project analysis as those with the least adaptive capacity. Sea level rise (SLR) and increased exposure to extreme events have resulted in the loss of crops and the salinization of agricultural areas as demonstrated in Section I of the Concept Note. Further, ecosystem degradation from CC and anthropogenic impacts have decimated various fishing communities in Cuba's target areas, as mentioned above.

[45] https://publications.iadb.org/publications/spanish/document/Diagnostico-integral-del-sector-pesca-y-acuicultura-de-la-Republica-de-Panama.pdf

Coastal and indigenous communities will improve their livelihood and make them more climate-resilient as a result of the inclusion of climate smart production and the economic benefits generated by the diversification, more sustainable production and promotion of circular value chains. Productive diversification will contribute to strengthening food security and thus to a better nutritional and health condition, both for the direct beneficiaries and for the population of the territories, by increasing the availability of food.

Productive technology inclusion adapted to a new climate scenario will make it possible to strengthen the resilience and sustainability of the livelihoods of small producer families. Additionally, strengthening the capacities of producers will contribute to their personal and professional development. Also, the strengthening of local producer organizations will generate greater associativity and social solidarity in the communities where they are developed.

The project favours a participatory approach that ensures that consultation and governance mechanisms are included hence creating a local governance focused on managing climate impacts for local food security. The project will also work to include women and indigenous groups into rural value chains through climate-resilient and environmentally sustainable agricultural practices. This will aim to address their vulnerabilities through their active participation and inclusion while looking to generate income providing opportunities.

The project in its approach recognizes the differentiated impacts faced by men and women in the face of CC and their role in risk management. Hence the project will favour gender mainstreaming throughout the components, based on the Gender Analysis and Plan that will be developed during the project's Full Funding Proposal phase by a project technical specialist.

**Environmental impacts:**

The project expects significantly positive environmental impacts by reducing biodiversity loss and promoting responsible use and protection of key ecosystems in identified vulnerable areas in both countries. The project also expects communities to be more aware of the importance of ecosystems such as mangroves and coastal wetlands in the provision of environmental goods and services that are key to protecting the coastline from floods caused by the increase in mean sea level or generating fishing resources. It will also provide training to producers for the application of best production practices that contribute to the conservation of water, soil and biodiversity while improving productivity including adaptation and resilience actions to CC.

Through the implementation of sustainable ecosystem management, including the restoration of mangrove areas and riparian forests, the project will also contribute to GHG mitigation that in turn will contribute to both country's NDC targets.

The project includes a building back better perspective. Raising community livelihood resilience and inclusion of local tools and governance climate sensitive instruments that will help them to cope with climate changes. In addition, increasing local knowledge about ecosystem services produced by local forests, wetlands and mangroves, and their value, not only in the population but also in local governments, will allow the integration of nature-based solutions. NBSs will help not only to stop the degradation and deforestation of key ecosystems such as mangroves, corals and wetlands in these areas, but will also allow these ecosystems to be able to help reducing the adverse impacts of CC.

**D.** Describe or provide an analysis of the cost-effectiveness of the proposed project / programme and explain how the regional approach would support cost-effectiveness.

The project favours a cost-efficient approach to implementation through its regional approach that will allow the project to build on binational best practices while leveraging existing capacities and promoting knowledge exchange. The project will provide technical assistance capacity support applicable to both countries that will result in less need for investment in individual country teams while allowing the project to better systematize, contextualize and cross pollination of lessons learned amongst areas. This approach creates an economy of scale in technical expertise that is both cost efficient and valuable for a principal project objective (promoting exchange for adaptation action, including gender mainstreaming, at a local level). More importantly, it provides the necessary scale to evaluate the use of loss and damage methodologies to guide adaptative actions and correctly estimate the cost of CC and failure to action.

The project also favours the implementation of NBSs and EBA as main solutions to manage climate impacts while creating on-ground local capacities to develop them. This ensures that local stakeholders learn by doing while also providing feasible alternatives to adaptation measures that are effective and do not require large scale infrastructure investment that would not be appropriate for the target areas. The effectiveness of these measures in enhancing resilience (measured through reduced agricultural and fishing losses) will provide information to allow for upscale to other coastal communities facing similar pressures and to include in their own calculations. The scale of this project provides an important evidence base for decision making. EBA has proven to be a cost-effective solution to manage climate impacts, with benefits in environmental, social and economic spheres that often result in increased and improved livelihoods[46]. Nevertheless, it is rarely employed since results are often not systematized or calculated in economic and productive terms. In the case of food security, NBSs can provide a triple benefit when deployed properly, in terms of building agricultural production and resilience, managing CC impacts, and enhancing nature and biodiversity.[47]

Finally, in consideration of projected climate impacts to coastal municipalities a do-nothing scenario will result in the invaluable loss of agricultural land as a result of coastal erosion and salinization in both countries. In Cuba, in particular, according to the Macro analysis report, accumulated losses are estimated at around 40,000 tonnes in harvests of fundamental crops (rice and sugar cane) and other various crops (tubers and roots) as a result of SLR.

**E.** 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. If applicable, please refer to relevant regional plans and strategies where they exist.

The proposal is coherent and contributes to global goals such as the Sustainable Development Goals (SDGs), the Aichi biodiversity targets and the Paris agreement that establishes measures and encourages the 195 states that are party to the Framework Convention of the United Nations on Climate Change to establish commitments to reduce Greenhouse Gas (GHG) emissions through the mitigation, adaptation and resilience of ecosystems to the effects of Global Warming.

**Cuba:**

The project is aligned with the 2016/2020 National Environmental Strategy of the Republic of Cuba, which in its strategic line of confronting climate change establishes three key specific objectives:

a) Increase the adaptation and mitigation capacity of the sectors of the economy and services, as well as of Cuban society in general; objective aligned with components 1 and 2 of the proposal.
b) Reduce the vulnerability of the ecosystems and prioritized sectors to the effects of CC; objective aligned with components 2 and 3 of the proposal.
c) Increase the perception of the impacts of CC at all levels of Cuban society, as well as participation in actions aimed at confronting CC; objective aligned with component 4 of the proposal.

It also supports the implementation of the Strategic Plan for the Agricultural and Forestry Sector of the Republic of Cuba, which includes among its strategic objectives to guarantee the conservation, protection and sustainable management of the environment considering the impacts of CC and disasters. Strategic priorities of this plan include increasing production and diversifying livelihoods, conserving and protecting resources and the environment, and tackling CC and disasters. This tool includes protection, conservation and rehabilitation of the environmental, agricultural and forestry activities, addressing CC, as well as conservation and rational use of natural resources such as soils, water and forests. The project also considers the implementation of Cuba's National Gender Strategy for the Agriculture Sector that looks to increase the role and participation of women in the primary sector.

Most critically, the project responds to and favours the implementation of the State Plan to Manage Climate Change "Tarea Vida", identifying prioritized areas and places, their effects and main actions to be undertaken so

[46] https://cssh.northeastern.edu/policyschool/wp-content/uploads/sites/2/2021/05/Northeastern-Jobs-and-Livelihoods-brief.pdf
[47] http://www.fao.org/3/cb3141en/CB3141EN.pdf

that these communities and their livelihoods can adapt and be more resilient to the effects and impacts of global climate change. It is also consistent with the National Plan for Economic and Social Development until 2030 (PNDES-2030) that identifies food and energy production among the six strategic government sectors for which it is important to take into account environmental considerations, especially the effects and impacts of global CC.

The project is also aligned with the Country Priorities Framework developed by the GoC and FAO that identifies main national priorities for receiving FAO Assistance including adaptation to CC and the sustainable management of natural resources. As a result, selected institutions implement activities of adaptation to CC and promote the sustainable management and development of natural resources, in line with the National Environmental Strategy, the National Strategy for Biological Diversity and other programs, such as the National Action Program to Combat Desertification and Drought and the Sustainable Land Management Program.

**Panama:**

The project is consistent with national strategies and sustainable development plans. Panama has formulated and recently submitted its National Determined Contributions, approved a National Policy on Climate Change (Executive Decree No. 35 of 2007) and has enhanced regulation of its climate change mitigation and adaptation policy, which has been incorporated within Panama's General Environmental Law (Executive Decree 100 of 2020 and Executive Decree 131 of 2021). The project is aligned with these policy instruments favouring EBA as well as in implementing solutions that are focused on climate vulnerable sectors, including rural communities and agriculture, as well as looking to solutions to favour the reduction of emissions in the AFOLU sector. It is further aligned with its National Footprint Reduction program that aims at incorporating sustainable development indicators into existing productive practices, and at reducing impacts on national resources and GHG emissions.

The project is also consistent with the National Climate Change Strategy, which establishes a roadmap with the objective of direct the country towards a low-carbon economy with mitigation and adaptation actions with a sustainable economic, social and environmental growth (Component 1) as well as compliance with the SDG5 that favours the achievement of gender equality as a cross-cutting axis in development and the environmental management. Moreover, the achievement of the Strategic Government Plan 2019-2024 of Panama is framed within objectives and goals indicated through a large participatory process called "national consensus". The consensus includes environment and CC issues, the prevention and management of risks disasters, the promotion of actions to combat the effects of global CC as part of the climate action of the 2030 Agenda and the SDGs.

The project also relates to other national legal relevant instruments such as the National Forestry Strategy 2050, which targets to guarantee the conservation of this important resources, stimulate the sustainable forest industry, conserve the forest heritage as an important basis of ecosystems and mitigate the effects of CC. As part of the measures that promotes this strategy, it is the Alliance for a Million Hectares, which is a great public-private initiative that seeks the conservation, reforestation and recovery of 1 million hectares of forests and degraded lands in Panama. This initiative promotes a reduction in the deforestation of natural forests, carbon sequestration, generating multiple benefits such as economic, social and environmental to the country (Components 2 and 3).

The project is further aligned with the National Climate Change Plan for the Agricultural Sector of the Republic of Panama, which promotes sustainable production schemes and production diversification that incorporate variables for adaptation to global climate change (Component 2). It also favours the implementation of Panama's National Water Security Plan that establishes a roadmap that must be executed to improve Panama's quality of life, supports its inclusive economic growth, and ensures the integrity its environment (Component 3). Additionally, the project is in line with the National Biodiversity Strategy and its 2018-2050 Action Plan (Component 3) and its roadmap for the comprehensive management of biodiversity through the implementation of five strategic priorities: (1) conservation and restoration; (2) reduction of pressures on biodiversity; (3) environmental knowledge, awareness and education; (4) sustainable use and management; and (5) integration and governance.

At local level, the project results will provide support in delivering on the 2030 Food Security Action Plan included within the Colon Regional Development Plan. The Action Plan foresees activities targeted for small producers in rural districts to improve competitivity and integrated innovation processes into artisanal production as well as traditional agroindustry. Actions under this target are to be focused with a sustainability focus that reduces

environmental impact and enhances adaptative capacity for climate resilient agriculture and livestock in the district.

The results and lessons learned will be an important contribution to the fulfilment of the state's obligations in national communications on CC. Additionally, the project may also contribute to the process for the establishment of the REDD + strategy of Panama.

**F.** 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.

The project will work with relevant authorities in both countries to ensure that national and local regulations are met, including those on natural resource management in both countries for on-ground action as well as those protecting the rights of workers and vulnerable populations. This will include following national processes such as those included in the Constitutions of both countries and in Panama's Declaration of Indigenous Peoples Rights.

| National Regulations | Project Compliance |
|---|---|
| **Panama** | |
| Constitution of Panama (2004) | Establishes the normative, legal and political framework for Panama, including laws for the protection of human and political rights (Arts 131- 145) and establishes an ecological framework (Arts 118 -121) |
| General Environmental Law of Panamá (2009) | Adherence to the Law including its Article 16 that requires environmental impact assessment process for the implementation of large scale actions in the establishment and expansion of agriculture, livestock, hunting and forestry as well as in fishing productive activities (fish hatcheries and farming of shrimp, crocodile, turtle and crabs) |
| Administrative Resolution No. 88 of August 23, 2011 | Establishes technical guidelines for the preparation of Evaluation and Audits for Environmental Impact Studies for Coastal Marine Zones and Inland Waters, including the development of impact studies for projects in coastal marine areas. |
| Administrative Resolution No. 103 of October 7, 2011 | Establish guidelines for Environmental Audit and Inspection of Companies in Coastal Marine Areas and Inland Waters applicable to companies and activities that may affect coastal marine resources and continental waters in the jurisdiction of the Natural Protected Areas and Protection |
| Panama's Declaration of Indigenous Peoples Rights | Establishes the process for ensuring free informed prior consent of indigenous communities |
| Work Code of Panama of 1995 | Establishes applicable labour laws to be followed to ensure the safety, human and labour rights of all Panamanian workers, including establishing working hours and ensuring non-discrimination. Chapter 3 focuses on conditions for rural work |
| Law 15 of 1977 by which the Inter American Convention on Human Rights is Approved | Approves the international framework for human rights as applicable and valid in Panama guaranteeing rights for all Panamanian people |
| **Cuba** | |
| Constitution for the Republic of Cuba (2019) | Establishes the normative and legal framework for the Republic of Cuba including the role of the central, provincial and municipal governments and representation. Establishes in its Chapter 5 Political Rights and Guarantees protecting human dignity in the form of education, jobs, health, social security and including equal access to women to all political and economic rights and protection against violence (Art 43) and establishing the right of children and adolescents to education and prohibiting child labour |
| General Environmental Law (Law 81 of March 11, 1997) | Principal environmental law in the Cuban legal system. Establishes the principles that govern environmental policy and the basic norms to regulate the environmental management to protect the environment and contribute to achieving the sustainable development objectives of the country. It establishes the general framework for the protection of coasts, waters, terrestrial and marine biodiversity, forest resources and the bases of the National System of Protected Areas, among others. The Law is also the basis of all the instruments that apply to the country's environmental management, which are listed in Article 18 and include, among others, environmental management; environmental licensing; environmental impact assessment; environmental information system; state environmental inspection system |
| Law 129 of 2019 on Fishing Regulations | This regulation, without directly addressing CC, includes various measures that have been used to protect fisheries and marine resources, and which are also good adaptation |

| | |
|---|---|
| | practices. This includes the elimination of the most aggressive fishing practices for the species and the environment; the implementation of new minimum sizes for catches of different species; the control of fishing activity at times of reproduction of some critical species; the introduction of longer fishing bans in reproductive periods and the establishment of Areas under special use and protection regimes. These are defined as legally established protected areas in which fishing activities are governed by special provisions |
| Decree-Law 212 of 2000, Coastal Zone Management | Decree-Law No. 212 of August 8, 2000, on "Coastal Zone Management", aims to establish provisions for the delimitation, protection and sustainable use of the coastal zone and its protection area, in accordance with the principles of integrated management. The Decree-Law defines the coastal zone and its protection zone and establishes a classification that takes into account the structure and configuration of the different types of coastlines, criteria from which the extension of this zone is established. The execution of works or activities in the coastal zone, including those of protection, are conditional to acquiring the environmental license and compliance with the requirements of the same, in accordance with the provisions of "Article 28" of Law No. 81, Environmental Law, and the corresponding legislation |
| Law No. 81 of July 11, 1997 | Law No. 81 of July 11, 1997, "On the Environment", defines as one of its objectives (article 9, paragraph e) "to regulate the development of environmental assessment, control and monitoring activities" and by virtue of this, establishes, in its Chapter IV, the general provisions of the Environmental Impact Assessment process, the management of which corresponds to the Ministry of Science, Technology and the Environment |
| Resolution 139 of 2010 of the Ministry of Science, Technology and Environment | Establishes the application of environmental impact studies to activities related to:<br>• Tourist facilities, in particular those that are planned in coastal ecosystems;<br>• Changes in land use that may cause significant deterioration in this or other natural resources or affect the ecological balance;<br>• Beach improvement and rehabilitation projects. |

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

The project will ensure coordination with related national projects in Cuba and Panama. Lessons will be shared through national coordination mechanisms, also considering that the Ministries of Environment and Agriculture are involved in all cases, hence creating an opportunity to enrich and mutual learning. Furthermore, best practices will serve to enrich the bi-national network that will be created for the project thus creating an ample opportunity for upscale at a regional setting.

**Table 4:** Complementary Projects in Cuba and Panama

| **Cuba** | | |
|---|---|---|
| Project | Characteristics | Entry Points for Coordination and Project Additionality |
| Coastal Resilience to Climate Change in Cuba through Ecosystem Based Adaptation - "MI COSTA" (GCF/UNDP/AMA) | The project is focused on implementing an integral coastal ecosystem-based approach for coastal resilience including SLR and storm intensity. It will invest in the restoration of coastal ecosystems as well as in enhancing an enabling legal framework for EBA and on informed communities. The project will be implemented along two large coastal stretches that include interventions in Batabanó and San Cristobal. | The project to begin implementation in late 2021. Mi Costa will focus on EBA for general coastal resilience and protection. Nonetheless the project, while focused on community adaptive capacities, is not focused on food security nor on productive systems within coastal areas. Work with local governments will take place at a provincial (not municipal level). AMA will implement Mi Costa and the current project hence creating ample opportunities for coordination and learning while avoiding duplication. |
| Coastal recovery in communities in Cuba y Dominican Republic (Caribbean Biodiversity Fund) | The project is focused on marine ecosystem recovery in the Fauna Refuge of the Batabanó Golf located in the Batabanó municipality. Among the project's main expected results is the creation of the Caribbean School for the restoration of coastal wetlands. | The project is focused primarily on marine ecosystems and the role of coastal wetlands on their protection. The project results will serve to inform the proposed project and will provide |

| | | |
|---|---|---|
| | | a greater opportunity for knowledge sharing. |
| Increased climate resilience of rural households and communities through the rehabilitation of productive agroforestry landscapes in selected localities of the Republic of Cuba (IRES-Cuba)" (GCF/FAO/MINAG) | The project will restore productive landscapes to preserve ecosystem services through the use of innovative methods and financial incentives. Amongst these, will be the use agroforestry and silvopastoral systems that will be introduced in 35,000 ha to improve water infiltration. The project will be implemented in the provinces of Matanzas, Villa Clara, and Las Tunas that do not coincide with the proposed project. | Lessons learned on productive practices as NBSs for adaptation will be incorporated into the proposed project as applicable considering different ecosystems. Lessons learned will also be shared to Panama through the binational platform. |
| Mainstreaming biodiversity into mountain agricultural and pastoral landscapes of relevant ecosystems in Eastern Cuba (Global Environmental Facility FAO/MINAG) | The project will reduce pressures on key fragile mountain and pre-mountain ecosystems of Eastern Cuba, by mainstreaming biodiversity in agriculture/livestock production, and implementing integrated landscape management (ILM) and planning, also, increasing socio-ecological resilience and local sustainability through sustainable participatory management and rehabilitation of agricultural and natural ecosystems. To this end, the project will contribute to the strengthening of governance, legal framework, policies and programs and will introduce new and innovative sustainable production practices, including the promotion of locally-produced, high-quality and environmentally-friendly food products. The project will also address potential environmentally-friendly value chains. | One of the municipalities targeted is the mountain and agricultural and pastoral landscapes of Baracoa. Part of the experience to be develop in this zone promotes the sustainable production practices of products such as coconut, to promote environmentally friend food products and value chains.<br>The proposed project will promote complementary actions for protecting key ecosystems relevant to productions that are menaced by SLR and floods. It should be noted that the current proposal will be focused on coastal and not mountain ecosystems. |
| Environmental Foundations for Local Food Sustainability (BASAL) (EU/COSUDE/ AMA/MINAG) | The project is focused on generating climate resilience to the agricultural sector in Cuba through improved technologies and productive practices as well as capacity building to the productive sector. The project was implemented in 3 municipalities in the Pinar del Rio (Los Palacios focused on rice), Artemisa (Guira de Melena focused on diverse crops) and Camaguey (Jimaguayu focused on livestock). | The project will close this year and was implemented in specific municipalities identified through key crops. The focus, while intersectoral (both AMA and MINAG implemented), was limited to these with a strong capacity building element focused on the productive sector. These practices as well as working through local groups and organizations will be replicated by the proposed project, however this project will focus on a wider approach for food security that includes enhancing local government structures as well as linking productive practices to coastal ecosystems. |
| Reduction of Vulnerability to Coastal Flooding through Ecosystem-based Adaptation in the South of Artemisa and Mayabeque Provinces (Adaptation Fund/ UNDP/AMA) | The project is focused on the restoration of 84km of mangrove lined coastline implementing an EBA approach for coastal resilience. It also implemented a community-based approach of ecosystem awareness. | The project will close this year and implemented in nearby provinces to the Batabanó municipality. The project focused on coastal resilience through EBA, however a productive approach was missing. Lessons learned on the implementation of an EBA approach for coastal ecosystems as well as community awareness techniques will be incorporated into the proposed project. |
| **Panama** | | |

| Project | Characteristics | Entry Points for Coordination |
|---|---|---|
| Adapting to climate change through integrated water management in Panama (Adaptation Fund / Fundacion Natura) | The project aimed at enhancing water management capacity for food and energy security through watershed management in the river watersheds of Chiriquí Viejo and the Santa María River. The project also piloted climate smart agricultural and sustainable livestock practices to manage both flood and drought conditions from precipitation-related weather events. | The project is currently under implementation and will conclude this year. Lessons learned from the project and best practices will be incorporated into the proposed project. Fundación Natura will be a key partner in project implementation. However, the proposed project will expand on knowledge gained by taking into account SLR scenarios that had not been foreseen while focusing on coastal ecosystems and their preservation as NBS for food security. |
| Improved technical production of coconut and other harvests in the Low Coasts of the Colon Province (Ministerio de Desarrollo Agropecuario / Instituto de Inovación Agropecuaria de Panamá (IDIAP)) | The project aimed at promoting sustainable production of coconut as well as to diseases related to coconut. The project is looking into research into coconut processing as well as into identifying a circular economy approach. | Research developed by the IDIAP will be integrated into the proposed project, particularly in its 3rd component. The proposed project in turn will provide a valuable climate lens that is currently absent from the project. |

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

Component 1 favours the creation of knowledge management through Output 1.3 that will allow to systematize best practices in the implementation and use of loss and damage methodologies. Through the implementation of such methodologies, impacts on productivity in the face of slow onset will be estimated, hence providing the opportunity for the project to inform international standardized methodologies to be enhanced through on-ground real-time action. These experiences will be systematized in the forms of toolkits, guidance notes and similar publications to allow for the replication and upscale in similar contexts (coastal ecosystems facing slow onset climate hazards). These knowledge products will provide an increased understanding on the applicability and use of loss and damage methodologies not only as reactive measures to asses impacts from specific disasters but also as tools to guide adaptation actions and evaluate resilience capacity. This is particularly relevant in the face of slow onset impacts where total losses are already felt but not yet calculated, and where an opportunity for the implementation of risk mitigating and adaptive measures exists to reduce loss and damage to local agricultural productivity and its effects on food security and local livelihoods. The evaluation of the impact of adaptive actions implemented through the project will provide important inputs to coastal communities facing similar pressures.

The project will also make use of a field school approach that favours on-the-ground experimentation through a learning-by-doing approach that will incorporate lessons learned within municipalities for replication in neighbouring areas through concrete results that favour local solutions. This is a key aspect to ensure the long-term change and appropriation that the project is looking for and has proven to be effective in upscaling agriculture best practices in a concrete manner.

The bilateral cooperation mechanism between Cuba and Panama will also create the opportunity for both countries to innovate and expand on the loss and damage methodologies to other sectors while enhancing bilateral cooperation in climate action.

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

Due to COVID restrictions the project has resorted to a mainly virtual consultation processes including surveys and the delivery of virtual meetings. These have taken place with key national and local governments in both

countries to identify perceptions around CC and CC risks as well as to validate project measures. These consultative exercises have allowed to identify capacity gaps and concerns to be incorporated by the project, including concerns for community nature-based livelihoods and risk management and accounting through the use of loss and damage methodologies to better assess climate impact.

Consultation have included meetings (virtual and small in person settings) and communications with the Ministries of Environment, Agriculture, Fishing and municipal governments in Panama (Chagres, Santa Isabel and Portobelo) that have been recorded through project minutes and through online surveys (Annex 3). In the case of consultations with Cuban municipalities these have taken place through surveys considering the challenges of accessing virtual platforms in local communities.

Consultations with local producers in both Cuba and Panama took place through the use of online and telephone interviews and surveys with the support of the Ministries of Environment in both countries. These consultations allowed the project to better identify challenges to agricultural production and perceptions of climate impact as well as perceived needs, including the lack of technical guidance and inputs to enhance productivity in both rice and coconut harvesting. Consultations have also included indigenous people through interviews with the Heads of Indigenous People and also the Indigenous Representative at the Ministry of Environment. These consultations enabled the assessment of the indigenous communities (Annex 3) and the identification of their main needs that will be integrated into components 2 and 3.

During full proposal phase, the project will conduct consultations with productive associations, women's organization and women focal points, water boards and community representatives while ensuring a gender focus to identify concerns and vulnerabilities that are specific for women and vulnerable groups. These consultations will result in a Stakeholder and Gender Action Plan that will allow to further evaluate and identify the needs, and relevant actions, for vulnerable populations including indigenous groups. The analysis derived from these products will further inform project design.

**J.** Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

**Table 5**: Justification for project funding requested

| Components/Outputs | Baseline (without AF resources) | Alternative (with AF resources) |
|---|---|---|
| **1. Strengthened governance capacity for local adaptation management** | | |
| 1.1 Implemented loss and damage of agricultural and fishing productivity methodology in 9 target coastal municipalities in the face of slow onset climate impacts | Municipal governments with an abstract idea of CC based on national plans and observed changes.<br><br>In the case of Cuba, while there is a general greater awareness, it is limited to general impacts thar are not necessarily locally specific.<br><br>Little capacity from municipal governments to manage vulnerability to climate impacts, particularly slow onset event. | Municipal governments with knowledge on CC and concrete impacts to local vulnerability and food security.<br><br>Local government capacity to begin identifying potential adaptation measures to reduce climate vulnerability to slow onset impacts.<br><br>Municipalities will be able to project the concrete cost of CC and the value of adaptation and equipped with greater capacity to adjust budgets to finance adaptation planning. |
| 1.2 Damage and Loss Information Systems for slow onset climate hazards institutionalized at a sectoral and local level and shared binationally for monitoring and evaluation and adaptive planning | No capacity to host information on damage and losses to slow onset impacts hazards and much less analytical capacity for the development of information products useful for adaptive action and planning.<br><br>Decisions over loss and damage to agricultural production to specific disasters made without a capacity to analyse long term trends to slow onset impact hence undercounting and underestimating impact to local agricultural production, livelihoods and food security. | Damage and loss information systems designed in a manner that is appropriate and methodologically consistent to both Cuba and Panama favouring the housing and processing of loss and damage data to slow onset impacts.<br><br>National and local capacities created for data processing allowing for the analysis of long-term trends to slow onset impacts and calculating full (and ongoing) impact of CC to local agricultural productivity. Information products provide valuable inputs to inform NDCs and adaptation action to reduce losses. These measures can be evaluated through reduced loss impact to |

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| | Capacity to implement adaptation action is limited by lack of measures or methodologies to evaluate their impact in reduced losses and increased resiliency and generate knowledge on impacts.<br><br>Existing loss and damage methodologies remain theoretical exercises with limited recorded experience (or retrofitted analysis) on how to adjust to local capacities and challenges. When these are implemented following disasters, they are not necessarily incorporated into national and sectoral datasets or are done inconsistently thus not favouring comparability nor knowledge sharing across countries. | projected CC (SLR and temperature projections and their materialization).<br><br>Standardization of loss and damage methodologies across two countries and 9 coastal municipalities provides the scale necessary to better inform loss and damage methodologies and their implementation as well as their transformation in tools for adaptive planning and risk management. Lessons learned provide valuable insights to enhance methodologies.<br><br>Bilateral cooperation amongst Panama and Cuba is enhanced and resulting in enhanced advocacy for climate action in the region. |
| 1.3 Systematization of best practices and lessons learned in assessing loss and damage methodologies for slow onset hazards as a tool for adaptation planning and risk management to food security and agriculture- and fishing-based livelihoods | Innovative loss and damage methodologies remain theoretical exercises with little information regarding the calculation of on-ground implementation in the face of slow onset impacts (vs one off disasters).<br><br>Adaptive action to reduce losses cannot be evaluated in a methodological manner and hence their impact in reducing climate risk is limited and cannot be measured.<br><br>Loss and damage methodologies remain reactive tools for DRR to specific disasters. | Innovative loss and damage methodologies are tested on the ground with lessons learned systematized and incorporated to enhance the methodology and better incorporate its use to slow onset hazards. Replication is favoured through the development of tool kits and guidance notes for upscale and use in similar contexts in the region.<br><br>Lessons learned shared on the measured impact of adaptive action in reducing agricultural losses in the face of slow onset hazards in coastal communities. As a result, capacities are built to assess the role of adaptive action in generating resilience.<br><br>Loss and damage methodologies allow for the incorporation of resilience measures and capacities to manage slow onset impacts and hence become tools to guide adaption planning. |
| **2. Ecosystem based adaptation (EBA) measures implemented in key ecosystems to protect local food production and promote resilience and food security** | | |
| 2.1 Local ecosystem-based services valued and incorporated into local planning and risk management for local food security | Little knowledge to identify ecosystem services as related to food security and resilience. Agricultural-, and in some cases, tourist-based expansion further degrading valuable ecosystems. Short-term economic gains favoured over long-term resiliency by productive sectors and government authorities.<br><br>Ecosystem degradation is continued at existing rates due to unstainable productive management, exposing local livelihoods to recurrent and exponential climate impacts. | Increasing awareness on ecosystem-food-coastal resilience nexus. Valued ecosystems make ecosystem services easier to be identified and incorporated into local development metrics. Identification of coastal vulnerability based on climate impacts and ecosystem health.<br><br>Awareness on EBA as a potential adaptation alternative is incorporated, socialised and implemented through a hands-on learning process. Impact can be analysed on the basis of reduced exposure to agricultural losses through its incorporation as a measure of resilience in loss and damage methodology. |
| **3. Improved resilience of nature-based livelihoods and local food security** | | |
| 3.1 Improved adaptation capacity and resilience of small scale agricultural, livestock and fishing related livelihoods with a focus on local food security | Unsustainable productive practices result inviable to climate impacts as SLR, coastal erosion and marine intrusion into aquifers and agricultural lands make these practices | Adaptive capacity of small producers is increased through extension services, access to technology and knowledge of adaptive practices to ensure ecosystem compatibility and climate smart productive practices to enhance traditional |

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| | unsustainable. Increased degradation of protective ecosystems to make up for productive losses hence increasing vulnerability to climate impacts. Food insecurity increases in the region as nature-based livelihoods are lost due to low adaptive capacity. | ones. Link between ecosystem-food-coastal resilience is strengthened thus enhancing long terms sustainability and protection of EBA services valuable to livelihoods. Measures to ensure food security amongst productive associations are incorporated. |
| 3.2. Diversified and EBA-compatible livelihoods identified and supported for agricultural and fishing-dependent households | Traditional livelihoods remain insufficient to make up for economic losses due to climate impact and ecosystem degradation. | Technical expertise and investments made in viable alternative livelihoods and their inclusion into local value chains.<br><br>Local diversified productive value chains that are also climate resilient are inclusive to women and minority populations thus increasing cash income and food security of small-scale producers to favour livelihood diversification and resilience in the face of slow onset impacts. |

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

Project sustainability will be guaranteed by the building of capacities at the institutional, multisector and local levels, by the commitment of the competent institutions in the monitoring and technical assistance of the actions implemented by the project, and by greater awareness and equal participation of the key actors identified by the project. Coordination role of Ministries of environment with relevant CC instruments developed at national level and focused on local impacts as well as national commitments with possible local contribution will be relevant in this case to guarantee mainstreaming of climate adaptation approach into national relevant policies and scale up and replicability of the results. Active participation of Ministries of Agriculture will strengthen project sustainability at local level with the possibility to scale up tools and best practices in other local municipalities in both countries. This also allows the inclusion of CC actions in agricultural sector.

In addition, bilateral cooperation mechanism and platform will allow for the project to innovate in accounting for local resilience measures to reduce losses and better evaluate resilient capacity that is both measurable and accountable. The project results will be significant to international dialogues and national accountings of climate impacts to coastal communities and economies. Best practices and lesson learned of this project will be internalized and systematized by national and local actors in both countries and their experience mutually shared to ensure dissemination of local practices into other local contexts as part of the cooperation mechanism included in component 1.

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

Considering the project objective focused on sustainable development whereby economic and social advances will consider environmental conservation, the project does not foresee negative impacts derived from project implementation. The project will ensure equitable participation and benefit sharing while seeking to incorporate a gender focus to project activities. The project may have some minor risks associated with it, however, these can be easily mitigated. The project is therefore categorized as a category B project.

An initial review of environmental and social impacts has been made below, which will be further analyzed during the Full Project formulation phase also to include the development a Stakeholder Engagement and Gender Plan. An Environmental Management Framework will also be prepared, in line with FAO and Adaptation Fund's Policies.

| Checklist of environmental and social principles | No further assessment required for compliance | Potential impacts and risks – further assessment and management required for compliance |
|---|---|---|
| *Compliance with the Law* | x | |
| *Access and Equity* | | x |
| *Marginalized and Vulnerable Groups* | | x |
| *Human Rights* | x | |
| *Gender Equity and Women's Empowerment* | | x |
| *Core Labour Rights* | x | |
| *Indigenous Peoples* | | x |
| *Involuntary Resettlement* | x | |
| *Protection of Natural Habitats* | | x |
| *Conservation of Biological Diversity* | | x |
| *Climate Change* | x | |
| *Pollution Prevention and Resource Efficiency* | x | |
| *Public Health* | x | |
| *Physical and Cultural Heritage* | | x |
| *Lands and Soil Conservation* | x | |

**Compliance with the Law**: The project will ensure alignment to existing national laws and regulations in both countries, as well as supporting governments in complying with global agreements and/or conventions. All project actions and activities will be coordinated with the responsible stakeholder institutions, who will provide guidance and support on technical and financial execution of the project in accordance with national regulations. It should be noted that both countries will include the active participation of environmental national authorities in charge of environmental regulation.

**Access and Equity**: The project design considers providing free access, information and participation to the different stakeholders and actors, guaranteeing equity as one of the main principles for the implementation of the project. The project does not foresee reducing access to natural resources for local populations, although community action plans for ecosystem management may require restricting access during works on ecosystems during their implementation. Hence project will develop a stakeholder engagement plan during the Funding Proposal stage to better evaluate this risk and ensure appropriate mitigation measures.

**Marginalized and Vulnerable Groups:** The project will target marginalized and vulnerable groups with a focus on women, youth and indigenous people.

**Human Rights:** The concept of the project is designed to respect and comply with all the principles and agreements contained in all conventions relating to human rights.

**Gender Equity and Women's Empowerment**: The project promotes gender equality and includes gender considerations, participation and empowerment of women in all its actions and activities. Considering that in both countries, primary production is heavily inclined towards men with low female participation, the fully-fledged project proposal will develop a Gender Plan and Analysis to ensure that women's participation, specific concerns and vulnerabilities are well reflected.

**Core Labour Rights**: The project will follow all applicable labour regulations for each of the two countries.

**Indigenous Peoples**: A small group of indigenous populations have been identified within the target sites of Panama. The project has developed an initial analysis that has been enhanced through consultations with indigenous representatives. A further analysis will be made during the Funding Proposal stage to ensure the project incorporates the concerns and needs of indigenous populations.

**Involuntary Resettlement**: No involuntary community resettlements are anticipated during project implementation.

**Protection of Natural Habitats and Conservation of Biological Diversity**: The project considers the conservation, recovery and restoration of key ecosystems and their associated biodiversity as one of the key elements to reduce vulnerability due to the effects and impacts of CC. Nonetheless, NBSs for productive management (including agroforestry and silvopastoral systems) may entail restoration actions that will require careful analysis considering close proximity to naturally protected areas. Accordingly, the development of a management framework will be better evaluated during the preparation of the Funding Proposal for the project and as activities are better defined.

**Climate Change:** The project will promote the development of good productive practices in livelihoods that contribute to the reduction of greenhouse gas emissions, enhancement of food security, as well as promotion of the protection, recovery and restoration of key ecosystems such as mangroves and other highly important wetlands such as carbon sinks. Hence all project actions will include a climate lens in their development and planning.

**Pollution Prevention and Resource Efficiency**: The focus of the project actions is based on NBSs that are expected to reduce pollution and improve efficiency in the use of resources.

**Public Health:** The project hopes to contribute to reducing the risks to public health in the project intervention area through a better understanding of the effects of CC and the execution of actions to reduce vulnerability and risks resulting from the effects and impacts of CC.

**Physical and Cultural Heritage:** Within the study area is the Castillo del Real de San Lorenzo and Portobelo Cultural Heritage Site in Panama, declared by UNESCO in 1980. Both sites constitute officially declared and protected areas under the management category of Protected Landscape and National Park, respectively. No impacts or risks is expected from project implementation to these sites, however the need for a management framework will be better evaluated during the Funding Proposal stage.

**Lands and Soil Conservation**: The project will promote the conservation and sustainable use of soils and land by incorporating tools and best productive practices that improve their management and promote the protection, recovery and restoration of priority ecosystems and with it the protection of the soil and retention of organic matter and sediments.

## PART III: IMPLEMENTATION ARRANGEMENTS

Part III of the Adaptation Fund Template will be provided upon the submission of the Full Funding Proposal.

# PART IV: ENDORSEMENT BY GOVERNMENTS AND CERTIFICATION BY THE IMPLEMENTING ENTITY

## A. Record of endorsement on behalf of the government[48]

*Provide the name and position of the government official and indicate date of endorsement for each country participating in the proposed project / programme. Add more lines as necessary. The endorsement letters should be attached as an annex to the project/programme proposal. Please attach the endorsement letters with this template; add as many participating governments if a regional project/programme:*

| | |
|---|---|
| *Milciades Conceptión, Minister of Environment, Ministry of Environment (Republic of Panama)* | Date*: July, 19, 2021* |
| *Ulises Fernández Gómez, Director of International Relationship, Ministry of Science Technology and Environment (Republic of Cuba)* | Date*: June 25, 2021* |

## 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 and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme. | |
| *Maher Salman*<br>Implementing Entity Coordinator |  |
| Date: August 6, 2021 | Tel. and email:<br>0039 0657054718<br>Maher.Salman@fao.org |
| Project Contact Person: Maher Salman | |
| Tel. And Email: 0039 0657054718, Maher.Salman@fao.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.

## Annex 1: NDA Endorsement Letters

REPÚBLICA DE PANAMÁ
GOBIERNO NACIONAL

MINISTERIO DE AMBIENTE

Panamá, 19 de julio de 2021
DM-1361-2021

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

**Subject:** Endorsement for "Strengthening the adaptive capacity of coastal communities of Cuba and Panama to climate change through the binational exchange of best practices for climate management and local food security"

In my capacity as designated Authority for the Adaptation Fund in Panama, I confirm that the above regional project/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 region.

Accordingly, I am pleased to endorse the above project/programme proposal with support from the Adaptation Fund. If approved, the project/programme will be implemented by Food and Agriculture Organization of UN and executed by NIE Fundación Natura and the Ministry of Environment.

Sincerely,

**MILCIADES CONCEPCIÓN**
Minister of Environment, Ministry of Environment

MC/AGA/LC/jl

Albrook, Calle Broberg, Edificio 804
República de Panamá
Tel.: (507) 500-0855

www.miambiente.gob.pa

ADAPTATION FUND

**Letter of Endorsement by Government**
**Ministry of Science, Technology and Environment (CITMA) of Cuba**

June 25, 2021

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

**Subject:** Endorsement of Proyect "Strengthening the adaptive capacity of coastal communities of Cuba and Panama to climate change through the binational exchange of best practices for climate management and local food security".

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

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by Food and Agricultural Organization of the United Nations (FAO) and executed by Environmental Agency of the Ministry of Science, Technology and Environment - CITMA (AMA) with the support of the Ministry of Agriculture (MINAG)

Sincerely,

MINISTERIO DE CIENCIA TECNOLOGIA Y MEDIO AMBIENTE
DIRECCION DE RELACIONES INTERNACIONALES

Ulises Fernández Gómez

Director of International Relationship
Ministry of Science, Technology and Environment
Republic of Cuba

**Annex 2: Initial Stakeholder Analysis (Gender and Indigenous Populations)**

- **Initial Gender Analysis**

**Panamá**

The 2012 "Public Policy of Equal Opportunities for Women (PPIOM)" [49], jointly with the National Institute for Women (INAMU), has per objective to end inequality and promote equal opportunities between men and women. Environment is defined as a strategic guideline to "promote the participation of women in the culture of conservation, environmental protection, use and access to natural resources, and the benefits generated for sustainable development, in order to improve the quality of life of the population from a gender equality and equity perspective". This policy also promotes institutional mechanisms and human resources to guarantee gender equality and equity in policies, plans, programs and projects for the sustainability, management and conservation of natural resources.

At the sectoral level, the Ministry of Environment (MiAmbiente), according to the information provided by the Direction of Climate Change, [50] does not have a defined legal framework for gender. However, since 2019, it began a process to prepare a Gender and Biodiversity Plan led by indigenous women and with broad participation of civil society, with the support of UNDP, and is working on the development of a mainstream gender perspective. In the case of the Ministry of Agricultural Development (MIDA), it has developed the Rural Women Program attached to the Rural Development Direction, which concentrates its efforts on serving women's organizations in rural areas who do not necessarily have agriculture as their main activity. This program does not have trained human resources or financial resources to address gender equality and its activities are financed by associations with other public entities or donations from cooperation organizations. By 2020, this program had 240 associations across the country with about 3,000 members.[51]

**Women in rural zones:** In agricultural production, 3 out of 10 producers in the area are women. According to data from 2010 reports, about 29,000 women have a direct relationship with the land through different types of tenure. On the other hand, about 25% of those who carry out work within the exploitation are women. In general, it has been reported that men are in charge of the toughest tasks during sowing time (e.g. cleaning the land, making hulls), while women are in charge of crops care, including irrigation in the summer and at harvesting. In the case of livestock, men and women are involved in feeding and maintaining small livestock, although in most cases it is in charge of women while with larger livestock the greater responsibility falls on men.[52] The analysis of the specific gender roles in the productive activities and its related project activities to mainstream gender perspective will be developed during funding proposal stage in a deeper gender analysis.

Part of the survival strategies of rural families lies in the diversification of activities among their members. 54% of producers and 81% of agricultural producers have a non-agricultural occupation as their main occupation[53]. According to the census, 36% of men work in agriculture as their main occupation and only 14.4% of women do so.[54] Domestic activities, as described below, occupy most of the time of women, who also work into services and other areas of the economy that offer better conditions for them. The little support and the almost zero incentives that women receive to stay in agricultural or livestock activities work against their performance in the sector. Despite being linked to the land through various forms of tenure, their access to production services such as technical assistance and credit is almost nil.[55]

**Time use:** At a general level, women's work in paid productive activities is affected by the burden of other tasks assigned stereotypically and almost exclusively to women, such as domestic work and care for other

[49] INAMU. 2012. *Política Pública de Igualdad de Oportunidades para las Mujeres*. Panamá
[50] Entrevista realizada a Ruben Abrego, Veronica González y Edna Flores de la Dirección de Cambio Climático de MiAmbiente
[51] Entrevista realizada a Anayansi Pérez, Encargada del Programa de la Mujer Rural. DDR. MIDA. 07/12/2020
[52] Martinez, A (2020). Social and Environmental Analysis, GEF Project "Sustainable land management and restoration of productive landscapes in hydrographic basins for the implementation of the national goals of Land Neutrality (LDN)"
[53] Martinez, A (2020). Social and Environmental Analysis, GEF Project "Sustainable land management and restoration of productive landscapes in hydrographic basins for the implementation of the national goals of Land Neutrality (LDN)"
[54] Martinez, A (2020). Social and Environmental Analysis, GEF Project "Sustainable land management and restoration of productive landscapes in hydrographic basins for the implementation of the national goals of Land Neutrality (LDN)"
[55] Martinez, A (2020). Social and Environmental Analysis, GEF Project "Sustainable land management and restoration of productive landscapes in hydrographic basins for the implementation of the national goals of Land Neutrality (LDN)"

family members. According to data from 2011 at the national level, although the difference in time dedicated to total work (paid and unpaid) is small (M = 64.9 h / week, H = 64.2 h / week), the distribution between paid and unpaid work is great. Indeed, while women have 29 hours of paid work, men have 50 and while women dedicate 36 hours to unpaid work, men only dedicate 14[56]. In the case of women in rural areas, the deficits of support from the State in the care area, the market and the little or no participation of other adult family members in care tasks, lengthen the unpaid working hours of women. For example, having children under 5 years of age reduces the paid working day of women by approximately 6 hours.[57]

**Scholarship**: Women producers have higher levels of schooling than men do. The percentage of male and female producers with no level of education is very similar, 12% and 10.5% respectively, while 58% of male and female producers and 47% of women have completed primary school at most. In contrast, 30% of men and 42% of women have secondary or higher education[58]. This comparative advantage of women producers could include digitalization and modernization processes of the sector and capacity building on sustainable productive practices including climate perspective in these activities to generate resilience. In the case of young population, there are advantages since 60% of those between the ages of 25 and 29 have finished secondary school. Additionally, technical and vocational education among young people has gained importance in the country: 14% of secondary education students are enrolled in technical or vocational schools, [59] including the Professional and Agricultural Technical Institutes.

**Land tenure and farm size:** 28% of the agricultural producers with direct access to the land are women and distributed in the different types of tenure, mainly with property title (34%) and without ownership title (52%)[60]. Strengthening land tenure as owners with property title will results in better household income, better family nutrition, greater investment in the agricultural farm and in the education of children, among other aspects that improve living conditions of families. On the contrary, if they do not have a title, they are limited in their access to credit, technological innovations for the production and sustainable use of natural resources.

**Cuba**

Cuban women are protected within the framework of laws and public policies, in which their rights are recognized. Some of them have specific articles in favor of women's rights, such as the National Constitution (2019, art. 49,205 and 207), the Family code (1975, art. 24 and 65), the Civil Status Registration Act and the Civil Code Act (Art. 517, 518) and general law of Housing, Labour code, and Worker's Maternity Law Decree, Paternity Law, Social Security Law. These legal frameworks recognize women rights and equality into the society.

**Women in agriculture and rural areas:** At sectoral level, the Ministry of Agriculture has a gender strategy, which is merely a management tool with a prioritization in forestry and tobacco sectors. According to the 2016 Statistical Yearbook of Cuba, of the total number of people employed in agricultural cooperatives, women represent 15.7%. They also account for 15.9 per cent of the total number of persons engaged in agricultural, livestock and forestry activities. In rural areas, women are the majority in services such as education and public health, which together account for more than half of the State's public employment. Between 2010 and 2013, more than 50,000 women lost their formal link with the state agricultural system in Cuba. In addition, in 30 years, more than 400,000 people are expected to emigrate from rural areas to the cities[61].

The largest percentage of emigration from the countryside is concentrated amongst men; and those who remain still concentrate representation in paid agricultural jobs. By 2030, more than half of all households in Cuba are projected to be headed by women, including households in rural areas. The Cuban context

[56] CEPAL. Los cuidados en América Latina. Textos seleccionados 2007-2018. Páginas selectas de la CEPAL. 2018
[57] CEPAL (2020) Decimocuarta Conferencia Regional sobre la Mujer de América Latina y el Caribe, Santiago, 27-31 de enero de 2020
[58] Calculado con base en información proveniente de INE. *Censo Agropecuario 2010*. Volumen VII. Enfoque de Género. Cuadro 22. Panamá
[59] OCDE/CEPAL/CAF (2016), *Perspectivas económicas de América Latina 2017: Juventud, competencias y emprendimiento*, OECD Publishing, Paris. http://dx.doi.org/10.1787/leo-2017-es
[60] INEC. *Censo Agropecuario 2010*. Volumen VII. Enfoque de Género. Panamá
[61] FAO (2020) Gender Analysis GCF -FP126: "Increased climate resilience of rural households and communities through the rehabilitation of production landscapes in selected localities of the Republic of Cuba (IRES)"

from a gender perspective, while showing some achievements, is confronted with countless gaps and inequities.

**Employment rate (disaggregated by sex)**: At country level, the total number of women employed in the economy remains around 37%, with differences between the State Sector (45.3%) and the Non-State Sector (17.4%). In both cases, these percentages are with respect to the total persons employed in each sector (state 3262.1 thousand workers and non-state 1329). According to different types of economic activities, there is a high female presence in sectors such as health and social assistance (68.5%) and education (66.3%). There is a lower presence in mining and quarrying (17.7%), agriculture, livestock, forestry (15.9% of the total persons employed, 820.9 thousand), fishing (14.4% of the total in this sector, 27.0 thousand) and construction (11.3%). A gender gap may be considered the smaller number of women employed in the above-mentioned sectors, since it may generally refer to the persistence of gender stereotypes and traditionally masculinized jobs[62].

| | total | Women | Men | % Women | % Men |
|---|---|---|---|---|---|
| **Total employed** | 4 591.1 | 1 709.6 | 2881.5 | 37.2 | 62.8 |
| **State** | 3 262.0 | 1 478. 8 | 1783.2 | 45.3 | 54.7 |
| **Non State** | 1329.1 | 230.7 | 1098.4 | 17.4 | 82.6 |
| Cooperatives | 189.9 | 29.8 | 160.1 | 15.7 | 84.3 |
| • Agricultural | 178.5 | 27.6 | 150.9 | 15.4 | 84.6 |
| • Non-Agricultural • Private | 11.3 | 2.2 | 9.1 | 19.4 | 80.6 |
| Private | 1 139. 2 | 200.9 | 938.3 | 17.6 | 83.4 |
| • Of it: on its own | 540.8 | 174.8 | 366.0 | 32.3 | 67.7 |

**Unemployment.** According to data indicated in the 2016 Statistical Yearbook reported in the table to the left, there are more men employed than women; which may be the reason for several direct or indirect causes.

**Land tenure:** Although progress in the process of handing over land in usufruct and the Cuban rural organization (ANAP) include a Gender Strategy in 2005, women's land tenure in the sector has not exceeded 17.4 per cent. In addition, women represent 10.9% of the total number of applications granted to obtain land in usufruct. In the national statistics consulted, there is no breakdown by sex of this indicator.

**Educational level:** By 2015, female enrollment on primary education was 48.7 %, secondary education 50.0% and university education 59.6%. Women graduating from technical and vocational education is up to 33.5 % and women graduating from higher education 55.4 % of the total of people graduated in that category. According to previous data, more women graduate at the higher level than technical education. At technical level, men are the majority and in consequence have an immediate insertion into the labor market and income access. This could highlight a gap in terms of incorporation into employment, since men generally prefer to start working earlier, in order to obtain more income, and women prefer to dedicate themselves to greater educational improvement before starting their employment (as paid work). However, although women achieve higher levels of education, they are not necessarily inserted in better-paid jobs, or linked to decision making.[63]

**Division of labor between men and women:** Overload of domestic roles limits the adequate insertion of women into the labor market, and their access to more recognized or better-paid positions. The predominance of “macho” attitudes at the labor, community, and family levels hinder women's insertion, participation, and permanence in the labor market in the agricultural sector. Most of the women do not receive remuneration for their work in support of food production and their participation in agricultural work is undervalued, as it is related to a part of the productive process determined in accordance with the sexual division of labor and qualified as less effort. As a consequence, their work is perceived as a "help", thus determining limits on their participation, decision-making and income generation. Women are recognized as those who control inputs, buy food and collaborate in productive activities (raising backyard animals, cleaning milking utensils, making food for workers, in addition to domestic work). Sometimes they are in a subordinate relationship, which implies the situation referred to above as a gender gap. [64]

The division of labor is considered a gender gap. The highest levels of participation in the unpaid activities of men and women are concentrated in the activities that integrate domestic work, which represents

[62] Data taken from the results of the 2016 National Survey on Gender Equality and Statistical Yearbook 2017

[63] FAO (2020) Gender Analysis GCF -FP126: “Increased climate resilience of rural households and communities through the rehabilitation of production landscapes in selected localities of the Republic of Cuba (IRES)”

[64] FAO (2020) Gender Analysis GCF -FP126: “Increased climate resilience of rural households and communities through the rehabilitation of production landscapes in selected localities of the Republic of Cuba (IRES)”

63.21%[65]. In second place, care for dependent persons with 19.02 % for the total number of persons interviewed. Women employed dedicate almost 10 hours to unpaid work, which means that even with an employment, they maintain a domestic burden, showing the double workload they face. Within unpaid work, the gap between men and women, is also wide, as expressed in hours. In caring activities of children, adults and sick people, women dedicate 8:29 h/week vs. their male peers, which dedicates 3:38 h/week to the same activity. [66]

- **Initial Analysis of Indigenous Populations:**

According to Panama 2010 national Census, out of 3.4 million inhabitants, 438,559 (12.8%) declared to be indigenous. Guna, Emberá, Wounaan, Ngäbe, Buglé, Naso Tjer Di and Bri Bri indigenous peoples have gained recognition and delimited their territories according to the fluctuation of the administrative political division of the State and are currently represented by 12 congresses and councils. Although the Kuna de Wargandi and Kuna de Madungandi peoples are recognized by law, they have the category of "corregimiento" according to the regulations that created it, and government aid is almost nil. For their part, the communities that remained outside the “comarcas” organized themselves on collective lands. In 2019, the government accepted and recognized the existence of 25 indigenous territories per holder.

Panama has not ratified ILO Convention 169 on Indigenous and Tribal Peoples, but has voted in favor of the United Nations Declaration on the Rights of Indigenous Peoples. Current government administration appointed Ausencio Palacios of the Ngäbe indigenous people, as Vice Ministry of Indigenous Affairs, and Alexis Oriel Alvarado Ávila of the Gunadule indigenous people at the National Direction of Indigenous Lands and Municipal Assets of the National Land Administration Authority (ANATI).

**Indigenous capacity building.** In addition, the Government of Panama created regional trainings in the Guna yala and in the Ngäbe-Buglé and Emberá-Wounaan regions. As a consequence, new trainings in indigenous regions were completed by the Institute for Training and Use Human Resources (IFARHU), Ministry of Agricultural Development (MIDA), Ministry of Environment (MiAmbiente), Health, Education, National Institute of Professional Training and Training for Human Development (INADEH), Ministry of Social Development (MIDES).

**Land tenure.** Ministry of Environment Resolution No. DM-0612-2019 of November 29, 2019, establishes the legal criteria to be applied to determine the viability of granting approval to requests for the award of collective lands, to be submitted by indigenous communities through their authorities. The polygons of recognized traditional areas partially or totally overlap with protected areas or lands of the State Forest Heritage”, thanks to the influence of the National Coordinator of the Indigenous Peoples of Panama (COONAPIP) that seeks legal recognitions for indigenous territories.

**Challenges.** Despite the achievements obtained from indigenous organizations, and the efforts made by the government in favor of reducing inequalities, the situation of the indigenous peoples of Panama continues to show the need to strengthen their access to development, a comprehensive reduction of socioeconomic gaps, and strengthening of the design and implementation of public policies and differentiated programs that meet their specific needs. People who live in indigenous communities and regions have less access to basic services, fixed income, formal employment, health, food and nutritional security, among others, because of their rural location and difficult access, weather conditions, difficulties in accessing markets.

In 2019, a loan for US $ 80 million from the World Bank was approved to supports the implementation of the Development Plan for the Indigenous Peoples of Panama, focused on improving access to quality of services in health, education, and water and sanitation in the 12 indigenous territories of Panama.

[65] 52.37% declared by men and 74.07% declared by women according to data in the 2016 National Survey on Gender Equality.
[66] FAO (2020) Gender Analysis GCF -FP126: “Increased climate resilience of rural households and communities through the rehabilitation of production landscapes in selected localities of the Republic of Cuba (IRES)”

According to the analysis developed by FAO, UNDP, UN Women and UNICEF on the gender profile of Panama 2020, this country is in the group of countries with high human development. In 2018, it ranked 67th out of 189 countries, with a value of 0.795. Inequality is a basic element in the characterization of Panamanian society, which is reflected in a 21.2% reduction in the Human Development Index (HDI), Considering that the index is adjusted for inequality, it results in 0.626. On the other hand, the multidimensional poverty index between 2017 and 2018 did not show substantial changes (MEF, 2018). For women in 2017 and 2018 it was 18.5% and 18.6% respectively. For men, it was reduced by two tenths of a percentage, from 19.7% in 2017 to 19.5% in 2018. For both sexes the changes are minimal.

**Incidencia de Pobreza Multidimensional (IPM), por provincia, según sexo. Años 2017 y 2018**

| Provincias y comarcas indígenas | IPM 2017 | | IPM 2018 | |
|---|---|---|---|---|
| | Hombre | Mujer | Hombre | Mujer |
| Bocas del Toro | 44.8 | 44.4 | 40.3 | 41.9 |
| Coclé | 25.5 | 19.6 | 21.4 | 17.2 |
| Colón | 17.6 | 15.4 | 17.2 | 15.5 |
| Chiriquí | 13.4 | 11.5 | 12.7 | 11.1 |
| Darién | 42.0 | 37.9 | 35.8 | 36.1 |
| Herrera | 7.5 | 6.9 | 5.2 | 5.0 |
| Los Santos | 5.1 | 3.3 | 4.6 | 3.3 |
| Panamá | 8.9 | 8.2 | 10.6 | 9.9 |
| Veraguas | 20.1 | 18.2 | 18.2 | 16.1 |
| Kuna Yala | 91.0 | 91.7 | 93.9 | 93.7 |
| Emberá | 70.3 | 71.5 | 70.7 | 70.9 |
| Ngäbe Buglé | 93.7 | 93.0 | 92.4 | 89.8 |
| Panamá Oeste | 15.8 | 15.5 | 16.0 | 15.0 |
| Total | 19.7 | 18.5 | 19.5 | 18.6 |

Fuente: Encuesta de hogares INEC.

The multidimensional poverty rates produced in the past due to access to income have identified the Indigenous Comarcas and the provinces of Bocas del Toro and Darién as the territories where poverty conditions have the greatest impact. In 2018, multidimensional poverty is higher in Kuna Yala for both sexes. In the provinces of Panama, Los Santos and Herrera, women show the least impoverishment (see table).

The multidimensional poverty of children and adolescents in Panama reaches 48% (MIDES, 2018). This population between 0 and 17 years old represents half of the Panamanians in this condition.

The deficiencies caused by the existing structural poverty process have a greater impact on the lives of the children and adolescents. This population in the Comarca Ngäbe-Buglé represents one in four and in the province of Panama, children and adolescents are one in five.

The trend of life expectancy also shows significant inequalities in the country. In 2019, life expectancy in indigenous regions substantially reduced, (ref. table below). For indigenous men it is up to 69 years, and for women of the Emberá and Ngäbe Buglé regions it is around 73.9 years; in Guna Yala around 76 years. Clearly, poverty in indigenous areas takes many years from life. Men are in a more vulnerable situation, similarly to other districts such as Santa Isabel in Colón, where men have a life expectancy of 68.85 years. Within the Comarca Ngäbe Buglé, women with the lowest life expectancy (71.38%) are found in Jirondai and Santa Catalina with 71.76 and men are 66.94 and 67.51 respectively for those districts.

Regarding the Birth Rate at national level, in 2010 it was 18.62 of live births per thousand inhabitants, and in 2018, it decreased slightly to 18.5 births[67]. However, they present great variations between provinces and regions. For example, 11.4 and 13.7 were reported in Los Santos and Herrera regions, 16.8 in the Guna Yala region, respectively, which it is much higher (37.2) in the Ngäbe Buglé region and 27.0 in the province of Bocas del Toro.

Finally, the project will be developed in the coastal communities of the Costa Arriba and Abajo de Colón in which, according to the head of indigenous people at the Ministry of Environment and Indigenous Representative, there are some indigenous peoples' families specifically in the province of Colón. Costa Arriba of Colón, Guna families live in the districts of Santa Isabel, Portobelo. In Costa Abajo de Colón (targeted zone for this project), in the District of Donoso, Buglé and Ngäbe families have been identified. In Portobelo, there are approximately 50 Emberá houses located in La Estacada neighborhood, the majority dedicated to fishing and tourism through the sale of handicrafts. They are about to constitute a cooperative of boats and agriculture. Also, there are some Kunas families are also residing within the municipality whose main productive activity is also handicraft mainly for tourists[68]

[67] INEC, 2010-2018
[68] Interview with Manager of Protected Area of Portobelo

Unfortunately, there is no updated census, so the number of families that make up this indigenous settlement cannot be said with accuracy at this stage. However, consultation allowed the project to gauge that in the area of Omar Torrijos Herrera (not among the project target sites, but in close proximity) there are communities of the Ngäbe and Buglé peoples.[69] Most of these are dedicated to fishing.

**Annex 3: Initial Stakeholder Consultations**

Several presentation, interviews and survey were included into the consultation process feeding into the present Concept Note proposal for both countries. The scope of the consultation was to identify project objectives, possible components, effects of CC facing in Cuba and Panama in targeted zones, possible adaptation solutions, including solutions based on nature, data collection for risk management against climatic threats in the area, implementation of economic diversification measures for the region through sustainable and resilient activities. It was also explained that a binational proposal scope will allow a teamwork and share experiences between both countries.

**Panamá**

• **Aquatic Resources Authority**: Provided information about the projects they are carrying out in the Province of Colón, for the aquaculture of the Tilapias and Colosomas breedings. They provided us with contact information and shared information about the Fishing cooperative of Donoso and Chagres.

They do not have information of CC projects in the area nor that they have used nature as a means of defense barrier.

• **Authority of tourism**: Because of their contact with organized groups from the coastal sector, they consider that CC is affecting fishing, agriculture, livestock and tourism, and mentioned some local communities that face floods and landslides, such as Palmas bellas in Portobelo, Chagres, Govea, Miramar and Coclé del norte. These last three suffer from erosion of the coastline and damages to coastal roads. According to them, important actions should include climate resilient infrastructure and a water harvesting plan, increase of agroforestry systems, use of resilient seeds, minimize the use of pesticides, awareness actions with local population on CC, and dissemination through radio, television and other media.

• **Ministry of Agriculture:** Reported the relevance of the coconut production in the zone. Since 2016, they are involved into a project that includes agroforestry systems into this production to stimulate the production of the coconut tree to increase the income of the families that are dedicated to the activity. It will be interesting to include climate resilient practices into this project to ensure adaptation to extreme events and temperatures are included into these crops to guarantee a long-term production.

• **Municipalities:** Mentioned that they have built a retaining wall on the coastal edge of Piña and that they are interested in building a wall to Aníbal Beach.

In ***Chagres*** municipality, consider that CC is affecting tourism, fishing, agriculture and livestock in the area. In addition, they mentioned that the actions to face CC effects must include the implementation of sustainable agriculture, management of sand extraction, such as in the Aníbal beach of the Nuevo Chagres district and the management mishandling of waste. In ***Portobelo***, consider that CC is affecting fishing, agriculture and tourism. Relevant actions to mitigate effects of CC were related to the construction of retaining walls to face the force of the waves and fillings for the protection of the town of Puerto Lindo. Some of the main communities mentioned as most affected were Isla Grande, Puerto Lindo, Ballestilla and San Antonio (already lost part of their beaches due to the rising tides). Relevant floods were mentioned in Nuevo Tonosí, Portobelo downtown, Buenaventura and the community of María Chiquita. In ***Santa Isabel*** Municipality do not have knowledge about CC projects and they mentioned that do not have any department to take care of environmental issues. They considered that CC is affecting tourism, fishing, agriculture, tourism and livestock. Several actions mentioned to face CC were reforestation actions in the areas of the basins and the affected areas. Relevant floods and sea-level rise areas inside the municipalities were Palenque, Palmira, Cuango and Santa Isabel.

[69] Official communication and interview with Mr. Iniquilipi Chiari Lombardo, Head of Indigenous people (Ministry of Environment), and also indigenous Representative and Maribel Pinto (Climate change direction- Ministry of Environment)
General source: Panama country profile according to gender equality. Available in: https://panama.un.org/es/114729-perfil-de-pais-segun-la-igualdad-de-genero-panama

According to surveys from Ministry of Environment, Tourism Authority, Ministry of Agriculture, and Representatives from municipality council from Chagres, Portobelo and Santa Isabel, at least 14 from 18 of the people said that within these municipalities projects are carried out that are using nature as a barrier to reduce environmental shocks and impacts, such as SLR among others.

When demanded about a department inside the municipalities which includes protective activities to coastline, the majority of participants answered negatively.

Question about existing CC plans into municipalities, the majority of the answers was other, which includes no relevant mention about what were those plans except a mention about a dump. This reflects a lack of knowledge about CC and the relations with the effects of them into their lives and productive activities.

According to the same survey, participants mentioned as main productive activities sensitives to extreme weather events and SLR are fishing (13 mentions), agriculture (8 mentions) and tourism (8 mentions).

• **Indigenous people.** As mentioned earlier the consutlations have been severely limited by the travel restrictions imposed due to the COVID-19 pandemic. The consutlations with the indigenous communities in Panama have also been been adversely affected as a result and also further compounded by their geographical remoteness. To ensure the inclusion of the indigenous people, the design of the concept note has been conducted in consultation with Mr. Iniquilipi Chiari Lombardo, the Head of Indigenous People, and Maribel Pinto the Indigenous Representative at the Ministry of Environment. These consultations have enabled their initial assessment (see annex 2 above) and the identification of the key economic sectors that they operate in. These have been identified as mainly fishing, tourism through the making of handicrafts and agriculture. Due to the pandemic, tourism has been severely affected, therefore the project will focus on integrating the indigenous people into the components 2 and 3, including in tourism when it picks up again.

**Cuba:**

The Ministry of Environment (CITMA) and the Ministry of Agriculture, and their different directions, are the two ministries involve into this formulation process. Furthermore, during the formulation process some Cuban specialized institution, such as Agricultural Engineering Institute, Soil institute, Agroforestry research institute, Tropical Fruit Institute dependent of both ministries participated in consultative meetings and concept note design, in compliance with the specific functions assigned within the framework of its competences. As part of the integrated and articulated work system, alternative options to consultancy process were employed due to current context of Covid-19 to establish interaction with the territories. In Cuba, as part of the restrictive measures implemented to reduce the spread of the disease, the mobility of people between the different provinces of the country was regulated, representing a limitation to specify the planned routes to the selected municipalities in the framework of the elaboration of the Concept Note.

Virtual meetings between Technical Personnel in La Habana with FAO and Panama, held along one year, as well as survey with producers of targeted municipalities were include into this consultation process. Municipality selection process went through three important stages. 1) Conciliations with the municipalities considering the same selection criteria. 2) Definition of the initial proposal and the intervention in the provinces of Cienfuegos (coastal municipality) and Ciego de Ávila (non-coastal municipality to work the coconut chain). 3) At third stage, the final identification was made of the areas to be intervened in the municipalities selected for the implementation of the project, according to similar climate threats in coastal municipality with similar livelihoods (fishing and agriculture).

**Surveys and interviews:**

**Producers- Cuba and Panama:**


**Climate change – knowledge and affection to their production activities**

A similar survey was taken among Panama and Cuba producers, and some Protected Area managers were interview, in order to focalized actions mainly into field components.

Most of the producers in Panama reported that they do know what CC is, but they did not associate the effects of floods or storms with CC. Some recognized problems with water, floods or change in rain patterns and temperatures, but did not identify cause-effect relations with CC. In addition, they did not foresee any long-term changes in terms of climate or extreme events that affect their productive activities. They did not report adaptive measures taken by them into their productive activities yet.

In the case of Cuba, direct links between floods, droughts and intensive storms and climate change are clearer for the producers, but only few of them mentioned the possible effects over their productive activities.

**Protected Area Managers:**

From ***San Lorenzo protected area in Panama*** indicated a strong impact on the coastal and beach areas, through the intrusion of the sea towards the coast along the coast of Colon, due to CC. They mentioned that almost all the communities had to develop containment areas (hills and levees) to avoid flooding.

About ecosystems they mentioned the existence in 12,000 hectares of the protected area, 90% of the ecosystem is rainforest, 40% beaches and 5% mangroves (mainly zones next to Chagres River, that is part of the Panama Canal). They mentioned the importance of the rainforest and the main effects from CC over it derived from the SLR and storms and their effect over the soil, which increase the tree fall in the area (because the soil is not enough to generate enough support for trees of a certain size). He also mentioned that the wetlands in this park is in good conditions and it is a zone of difficult access and because of that is less intervened. Also, is part of the Chagres River in the Canal Zone. The main threat to the protected area is related to neighbor communities (Gatun lake sector, North West margin, Escobado community, Achiote). The need for housing for the communities, the illegal hunting and agriculture of subsistence are some activities that generate pressures over this protected area.

From ***Portobelo protected area in Panama*** participants indicated the importance of the mangrove ecosystem along the coast of that municipality and that ecosystem is in good conditions, excepts in the area of Portobelo, where it is affected by waste. She recognized the importance of the mangrove could protect the population of the zone. Despite the fact that they did not have any recent study about the state of the mangrove, they had a recent episode of floods in the municipality on 2018, indicating how the SLR is affecting them.

From the ***protected area in Batabanó in Cuba***, ecosystem conservation and restoration are the most challenges for her. She mentioned some extreme episodes of floods, hurricanes and droughts during the last 3 years. She mentioned that CC will affect all coastal forests and fauna provided services, and the productive activity that are carried out and directed. She also mentioned the possible effects of the SLRs in the coastal zones and villages, that could represent threats, such flooding, corals deaths, disappear of fish species, rains shift, heat increases and the risks of new diseases.

**Project Formulation Grant (PFG)**

Submission Date: August 6th, 2021

**Adaptation Fund Project ID**:
**Country/ies**: Republic of Cuba and Panama
**Title of Project/Programme**: Strengthening the adaptive capacity of coastal communities of Cuba and Panama to climate change through the binational exchange of best practices for climate management and local food security
**Type of IE (NIE/MIE)**: Multilateral Implementing Entity (MIE)
**Implementing Entity**: Food and Agriculture Organization of the United Nations (FAO)
**Executing Entity/ies**: **Cuba:**
Environmental Agency of the Ministry of Science, Technology and Environment - CITMA (AMA), the Ministry of Agriculture (MINAG)
**Panama**:
Ministry of Environment, Fundación Natura

## A. Project Preparation Timeframe

| | |
|---|---|
| Start date of PFG | **15 January 2022** |
| Completion date of PFG | **15 September 2022** |

## B. Proposed Project Preparation Activities ($)

Describe the PFG activities and justifications:

| List of Proposed Project Preparation Activities | Output of the PFG Activities | USD Amount |
|---|---|---|
| **Consultation with national and local stakeholders.** In order to ensure project activities will effectively address challenges faced by local communities, local-level gender-responsive consultations will be held in project target countries throughout the full project proposal design phase to enhance ownership and strengthen sustainability | Consultation and assessment tools and processes<br><br>Stakeholders' consultation reports<br><br>Stakeholders mapping. | 4 000.00 (Consultancy)<br>3 000.00 (Workshop)<br><br>Sub-total: 7 000.00 |
| **Institutional capacity assessment.** In order to identify institutional capacity gaps to be addressed and improved by the project, consultations will be held with national and local institutions in project target countries to strengthen collaboration, enhance | Consultation and assessment tools and processes<br><br>Institutional capacity reports<br><br>Identify main element and gaps for damage and losses baseline (information, | 8 000.00 (Consultancy)<br>3 000.00 (Workshop)<br><br>Sub-total: 11 000.00 |

| | | |
|---|---|---|
| sustainability, and promote scalability | institutional, national and local level, targeted crops to be selected) for both countries in selected municipalities<br><br>Proposal of indicators for damage and losses methodology<br><br>Identify requirement for binational damage and losses information platform for both countries | |
| **Sub-national and national consultations.** In order to raise awareness and report on progress toward project development, an inception meeting at regional level will be held, followed by a detailed mapping of project area to identify potential locations, and relevant baseline assessments, surveys and targeting exercises. Finally, a regional validation meeting will be conducted to finalize the full project proposal and strengthen the buying-in by authorities and implementing partners at all levels | Regional inception meeting<br><br>Detailed mapping of project area to identify potential ecosystems and potential agricultural and fisheries location in targeted municipalities to be part of the assessment of EBA according to component 2 and productive mapping of agricultural, tourism and fisheries activities according with component 3 and associated relevant indicators<br><br>Regional validation meeting | 7 000.00 (Meetings)<br>14 000 (Project area mapping EBA and NBS)<br><br>Sub-total: 21 000.00 |
| **Environmental and social risk assessment and management plan.** In order to ensure full alignment with the AF Environmental and Social Policy, and environmental and social assessment will be carried out in project countries to develop the overall Environmental and Social risk management plan, to be included in the final project proposal | Social vulnerability survey (women, youth, vulnerable refugees) for both countries<br><br>Environmental and climate-risk baseline assessment (including, social, indigenous people, cultural minorities and gender analisys) of the project target areas in Cuba and Panama<br><br>Environmental and Social risk management plan | 25 000 (Consultancy)<br><br>Sub-total: 25 000.00 |
| **Project document development.** Collection and coordination of inputs from technical teams. Based on consultation meetings, refinement of project design, including final formulation of project | Full-project proposal document in (English) | 25 000.00 (Consultancy)<br><br>Sub-total: 25 000.00 |

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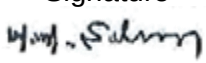
|---|---|---|
| outcomes and outputs and project activities. Design of project logframe with relevant indicators, and implementation arrangements. Definition of project detailed budget | | |
| **Project document translation to spanish** | | 11,000 |
| Total Project Formulation Grant | | **100 000.00** |

**C. Implementing Entity**

This request has been prepared in accordance with the Adaptation Fund Board's procedures and meets the Adaptation Fund's criteria for project identification and formulation

| Implementing Entity Coordinator, IE Name | Signature | Date (Month, day, year) | Project Contact Person | Telephone | Email Address |
|---|---|---|---|---|---|
| Maher Salman, FAO |  | 6 August 2021 | Maher Salman | +39 06 570 54718 | maher.salman@fao.org |