Coastal Adaptation to Climate Change in Cuba through Ecosystem Based Adaptation

Republic of Cuba | United Nations Development Programme (UNDP)

6 April 2018
Concept Note

Project/Programme Title: Coastal Adaptation to Climate Change in Cuba through Ecosystem Based Adaptation

Country(ies): Republic of Cuba

National Designated Authority(ies) (NDA): Ministry of Science, Technology and Environment (CITMA)

Accredited Entity(ies) (AE): UNDP

Date of first submission/version number: [2018-04-06] [V.1]

Date of current submission/version number: [2018-04-06] [V.1]
Notes

- The maximum number of pages should not exceed 12 pages, excluding annexes. Proposals exceeding the prescribed length will not be assessed within the indicative service standard time of 30 days.
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## A. Project/Programme Summary (max. 1 page)

<table>
<thead>
<tr>
<th>A.1. Project or programme</th>
<th>☒ Project</th>
<th>☐ Programme</th>
<th>A.2. Public or private sector</th>
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<th>☐ Private sector</th>
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<tr>
<td>A.3. Is the CN submitted in response to an RFP?</td>
<td>Yes ☐</td>
<td>No ☒</td>
<td>If yes, specify the RFP:</td>
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<td>A.4. Confidentiality</td>
<td>☐ Confidential</td>
<td>☒ Not confidential</td>
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### A.5. Indicate the result areas for the project/programme

- **Mitigation**: Reduced emissions from:
  - ☐ Energy access and power generation
  - ☐ Low emission transport
  - ☐ Buildings, cities and industries and appliances
  - ☐ Forestry and land use

- **Adaptation**: Increased resilience of:
  - ☒ Most vulnerable people and communities
  - ☐ Health and well-being, and food and water security
  - ☒ Infrastructure and built environment
  - ☐ Ecosystem and ecosystem services

### A.6. Estimated mitigation impact (tCO2eq over lifespan)

- N/A

### A.7. Estimated adaptation impact

- Number of direct beneficiaries and % of population:
  - Direct 490,773
  - Indirect 1,285,322
  - 4.4% total population

### A.8. Indicative total project cost (GCF + co-finance)

- Amount: USD 96,953,200

### A.9. Indicative GCF funding requested

- Amount: USD 29,473,200

### A.10. Mark the type of financial instrument requested for the GCF funding

- ☒ Grant
  - ☐ Reimbursable grant
  - ☐ Guarantees
  - ☐ Equity
  - ☐ Subordinated loan
  - ☐ Senior Loan
  - ☐ Other: specify___________________

### A.11. Estimated duration of project/programme

- 8 years

### A.12. Estimated project/Programme lifespan

- 50 years

### A.13. Is funding from the Project Preparation Facility requested?

- Yes ☐ | No ☒ | Other support received ☐ If so, by who: | ☐ A or I-1 | ☒ B or I-2 | ☐ C or I-3 |

### A.14. ESS category

- ☒ A or I
  - ☐ B or I-2
  - ☐ C or I-3

### A.15. Is the CN aligned with your accreditation standard?

- Yes ☒ | No ☐

### A.16. Has the CN been shared with the NDA?

- Yes ☒ | No ☐

### A.17. AMA signed (if submitted by AE)

- Yes ☒ | No ☐ | If no, specify the status of AMA negotiations and expected date of signing: | ☒ Yes | ☐ No |

### A.18. Is the CN included in the Entity Work Programme?

- Yes ☐ | No ☒

### A.19. Project/Programme rationale, objectives and approach of programme/project (max 100 words)

1. This Project integrates 3 lines of action for effective climate adaptation of coastal areas: i) strengthening existing ecosystem structures (Ecosystem Based Adaptation-EBA), ii) building capacity at community and local government levels for EBA management and iii) mainstreaming adaptation to climate change (CC) within territorial institutions responsible for coastal management. This project will enable GoC’s implementation of the principal elements of the recently approved National Programme for Adaptation to Climate Change (Tarea Vida). It will do so by responding to the CC-related threats affecting Cuban coastal communities that have prioritized as the most vulnerable population to CC, mainly sea level rise and increase intensity of hurricanes.

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1 Concept notes (or sections of) not marked as confidential may be published in accordance with the Information Disclosure Policy (Decision B.12/35) and the Review of the Initial Proposal Approval Process (Decision B.17/18).

2 Total Cuban population 11,233,004 people (National Census 2015)

3 See here for access to project preparation support request template and guidelines

4 Refer to the Fund’s environmental and social safeguards (Decision B.07/02)

5 Include CITMA, Institute of Physical Planning, National Institute for Water Resources, Ministry of Agriculture and municipal governments
2. The project will directly benefit 490,773 people and indirectly 1,285,322 people in 20 coastal municipalities by increasing the resiliency of coastal landscapes and communities to CC. It will facilitate a shift in coastal adaptation from a traditional hard risk management and reactive strategies to a preventive approach based on maximising the natural infrastructure of Cuban coastal zones and their management.

B. Project/Programme Information (max. 8 pages)

B.1. Context and baseline (max. 2 pages)

3. Cuba lies in one of the most active parts of the Atlantic/Caribbean hurricane region (Figure 1). The percentage of hurricanes affecting the country classified as intense has risen from a historical average of 26% to 78% in the past 10 years. This trend is likely to intensify in a changing climate, as seen through the increase in intense storms observed across the Atlantic and related to the high temperatures observed in the Caribbean since 1998. Sea level rise (SLR) as a consequence of CC is expected to rise between 0.27m and 0.85m by the year 2100 (Table 1) resulting in flooding of up to 5,969 km² and affecting over 220 coastal settlements (Table 2). The narrowness of the main island of Cuba means that no part of the country is more than 60km away from the coast.

![Figure 1: Category 4 and 5 Hurricanes affecting Cuba between 1890 and 1995](image)

![Table 1. Predictions of sea level rise in Cuba up to the year 2100 (meters)]

<table>
<thead>
<tr>
<th>IPCC scenarios</th>
<th>Climate sensitivity</th>
<th>2020</th>
<th>2050</th>
<th>2070</th>
<th>2100</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1C Low (1.5°C)</td>
<td>0.04</td>
<td>0.08</td>
<td>0.14</td>
<td>0.22</td>
<td></td>
</tr>
<tr>
<td>Medium (2.6°C)</td>
<td>0.09</td>
<td>0.17</td>
<td>0.30</td>
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<tr>
<td>High (4.2°C)</td>
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<td>0.27</td>
<td>0.48</td>
<td>0.85</td>
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<tr>
<td>B2 Low (1.5°C)</td>
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<td>0.07</td>
<td>0.10</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>Medium (2.6°C)</td>
<td>0.10</td>
<td>0.16</td>
<td>0.23</td>
<td>0.35</td>
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<tr>
<td>High (4.2°C)</td>
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<td>0.26</td>
<td>0.40</td>
<td>0.62</td>
<td></td>
</tr>
</tbody>
</table>

![Table 2. Estimated area that would be flooded if a Category 5 hurricane were added to CC related SLR (km²)]

<table>
<thead>
<tr>
<th>Year</th>
<th>2050</th>
<th>2100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal conditions (with climate change)</td>
<td>2,349.5</td>
<td>5,696.5</td>
</tr>
<tr>
<td>Climate change + Category 5 hurricane</td>
<td>19,935.3</td>
<td>20,614.2</td>
</tr>
</tbody>
</table>

4. Cuban coastal communities are extremely vulnerable to the impacts of increasing sea level with a total of 119 (out of 262) coastal human settlements being identified as at risk from a range of CC-related impacts (See Figure 2) and 21 being predicted to disappear by year 2100. In addition, the karstic geology in the country results in a high level of dependence on subterranean aquifers that are susceptible to contamination from flood and storm events and increasing salinization from seawater incursion, thus posing direct threat to public health and water security.
Target Areas

5. Three coastal "stretches" identified as highly vulnerable to CC have been targeted under this project, totaling an approximate length of 2,763km of coastline and 2,716,800ha (72.390ha located on land and 1,992,900ha in marine areas (see Figure 3)). The project interventions will have a direct positive effect on 490,733 people within these stretches.

1) **La Coloma – Surgidero de Batabanó**: extremely narrow (in some places only 30km wide) thus entirely susceptible to sea prone CC-related impacts. This is the most vulnerable zone in Cuba to extreme hydro-meteorological events.

2) **Júcaro – Manzanillo**: Highly vulnerable to SLR and extreme storm surges. Sea water penetration is predicted to reach an average of 0.15km inland and in some areas up to 8.3km. The area between Guayabal and Santa Cruz del Sur is severely affected by marine intrusion with two of its aquifers facing high levels of saline intrusion.

3) **Baracoa/Gibara**: highly vulnerable to flooding from storms due to the frontline location of urban and rural settlements along the shoreline and the bathymetric and physical/geographic conditions of the coast. The flooding generated by Hurricane Matthew (due to a combination of storm surge, wave height and high tide) affected more than 330km of coastline. This area is the most important source of fresh water for most of the Cuban population.

Coastal Ecosystems

6. The integrity of the coastal ecosystems and of the coastal landscape as a whole is crucial for a strategy aiming to protect coastal communities against the impacts of SLR and marine prone extreme events particularly the impacts of waves associated with tropical storms, hurricanes and southerly winds (“sures”), slow on set events and, in turn help slow coastal erosion while also reducing the risk of coastal flooding and soil salinization from sea water incursion.

7. The functionality of coastal ecosystems and their complex interconnections allow them to provide a variety of services to communities (See Figure 4), including coastal protection, and disaster risk reduction particularly when acting as an integrated system within a coastal landscape. These integrated coastal ecosystems can act not just as a first line of defence against extreme events, but as a key component to reduce the risk related with extreme and, slow onset events as with other impacts related to climate change, such as sea level rise and soils salinization.

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6 In Manzanillo, a category 4 storm in October 2016 resulted in a storm surge of 2.27m

7 Silvestri, S., Kershaw, F. (eds.), 2010. Framing the flow: Innovative Approaches to Understand, Protect and Value
8. Ecosystems are currently being impacted by CC and anthropogenic pressures tampering their capacity to perform climate protective functions. While actions are being taken nationally to address anthropogenic pressures\(^\text{10}\), additional resources are needed to ensure their functionality as a protective service to CC. Currently, 82% of the sandy beaches in show signs of CC-related erosion; with some already disappeared and others are projected to disappear due to the impacts of waves associated with hurricanes. Rehabilitating dune vegetation will slow this process and possibly stop it. Mangroves have suffered high levels of degradation affecting their ability to reduce wave impacts and stabilise shorelines. Coral reefs have demonstrated signs of bleaching that can be attributable to CC-related increases in surface water temperature and compounded by the increased impacts of hurricanes\(^\text{11}\). Around 70% of reef crests in Cuba are highly deteriorated with current prediction models estimating a structural disappearance of coral crests within around 40 years if no action is taken. This decline has serious implications, given the importance of coral reefs and mangroves in protecting coastline against wave impacts.

9. Investments made in hard infrastructure that have sought to mitigate saline intrusion and other related climate challenges have had the unintended consequences of further degrading coastal landscapes, thus increasing the vulnerability of coastal communities to CC. For example, The South Dike, a 51.7 km levee built in 1991 aimed at accumulating runoff fresh water to halt the infiltration of saline water in the interior of a main aquifer, did result in greater access of fresh water, however, the investment caused degradation of coastal mangrove system resulting in erosion along the coastline which in turn increased the vulnerability of the coastal area and its communities to oncoming hurricanes and storms.

**Alignment with national priorities**

10. In 2015, the GoC produced a report\(^\text{12}\) gathering scientific evidence and data from the last decade to analyze the vulnerabilities of the coastal marine zone to CC. This report became the baseline for the National Environmental Strategy of Cuba (NES) and the 2017 national political strategy called *Tarea Vida* (Task for Life) that identified the eminent danger to coastal areas from saline intrusion, flooding and physical impacts and marked them as a national priority. The GoC is enthusiastic in the project's potential to enhance the implementation of *Tarea Vida*, which specifies progressive investments in the short (to 2020), medium (to 2030), long (to 2050) and very long (to 2100) term. Tools and capacity building platforms developed through this project will directly assist the GoC in providing national scale mechanisms for

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\(^{10}\) Enforcement of restrictions on sand extraction, removing physical barriers on the beaches, rescue program for beaches and coastal areas, infrastructure investment and a recently approved Law on Management of Terrestrial Waters, amongst others

\(^{11}\) Alcolado et al., 2009. *Trend of change of live stony coral cover in Cuban coral reefs*. Serie Oceanológica No. 5. La Habana, Cuba.

adaptation actions in coastal areas while leveraging existing national assets such as a high level of expertise and technical knowledge in natural resource management.

11. Cuban’s NES for 2017-2020, the Directives for Tackling Climate Change (2016) and the Nationally Determined Contribution (NDCs) have all declared climate change adaptation as a national priority, with threats to its coasts being highlighted as the most important challenge arising from climate change. The Guidelines for the Economic and Social Policy of the Party and the Revolution (2016) state the importance of accelerating the introduction of directives and programmes aimed at tackling climate change and integrating them in territorial and sector policies.

**Baseline Projects**

12. The project will build on the results of a large portfolio of projects related to the sustainable management of natural resources and ecosystem conservation. These have resulted in the establishment of solid institutional capacities and enabling conditions to facilitate the effective implementation of the project. They include: i) the GEF Sabana-Camaguey Project for coastal management that enhanced community participation to improve coastal governance and develop protocols for ecosystem monitoring; ii) the Adaptation Fund Project in the provinces of Artemisa and Mayabeque aimed at reducing vulnerability to coastal floods through mangrove restoration and rehabilitation; and iii) the national “Macroproject on Coastal Hazards and Vulnerability” that consisted of 12 research projects on the challenges of adaptation in coastal zones. National research and pilots have also led to informed best practices in mangrove, coral reef and dune rehabilitation (p.32-35 Pre-Feasibility Study).

**Key Barriers addressed by the proposed project**

13. While adaptation has been signalled as a priority, adaptation planning has been limited particularly when it comes to community resilience. A national adaptation strategy that takes into account the protective role of ecosystems as a stronghold while integrating communities, and enabling inter-sector coastal planning is needed. Barriers are:

1) **Limited experiences with the integrated and sustainable application of EBA:** A solid base of knowledge and expertise has been developed on natural resource management, sustainable land management, biodiversity and conservation, but there is a generalised lack of knowledge and practical understanding within government and productive sectors on how to integrate this diverse portfolio into a coastal adaptation strategy with interventions across multiple coastal ecosystems (as a functional coastal landscape) as is required for coastal protection.

2) **Limited knowledge in vulnerable communities of CC impacts and adaptation options:** CC is seen by local people as a future issue instead of an ongoing process that already poses immediate threats to lives and livelihoods, thus limiting their buy-in to adaptation strategies and planning. Actions have mainly focused on preparation and recovery to individual events and not to an ongoing phenomenon. Further, only limited number of staff in Cuban institutions at local and national level has first-hand practical knowledge of the range of adaptation options that exist and these have yet to be collected or disseminated as an effort to promote coastal resilience.

3) **Limited utilization of information on CC by communities and decision makers:** Cuban scientific and technical institutions have generated large amounts of information on the characteristics of coastal and marine ecosystems, trends in climatic conditions, and the magnitude and nature of CC threats affecting the ecosystems and local populations. This highly scientific material is not accessible to key decision makers, nor presented in the required manner needed for its effective application. Hence, knowledge has not yet evolved into recommendations to allow the formulation of responses and bridge sector gaps particularly at a local level.

4) **Inadequate cross-sector provisions for CCA in policy and normative frameworks:** although inter sector-coordination has been progressively strengthened in recent years, there is still an entrenched tendency for institutional actors –environment, social, production- to work in silos. This is particularly evident at a local level, where there is an expectation to follow national sectoral directives. While a legal framework has been established to promote territorial decentralization, it has yet to be made effective due to the fact that there are limited inter-sector mechanisms that foster and enable municipal adaptation planning. This has resulted in limited capacities to incorporate adaptation, natural resources management and decision-making at the territorial level.

5) **Limited investment:** climate change adaptation has been hindered by a limited availability of funds for investment. The current international economic context facing Cuba limits the capacity of the GoC to access capital markets and hard currency thus translating into higher costs and difficulties in accessing equipment and materials. Interventions proposed through this project favor cost-effective interventions, which while may require high implementation investments followed by reduced maintenance costs in the long term and ability to leverage national strengths (strong scientific and monitoring capacity) while providing additional positive externalities to coastal communities.

**B.2. Project/Programme description (max. 3 pages)**

**Adaptation alternative**

14. The project will promote the adoption of a new paradigm to guide adaptation efforts in Cuba taking into account the strengths and weaknesses of the baseline and offer a viable, socially and environmentally sustainable cost-effective alternative to existing approaches in addressing CC-related threats to coastal areas. The key elements are:
1) **Ecosystem-Based Adaptation (EBA):** management, maintenance and rehabilitation of ecosystems that provide services that enable people to adapt to the impacts of climate change;

2) **Strengthening communities’ understanding of climate change:** involvement of communities in adaptation actions and governance, based on consultation, ownership and awareness raising about threats and responses. An essential element for ensuring the long-term sustainability of resilience and EBA interventions;

3) **Integrated inter-sector approach:** integrating natural, social and productive activities components of the coastal landscape through enabling planning mechanisms that recognize the interrelation of CC impacts and responses.

15. The project’s **objective** is to increase resilience to the effects of climate change in threatened coastal communities and ecosystems through the implementation of EBA, local community capacity building and mainstreaming EBA within local and national planning frameworks for coastal management. This will be achieved through 3 project outputs: **Output 1** focusing on strengthening natural infrastructure to reduce the impact of CC hazards; **Output 2** focusing on enhancing coastal community resilience through adaptive capacity building; and **Output 3** focusing on ensuring an adequate enabling environment to monitor and mainstream EBA at a local level and its scaling up at a national level. These 3 outputs present a comprehensive approach to ensure coastal resilience by focusing on harnessing natural coastal defenses, community resilience and a national enabling framework.

**Output 1: Ecosystem Rehabilitation for Coastal Protection and Resilience to Climate Change**

16. The project proposes to rehabilitate coastal ecosystem structure and connectivity within a wider functional coastal landscape, including coral reefs, sea grass, beaches and dunes, coastal lagoons, cienagas (swamps), mangroves, and coastal forests along an approximate length of 2,763kms of coastline that influence the direct integrality of 2,717,10 ha. The rehabilitation aims to reestablish the ecosystem protective service from various ecosystems along targeted coastlines focusing on increasing the coastal ecosystem’s inherent resilience to extreme events and changing environments, including winds currents and waves and acting as physical barriers as well as an energy dissipation area. A range of rehabilitation actions will be implemented in coral reefs, mangrove, dunes and coastal forests, for which GCF resources are sought. These include coral and sea grass rehabilitation, mangrove rehabilitation, rehabilitation and enrichment of swamp forests along the landward limit of the coastal wetland belt (See p42-44 Pre-Feasibility Study). Actions across coastal ecosystems will be implemented with the full participation of local actors to ensure long term sustainability.

17. CITMA will lead the initiative supported by local public forestry services and cooperatives. Government co finance from these institutions is earmarked by Tarea Vida being directed in additional investments focused on conservation and land restoration along the targeted coastlines.

**Output 2: Increased capacity for adaptation in coastal communities**

18. **Output 2** looks to enhance coastal communities’ capacities to adapt to the risks posed by climate change as well as to provide an understanding of the links between EBA and coastal protection. Through the development of relevant climate information products for adaptation (Activity 2.2) communities will not only have the information needed to adapt to climate change but also will have as a result of Activity 2.1, the capacity to address risks through EBA and CBA.

**Activity 2.1: Enhancing local stakeholder capacities for adaptation through Capacity Building Centres (CBCs)**

19. This activity will enhance community capacities and disseminate climate adaptation knowledge in targeted coastal municipalities through existing local CBCs, while leveraging national training models and infrastructure (including the Disaster Risk Reduction Management Centers (DRRMC), Municipal University Centers, Environment Studies Centres (ESC). These capacity building platforms- which are already in place with a record of success on addressing environmental and disasters relief issues- will be tailored to provide information on coastal and natural resource management (water, coastal ecosystems) and the relevance of EBA in the face of climate change projections and impacts towards coastal communities and productive sectors. This will ensure that EBA as a concept and strategy becomes accepted and valued within local populations to ensure community buy in and provide capacities to maintain and conserve valuable coastal ecosystems as protection mechanisms to CC.

20. Target beneficiaries and actors will be community leaders and representatives from productive, planning and decision sectors at a territorial level. GCF funds will be used in developing the curricula appropriate for municipalities and transferred to local stakeholders as well as in the additional resources required for its implementation (training material and equipment, training of instructors). While GCF will cover initial investments, GoC will cover the costs related to incorporating CBCs and learning materials within current government structures -including its electronic learning database INFOGEO- to ensure its upscale, maintenance and long term sustainability.

**Activity 2.2: Climate information (CI) products for adaptation tailored for coastal communities**

21. **Activity 2.2** will use GCF funds to bridge communities’ information needs, throughout 8 municipalities, with existing national early warning and monitoring systems to enhance their day-to-day coping capacity to CC impacts. The information products will be designed according to participatory vulnerability analysis and focus primarily on climate adaptation (as a continuous process rather than one off events) at community level. CI products will be built by packaging relevant information available through national climate observation systems to address community needs for adaptation (i.e. impacts on water salinization, water access, food availability, household needs). These will be disseminated through
existing mechanisms that have proven effective for EW alerts such as local DRRMCs. Training by local universities, learning institutions and the ESC, will enhance community capacities to interact with the CI developed under this activity.

**Output 3 Governance and monitoring tools for coastal management and adaptation**

**Activity 3.1 Establishing a National Environmental Monitoring Platform for Coastal Adaptation**

22. This activity will use GCF funds to strengthen existing environmental and natural resource management information platforms (INRH, CITMA, Ministry of Agriculture, among others) integrating them into a wider permanent national environmental monitoring platform for adaption in coastal zones to be managed centrally by CITMA. By consolidating existing isolated natural resource management platforms relevant for coastal resilience, national authorities will have the capacity to monitor ecosystems and coastal landscapes in an integrated manner to better assess the effectiveness of ecosystem-based intervention responding to the impacts of both SLR and storms. The integrated environmental monitoring platform for adaptation resulting from this activity will generate annual monitoring reports on the impact of interventions, investments and CC along Cuba’s coastline and will promote the continuous flow of information and knowledge generated during the project and throughout the implementation of Tarea Vida. This will facilitate replication, both nationally, and potentially to other SIDS within the wider Caribbean region where limited coastal EBA with successfully proven interventions exist.

23. GCF funds will be used in enhancing and integrating existing information platforms into monitoring indicators to continually assess coastal vulnerability and resiliency to climate change (ecosystem health, saline water intrusion, coastal erosion, etc.). Funds will be used specifically for the procurement of information technology equipment and software required for managing the integrated monitoring platform with continuing cost covered by existing government budgets. Investments under this activity will also include enhancement in the monitoring of investments in aquifer recharge to reduce saline intrusion in coastal aquifers which are deemed particularly vulnerable to climate impact taking advantage of the existence of more than 30 wells and naturally existing cavities in the karstic bedrock located within the coastal ecosystem restoration areas. GCF Funds will be used for automatic saline monitoring equipment and the development detailed protocols for the monitoring of existing national aquifer recharge solutions. Government co financing will be invested in the monitoring of adjoining aquifers and measuring the impact of hydraulic works in reducing saline intrusion.

**Activity 3.2: EBA coastal protection measures integrated into Municipal Development Plans in Coastal Areas**

24. This activity will work with coastal municipalities in mainstreaming coastal adaptation strategies collected from the project and informed through the monitoring results from Activity 3.1. These will be incorporated into local planning mechanisms being developed and updated under the framework of Tarea Vida to ensure long term sustainability of EBA measures. Actions are: i) including coastal adaptation investments in new planning and sectorial instruments (i.e. ICZM, municipal land planning strategies); ii) providing technical advisory to water, land, productive (agriculture, fishing), environmental sectors and actors (community leaders, local governments, productive organizations, scientific/technical local research centres, civil society representatives), resulting in inter-sector integration being extended to the planning and management of successful EBA; and iii) overseeing relevant actions at national and municipal level to incorporate EBA and coastal adaptation management into local economic planning. Actions will be implemented in close collaboration with local and national actors, to which end, the project team will create sector, institutional and multidisciplinary networks, and their relevant coordination mechanisms to be managed through Municipal Administration Councils. GCF funds will be specifically used for expert support and in the development of technical inputs for knowledge management (material, maps) with GoC co-financing from Tarea Vida directed at enhancing municipal capacities.

**Theory of Change**

25. This project will shift the paradigm in climate resilience in coastal areas in Cuba, resulting in the full-scale, integrated and sustained application of an EBA approach together with building capacity and awareness among direct beneficiaries and government institutions at all levels. The project will build on baseline successful experiences and knowledge in ecosystem rehabilitation to support an integrated EBA approach within a coastal ecosystem landscape. It will also ensure the knowledge is disseminated through the CI products and managed through enhanced adaptation capacities and actions (from territorial planning, to understanding the impacts of CC and manging its response). By training local communities and authorities, the project will enhance ownership at the local level, and by promoting information exchange and letting local entities have an active role within the monitoring and information management the project is enhancing ownership of the decision-making process thus ensuring proper adaptation in vulnerable coastal areas, which represent over 50% of the country. Increasing the understanding of the risks and solutions among planners and communities will allow and promote more effective adaptation actions within the territorial development plans- as they apply to coastal management.

26. The beneficiaries of the project transcend the limits of the EBA direct intervention areas and neighbouring communities, through the effective management of information and knowledge, and the creation of favourable enabling conditions for mainstreaming adaptation in policies and regulatory instruments. To this effect, actions in the project, include the systematization and sharing of valuable lessons and adaptation best practices learnt with other actors, projects and institutions through a national environmental monitoring platform (activity 3.1) that will ensure that information flows from and back to the municipalities. This last step had been missing in past national adaptation approaches. With
the complementarity and synergies between its three outputs, the project will ensure that the necessary conditions are created for nationwide application and that could be extended to SIDS facing similar conditions. Please see the theory of change diagram in annex 1.

**Consistency with national regulatory and legal framework**

27. The project proposes direct solutions for all priorities outlined in *Tarea Vida*, supporting the GoC’s plans to tackle climate change, developing adaptive actions in prioritized sectors and supporting enabling planning mechanisms for nationwide scaling up. It is aligned with the NES (2016-2020), which defines climate change and its impacts as one of the main problems to address in the country; and to the National Program of Biological Diversity and National Action Plan (2016-2020), which includes goals and actions to promote the resilience of the natural ecosystems recognizing that climate change will have negative effects on valuable ecosystem services.

28. The project builds up from the formal and informal training and education programs and expertise already existing at the local level (Capacity building centres, Municipal University Centres, Disasters Management Centres, among others). These programs’ expertise and presence within local communities, productive sectors and schools will support successful community engagement and action while ensuring a transition from a hazards reduction to an adaptive planning approach. It also builds on the GoC’s recent emphasis on enhancing local governments.

**Implementation Arrangements**

29. CITMA will be the executing agency for the project. CITMA is responsible for directing, executing and controlling State’ policies in relation to science, technology, environment and their coherent integration into national sustainable development and is also responsible for coordinating the National CC Group that brings together various national sectors and academic institutions. CITMA has expertise in implementing the baseline projects in natural ecosystem management. It will work with local and national partners and community members to implement the project while drawing upon its ascribed entities (Service for National Protected Areas, National Environmental Agency, etc.) and territorial delegations.

30. The project will be implemented following UNDP’s National Implementation Modality (NIM), according to the Standard Basic Assistance Agreement between UNDP and the Government of Cuba, the Country Programme Action Plan (CPAP), and policies and procedures outlined in the UNDP POPP. UNDP Cuba will support the oversight of project budget and costs, appointing and contracting staff and consultancy services, subcontracts and equipment supply. UNDP Cuba will also monitor project implementation and the achievement of outcomes and outputs, and will ensure the efficient use of grant funds. UNDP has worked with Cuba in several of the baseline projects (listed in the pre-feasibility study) that this project will upscale and integrate within the national adaptation strategy that integrates EBA and CBA, thus it is well suited to support the GoC in this process.

**Identified Risks**

- **Limited engagement of local actors in the implementation of the project activities** which leads to a lack of appropriation of the adaptation initiatives affecting their sustainability in the long term. The project has been designed in collaboration with national and local actors to address their vulnerability and needs. A Community Engagement Plan is being developed along with consultations that will be included within the forthcoming project proposal. Consultations will include an early phase to disseminate information about the project activities in targeted communities that will also support building capacity on adaptation and the benefits of EBA/CBA, safeguards and climate change in general. The consultation plan under development will include culturally appropriate methodologies tailored to the actors where consultations programs will be implemented. Best practices for community engagement from baseline projects will be incorporated.

- **Extreme weather events affect the expected impact of the project interventions.** The outputs of the project, particularly output 1, are exposed to extreme weather events, which could cause damages, loss or delays during the implementation. The project considers different types of activities that are complementary to each other that will be implemented simultaneously to strengthen and complement the positive expected effects from these interventions. In addition, project implementation will take into consideration regular hurricane seasons in project investment planning.

- **Reduced effectiveness of the project because activities are not undertaken to identify and address the causes driving ecosystem degradation.** The project will develop actions to restore ecosystem functions focusing on their coastal protective role, while the GoC will use national funds and initiatives to address the drivers of degradation by strengthening the Environmental Regulatory System (p.10 Prefeasibility Study), including elaborating and implementing regulations specific to each territory and support the capacity building at the national and local levels.

- **Unexpected environmental or social impacts from the interventions affect project implementation and expected results.** As part of the project design, a preliminary environmental and social risk assessment was developed to identify potential risks and mitigation measures that will be implemented through the implementation of the project given the particular socio-economic context of Cuba, and taking into account the sensitive environmental areas in which the project interventions are focused. The project will avoid major risks in its design and where residual risk remains, the Environmental and Social Management Framework (ESMF) will comprehensively outline the mitigation
measures that will be required through the implementation of the project. A Stakeholder Consultation Plan and Gender Action Plan will also be developed in order to maximize social benefits and avoid social risks.

- **Risk associated with the conditions of work within natural ecosystems**: Health and safety protocols will be followed to ensure health and safety risks are minimized and guarantee the health and safety of all project field staff.
- **Increase on prices and restrictions to access international markets raise implementation costs**, diminishing the financial capacity of the project to undertake all the planned activities. A procurement plan will be developed to plan for the necessary procurement in the short and medium term that will take into account possible currency related risks as have been managed in past international funded projects in which UNDP has provided support to mitigate financial risks (negotiated contracts with fixed pricing, block purchasing, diversified vendors, etc.).

### B.3. Expected project results aligned with the GCF investment criteria (max. 3 pages)

#### Impact Potential

31. Total beneficiary population (direct and indirect) will consist of the 1,285,322 inhabitants of the 20 coastal municipalities that comprise the three coastal stretches targeted. Within this overall beneficiary population, the project will directly benefit 490,773 inhabitants of the direct intervention areas (output 2); it will also benefit to a lesser degree the remaining 794,029 inhabitants of the full target areas, also affected by CC-related impacts (including SLR and saline intrusion into aquifers) and that will benefit through the EBA project’s actions along the target coastlines.

#### Paradigm Shift

32. The project will provide support in transitioning from hard disaster risk management approach to CC to a holistic approach that favours resilience through adaptation as a continuous process that maximises the functionality of natural infrastructure along coastal zones and that is grounded on and sustained through coastal communities and informed coastal planning mechanisms. Through the complementarity and synergies of its 3 interrelated outputs, the project will ensure that the necessary conditions are created for nationwide application of the proposed coastal protection measures by addressing the baselines of action required for effective EBA (protective ecosystems, communities as active agents of adaptation and planning frameworks).

33. While Output 1 will enhance natural coastal infrastructure as systems to mitigate climate impacts to coastal zones, Output 2 will promote a shift from a traditional reactive approach that considers communities as passive stakeholders into a preventive approach where they are informed active agents of coastal and risk management. Output 3 will provide an opportunity to shift from a sectoral approach to coastal management into an integrated and cohesive policy based on informed decision making that can be translated at a territorial level for effective ecosystem based coastal adaptation.

34. The EBA approach favoured by the project allows for a cost-effective strategy to coastal adaptation that builds on Cuban’s strongholds –sound understanding of its coastal ecosystems functionalities and services, strong scientific capacities of national institutions, educated communities, and existence of political will. It does this by enhancing national institutions to work in an integrated manner on adaptation to enhance the protective role of coastal ecosystems while leveraging in-country research and proven experiences that have yet to be implemented at a large territorial scale.

35. This will be further enhanced by involving local stakeholders as key figures in ensuring the permanent and sustainable functionality of the adaptation measures. Involvement will be achieved through capacity building across the CBCs and the provision of relevant information on climate risks and natural resources management as an adaptation strategy. The monitoring system established in Output 3 will be an essential instrument to enable inter-sectoral integration while providing consistent information on the effectiveness of investments on coastal natural infrastructure, which will be valuable not only for national upscale but to other tropical countries in their efforts to implement coastal EBA initiatives. Through Output 3, the project also provides an important opportunity in the country to enable information to flow back to communities so that it can be integrated into local coastal planning mechanisms thus moving beyond the implementation of top down directives. This will make the project a unique experience in the country.

#### Sustainable Development

36. Sustainable development co-benefits include:

| Economic | - Reductions in the economic impacts of SLR, extreme events and saline intrusion on natural capital, productive activities and infrastructure.
|          | - Reduction in the Government’s financial cost for emergency and recovery financial costs when responding to extreme events associated with CC;
|          | - Creation of local employment in ecosystem restoration activities, with associated economic multiplier effects. The high levels of gender equity in Cuban institutions and productive entities mean that significant such benefits will accrue to both men and women. |
| Social  | - Reduced exposure to the social and health impacts of extreme events associated with CC. This is particular significant for women, given that (despite generally high levels of gender equity in the country) there is still a significant level of gendered differentiation of roles in rural households, with women tending to be predominantly responsible for family health and living conditions and strengthening their capacities will reduce overall household vulnerability. |
Co-benefits derived from well recharge monitoring are related with water quality, early warning systems and groundwater use and availability.

- Increased resilience and stability of livelihoods challenged by CC through productive planning and capacity building.
- Co-benefits derived from improving reliability and access to ecosystem goods and services provided through EBA, include improvement of fisheries which will benefit food security, water retention and purification through enhanced vegetation cover, increased local biodiversity, migratory species habitats, increased air quality, increased support for offshore fisheries benefiting the wider Caribbean region, pollutants assimilation, lands stabilization, regulating fresh water pulses, remineralization, increased benefits from recreational activities, medicinal products, increased agriculture production (pollinators habitat), non-timber products

Environmental

- Improved conservation status of ecosystems and rehabilitation of their functions, generating global environmental benefits (biodiversity and blue carbon capture) in addition to social benefits (ecosystem goods and services) and adaptation benefits through EBA.
- Reduction in land/ecosystem degradation (SLM benefit) and increase in carbon stocks and mitigation potential due to reforestation and improved management of watersheds.

**Needs of the recipient**

37. The project addresses the high vulnerability of coastal communities to climate change, particularly focusing on extreme events, SLR and saline intrusion. Nationwide, a total of 119 coastal human settlements have been identified as at risk from a range of CC-related impacts, under the projected scenario for 2050 and 21 are predicted to disappear by the year 2100. The most extreme SLR scenario would result in the flooding of up to 5,696km², affecting more than 220 settlements. The project is addressing those coastal settlements classified as most vulnerable to these CC related impact

**Country Ownership**

38. The GoC has actively participated in conceiving the project to respond to the priorities identified in the country’s overarching policy and planning documents, and with a sound scientific baseline of the impacts, including: the NES 2016-2020, the Directives for Tackling Climate Change (2016) and NDCs. The project complements and in some cases sets the baseline for the implementation of the GoC’s climate change national strategy (Tarea Vida), to which its implementation in target areas will serve as strategic co-financing during the project. Local communities and stakeholders’ outreach is a crucial component of the project, both during design and implementation stages, which are being and will continue to be implemented through consultations and the development of monitoring systems

39. Country ownership will further be ensured through the leadership role of the CITMA as executing agency. CITMA is the lead agency of the environment sector and has demonstrated its strength, capacity and transparency in the execution of international projects, including an extensive portfolio of Global Environmental Facility (GEF) projects, totalling nearly USD 50 million, mostly under the implementation of UNDP.

40. The identification and formulation of the project was conducted involving a wide range of stakeholders at the national, provincial and local level, including initial consultation in the three project areas. Project activities will be implemented with close collaboration among national, provincial and local stakeholders, including government representatives, forestry associations and cooperatives, civil organisations, academia and members of communities in the intervention areas

41. A stakeholder map and a jurisdictional map will be developed for the FP, ensuring that entry points institutions at the national and local level are adequately informed and involved during project implementation. Mapping will be supported by a consultation process undertaken with local, provincial and national actors, and a comprehensive stakeholder consultation plan (as well as a Gender Action Plan) will be developed.

**Cost Effectiveness**

42. GCF funding will be highly focused on covering the additional costs of delivering CC resilience benefits to the target communities. The feasibility study will include initial comparisons of the cost-effectiveness of the project approach versus other approaches (such as hard infrastructure), and detailed analyses will be presented in the final Project Document. Cost-effectiveness will be maximised as follows:

- Channelling investments into areas identified as highly vulnerable to coastal related climate threats;
- Focusing on an EBA approach, considered to be more cost-effective than “hard” infrastructure, given that the ecological infrastructure already exist and the project will focus on repairing and/or addressing those aspects that could affect its functionality as a defence barrier. Once ecosystems have reach the desired protective functionality derived from rehabilitating and strengthening specific ecological processes, ongoing maintenance costs are much lower compared to hard infrastructure;
- Local stakeholders and communities’ engagement in the project activities; as full participants in the planning and implementation of the proposed adaptation strategies, and inducing local ownership, thereby reducing the need for (and cost of) costly advocacy campaigns well into the project implementation.
- To ensure local mainstreaming and ownership the project is holding consultation processes with local authorities allowing the technical team to understand the potential barriers and challenges for implementation, as well as identifying opportunities and partners and project champions locally.
- In addition to the declared co-financing, it is expected that the project will be able to leverage a similar amount of additional investment in the form of indirect investments or longer-term resource commitments.

B.4. Engagement among the NDA, AE, and/or other relevant stakeholders in the country (max ½ page)

43. The identification and formulation of this concept note was conducted involving a wide range of stakeholders at the national, provincial and local level, including an initial consultation in the three project areas. These consultations were done through participatory brainstorming, site visits, formal meetings and email communication and a wider national consultation workshop took place to validate the approach and territorial ownership.

44. For the detailed proposal development, a consultation process will be undertaken with local, provincial and national actors and groups. The consultation aims to: i) understand and identify their perceptions of climate change and its impacts on their communities, ii) integrate their views and suggestions on the project activities to the project design; iii) confirm/identify their roles in the implementation of the project, and iv) identify other barriers and mostly opportunities. The consultation process includes an information phase aimed at disseminating information and providing early capacity building that will allow them to manage, sustain and replicate the transformation proposed by the project. These activities will be based on a comprehensive stakeholders’ map and a stakeholder jurisdictional map. A comprehensive stakeholder consultation plan will be developed to describe the consultation process, including its phases, methodology and targeted audience. It is important to note that the project design considers implementing best practices and activities in collaboration of local actors, accompanying implementation with training and capacity building.

C. Indicative Financing/Cost Information (max. 3 pages)

C.1. Financing by components (max ½ page)

<table>
<thead>
<tr>
<th>Component/Output</th>
<th>Indicative cost (USD)</th>
<th>GCF financing</th>
<th>Co-financing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Amount (USD)</td>
<td>Financial Instrument</td>
</tr>
<tr>
<td>Output 1 Ecosystem Rehabilitation for Coastal Protection and Resilience to CC</td>
<td>63.043</td>
<td>18.379</td>
<td>Grant</td>
</tr>
<tr>
<td>Output 2 Increased capacity for adaptation in coastal communities</td>
<td>10.712</td>
<td>3.544</td>
<td>Grant</td>
</tr>
<tr>
<td>Output 3 Governance and monitoring tools for coastal management and adaptation</td>
<td>15.945</td>
<td>4.550</td>
<td>Grant</td>
</tr>
<tr>
<td>Output 4 Project Management</td>
<td>6.544</td>
<td>3.000</td>
<td>Grant</td>
</tr>
<tr>
<td>Indicative total cost (USD)</td>
<td>96.244</td>
<td>29.473</td>
<td>67.470</td>
</tr>
</tbody>
</table>

C.2. Justification of GCF funding request (max. 1 page)

45. Cuba has extensive information resources and strong technical capacities that have been put into place through the development of various vulnerability assessments and climate change scenarios used in the shaping of this project. However, the country lacks a national adaptation strategy that integrates this information into a scalable adaptation model that takes into account the protective role of ecosystems as a stronghold while integrating communities, and enabling inter-sector coastal planning. This situation is even more pressing when considering the climate changes projections for the country and its impact on vulnerable coastal communities.

46. The absence of an integral adaptation approach in Cuba is a result of both a lack of the initial financial resources required to carry out the necessary adaptation investments and limited capacities to develop the required tools needed for effective inter-sector cooperation. The investment needed to address the additional cost to climate change is beyond the scope of financial instruments currently applied or planned by the Government, and the country does not have access to other financial instruments including any international loans.
The impacts to be addressed are exclusively public and global in nature, and do not generate financial returns, thus precludes financing by the private sector which in the case of Cuba is extremely incipient. No international development banks currently operate in Cuba and no mechanisms exist for the administration of reimbursable financial instruments.

Cuba seeks maximum concessionality to undertake the proposed adaptation actions as justified by the following:

1) The nature, magnitude and urgency of the CC-related threats facing coastal communities in Cuba are such that immediate action is required, with levels and types of investment that are beyond the capacity of the GoC to satisfy in the short term, with the limited resources of convertible currency available to it.

2) The CC-related impacts to be addressed by the project cannot adequately be addressed by existing financial instruments managed by the State, or through investments by actors in production sectors such tourism and agriculture.

The sustainability of the impact of the grant investment will be ensured by the full participation of the communities in the identification and prioritisation of the issues to be addressed and the planning and implementation of corresponding investments, backed up by effective community-based governance provisions, and the selection of climate sustainable ecosystem rehabilitation practices. In addition, by building up and enhancing existing government mechanisms the project ensures that investments are integrated into national structures with committed government financing for maintenance and upscale as well as enhanced uptake.

C.3. Sustainability and replicability of the project (exit strategy) (max. 1 page)

50. Technical sustainability will be ensured through the use of adaptation strategies that have relatively low levels of technical complexity and limited requirements for ongoing maintenance, and that are built on technical and scientific capacity within the country. For example, the mangrove planting and management techniques have been previously demonstrated in the Adaptation Fund project in Artemisa and Mayabeque. The strategies will also be based on, and backstopped by, major resources of highly qualified technical and scientific capacity in the participating Cuban institutions. EBA initiatives proposed will also not stand alone during the adaptation process as the project plans to build capacity among local communities and governments (national and local).

51. Environmental sustainability is a cornerstone of the project design, with a sound understanding the main drivers of ecosystems functions’ (as natural infrastructure) optimization or degradation, and investing on those functions that enhance ecosystem structural capacity and in reducing conditions that impact such service. Of particular importance will be the application of an integrated coastal ecosystem approach, which recognises that these (mangroves, wetlands, seagrass beds, sandy beaches, dunes and coral reefs) function as an integrated system with vital ecological interdependencies connecting them. Following the proposed initial investment, coastal ecosystems will be in a condition to sustain themselves through natural processes of reproduction, growth and colonisation.

52. Institutional sustainability will be ensured by fully involving national and local institutions (National, provinces, municipal and community-based) from programme design to implementation. As explained in the stakeholder analysis and implementation arrangements, institutions at all of these levels will be directly involved in the project, and in planning and providing technical and governance support for the successful implementation of adaptation strategies; national and local institutions will also participate in the monitoring of the project’s impacts and in the management and dissemination of information and lessons learned. Of particular importance will be the focus of the project on interinstitutional and inter-sector collaboration.

53. Social sustainability will be ensured through the active and direct involvement of the populations affected by, or at risk from, the impacts of climate change in the planning, implementation, management and monitoring of adaptation strategies, as participants rather than solely as stakeholders. The project will also invest in awareness raising and education among the affected/ participating population and respective planning and sector authorities regarding the short- and long-term nature and implications of climate change, and the adaptation options available. This will help to ensure that local people continue to support the adaptation measures in the long term and to reduce the damage to the protective role of ecosystems, from anthropic damage, as well as maximising design and compliance of planning and governance provisions intended to reduce communities and livelihoods vulnerability to climate risks. The inter-sector mechanisms in Output 3 will maximise adaptation mainstreaming among planning instruments and sectors’ policies.

54. Following the necessary GCF’s initial funding investment, required to rehabilitate the EBA functions of key ecosystems and create the capacities and instruments mainstreaming required to sustain them, the financial sustainability of the ongoing maintenance and management of the adaptation strategies will be ensured through financial and economic instruments managed by the Government, including actions foreseen through the long term implementation of Tarea Vida.
|☑️ Map indicating the location of the project/programme |
|☒ Diagram of the theory of change |
|☐ Economic and financial model with key assumptions and potential stressed scenarios |
|☒ Pre-feasibility study (Annex I) |
|☐ Evaluation report of previous project |
|☐ Results of environmental and social risk screening |

### Self-awareness check boxes

Are you aware that the full **Funding Proposal** and Annexes will require these documents? Yes ☒ No ☐

- Feasibility Study
- Environmental and social impact assessment or environmental and social management framework
- Stakeholder consultations at national and project level implementation including with indigenous people if relevant
- Gender assessment and action plan
- Operations and maintenance plan if relevant
- Loan or grant operation manual as appropriate
- Co-financing commitment letters

Are you aware that a **funding proposal** from an accredited entity without a signed AMA will be reviewed but not sent to the Board for consideration? Yes ☒ No ☐
Annex: Theory of change diagram

The theory of change underlying the paradigm shift to be brought about by the project is shown below:

**NEW PARADIGM**
- Recognition, promotion and mainstreaming EBA in territorial planning, understanding ecosystems potential in increasing communities climate resilience
- Recognition of ecosystems interconnectivity across the landscape in building communities and ecosystems climate resilience
- Communities involvement in climate impacts and adaptation actions and governance, based in consultations, ownership and awareness raising
- Integrated vision of EBA, communities engagement and ownership and mainstreaming adaptation in planning instrument as cost-effective and lasting sustainable actions

**ACTIVITIES**
- Integral rehabilitation of coastal landscapes for enhanced coastal protection
- Strengthening ground water monitoring activities in aquifers to assess and control saline intrusion
- Enhancing local action through capacity building Centers
- Climate adaptation products tailored for coastal communities
- Climate information sharing platform in coastal zones
- Climate change adaptation integrated in Municipality plans

**OBJECTIVE:** To increase climate resilience in coastal communities of Cuba

**OUTPUTS**
- Ecosystem Rehabilitation for coastal protection
- Increased adaptation capacity in vulnerable communities
- Governance tools for a climate resilient development in Cuban coastal zones

**BARRIERS**
- Limited experiences with effective and sustainable implementation of EBA
- Local vulnerable communities lack understanding of the impacts of CC
- Communities and decision makers are not using properly the existing information that could potentially be useful to diminish their vulnerability to CC
- Climate adaptation is not mainstream in policy and normative documents
- General perception of EBA approaches

**BASELINE SITUATION**
- There are valuable lessons but the knowledge is dispersed and not integrated nor disseminated
- Insufficient integration and communication between sectors
- Emphasis in hard infrastructural approaches with a punctual solution driven approach, rather than a holistically approach
- Insufficient planning and evaluation of the impacts of resources management actions
- Inadequate monitoring of long term impacts and

**THREATS**
- Sea level rise → coastal erosion & flooding  
  - Destruction of settlements
  - Aquifers salinization
  - Loss of economic activities (tourism)
- Unproductive agricultural land

**THREATS**
- Extreme events → hurricanes, storms, cold fronts (strong winds, storms, surges, rain)
  - Impacts of settlements, infrastructure, communities, local economy and public services
  - Reduced water quality with consequent health and environmental impacts
  - Aquifers salinization
  - Communities isolation

**KEY RESULTS**
- Increased ecosystem resilience and their associated protective role
- Increased communities and livelihoods climate adaptation
- Increased adaptive planning integration in local and national planning authorities