

3 Mango Street  
Belmopan City  
Cayo District, Belize

ph 501 822 3637  
fx 501 822 3759

info@pactbelize.org  
www.pactbelize.org

fb.com/pactbelize

1<sup>st</sup> August 2019

The Adaptation Fund Board  
c/o Adaptation Fund Board Secretariat  
Email: [secretariat@adaptation-fund.org](mailto:secretariat@adaptation-fund.org)  
Fax: 202 522 3240/5

Dear Sir/Madam:

**Subject: Enhancing the Resilience of Belize's Coastal Communities to Climate Change Impacts**

The Protected Areas Conservation Trust (PACT) hereby submits to the Adaptation Fund Board a Concept Note for a Project entitled "Enhancing the Resilience of Belize's Coastal Communities to Climate Change Impacts."

The Project is aimed at improving the resilience of 25 coastal communities in Belize to the anticipated effects of climate change via four innovative components:

Component 1: Improving Coastal Land Use for Resilient Habitation and Sectoral Activities

Component 2: Coast Vulnerability Monitoring


Component 3: Beach Stabilization of High-Risk Coastal Areas

Component 4: Awareness Raising, Knowledge Dissemination and National Capacity Strengthening

The Project components will total USD \$4 million for implementation.

Should there be any queries on the concept, please contact the undersigned or Ms. Denaie Swasey, our Climate Change Technical Officer.

Respectfully,

  
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Nayari Diaz-Perez (Mrs.)  
Executive Director, PACT

CC: Dr. Percival Cho  
Chairman, PACT



**ADAPTATION FUND**

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

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

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

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

Complete documentation should be sent to:

The Adaptation Fund Board Secretariat  
1818 H Street NW  
MSN P4-400  
Washington, D.C., 20433  
U.S.A  
Fax: +1 (202) 522-3240/5  
Email: [afbsec@adaptation-fund.org](mailto:afbsec@adaptation-fund.org)



## ADAPTATION FUND

# PRE-CONCEPT FOR NATIONAL PROJECT/PROGRAMME TO THE ADAPTATION FUND

## PART I: PROJECT/PROGRAMME INFORMATION

Project/Programme Category:	Regular Project
Country/ies:	Belize
Title of Project/Programme:	Enhancing the Resilience of Belize's Coastal Communities to Climate Change Impacts
Type of Implementing Entity:	National Implementing Entity
Implementing Entity:	Protected Areas Conservation Trust
Executing Entity/ies:	National Climate Change Office Coastal Zone Management Authority and Institute
Amount of Financing Requested:	\$4 Million (in U.S Dollars Equivalent)

### **Project / Programme Background and Context:**

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

#### **Country Context**

Belize, located on the eastern coast of Central America, has a national territory which expands across 46,620 km<sup>2</sup>. The mainland of the country comprises 95% of the total territory and the remainder, approximately 1,060 km<sup>2</sup>, consists of small islands and offshore cayes. The country's coastline, which extends 386 km is noted for its extensive mangrove forests, sea grass beds and the Belize Barrier Reef System. Belize's geographic location and low-lying coastal areas leave it highly susceptible to the impacts of climate change as half of the northern portion of the country and a large portion of the southern third, as well as the coastal areas and islands are flat and low lying, being highly vulnerable to sea level rise (SLR), erosion, storm surges and flooding. A 2014 assessment categorized Belize's vulnerability index to climate change as extremely high; ranking 9<sup>th</sup> on the list of 38 other countries in Latin America and the Caribbean (CAF, 2014).

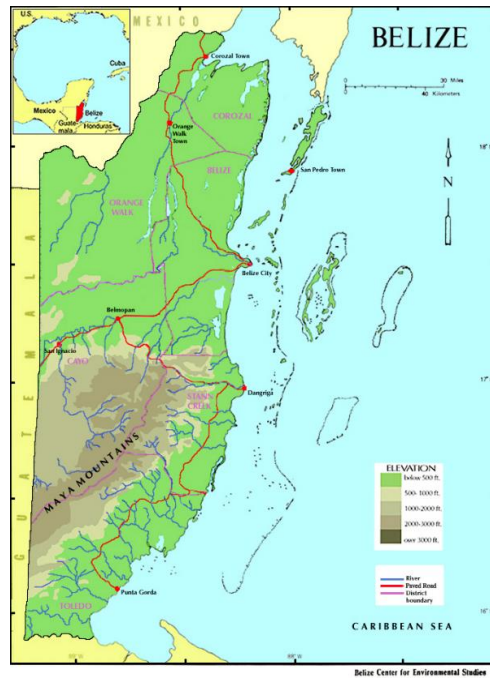


Figure 1. Map of Belize (Belize Center for Environmental Studies).

The coastal zone of Belize, where a significant percentage of the population is located, 40%, and where the bulk of economic activities take place (tourism, fishing and agricultural production), is mostly below the high tide level; placing the coastal zone at a high risk for climate-driven sea level rise, especially when augmented by storm surges. Belize’s Third National Communication identified the coastal ecosystems of Belize as the area most susceptible to the effects of climate change (NCCO, 2016). Anticipated climatic changes will therefore have direct implications on the future state of the coastal zone and the ability of Belizean people to utilize the resources it provides for nature based economic sectors, for example the fisheries and tourism industry.

The IPCC (2007) stated that global sea level rose at an average of 1.8 mm per year from 1961 to 2003. Domingues et al. (2007) estimated a rise of  $1.5 \pm 0.4 \text{ mm yr}^{-1}$  for the same period. According to sea level rise projections for the Caribbean region, sea level will rise 0.18 – 0.59 m by 2099 (Cambers et al., 2007), while Rahmstorf (2007) projected that sea level could increase between 0.5 – 1.4 m above the 1990 level.

The ‘Analyzing Vulnerability of the Belize Coastal Tourism Sector’ Report (2014) indicated that low lying areas in Belize, particularly those with elevations ranging from 0 – 5m, are the most vulnerable to sea level rise. As shown in Figure 2, this accounts for a significant portion of Belize’s coastal zone, especially when a 3 km inward extent along the coast is considered, where most development activities occur. In the development of Figure 2, the CZMAI utilized available data creating an indicative map; there is need to create a modified map utilizing data obtained from technologically advanced mechanisms. The report stated that in relation to tourism a total of 291 tourism facilities were identified along the coast. These facilities were located at different elevations, however, 94% of accommodations were found to be within the lower elevation (0 – 5 m) and 79% of attractions were found to be within the lower elevation (CARIBSAVE, WWF, CZMAI, ERI, BTB, BTIA, 2014). Tourism facilities and other infrastructure/ housing located within these low elevation classes are considered at more risk to inundation. They are also at

higher risk to erosion, soil and aquifer contamination with saltwater and to other impacts of sea level rise. This is alarming, as the coastal plain of Belize largely lies below 20m above sea level, with many areas below 10m and subject to inundation. A significant portion of Belize City, the largest urban area, is on land below 10m.

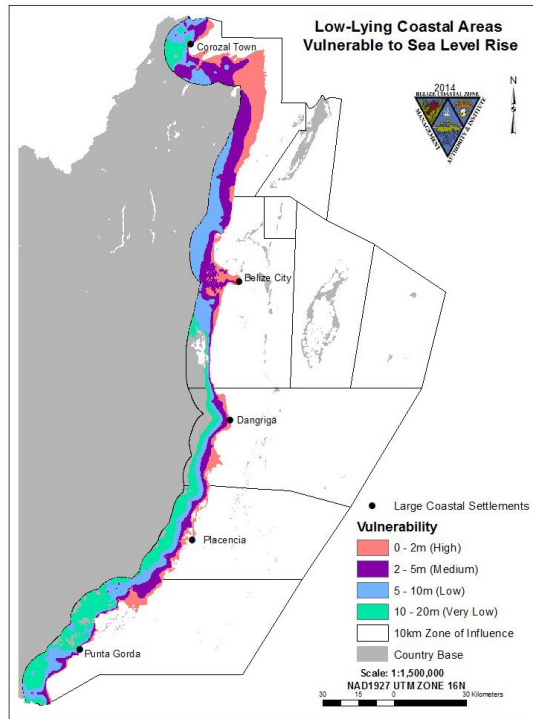


Figure 2. Vulnerability of Coastal Areas relative to sea level rise (CZMAI, 2014)

In some portions of the country, changes in climatic conditions and compounding anthropogenic activities along the coast are already visible. Traditionally within coastal communities, houses are built directly on beaches, unwary of the negative impacts posed by a changing climate due to limited knowledge. Communities along the southern coast of Belize are being drastically affected by erosion as human activities, climatic changes and variations, and other natural causes have resulted in coastal line retreat. Impacts such as these signal the need for strengthened systems and regulations for the implementation of national guidelines for coastal development, the institutionalization of national building codes and the monitoring of erosion in coastal areas.



Figure 3. Images depicting erosion affecting beach dwellings in Dangriga and Hopkins, respectively (NCCO)

Throughout Belize and the Caribbean, the consequences of climate change are impacting communities and national economic sectors. Given current climate projections for the region, the impacts will be exacerbated and have highly noticeable effects on Belize's economic and social development. Changes in the intensity, distribution and frequency of extreme weather events, such as storms and hurricanes, sea level rise (SLR), increase sea surface temperature, ocean acidification, coral bleaching, drought, wildfires, and changes in crop production are but some of the impacts of climate change the country is expected to endure. Changes in sea level will drastically increase the vulnerability of Belize's coastal communities, amplifying coastline retreat.

The impacts of climate change will also result in further cross-sectoral issues such as increased coastal erosion and more extensive inundation from rising sea levels, leading to loss of beaches; increased storm surges leading to the flooding of larger areas, thereby impacting primary production and extending saline intrusion zones into estuaries and coastal aquifers. Such biophysical impacts will lead to loss of coastal habitats, property damage, flooding and loss of life. In addition, these impacts will have economic consequences for rural production, tourism, urban lifestyles and displacement of coastal communities.

In order to effectively address these issues, the threat of climate change requires multisectoral action from policy makers, technical experts, the private sector and the public, in order to seek solutions and make changes to reduce global emissions of greenhouse gases. However, even with mitigation efforts in place, the effects of climate change will still be prominent. Therefore, the impacts currently being experienced and those expected to take place in the near future require the country to find innovative approaches to adapt to the imminent changes in order to reduce vulnerability and enhance resilience to future climate risks and hazards. This Project intends to implement concrete actions that will enable the country to address identified coastal adaptation mechanisms relevant to different sectors under the four components. Through the strengthened capacity of key government agencies resilience will also be increased, leading to better informed decision making. Awareness raising and knowledge transfer will also aid relevant stakeholders in making more informed decisions about building or dwelling directly on the coast.

## **Project / Programme Objectives:**

*List the main objectives of the project/programme.*

The objective of the proposed Project will be to increase climate resilience of coastal communities in Belize by improving coastal land use, habitation and monitoring by increasing adaptive capacity and knowledge transfer. The project will achieve this through four main components:

- i) Improving Coastal Land Use for Resilient Habitation and Sectoral Activities
- ii) Coastal Vulnerability Monitoring
- iii) Beach Stabilization of High-Risk Coastal Areas
- iv) Awareness Raising, Knowledge Dissemination and National Capacity Strengthening

The concept behind this Project is to decrease vulnerabilities in coastal areas by improving planning and decision making thus ensuring that country capacity is built to address future

climate change impacts. Component One seeks to aid in the control of risks and prevention of continued infrastructure development in vulnerable coastal areas, which threatens the integrity of mangrove forests, seagrass beds and coral ecosystems as well as native biodiversity. As infrastructure continues to be built in areas that are highly exposed and vulnerable to risks and future hazards, it is important to regulate and make recommendations for future construction in these areas in avoidance of negative economic and environmental impacts and enforce national guidelines for such activities to lower vulnerabilities. The completion of this component will result in the creation and implementation of a national policy for resilient coastal habitation with the associated building codes. The Integrated Coastal Zone Management Plan and its associated guidelines for zonation will also be strengthened for implementation. Through this, the development of regulations to enforce the coastal zone guidelines will enhance coastal resilience and ensure that identified mechanisms for coastal land use, subdivision, utilization of coastal resources and adaptation to climatic changes will enable sustainable future development along the coast.

The Coastal Vulnerability Monitoring, Component Two, will seek to integrate the impacts of climate change to coastal zone management practices by carrying out critical assessments and monitoring. This component will carry out a crucial assessment and monitoring of saline intrusion and develop a program to track its impacts. A National Beach Erosion Monitoring Program will also be initiated to monitor coastal/beach erosion, utilizing stakeholders within the national protected areas system for on the ground monitoring, with the CZMAI coordinating the related activities. This component will aid in planning for climate resilient infrastructure as it will examine vulnerabilities of saline intrusion and erosion, thus avoiding development in areas that may be highly impacted by these.

The Monitoring component will also include a coastal early warning system for storm surges and flooding. This will lead to a system being established for observation (monitoring), data collection and information management, information dissemination and raising public awareness, as well as implementing appropriate adaptation measures. A subsequent coastal preparedness and response plan for storm surges and flooding will also be developed, highlighting preventative measures that can be taken to decrease vulnerabilities and the severity of impacts. The plan will aid the National Meteorological Service in preparing for storm surges and flooding and to be able to make the best use of resources, time and efforts.

Component three, Beach Stabilization of High-Risk Coastal Areas, will seek to recover beach loss due to erosion and reach shore stabilization in two communities of southern Belize. This component will directly benefit the members of the selected coastal communities via securing local infrastructure, increasing tourism and recreation activities tied to beach use and intrinsic national value. At the national scale lessons learnt will be documented and reported for scaling up to other communities with similar coastal attributes. This is a critical component in increasing adaptive capacity of coastal communities that have suffered extensive erosion, hence aiding in protecting the shoreline from future erosion and from the negative impacts of increased storm intensity, attributed to climate change, in addition to improving the livelihoods of many people.

Under Component four, Awareness Raising, Knowledge Dissemination and National Capacity Strengthening; information on climate change impacts to the coastal zone and appropriate

mechanisms for climate change adaptation will be made easily accessible to the public, private and government sectors. This will lead to increased adaptive capacity and knowledge, thus strengthening the institutional and local capacity to address the risks associated with climate induced impacts on the coastal zone of Belize. A National Climate Change Communication Strategy and Action Plan will be developed, aimed at facilitating effective communication on climate change information at all levels in order to enhance management of climate change impacts and explore measures for adaptation and mitigation and related opportunities. Training modules will also be developed, to inform and build capacity of stakeholders for best coastal adaptation practices for Belize. This component also aims to increase the institutional capacity of the CZMAI by strengthening their GIS capabilities.

These above components are crucial for the proper management of vulnerable coastal areas in Belize, in the absence of proper planning, legislations and policies unsustainable development will continue unchecked along the coast, increasing vulnerabilities and exacerbating the impacts of climate change. Knowledge transfer and capacity building are also necessary to ensure that relevant stakeholders can increase their adaptive and absorptive capacity and are willing to comply with the necessary adaptation actions to increase national resilience.

### **Project / Programme Components and Financing:**

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

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

<b>Project/Programme Components</b>	<b>Expected Concrete Outputs</b>	<b>Expected Outcomes</b>	<b>Amount (US\$)</b>
1. Improving coastal land use for resilient habitation and sectoral activities	1.1. Development of national policy for resilient coastal habitation based on vulnerabilities  1.2. Strengthening the implementation of the Integrated Coastal Zone Management Plan and associated management guidelines for zonation	1.1.1. Reduce instances of habitation in vulnerable coastal areas  1.1.2. Decrease incidence for the loss of infrastructure investments  1.1.3. Protect the lives of 40% of the country's population that live and work within the coastal zone	1,000,000



<p>2.Coastal Vulnerability Monitoring</p>	<p>2.1. Development of a national coastal saline intrusion program</p> <p>2.2. Develop and implement a National Beach Erosion Monitoring Program</p> <p>2.3. Develop and implement a coastal early warning monitoring system for storm surge and flooding</p>	<p>2.1.1. Enhance evidence-based knowledge to determine best use practices for freshwater supply for the coastal areas (water and agricultural sector); Reducing probability of further saline intrusion</p> <p>2.1.2. Implementation of a long-term monitoring program which utilizes advanced techniques for annual monitoring, which would enable proactive response to coastal erosion</p> <p>2.1.3. Strengthen the capacity of CZMAI to coordinate and maintain a beach erosion monitoring system</p> <p>2.1.4. Improve national system for forecasting and signalling storm surge and flooding events in order to respond in a timely manner and minimize impacts</p>	<p>1,005,000</p>
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3. Beach stabilization of High-Risk Coastal Areas	<p>3.1. Conduct baseline assessment for best options for nourishment/rehabilitation</p> <p>3.2. Development of an engineering plan for the nourishment/ rehabilitation of selected beach with storm and erosion protection mechanisms</p> <p>3.3. Pilot nourishment/ rehabilitation of selected coastal communities</p>	<p>3.1.1. Development of a mechanism for the nourishment/ restoration of areas lost to erosion which can be modified for replication in other areas of the country.</p> <p>3.1.2. Extension of storm and erosion protection in rehabilitated areas, thereby increasing the selected community's adaptation potential</p> <p>3.1.3. Decrease probability of infrastructure loss in rehabilitated areas Decrease probability of infrastructure loss in areas rehabilitated</p>	1,000,000
4. Awareness raising, knowledge dissemination and capacity strengthening	<p>4.1. Development of a National Climate Change Communication Strategy and Action Plan</p> <p>4.2. Development of training modules for best coastal adaptation practices for Belize</p> <p>4.3. Strengthening of GIS capabilities within the CZMAI</p>	<p>4.1.1. Increase general public knowledge on mechanisms for climate change adaptation in communities</p> <p>4.2.1. Increase adaptive capacity of public and private sector</p> <p>4.2.2. Build institutional capacity of CZMAI</p>	275,000
<b>6. Project/Programme Execution cost</b>			<b>380,000</b>
<b>7. Total Project/Programme Cost</b>			<b>3,660,000</b>
<b>8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)</b>			<b>340,000</b>
<b>Amount of Financing Requested</b>			<b>\$4 Million USD</b>

## Projected Calendar:

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

Milestones	Expected Dates
Start of Project/Programme Implementation	July 2020
Mid-term Review (if planned)	August 2022
Project/Programme Closing	July 2024
Terminal Evaluation	January 2025

## PART II: PROJECT / PROGRAMME JUSTIFICATION

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

**Component One**, Improving coastal land use for resilient habitation and sectoral activities, focuses on strengthening the governance of coastal communities and can provide a formal structure to address the challenges that arise due to continued growth in coastal areas. The objective of creating a national policy for resilient coastal habitation will be achieved by i) identifying coastal habitation vulnerabilities and trends via the analysis of past coastal alignment spatial data ii) developing a risk profile based on vulnerabilities identified iii) creating a building code for the coast iv) establishing a pilot for simulation of a resilient coastal building/ home v) development of the policy on resilient coastal habitation in collaboration with all relevant stakeholders vi) socialization and communication of the policy through community outreach consultations and workshops. These activities will aid in reducing instances of habitation in vulnerable coastal areas and in decreasing social and infrastructure cost due to increased resilience. It will also prevent and reduce the effects of natural hazards and of climate change on vulnerable coastal areas, which can be exacerbated and induced by human activities.

Currently, there is widespread expansion of communities into vulnerable coastal areas, as well as tourism infrastructure such as hotels and resorts, which is leading to the unsustainable development of the coast. While the coast is a desirable location for development, as many economic activities occur there, proper management of coastal areas, especially highly sensitive and vulnerable habitats is necessary, as they also provide high value for conservation and public enjoyment. With this policy in place it will aid in regulating coastal habitation in vulnerable areas, leading to more informed decision-making. In the absence of the policy, human modification of the coastal zone for habitation and development will continue to increase, exacerbating existing threats and future threats of a changing climate. Continued development in highly vulnerable areas increases the number of people and built infrastructure that are exposed to the impacts of climate change and natural hazards. The policy will provide a clear understanding of potential impacts of development in areas, which are at risk to coastal flooding, erosion, sea level rise etc.

Through Component One the implementation of the Integrated Coastal Zone Management Plan (ICZMP) and associated guidelines for zonation will also be strengthened. This will take into consideration analysis of coastal alignment and trends linked to habitation and vulnerabilities. To do this past coastal alignment spatial data will be collected and analyzed to determine trends in coastal erosion, which is directly linked to component two, Coastal Vulnerability Monitoring. This activity intends to build mechanisms for informed and wise planning of Belize's coast for sustainable future development and shall set forth and enforce goals and objectives to govern the use of land and water in Belize's coastal zone through implementation of the ICZMP. The component will build on and support the implementation of the guidelines for zonation that already exist under the CZMAI. This will be achieved through i) legal review of the Coastal Zone Guidelines in order to prepare recommendations for strengthening, amendment, additions etc. ii) development of regulations for the implementation and enforcement of the ICZMP and Guidelines iii) socialize the utilization of the Plan and Guidelines as a tool for future coastal development initiatives.

The implementation of the Plan and guidelines of zonation that fall under it is crucial in decreasing vulnerability as it will allow the rational and orderly development of coastal land in an environmentally sound manner to ensure the sustainable development of human settlements and infrastructure that are resilient to climatic changes and its impacts. The latter is of high importance as the ICZMP indicates that six of the ten major residential centers in Belize are located on the coast. "Despite a stated policy to relocate housing inland due to sea level rise and hurricane vulnerability, all coastal centers are experiencing growth to varying degrees, and frequently into flood-prone areas. Development is undertaken by both the public and private sectors, with the latter involved primarily in sub-divisions in several coastal locations, often targeting foreign markets and retirees" (CZMAI, 2016). Therefore, the Plan is crucial to deter such development. Through the zonation guidelines it will allow the needs of the population, in terms of housing, infrastructure, tourism development etc., to be met within areas that are suitable for each type of activity with minimal or no negative impacts on the terrestrial and/or marine environments. It will ensure that areas vulnerable to natural hazards or disasters, areas with unsuitable terrain (such as swamps) or areas that endanger the health and safety of the population are not further developed. With proper implementation and enforcement, areas identified for different activities (residential, industrial, tourism etc.) can be divided into zones in which specific land uses will be permitted or prohibited. It may also regulate the size and placement of buildings and other conditional uses of the land.

**Component Two**, Coastal Vulnerability Monitoring, will support the assessment of coastal saline intrusion to determine the saline intrusion zone along the coast and its impacts on freshwater supplies. This monitoring program is crucial in determining best uses for the land and the spectrum of activities which are appropriate for zones with high salinity. It is also beneficial to the agriculture sector for determining crop cultivation zones. The study will provide vital information for the development of a National Water Master Plan, Water Quality Control Plan and Water Vulnerability Profile. Activities included within this assessment include i) information collection and analysis ii) preliminary groundwater flow assessment iii) saline intrusion risk mapping iv) developing and executing field program v) evaluating the results of the assessment and completing the risk mapping and report.

A national coastal Monitoring Program for Beach Erosion will also be implemented to assess the causes and impacts of coastal erosion and safeguard coastlines for rapid erosion in the future. Available techniques will be analyzed to determine suitability. Activities include i) analyzing techniques available to assess erosion to determine best options ii) analyzing aerial films of the coastline in possession of the LIC iii) establishing a community network for on the ground monitoring iv) building capacity of the CZMAI to coordinate, maintain, conduct analysis and do outreach for the monitoring program v) providing training to the community network on protocols for monitoring and reporting vi) develop database for the data collection and storage vii) develop a mechanism to ensure sustainability and funding for the community network after the project has been completed.

An Early Warning Monitoring System for storm surge and flooding will also be enhanced under Component Two. This will lead to the forecast and signaling of storm surge and flooding events, which will allow emergency response in a timely manner to minimize impacts. The system will build upon and be integrated into the activities of the National Meteorological Service and National Emergency Management Organization. Activities to be conducted under this output include i) assessment and mapping of coastal flooding hazards ii) purchasing of equipment for data collection, monitoring and maintenance iii) assessment to determine the best option available for an automated dissemination process iv) development of risk indicators from collected and observed data v) development of database for collection and storage of data vi) trainings for the maintenance and use of the early warning system and vii) development of a response plan for storm surges and flooding, this will lead to an efficiently coordinated response which will protect human life and therefore ensure their wellbeing.

**Component Three**, Beach Stabilization of High-Risk Coastal Areas, seeks to recover beach area lost due to coastal erosion. Recovery of beach area will allow for the development of a mechanism to recover areas lost to erosion which can be replicated in areas with similar attributes and modified to fit specific needs. It will also lead to the extension of storm and erosion protection in the selected areas, increasing their adaptive capacity and will decrease the probability of infrastructure being lost in the area in the future. To carry out this component activities include i) a baseline assessment conducted to determine the best options for rehabilitation ii) an engineering plan with the necessary surveys will be developed for the rehabilitation of selected communities and iii) the development of a mechanism to recover areas lost to erosion which can be replicated in areas with similar attributes. Through this component it will be determined what is the best option to stabilize the beaches of the two selected communities and carry out the necessary activities in a sustainable manner with minimum impacts to the environment and society.

**Component Four** focuses on awareness raising, knowledge dissemination and national capacity strengthening. It will strengthen the capacities of local government officers, the private sector and communities. This will be done by developing a National Climate Change Communication Strategy and Action Plan. The strategy and action plan will facilitate effective communication on climate change information at all levels in order to enhance management of climate change impacts and explore measures for adaptation and mitigation and related opportunities. This will be carried out by i) consultations with relevant stakeholders to determine needs, gaps and

weaknesses ii) develop communication objectives and establish target audiences iii) establish communication channels iv) develop a communication strategy and action plan for climate change and v) developing and implementing a public awareness campaign.

Public awareness and outreach will be carried out to increase knowledge on mechanisms that can be implemented and actions that can be taken for climate change adaptation, especially along the coast. Lessons learnt from the project will also be documented and form part of knowledge products to be disseminated. Under the component training modules will be developed for best coastal adaptation practices. These training modules will be put into practice through workshops and trainings, to be carried out in order to strengthen local capacity to be able to assess impacts of climate change on the coast and how to develop best coastal adaptation practices. This will lead to the strengthening of awareness and ownership of adaptation and climate risk reduction processes. Activities under this output include i) consultations with stakeholders to determine their level of knowledge and needs ii) development of training modules iii) development of an inclusive community based toolkit iv) documenting of lessons learnt and dissemination through appropriate means v) trainings and workshops carried out based on training modules for best coastal adaptation practices.

The CZMAI's capabilities to utilize GIS will also be strengthened, building institutional capacity. Specific activities to be carried out include i) identification and attainment of infrastructure and materials, including computer hardware and software and data gathering equipment for the CZMAI ii) training of the community network carried out for the operationalization of the National Coastal Monitoring Program under Component Two iii) training and utilization of GIS equipment for national monitoring of erosion carried out with CZMAI, to be used for risk mapping and mapping coast susceptibility to erosion.

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

Coastal and marine ecosystem provides substantial goods and services to Belize and the coastal zone is an area of high economic activity. The coastal area contains abundant natural resources, supporting several productive sectors, such as tourism and fisheries. The coast is also home to about 40% of the population, its ports, and developments for industry, agriculture and aquaculture (CZMAI, 2016). Based on 2010 population statistics, there are 53,234 males and 55,039 females residing in the nine coastal planning zones across 25 coastal communities in the country. However, despite the importance of coastal ecosystems and the services they provide, they are often mismanaged and lack the proper investment and policy decisions. Belize's reefs, as well as other coastal habitats, are threatened by unchecked coastal development, overfishing, tourism pressures and climate related changes (WRI, 2008).

### ***Economic Benefits***

As the coast provides highly economically valuable services to Belize and is an area of high economic activity, the proper management and protection of the coast is crucial to ensure

sustainable economic development. Belize's Tourism Industry is highly focused within the coastal zone, with three quarters of hotels found along the coast and the cayes. Tourism based activities contribute 23% of Belize GDP, employing over 17,000 Belizeans. Indirect economic impacts of the Tourism sector, such as locally manufactured materials that support the industry, earns an additional 26 to 69 million USD a year (WRI, 2007). The beach rehabilitation project will provide economic benefits by increasing tourism in the selected southern communities and by decreasing the probability of infrastructure loss due to erosion.

The Fisheries Sector, which employs over 2,000 licensed fisherfolk, is also dependent on a healthy coastal ecosystem and is also one of Belize's main industries. In 2016 the Fisheries sector contributed 5% of Belize's GDP. Between 2005 and 2015 lobster generated an average annual income of BZ\$15.13M from export; while conch averaged an annual income of approximately BZ\$8.32M from export (Belize Fisheries Department, 2015; Belize Fisheries Department, 2017). Thus, in order to keep this industry alive and prospering it is important to safeguard the coastal ecosystem and ensure that capacities are built so that adaptive measures can be put in place and better-informed decision making occurs regarding the coastal communities. The project will aid in implementing necessary tools for coastal planning and management as a method to effectively protect the lives of fisherfolk that live within vulnerable coastal areas including the Creole, Mestizo and Garifuna people.

The project will also earn economic benefits from shoreline protection, as it will aid in the prevention of continued development in vulnerable coastal areas and ensure that future development and land use is appropriate and leads to minimal negative impacts. It is crucial to prevent future deterioration of vulnerable habitats such as mangroves, seagrass bed and reefs.

### ***Environmental Benefits***

The project would provide substantial environmental benefits to Belize's coast. The project will lead to the protection of vulnerable coastal areas from future habitation, tourism, infrastructure and industry development. The latter will in turn result in increased environmental protection as the implementation of nationally identified guidelines and corresponding regulations will minimize detrimental effects of improper development. Biodiversity in coastal areas will also benefit through the improved management and proper planning of coastal areas, habitation and land use. The prevention of unsustainable clearance of mangrove forests will positively affect fish stocks and invertebrates as they provide nurseries for them, shoreline protection from storms, waves, floods etc. will also be expected, which will help prevent erosion in other areas.

Also, the proposed rehabilitation project will protect the shoreline of the chosen communities from storms and erosion. This will indirectly benefit other communities, as the measures can be modified and replicated in other areas in need of beach rehabilitation.

### ***Social Benefits***

Social benefits include reducing the vulnerability of coastal communities to climate change and decreasing the chances of infrastructure investment losses by preventing future development in vulnerable areas. This will protect the lives and livelihoods of Belizeans, by adhering to national coastal development guidelines thus minimizing unwarranted development in unsuitable areas.

Awareness and knowledge of the public will also be increased for mechanisms that can be implemented for climate change adaptation, thus decreasing their vulnerability to erosion and other negative impacts of climate change. The Early Warning System that will be enhanced will protect essential household and community assets. It will also reduce exposure to storm surges and flooding events and increase the ability to prepare for and respond to these disasters. Reduced exposure to storm surges and flooding events will also decrease associated negative impacts on health of the population in areas that are more vulnerable to these hazards by supporting efforts to fight outbreaks of waterborne diseases such as cholera.

Project design and implementation will take into consideration the Environmental and Social Policy of the Fund. Safeguards to minimize potential impact will be instituted, these will be further elaborated in the fully developed project proposal.

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

The Project intends to build on existing structures and identified initiatives to ensure cost effectiveness. The enhancement of systems and mechanism already in place, such as the Early Warning System and the Coastal Zone Guidelines, decrease time and cost associated with the formulation of these systems from an initial concept. In avoidance of duplicated efforts, synergies will be formed with other ongoing and/or planned projects to maximize efficiency. Further enhancing the technical capacity of the entities involved in project implementation also provides for the long-term sustainability of national initiatives beyond the four-year timeframe of the Project.

The multisector approach to Project design enables the harmonization of activities and the pooling of resources for the implementation of a comprehensive Project, which addresses a multitude of coastal resiliency adaptation needs. At the pre-concept stage synergies between components provided a strong basis for inclusion of activities within the proposal.

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

The project was developed for strategic alignment with national and sectoral development strategies as well as obligation under international conventions to which the country is a Party. In line with national priorities for development, the Project has been aligned to the **Growth and Sustainable Development Strategy** (GSDS) 2016 – 2019, which is the overarching strategy aimed to comprehensively guide national development.

The Project is centered on the implementation of Belize's **National Climate Change Policy, Strategy and Action Plan** (NCCPSAP) which aims to guide the short, medium and long-term processes of adaptation and mitigation of Climate Change and to ensure the mainstreaming and



integration of Climate Change considerations at all levels of the development planning and operational processes of governance (NCCPSAP, 2015). Necessary adaptive mechanisms identified in Belize's Third National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) and eight of Belize's adaptation targets from its **Nationally Determined Contribution (NDC)** to UNFCCC have been incorporated within the Project thereby to improve the countries resiliency.

The Project also contributes to the achievement of Sustainable Development Goals (SDGs) 6 - Clean Water and Sanitation, 11 – Sustainable Cities and Communities and 13 – Climate Action.

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

The project meets the standards of environmental assessment, which will be enforced by the Department of Environment via Environmental Impact Assessments (EIA). The EIA Regulations of the Subsidiary Laws of Belize (2003) contain a list of activities for which an EIA is required. The project will ensure that the activities contained within are properly assessed to determine the necessity for an EIA or a limited level study. If required all stipulated conditions will be met to ensure the Project activities are in full compliance with its requirements.

The project will also obtain all necessary permits for specific activities requested by the different sector authorities for development and execution of the proposed activities. Activities that do not require an EIA or limited level study will have high standards of environmental management in order to avoid negative impacts on coastal ecosystems, biodiversity and people's health. The project will adhere to the Environmental and Social Policy and devise mechanisms to be in full compliance with all human rights including those of marginalizes and vulnerable groups and indigenous peoples.

Under Component One of the Project national mechanisms to address coastal habitation will involve the formulation of building codes for infrastructure within coastal areas. These innovative codes will be the first of its kind in the country, to take into consideration the anticipated impacts posed by climate change and variability, inclusive of increased temperature, storm intensity and sea level rise.

The project has also been prepared in accordance with some of the stated sectorial intentions to adapt to climate change from the Nationally Determined Contributions, Belize's Third National Communication and the National Climate Change Policy, Strategy and Action Plan, as stated previously in Part II D.

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

There is no duplication of efforts from other funding sources at the time of pre-concept development. Rather the project creates synergies with other projects and implement actions that

will complement and enhance other projects further contributing to Belize's resiliency. Relevant projects include:

The 'Marine Conservation and Climate Adaptation Project' (MCCAP), financed by the Adaptation Fund, aided the CZMAI to implement components of the Integrated Coastal Zone Management Plan (ICZMP) to increase protection of coastal ecosystems: mangroves, seagrasses and tidal marshes. The MCCAP supported implementation of mechanisms to improve the adaptive capacity of communities dependent on fragile marine resources by reducing the local community's dependence on fishing stocks via alternative livelihoods and educational campaigns. This Project would further enhance the implementation of the Plan via the formulation of regulations to implement coastal development guidelines for zonation outlined within the Plan and to enhance education and awareness on climate change adaptation. This project will focus on addressing the issue of development and habitation on vulnerable areas, creating advanced mechanisms for adaptation in areas already developed and deterring future development in vulnerable areas based on the coastal guidelines taking into consideration the need for an adequate buffer zone dependent on specific coastal features and vulnerabilities.

Another initiative which the project can create synergies with is the 'Capacity Building for Climate Vulnerability Reduction' in Belize being funded by the Inter-American Development Bank. Through this project studies will be carried out to develop a coastal risk profile for erosion and flooding and to recommend risk management actions for Belize's coastal zone. The project, which commenced in July 2019, is expected to be completed by February 2020 covering assessments of hazards, exposures, vulnerabilities and identification of high-risk-hotspots as well as recommendations of mainly nature-based solutions to address natural hazards. Results from components under the IDB project will be directly linked to this Project and aid in provision of necessary baseline data and mechanisms for improvement. Outputs will directly complement this project and aid in informing decisions.

In the case of National Meteorological Service, identified internal gaps will serve as the basis for improvement of the NMS's web-based data management system. Capacity of the NMS will also be improved through the improvement of their early warning system protocols through the development and implementation of a coastal early warning system for storm surge and flooding. This will enhance the system they already have in place for monitoring and improve risk management.

Complementary activities under this Project will enhance the operation of the climate risk information system being developed through the Climate Risk Vulnerability Reduction Program being executed by the Ministry of Works. This will be through the strengthening of data collection mechanisms of the National Meteorological Service to feed into the system.

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

Component Four focuses on awareness raising and knowledge dissemination. This will be a key part of ensuring sustainability of the project by building local capacity. Prior to implementation lessons learnt from similar projects/activities will be integrated. All lessons learnt during the

project development and implementation phases will be documented and shared to ensure wide dissemination of results, best practices and lessons.

Capturing of lessons learnt will also allow for knowledge products to be developed which can be incorporated and used in the Public Awareness Campaign and can inform the Climate Change Communication Strategy and Action Plan. This can lead to case studies, short videos, posters, which can be specifically tailored to different communities and different user groups. The national communication strategy will boost climate change awareness within sectors and all coastal communities for improved coastal planning, habitation and monitoring. As the effects of climate change are visible in some communities and sectors, but the linkage to climate change and its future effects are not clearly understood, awareness raising initiatives are important to build the resilience of local communities to adapt to imminent threats and promote ownership on initiatives.

There are provisions for knowledge management within each component. Under Component One the development of a coastal habitation policy and the formulation of regulations for Belize's coastal guidelines will be heavily reliant on active stakeholder consultations in coastal communities. The entities undertaking the activities will provide the public with information via national media houses and social media platforms. Information obtained from the implementation of Component Two will be linked to existing web-based platforms as well. Data collected from tidal gauges and the National Meteorological Service's automated stations will be linked to the Service's web-based data management system providing real time data for Belize. The web-based system will inform other initiatives of the Service such as the common alert protocol and the early warning system alerting protocols thereby protecting the lives of Belizeans. Similarly, the Beach Erosion Monitoring Program, which will be spearheaded by the CZMAI, will provide data for analysis at periodic intervals for the proactive formulation of mitigation and adaptation mechanisms to coastal erosion. Lines of communication will be open during the implementation of Component Three in the two selected coastal communities. This will keep communities abreast of activities and ensure active participation, transparency and knowledge sharing.

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

In order to prepare this concept all relevant stakeholders were consulted to discuss national needs and priorities in relation to climate change and the coastal zone. Their inputs were introduced into agreed upon components and were further developed based on output, outcomes and activities. Several stakeholders were consulted with during meetings were priorities were further discussed. Initial stakeholders consulted for the development of the pre-concept include the National Climate Change Office (NCCO), Protected Areas Conservation Trust (PACT), Caribbean Community Climate Change Centre (CCCCC), National Emergency Management Organization (NEMO), Meteorological Department, Coastal Zone Management Authority and Institute (CZMAI), Department of Environment, Lands Department, Hydrology Department, Ministry of Housing and Urban Development, Building Sector Reform Project, Ministry of

Natural Resources, GAMMA S.A., Ministry of Science, Technology and Environment of Cuba (CITMA), NGO's and managing authorities of two coastal communities, Dangriga and Hopkins.

The preparation of the concept, which is based on priorities of stakeholders, required the establishment of two committees. A "High-Level" committee which included the CEO of the Ministry of Agriculture, Fisheries, Forestry, the Environment and Sustainable Development, guided the process of concept creation. A Technical committee was also established, comprised of technical experts from various sectors. The technical committee provided their knowledge from working on the ground with their stakeholders, sharing stakeholder needs, gaps and priorities and any relevant information that they possessed.

Throughout the development of the project stakeholders have been informed and kept abreast of the development process. It is the aim of the proposed project to further expand the scope, by conducting extensive stakeholder consultations and continue the work which has commenced with all relevant stakeholders' communities, including indigenous communities, during development of the full project proposal. Consultations will take into consideration the gender policy of the Fund.

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

Ongoing measures to address national needs for adaptation and coastal habitation have produced some results and increased the country's resilience. However, these initiatives need to be built on further to fully ensure climate resilient coastal communities thereby protecting the lives of over 160,000 Belizeans. The effects of improper planning void of climate variability considerations, poor infrastructural development and coastal erosion compounded by sea level rise are already visible within heavily populated coastal areas of the country. These have resulted in the loss of cultural areas in some communities, housing, community infrastructure and beaches. As such there is the need to devise concrete long-term solutions to address the safety of these coastal communities.

At the national level, stakeholders have recognized the need to create legal instruments for the implementation of national development guidelines, contained within the ICZMP. Currently, the guidelines have no legal power and are being used merely as a suggestive recommendation for coastal development. The absence of a legal framework for their implementation has resulted in the unwarranted development in climate vulnerable areas of the country. The absence of a coastal habitation plan has similarly resulted in the construction of climate vulnerable housing and infrastructure. The project intends to address both issues under Component One by creating regulations for the legal enforcement of coastal guidelines and the creation of a habitation policy with building codes that would better enable coastal communities to adapt to the adverse effects of climate change. The cost of activities under this component is estimated at US \$1,000,000 for the four years of implementation.

The success of Component One will be supported over a long-time frame by the implementation of activities under Component Two for coastal monitoring. After the country has implemented mechanisms for coastal habitation and development, it is necessary to monitor activities within

the area to ensure that proactive solutions can be created to protect lives and infrastructure. Monitoring activities including i) annual saline intrusion assessments to determine water quality ii) beach erosion monitoring, through the creation of a national network with stakeholders and iii) enhancement of the early warning system for storm surges and flooding. The cost of activities under this component is estimated at US \$1,005,000 for the four years of implementation.

Financing from the Adaptation Fund will also enable the formulation of viable mechanism to restore coastal communities and beaches loss under Component Three. The cost of activities under this component is estimated at US \$1,000,000 for the four years of implementation. A preliminary assessment will devise best solutions to restore/nourish areas lost to erosion, which has resulted in the detrimental effects to coastal communities that are affected.

Additionally, under Component Four an extensive public awareness raising, knowledge dissemination and capacity building activities will increase local understanding of climate adaptation mechanisms and build local support for the implementation of national coastal adaptation activities under the Project. Capacity building for national executing entities, will also ensure the long-term sustainability of Project activities, thereby improving the country's ability to achieve adaptation targets. This is particularly important for the maintenance of the national beach erosion monitoring program. The cost of activities under this component is estimated at US \$275,000 for the four years of implementation.

Total funding requested from the Adaptation Fund is US \$4 million, including the project execution cost of (US \$380,000) and the Implementing Entity Fee (US \$340,000).

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

Sustainability will be ensured in the execution of Component One through the development of a building code for the coast that will serve as tool for the long-term development of coastal areas. The building code will ensure that the health and safety of the public and the natural environment is protected from negative impacts. Long term implementation of the Integrated Coastal Zone Management Plan and its associated guidelines for zonation will also be sustained by developing regulations for their implementation and enforcement.

The sustainability of Component Two has been taken in account by ensuring that national institutional capacities will be built for monitoring. Under activities for the initial coastal saline intrusion assessment, equipment will be purchased for execution of the studies during implementation of the project and for continued monitoring after completion. The purchasing of necessary equipment enables the government agency responsible for this assessment to carry out future studies beyond the life span of the project. Internal capacity of the department will also be improved by providing the necessary training. Similarly, the development and implementation of a National Beach Erosion Monitoring Program will ensure sustainability by creating a community network to collect data and conduct on the ground monitoring to feed into the Coastal Zone's developed monitoring program for long term assessment. Real time information will enable the agency to proactively respond to threats and risks.

In order to ensure the long-term sustainability of the project, as well as the development of local and institutional capacity to effectively implement and enforce the regulations and policy put in place under the project Component Four is directly targeted toward awareness raising, knowledge dissemination and national capacity strengthening. This will include a National Climate Change Communication Strategy and Action Plan to facilitate effective communication on climate change information at all levels to enhance proper management of climate change impacts and ensure that possible opportunities are explored. The strategy and action plan will also serve as a tool for the NCCO to implement components of its National Climate Change Policy, Strategy and Action Plan, which are in line with this Project. The public awareness campaign, to be implemented, will be used to inform highly vulnerable communities about climate change, adaptive mechanisms that can be implemented and of the proposed project activities to increase resiliency. Additionally, through the dissemination of information and knowledge building initiatives on the importance of adhering to the coastal habitation policy, coastal zone guidelines and regulations, the Project aims to minimize the occurrence of habitation in vulnerable areas. In providing communities with information on environmental threats such as increased storm intensity and SLR and current adaptation mechanisms the Project hopes to create a cultural shift from building directly on beaches. Knowledge sharing of this kind will ensure that sustainability is achieved by increasing public participation and ensuring they are continually updated and informed.

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

The Project has been categorised as Category B with respect to the potential environmental and social impacts that can be generated during the implementation of Component 3. Activities under this component for coastal restoration may result in some changes to the natural environment within selected areas. However, these impacts are minimal and can be easily mitigated. At the pre-concept stage mechanisms for addressing environmental impacts have been identified. These impacts and risks will be fully addressed in the subsequent fully developed Project Proposal.

<b>Checklist of environmental and social principles</b>	<b>No further assessment required for compliance</b>	<b>Potential impacts and risks – further assessment and management required for compliance</b>
<i>Compliance with the Law</i>	X	
<i>Access and Equity</i>	X	
<i>Marginalized and Vulnerable Groups</i>	X	
<i>Human Rights</i>	X	
<i>Gender Equity and Women’s Empowerment</i>	X	
<i>Core Labour Rights</i>	X	
<i>Indigenous Peoples</i>	X	
<i>Involuntary Resettlement</i>	X	
<i>Protection of Natural Habitats</i>	X	



<i>Conservation of Biological Diversity</i>	X	
<i>Climate Change</i>	X	
<i>Pollution Prevention and Resource Efficiency</i>	X	
<i>Public Health</i>	X	
<i>Physical and Cultural Heritage</i>	X	
<i>Lands and Soil Conservation</i>	X	

### **PART III: IMPLEMENTATION ARRANGEMENTS**

At this pre-concept stage the Belize’s National Climate Change Office (NCCO) and the Coastal Zone Management Authority and Institute have been identified as the executing entities for the Project. The Protected Areas Conservation Trust will function in the capacity of Implementing Entity with financial, monitoring and reporting responsibilities. At this pre-concept stage, the Project has garnered the support of numerous governmental entities inclusive of the Ministry of Natural Resources (Hydrology Service and Lands Department), Ministry of Housing, National Meteorological Service and the Department of Environment.

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

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

<p>Joseph Waight Financial Secretary Ministry of Finance</p> 	<p>Date: August 1, 2019</p>	
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**B. Implementing Entity certification** *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (Belize's Growth and Sustainable Development Strategy, National Climate Change Policy Strategy and Action Plan and Belize's Nationally Determined Contributions to the UNFCCC) and subject to the approval by the Adaptation Fund Board, commit to implementing the project 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.

<sup>6</sup> 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.





Mrs. Nayari Diaz-Perez

Executive Director of the Protected Areas Conservation Trust  
Implementing Entity Coordinator

Date: 2<sup>nd</sup> August 2019

Tel. and email: (501) 822-3637  
[ed@pactbelize.org](mailto:ed@pactbelize.org)

Project Contact Person: Ms. Denaie Swasey

Tel. And Email: (501) 822-3637 / [cc.techofficer@pactbelize.org](mailto:cc.techofficer@pactbelize.org)



**GOVERNMENT OF BELIZE**  
*Ministry of Finance*  
*Belmopan, Belize*

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August 1, 2019

**The Adaptation Fund Board**  
c/o Adaptation Fund Board Secretariat  
Email: [Secretariat@Adaptation-Fund.org](mailto:Secretariat@Adaptation-Fund.org)  
Fax: 202 522 3240/5

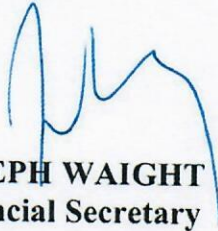
Dear Sir/Madam:

**Subject: Endorsement for Enhancing the Resilience of Belize's Coastal Communities to Climate Change Impacts**

In my capacity as designated authority for the Adaptation Fund in Belize, I confirm that the above national project 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 Belize.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by Protected Areas Conservation Trust (PACT) and executed by the National Climate Change Office (NCCO) and Coastal Zone Management Authority and Institute (CZMAI).

Sincerely



**JOSEPH WAIGHT**  
Financial Secretary

