PROGRAMME ON INNOVATION:
LARGE GRANTS PROJECTS

REQUEST FOR PROJECT FUNDING FROM THE ADAPTATION FUND

Complete documentation should be sent to:

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ADAPTATION FUND

SINGLE COUNTRY INNOVATION PROJECT CONCEPT PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme:	Securing Water Resources through solar energy and innovative adaptive management (SEAM)
Country/ Countries:	Belize
Thematic Focal Area[1]:	Rural Development and Water Management
Type of Implementing Entity:	National Implementing Entity (NIE)
Implementing Entity:	Protected Areas Conservation Trust (PACT)
Executing Entities:	Ministry of Rural Transformation, Community Development, Labour and Local Government
Amount of Financing Requested:	4,970,000 (in U.S Dollars Equivalent)

Project / Programme Background and Context:

Belize is a country rich in natural resources. This richness has resulted in the country building its major income earning sectors around the natural resources the country has to offer, thereby being heavily dependent on ecosystem services and its proper functioning. Traditional practices and way of life for many of the country's ethnicities also rely heavily on Belize's natural resources. Located on the eastern coast of Central America, Belize has a national territory of 46,620 km^2, with its coastline extending 386 km and being notable for its rich coastal and marine ecosystems, inclusive of the Belize Barrier Reef System.

Although Belize contributes minimally to climate change the country is impacted by climate change and variability due to its distinct characteristic as a low-lying small island developing state. Majority of the country including its coastal areas and islands are flat and low-lying, making the country highly vulnerable to sea level rise, erosion, storm surges and flooding. Some of the current threats of climate change extend to changes in the intensity, distribution and frequency of extreme weather events, such as storms and hurricanes, sea level rise (SLR), increased sea surface temperature, ocean acidification, coral bleaching, drought, wildfires, and changes in crop production. All of which result in direct and indirect threats to the productive sectors of the country.

[1] Thematic areas are: Agriculture, Coastal Zone Management, Disaster risk reduction, Food security, Forests, Human health, Innovative climate finance , Marine and Fisheries, Nature-based solutions and ecosystem based adaptation, Protection and enhancement of cultural heritage, Social innovation, Rural development, Urban adaptation, Water management, Wildfire Management.

The water sector is notably a key sector possessing an important commodity necessary for the survival of all local communities. Although the country has an abundance of water resources and a high-water per capita rate, this sector is particularly vulnerable to impacts of climate change as the country extracts majority of its water resources from rivers and groundwater sources. Belize's Third National Communication (TNC) to the UNFCCC, noted that rainfall is projected to decrease more and more from the 2030s to the 2090s leading to worsened drought conditions. The latter will decrease water supply with lower projected levels of rainfall. On the opposite end of the spectrum, given climate uncertainties, the changing climate will also lead to intense rains and flooding during other periods. Additionally, deforestation further threatens water availability by decreasing ecological functionality of watershed thereby affecting water quality. Population growth also impacts the availability of water resources. Belize's TNC highlighted the need for adaptive measures such as the protection and restoration of ecosystems, increased water harvesting, water protection, and promoting sustainable water utilization.

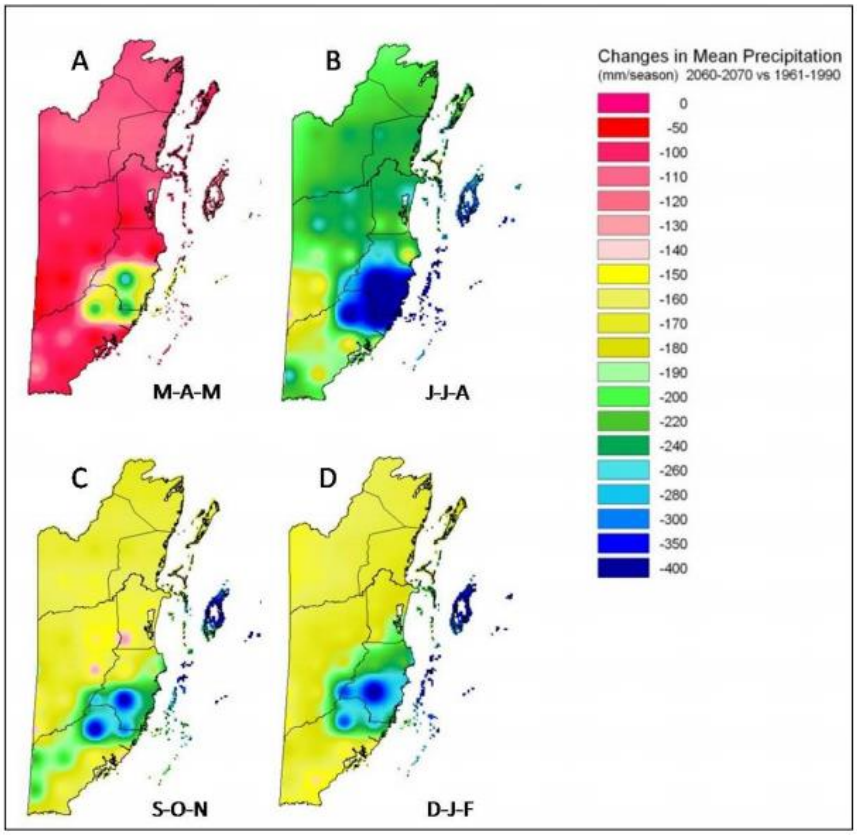


Figure 1: Changes in Precipitation - Rainfall (Source: TNC, 2016)

Mean season rainfall across all months for the country are projected to change for the 2060-2070 period in comparison to the 1961-1990 (Figure 1). Across all months, rainfall is projected to decrease significantly in the southeastern portion of the country. Map B in Figure 1 shows a decrease in seasonal rainfall approaching approximately 300 mm/season in a zone centered over Stann Creek and the southern Toledo District from June to August.

Map C depicts an overall decrease in rainfall of ~ 200 to ~ 220 mm/season for most of Belize from September to November, during Belize's classified Wet Season. The months of December to January, which are within the dry season are projected to have little change in rainfall with an overall decrease of approximately 100 mm/season. In the Toledo District however, this change has been projected between 150 – 200 mm/season in a centered zone covering the Stann Creek, Cayo, Toledo and Belize Districts.

As the uncertainties of water availability, linked to projected extended dry periods, are expected to negatively affect communities, natural systems and key economic sectors, this project proposes an integrated multiprong approach for the protection and proper management of water resources. The Ministry of Rural Transformation, Community Development, Labour and Local Government, the Executing Entity (EE), has recognized the need to institute a new approach to the management of water through its daily operations in communities across Belize. This has also been echoed by the complementary Government Ministries and Departments that work in conjunction with the EE. This approach takes into consideration the human, economic and environmental aspects of water and watershed management, which require synchronization in Belize. The EE and associated Government Entities will champion this new approach to water management in the rural communities of Belize

that are detrimentally affected by limited water resources, which are projected to be further restricted with the impacts of climate change.

Dynamics of Target Communities

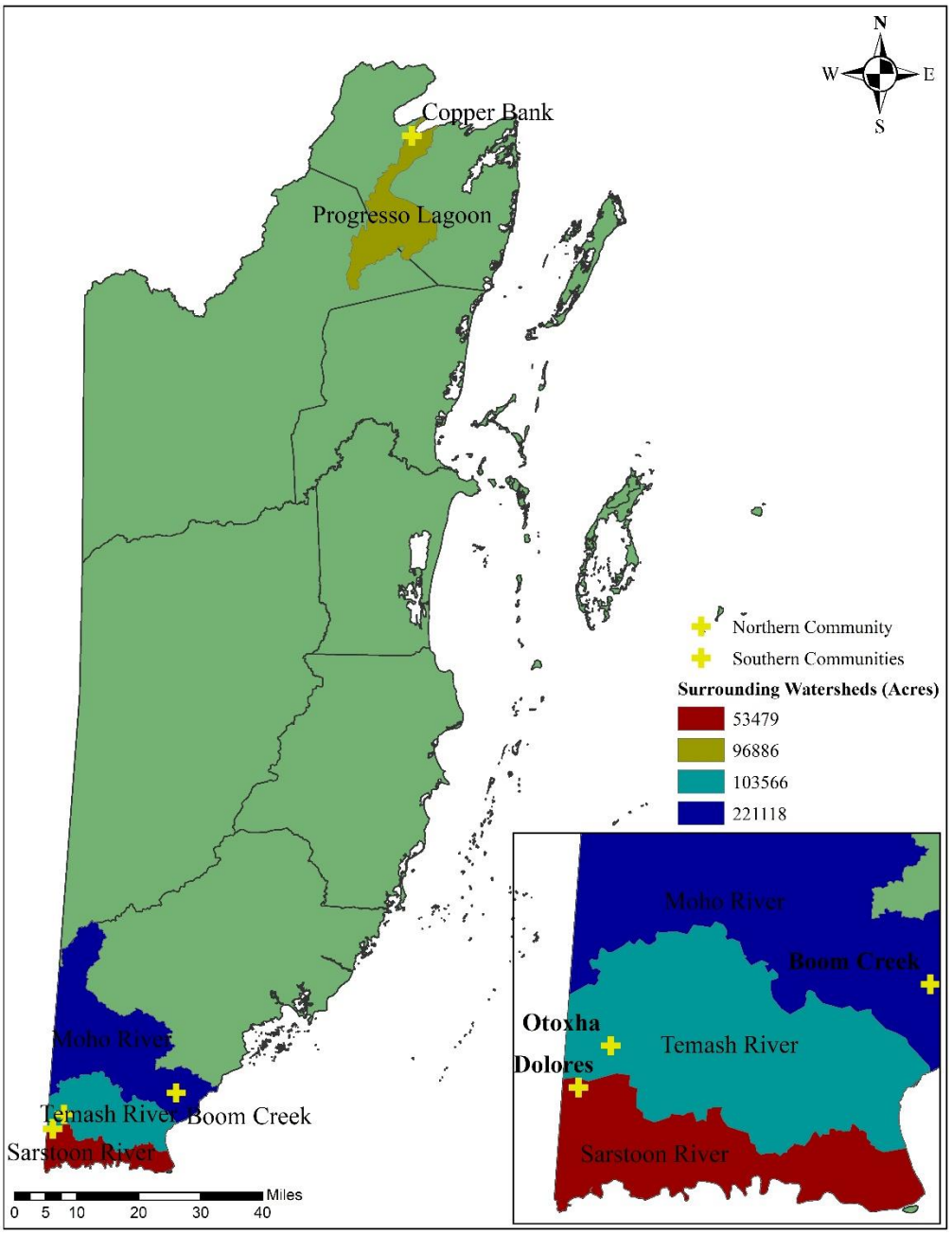


Figure 2: Map Displaying the Four Target Communities

Boom Creek

Boom Creek Village is a lowline area (swamp) located southwest of Punta Gorda Town, Toledo District along the Moho River. The village is approximately 9 km or 5.6 miles from Punta Gorda Town. The village land borders with San Felipe, Midway and John Bejerano Private land towards Punta Gorda Town. It is accessible by road, which was constructed in 1992. The road ends at the last house in the village. During the rainy season, the road to the village floods for extended periods of time. During these events the village is accessed via a 20-minute boat ride on the Moho River. The land in the village is mainly used for agricultural purposes (corn-matambre), and traditionally used on a rotational basis. Approximately, an average of 10 – 15 acres of land is being used for each seasonal crop. A small portion of private land is cleared for farms (fruit trees etc...) and the harvesting of log or extraction of lumber during the logging season. The village has one primary school and is located within the Moho River Watershed (Figure 2).

Figure 3: Inaccessible Road Boom Creek (Source: Ministry of Rural Transformation)

Figure 4: Government School in Boom Creek (Source: Ministry of Rural Transformation)

Figure 5: Creek in the Center of Boom Creek (Source: Ministry of Rural Transformation)

Otoxha

Otoxha is a tiny Mayan Indigenous community in south-eastern Belize within the Toledo District located near the Temash River. The community is two miles away from the community of Dolores and the nearest urban area is Punta Gorda. Most families in the community live in thatch houses and are subsistence farmers. The village has a multigrade primary school; however, students must travel 1-2 hours to attend secondary school. The main form of transportation to and from the village is by public transportation, buses. There is a public heath post that is serviced by mobile health clinics in the community approximately every six (6) weeks. The community is located in the Temash Watershed (Figure 2).

Dolores

Dolores Village is located in the south-eastern portion of Toledo District within the Adjacency Zone, which is approximately 6 miles from the Belize-Guatemala Border. It is 2 miles away from Otoxha Village or 50 miles from Punta Gorda Town and is accessible by vehicle on a gravel road constructed in 2003. The road ends at the end of the village. Most families build and dwell in thatch houses along the road leading up to the village. They are mostly subsistence farmers and community lands are mainly used for agricultural purposes, and traditionally is used on a rotational basis. On average of 8 – 10 acres of land is being used individually for each seasonal crop. Secondary vegetation is mainly used for clearing new area for housing, cattle rearing and corn (matambre) and beans. High (virgin) forest is mainly used for rice and corn. Dolores is located in the Sarstoon Watershed (Figure 2).

Copper Bank

Copper Bank is located along the west bank of Laguna Seca lagoon, which empties in the Corozal Bay in the Corozal District. The village can be accessed by various routes. The first is by road from Orange Walk Town through the villages of San Estevan and Progresso or through Corozal Town crossing the New River by ferry through Pueblo Nuevo. It can also be accessed through the village of Sarteneja by ferry across the mouth of the Laguna Seca Lagoon. The northern community is located within the Progresson Lagoon Watershed (Figure 2).

Social and Economic Status of Target Communities

Many of the target communities are located in remote rural areas of the country with limited access to modern day conveniences. Villages such as Boom Creek, Otoxha and Dolores have no access to electricity via the national grid. The economic and some social factors of the communities are presented below.

Boom Creek Village

In Boom Creek, twenty-two (22) households have access to solar power and three (3) households still utilize candles and homemade lamps. Current income earning activities include subsistence farming utilizing traditional methods which in many cases are not environmentally friendly. The rearing of domesticated animals is also common in the community, with excess crops and animal products being sold in the nearby Town of Punta Gorda. Communities such as Boom Creek also have small scale logging ventures that provide income to a few households that have access to private land.

Water Supply/Source

There are two functional hand pumps in the village and one production well; one is in a community members property and the other in the school's compound. Rainwater is their main source of drinking water. Each household has water catchment tanks to harvest rainwater. A few households have access to hand dug wells. The community hand pumps are mostly utilized during dry season which is a burden for families that do not possess a vehicle to transport containers filled with water to their homes. Females do laundry at the creek which is located in the center of the village. The nearby river has salt content, so it is not used for consumption or washing with the exception of bathing.

Figure 6: Village Hand Pump for Water (Source: Ministry of Rural Transformation)

Otoxha Village

Otoxha another rural community in the Toledo District contains 58 households and approximately 357 persons. This Indigenous Community is home to both Mopan and Q'eqchi Mayan cultures and is governed by the traditional village Alcalde System and the Village Council system working at the local governance level. On average, households in the community earn less that BZD $100.00 per month approximately 57.4%, which is well below the poverty line. The main source of income being agriculture and livestock rearing at a small scale, which accounts for 63% of the population. The remaining community members earn wages from government employment (9.3%), social security benefits (9.3%), construction (5.6%), logging (1.9%) as well as arts and crafts (1.9%). The majority of households in the community do not have access to electricity (68.5%), with the remaining gaining access via solar energy and diesel generators. A total of 94.4% of the households do not have a telephone relying on the village community phone for communication purposes.

Water Supply/Source

The main source of the village's drinking water, 68.5%, is from public hand pump, 9.3% obtain water from a local spring, 9.3% from wells, 3.7% surface water and 1.9% have access to water piped into their yards (Saunders, 2009). In terms of water treatment, a total of 75.9% of villagers indicated that they treated their drinking water supply by boiling. The main source of water supply for other purposes including washing was surface water (85.2%).

Dolores Village

Dolores is a tiny village in the southern portion of the country that contains 100 households and approximately 560 persons. The village is predominantly Q'echi Maya (64%) with Q'echi and some English and Spanish being spoken. The village is also occupied by East Indians (27%) and Mopan Maya (6.0%). The village is governed by the Village Alcalde System and the Village Council System. Similar to Otoxha, the average monthly income of most community members was less that BZD $100.00 per month, with the income source being primarily agriculture and livestock production (95%). Most of the population is living below the poverty line. Most of the homes in the village of Dolores are thatch houses (94%) and less than 40% of the community has access to electricity, with solar being the main source.

Water Supply/Source

The main source of the village's drinking water is from surface water. Another 30% utilize water from spring, and 19% use rainwater from individual collection systems. The vast majority of villagers treat their drinking water. In terms of water for other purposes including washing, the main source of water supply was from spring (47%) and the creek (27%) with 19% utilizing other sources such as piped water (Saunders, 2009).

Copper Bank Village

Copper Bank is located in the rural area of the Corozal District containing 150 household and approximately 550 persons. The ethnicity is mainly Mestizo and the predominant language is Spanish with a majority being bilingual speakers. The community falls under the Quintile 2-Lower-Middle classification in accordance with the SIB Poverty Index. Income is generated from fishing (80%) construction (2%) and cane farming (18%), with an average income of BZD $500-2000 per month. The majority of the community, 99% have access to electricity via the national grid.

Water Supply/Source

The main source of drinking water in the village is rainwater collection. Households harvest rain water for drinking and utilize well water for other purposes. Through the use of water pumps, some households pipe well water into their homes for toilets, laundry and for other household use. There are a reported 85 water wells in the community. However, during the months of January to May eighty percent (80%) of the wells dry resulting in households having to utilize the community water pumps. Additionally, only 20% of the wells have availability of water. Copper Bank has 3 hand pumps connected to 3 community water wells; only 1 pump is functional at this time. Most households harvest rainwater with approximately 60% of household pumping rain or well water into their homes for household use. Well water being utilized is not chlorinated prior to use. To address this issue the Ministry of Health has been distributing chlorine tablets to households especially during outbreaks of gastroenteritis (diarrhoea and vomiting) and Hepatitis A.

Treatment of Water in Belize

In most communities across Belize, that are not connected to the national water supply system, water is not treated prior to use, which often results in the prevalence of diseases and health issues in the country. The Ministry of Health (MOH) in conjunction with the EE and other national bodies, have been working with communities to create awareness of the importance of water treatment. This has been a challenge in many communities as there is limited knowledge and awareness at the community level about the impacts of inadequate water treatment and human health. The MOH has developed an Operations and Maintenance Manual for Water Systems, which aims to improve water treatment and minimize heath impacts which also promotes the sustainable utilization of the resource. The MOH also works with the EE to conduct periodic water quality testing of water systems including wells to inform water management. Given the importance of water, the country is also aiming to develop a Water Safety Plan which also takes an integrated approach to water protection and use. This project aims to also address aspects of water quality and human health through its actions, while building on the other core actions already being implemented in country.

Table 1: Community Statistics

Community	Households	Population	Male	Female	Ethnicity	Language
Boom Creek[2]	22	91	37	53	Mestizo (53.8%) Q'eqchi (30.8%)	Spanish English Q'eqchi
Otoxha	58	282	138	144	Q'eqchi (85.2%) Mopan Maya (11.1%)	Q'eqchi Mopan Maya
Dolores	100	560	205	248	Q'eqchi (64%) East Indians (27%) Mopan Maya (6%)	Q'eqchi English and Spanish
Copper Bank	150	550	250	300	Mestizo (98%) Caucasian (2%)	English and Spanish

Problem Statement

The traditional means of supplying potable water to households from underground aquifers via wells has been increasingly challenging, resulting in some communities experiencing water scarcity. Water availability in rural communities located in the poorest regions of Belize will be further threatened by climate change and vulnerability; consequently, through this project potable water resources will be restored in the four identified target communities in Belize, via solar water extraction systems and an integrated approach to the long-term utilization and management of water resources facilitated by community lead action. The project also takes into consideration the ecological functioning of watershed and intends to involve communities in restoration of watersheds via nature-based agricultural techniques to restore the water catchment function of watersheds.

[2] Some of the statistics presented may be outdated and are estimates based on the last Census and rapid assessments

Project / Programme Objectives:

List the main objectives of the project/programme.

The core objective of the proposed project is to promote the advancement of rural communities by securing water resources in four communities located in the Northern and Southern regions of the country. This will be achieved via three interlinked project components:

1. Improved Potable Water Supply Systems
2. Community Based Watershed Protection and Management
3. Improved Governance and Enhanced Appreciation for Water Resources

This project aims to decrease the uncertainty of water availability in communities by providing climate innovative and adaptive mechanisms to address current and future climate change impacts on water resources. Under Component One, water supply and distribution systems powered by solar energy and fitted with climate adaptive fixtures will be installed in the four selected communities. This component provides communities that traditionally relied on wells for water resources, with a viable long-term source of potable water.

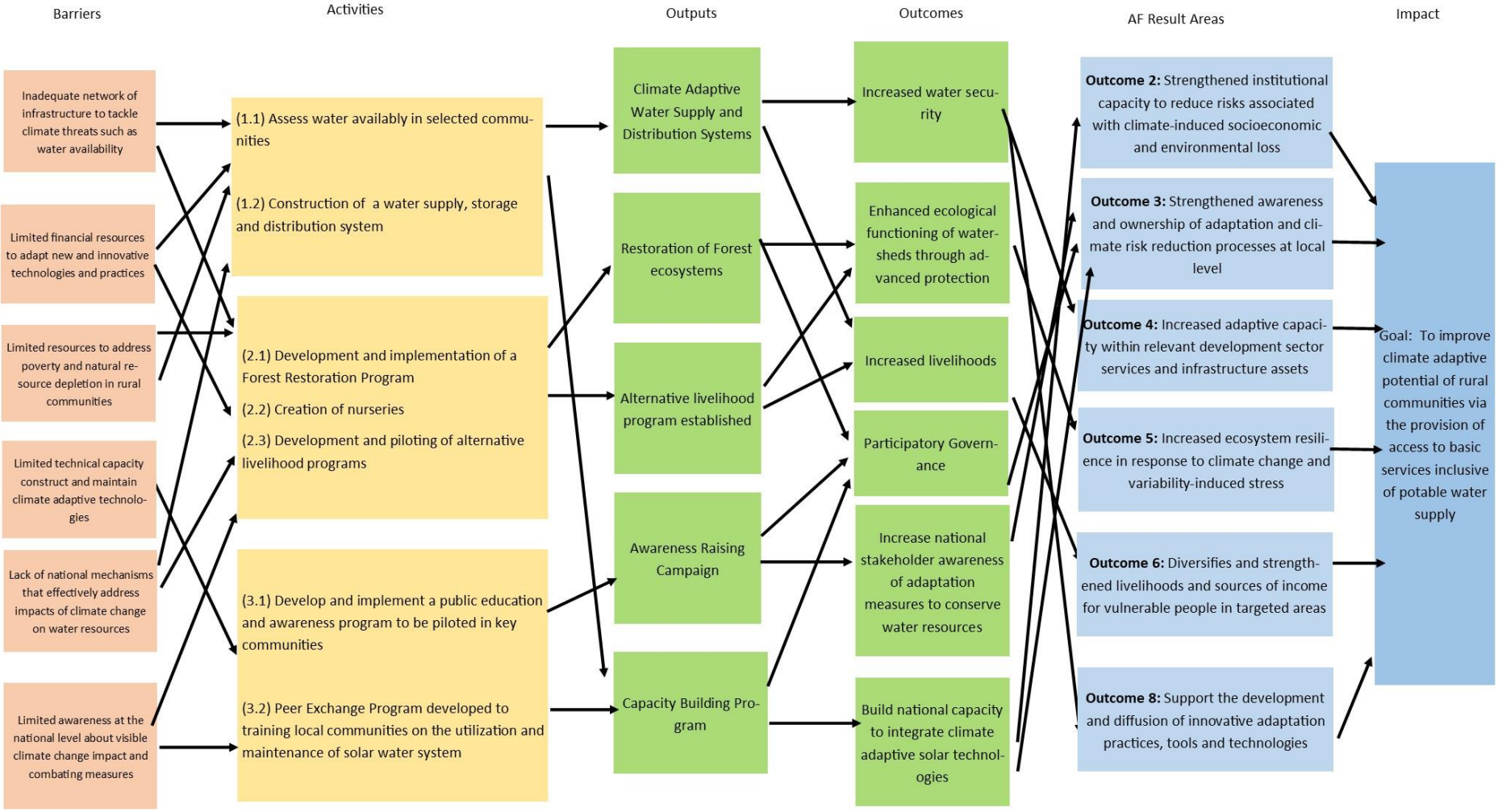
Component Two takes into consideration the securing of water resources via the protection and sustainable utilization of the watershed resources. Under this component, the Executing Entity will work with communities that traditionally unsustainably extract and utilize resources within the watershed, to adapt climate friendly and sustainable alternative livelihood projects that benefit the ecological functioning of the watershed as a water catchment. This Component also includes actions for restoring the ecological functionality of the watersheds.

Component Three, Improved Governance and Enhanced Appreciation for Water Resources, aims to increase the knowledge of local communities on the importance of water resources and ways to secure resources in a future of climate uncertainty linked to climate change and vulnerability. As water is a vital resource for the survival of all communities it is important that communities become aware and become actively involved in the conservation, protection and sustainable utilization of water resources. Continuous education and outreach are necessary to garner public support for the project and to ensure the long-term sustainability of the project interventions. Campaigns and trainings with local municipalities and communities will allow for the integration of best practices for Belize. Under this component actions will also be instituted to improve the management of the new integrated system by local counterparts with the aid of the EE. This includes the digitization of water board systems to be compatible with modern technology, which promotes the efficient use of water resources by minimizing waste and monitoring use in communities. To improve local governance, the EE also aims to develop a program to monitor and assess ground water levels in target communities, with the possibility of scaling up the program in other communities in the future.

The objectives of this project are strategically aligned with the Adaptation Fund Strategic Results Framework in its overall aim of building the adaptive capacity of four local communities via the provision of secure water resources. Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level will be achieved via the implementation of Component 3 of the project for enhancing awareness. In all actions of the project, the Executing Entity will aim to provide communities and national stakeholders with the skills and knowledge necessary to increase their adaptive capacity. The project is built entirely on providing communities with the tools to address and combat climate change impacts, which will require communities to understand the context of climate change and the adaptation solutions. This component also contributes to improved national governance and promotes the integration of communities in the decision-making process. Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets is evident under Component One, via the installation of climate adaptive water extraction,

supply and distribution systems that can withstand climate change impacts, thereby securing water resources for four water deprived communities. Outcome 5, Increased ecosystem resilience in response to climate change and variability-induced stress, will be realized through the implementation of restoration programs for watersheds, which target the riparian forests to improve its functionality. Alternative livelihood programs based on the uniqueness of target communities will be identified and implemented. These programs will be in alignment with the goal of maintaining the ecological functionality of the watershed and hence will contribute to its protection. The Project will also contribute to Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas of the AF. The main goal of the project is to provide rural communities with innovative technologies and practices that would better enable them to secure water resources in a future of climate variability. The latter contributes to the Fund's Outcome 8 via the adaption of these new methods in traditional communities. Further information can be found within Annex 1.

Theory of Change



Project / Programme Components and Financing:

Fill in the table presenting the relationships among project components, outcomes, outputs, and countries in which activities would be executed, and the corresponding budgets.

Project/Programme Components	Expected Outcomes	Expected Outputs	Countries	Amount (US$)
1. Improved Water Supply Systems	1.1. Increased water security in for four rural communities in the poorest regions of Belize	1.1.1. Four water extraction and storage facilities 1.1.2. Four community distribution systems for water supply	Belize	3,439,375
2. Community Based Watershed Protection and Management	2.1. Enhanced ecological functioning of watersheds through advanced protection	2.1.1. Riparian Restoration Program 2.1.2. Alternative Livelihood Program	Belize	300,000
3. Improved Governance and Enhanced Appreciation for Water Resources	3.1. Increase national stakeholder awareness of climate change impact on the water resources 3.2 Build national capacity to integrate climate adaptive solar technologies 3.3 Increase capacity of local water boards to effectively manage water systems	3.1.1. Awareness Raising Campaign 3.1.2. Capacity Building Program 3.1.3. Integrated Training Program for the management water systems 3.1.4. Digitization of water system 3.1.5. Ground Water Monitoring Program	Belize	376,108
6. Project/Programme Execution cost				432,017

7. Total Project/Programme Cost	4,547,500
8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)	422,450
Amount of Financing Requested	4,970,000

Projected Calendar:

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

Milestones	Expected Dates
Start of Project/Programme Implementation	November 2022
Mid-term Review (if planned)	2023
Project/Programme Closing	April 2027
Terminal Evaluation	July 2027

PART II: PROJECT / PROGRAMME JUSTIFICATION

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

Component One, Improved Water Supply Systems, aims to provide an alternative and reliable water production system to the four target communities of Dolores, Boom Creek, Copper Bank and Otoxha, which are in the poorest and remote areas of the country. These communities were traditionally utilizing Rudimentary Water Systems, that supplied water via wells constructed for extraction from underground aquifers. Some communities contain numerous wells, some suppling water resources to individual households. Other sources of water include rain fed collection systems and the manual extraction of water from local streams and springs. The target communities lack access to potable water for drinking and household use, which is further inaccessible during Belize's dry season. During the dry season, some communities are only able to access water from water trucks that transport water from other municipalities. The unavailability of potable water and improper wastewater management further prevails the prominence of disease outbreaks in the communities, leading to long-term health impacts. Additionally, recent efforts to access water from new water wells dug in communities have been futile. The EE exhausted materials and resources in the past 6 months to locate new water sources to supply water to communities where existing wells can no longer provide water. During 2020-2021 the EE has dug wells beyond the maximum depth of previous systems and have only been able to access approximately 3 feet of water, which is insufficient to provide water resources to the community.

The success of this component also requires the completion of a requisite hydrological investigation to ensure that the water systems can provide the volume of water and recharge rate needed. The latter, tied to actions under Component 3, will avoid the over-abstraction of water that damage the aquifer and results in negative impacts (salinization of coastal aquifers) for all. Where required saline intrusion zone studies may be conducted to determine the zone of influence. It is the aim of this project to provide four rural remote communities, with secure access to potable water resources thereby increasing the ability of the community to adapt to changes in the climate that would further threaten the availability of water resources during periods of drought, inclusive of hydrological droughts. The project also contributes to Belize's mitigation potential by minimizing the utilization of fossil fuels tied to the use of traditional systems for the extraction, treatment and supply of water resources in communities.

Key actions under the project include:

i. The construction of new adaptive hybrid power photovoltaic water extraction system that utilizes readily available water from nearby water sources such as stream, tributaries and/or springs.
ii. The installation of a treatment facility to ensure the provision of potable water, that meet national standards. As well as the construction of a water storage and distribution systems which enable communities to improved access to water resources.

Component Two, **Community Based Watershed Protection and Management**, aims to improve and safeguard the ecological functionality of the watersheds via the adaption of climate friendly restoration action and alternative livelihoods that contribute to the long-term protection of the watershed and resources within. Restoration actions will enable the watershed to continuously provide water resources to local communities

through its natural processes. It will also enable a holistic approach to the management and utilization of water resources. As riparian forests provide key filtration and stabilization functions in watersheds, it is important that they be restored and protected to ensure ecological functionality and the stable supply of water resources. Alternatively, the action also contributes to the sequestration of carbon dioxide, thereby contributing to Belize's climate mitigation targets as well. This will be done via the cultivation of nitrogen fixing trees species in and along the watershed corridor to maintain and enhance forest cover, supporting environmental protection, climate resilient agriculture and alternative livelihoods.

Actions to be completed under this component include:

i. The identification and piloting of alternative livelihood programs in communities, minimizing the prominence of poverty
ii. Identification and restoration of forested areas via replanting and adaptive management
iii. Establishment of seed banks and nurseries for restoration actions

Component Three, **Improved Governance and Enhanced Appreciation for Water Resources**, aims to create an enabling environment that would support the large-scale adoption of innovative practices and technologies in communities across the country. The EE has recognised the need to create sustainable structures and avenues for the enhanced understanding of climate change impacts and adaptive measures to minimize impact and increase resilience. As public acceptance and support are key to the success of the proposed initiatives, actions to integrate community members and provide them with the resources and skills necessary to effectively contribute to the successful implementation of the project is vital. This will be achieved via the:

i. The implementation of a national stakeholder awareness campaign
ii. The implementation of a capacity building, peer exchange program, to increase knowledge of adaptive approaches to water resources management and utilization
iii. The development of a long-term integrated training program to enhance the successive capacity of local water boards to manage the water systems
iv. Digitization of water system
v. Program for assessing and monitoring ground water

These initiatives and innovative systems will transform the ability of the communities to mitigate and adapt to the impending threats of climate change. There are barriers to be overcome for the seamless achievement of Belize's resilience. Barriers to the implementation of climate adaptive strategies range from the lack of technical expertise to the large gap that exists within the country to finance climate change adaptation.

Technical Barriers

The EE and the Local Water Boards lack the technical resources to construct and manage new water systems in target communities. Currently actions for the provision of water in communities require remedial technologies and expertise for the extraction and management of water resources. The adoption of climate adaptive technologies for the long-term extraction, treatment and distribution of water in target communities will require the technical expertise of numerous engineers and technical skills, which do not currently exist within the EE. The acquisition, installation, and training of personnel on the utilization of the new technologies will enable EE to see the integrated adoption of new water systems in various areas of the country.

Financial Barriers

Local Water Boards and the EE lack the financial resources to transform local water systems to secure water resources. Approximately 148 communities in the country are under the management of Local Water Boards in rural areas, with the communities gaining access to water from groundwater sources. Decreased water availability from local underground water sources, linked to climate impacts such as decrease rainfall and shorter more intense rainfall, poses a particular challenge to those communities not connected to the national water system and are unable to upgrade infrastructure to supply potable water to communities. Currently all major municipalities and 44 villages are connected to the water systems managed by Belize Water Services Limited (BWSL), which contain large scale infrastructure for water supply and distribution. The initial investment, inclusive of assessments, and financing for the construction and maintenance of systems are limited and, in most cases, non-existent at the national level. Financial resources of the EE are restricted by national budgets, which inhibit the upgrading of water systems to modern climate adaptive systems, that provide secure water resources to communities.

Institutional Barriers

Currently, the Ministry lacks the formal structures necessary for the long-term sustainable management of newly build adaptive systems by the local Water Boards. To depart from the business-as-usual management of water systems, which have been deemed unsustainable, there is the need to advance management strategies that would better enable the longevity of the system through effective management. The creation of a progressive initiative within the Ministry that functions as a succession program for the management of the water systems, will enable communities to maintain fully functional water systems and secure water resources in communities already impacted by climate change and variability.

Participatory Governance

The proposed project is designed with participatory governance principles which allows the communities to actively engage in the decision-making process. The project will adopt participatory planning, budgeting, action and M&E systems. The participatory governance approach will positively contribute towards beneficiary ownership, local capacity enhancement, accountability and transparency. The project will ensure appropriate local engagement platforms are in place for all the local stakeholders to actively engage in the decision-making process. A strong community and local stakeholder mobilization process will be carried out from the inception of the project to ensure all local stakeholders including the target communities are brought in within the overall participatory governance model. The below diagram depicts the overall participatory governance model that will be adopted by the project.

Participatory Planning: The planning of access to water and watershed management practices will be done using participatory processes. The identification of problems, analysis, generation of options, etc. will be carried out in a community-centric manner.

Participatory budgeting: The budgeting of the local development interventions including community drinking water supply initiatives will be done using participatory budgeting processes. This will enable a higher level of financial transparency and accountability while promoting higher community contributions (in-kind).

Participatory Action: The implementation of the climate change adaptation initiatives will also be done in a participatory manner where men and women in the target community groups along with the other stakeholders will take responsibility for the implementation. The participatory planning process will identify the roles and responsibilities of different community groups, including women and youth, during the implementation process.

Participatory M&E: Participatory actions will be embedded into the monitoring and evaluation processes as well. The overall monitoring framework will be designed to provide main responsibility to the community groups

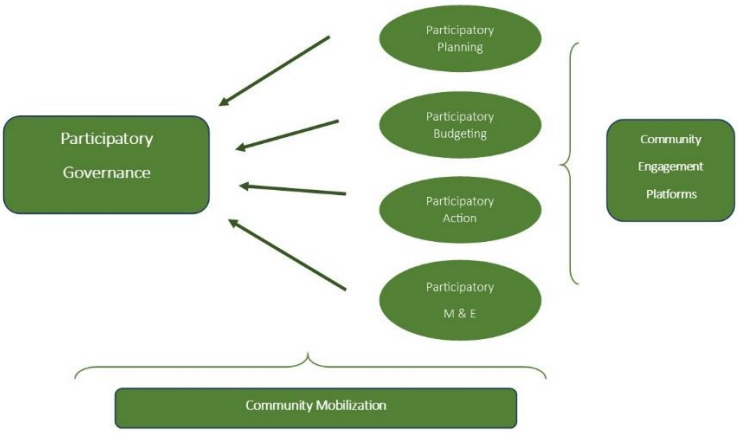


Figure 7: Diagram of Participatory Governance

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

The proposed project enables the adoption of an integrated and innovative approach to water supply and management based on a holistic understanding of the functionality of watershed and the institution of mechanisms to sustainably utilize and protect water resources. The adoption of sustainable climate resilient water systems in remote rural communities in the country will enable communities to build their climate resiliency and address the impacts of climate change that are already affecting the supply of water resources. Similar Hybrid Power Photovoltaic Systems have been piloted in other areas of the country, within larger communities and have proved effective in the reliable supply of water to communities such as Conejo Creek and Pueblo Viejo villages in the Toledo District. These communities faced similar instances of inadequate water supply from traditional sources.

The actions under this project aim to build on the success of the other water supply systems by integrating activities for the long-term protection of the water resources by improving community practices in the watershed, that benefit the functionality of the watersheds. This approach will require the comprehensive assessment of current practices, to determine those that are detrimental to the longevity of the watershed. Following the assessment, actions will be developed in close consultation with community leaders and community members. These actions will be prescribed environmental and climate friendly best practices that positively impact the ecosystem while enabling communities to attain value added economic and social benefits. The integration of these best practices will see the protection of the resources and ecosystem services on which the community depend, thereby securing water and in some cases food production systems. The technical and social approach to holistic water management has been identified by the EE as a necessary shift to the traditional water production systems that are currently threatened.

C. Describe how the project/programme aims to roll out successful innovative adaptation practices, tools, and technologies and/or describe how the project aims to scale up viable innovative adaptation practices, tools, and technologies.

The innovative adaptation practice, which the project intends to roll out, extends to the integrated technological and social approach to the supply of potable water and the safeguarding of water resources. Actions included in the project that will enable the successful roll out are evident in Components Two and Three. Contrary to traditional practices of installing water systems and relying on EE, Water Boards and Regulatory Agencies to ensure the long-term functionality of the system; through the improved management framework for the water systems and the livelihood actions, the interventions should be self-sustained decreasing the need for large scale financing from the EE and Government of Belize for the supply of water in communities. This project also intends to involve community members in complementary actions that would enable the maintenance of the system; via the implementation of forest restoration actions and the minimization of negative anthropogenic impacts via the identification of environmentally friendly alternative livelihood actions to secure water resources. These actions can be replicated in other communities thereby promoting the protection of water resources and decreasing the stress to water resources that would be compounded by climate change.

Component Three functions as the knowledge capturing component of the Project, enabling the project interventions to function as a pilot for eventual scaling up in other communities with water supply challenges. The mechanisms for building institutional capacity to manage the water systems, restoration and livelihood support actions enable the EE and regulatory agencies to monitor and evaluate the dynamics of an integrated system in a rapidly changing system impacted by climatic factors. The latter enables entities to devise a proactive approach to addressing water supply issues that may arise in similar systems. By increasing the community's knowledge and understanding of climate change impacts and promoting the integrated management of the water resources through ecological protection and sustainable utilization, the chances of project success in target and other communities is increased. The Component also facilitates the long-term monitoring of these systems under controlled circumstances which enables prompt adaptation to new challenges and impacts as they arise. The EE periodically monitors systems and communities through a network of Rural Community Development Officers within each district. These officers will work with communities and local water boards to ensure the effective management of the water supply in the communities, among other things. Under this project that monitoring will be extended to the other proposed interventions. The Monitoring and Evaluation System in place adds value to the project's knowledge capturing elements. Peer Exchanges similarly enable the capturing and dissemination of knowledge for the adoption of interventions in other communities in the country. Overall, the actions of Component Three contribute to the evidence basis for the future scaling up of the project interventions.

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

Water is a key resource for the survival of communities. In rural communities with minimal financing to transform to adaptive water supply systems that can provide a sustainable source of water, new approaches are required to ensure the survival of communities. The proposed project has numerous benefits to the four target communities and the innovative approach is welcomed by community leaders as it provides a of sense of security.

Economic

The alternative livelihood actions within the project, provide the poor rural communities with a new source of income to reduce the instances of poverty within the community. Drawing on the unique characteristics of the community and the findings of the social assessment to be conducted, sustainable alternative livelihood activities will be proposed for each of the target communities. Within Indigenous communities, this assessment and social interaction with village leaders and members is key to the success of the intervention and the improvement of the economic status of individual households. The assessment will also take into consideration the gender differences and cultural roles of men and women within the target communities, some of which are Indigenous. Therefore, proposed activities will take into consideration and be mindful of the social and cultural practices of the communities. As many of the communities contain households that earn an average of BZD $100.00 per month, interventions to provide a stable source of income and food within the individual households is vital. These financial challenges were further amplified during the Covid-19 pandemic, with community leader indicating the need to provide many households with food and water provisions due to the corresponding economic crisis faced by the country. As an added benefit, actions to increase income from other sources also decrease the community's dependence on natural resources thereby adding to the protection of the natural environment.

The interventions under Component One and Three work in conjunction to decrease the financial resources required by the Government of Belize and the EE to source water in communities that have experienced water shortage issue, anticipated to be compounded by climate change. The climate adaptive water systems will decrease the annual fuel consumption cost to the GOB and Local Water Boards for the extraction of water from wells using diesel generators. The new supply and distribution system will also provide a source of income to the Boards for the maintenance of the system via the water consumption payment system to be instituted for each community. The new systems will also enable individual households to access water from a stable supply, thereby in some cases decreasing the need for water to be transported from outside villages at a higher cost as is the case for Copper Bank.

Social

The social benefits of the project are tied to the long-term solutions the project intends to cultivate. The integration of community leaders and community member in all project actions creates a sense of ownership in the communities adding to the social advancement of the community and the effectiveness of project interventions. This is key to the success of the project and the increased social benefit to community members. The provision of a stable potable water supply to the communities enables households to carry out basic functions such as cooking and the maintenance of hygiene, thereby improving heath of communities. Current utilization of untreated water from stream and wells have resulted in the prevalence of diseases and health complications in some communities. The steady supply of water is particularly crucial to women, children, the elderly, sick and disabled that have varying water supply needs.

The alternative livelihood actions foster men and women as entrepreneurs in communities traditionally stricken by poverty; having an added benefit of food security, dependent on the solutions identified in conjunction with community members. Water and food security are key issues threatened by the changing climate; therefore, the project intends to simultaneously address both issues to enable the resiliency of the target communities and its

members. Alternative livelihood activities provide a new revenue stream for the communities minimizing their social dependence on financing from unreliable sources.

Restoration actions further protect the communities by minimizing erosion, thereby reducing the need to relocate in instances where homes are near eroded riverbanks. Restoration actions also enhance local biodiversity. This in turn provides communities with building materials for traditional homes and firewood as well as secure sources of game meat, harvested from the surrounding forest. The above enables the community to maintain their traditional cultural practices.

Environmental

The proposed actions under Component One and Two have direct and indirect environmental benefits. The water extraction, supply and distribution system have an added benefit of climate change mitigation. The Project also minimizes the risk posed to ground water resources that have not been properly assessed to determine extraction and rechange rates, as well as the possibility of saline intrusion for those communities in close proximity to coastal waters. The issue of water protection, conservation and sustainable utilization is of key importance to the longevity of Belize's water resources. As is evident in coastal communities such as Copper Bank, the supply of water is threatened by SLR, natural saline intrusion as well as anthropogenic induced saline intrusion via over abstraction. Additionally, only 20% of the 85 wells in the community supply water. The project hopes to minimize the negative impacts to underground water sources.

Component Two focuses on the protection of ecosystem services through the restoration actions and by minimizing the anthropogenic impacts to watershed systems. This component centres on the need to maintain and protect the system in order to ensure the supply of water resources for the future by employing, a holistic functionality approach. Restoration actions included here will enable the watershed to revitalize its provisional and protective ecosystem services, such as the catchment and filtration of water, the minimization of erosion, the provision of habitat, the maintenance of flora and fauna biodiversity for utilization by communities and flood protection, which all have social benefits to communities. The alternative livelihood actions, minimize the negative impacts caused by communities during the traditional utilization and extraction of resources as an income source. The project intends to propose socially accepted alternatives that benefit the environment, thereby ensuring the sustainable utilization of natural resources by communities. As these communities are heavily dependent on the surrounding natural resources for food, building materials and firewood for cooking, it is important that the resources be protected and used in a manner that promotes sustainability.

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

Beyond the lifespan of the project the interventions are anticipated to continue providing benefits to target communities and create an avenue for the adoption of the technical and social paradigm shift that is needed for the effective management of Belize's water resources. The project will also improve existing structures to ensure sustainability and cost effectiveness. The project will also take into full consideration the multisectoral and multilevel approach necessary for the successful implementation of project actions.

Under Component One, cost effectiveness is evident in the adaptive Hybrid Power Photovoltaic Water extraction, treatment, storage and distribution systems that decrease the community's dependence on fossil fuels. These

systems will also provide communities with a stable supply of water that minimizes the need for the EE to identify and construct wells for new sources of water from underground sources periodically. The human and financial resources required to identify and access new water sources will be decreased, thereby enabling the EE to channel resources to other priority areas. The recent actions to source water in the traditional manner have been futile and resulted in the loss of significant financial resources. Systems such as the proposed are more sustainable for the local water boards and EE to manage. The cost of this Component is USD $3,439,375.

The cost effectiveness of Component Two is evident in the paradigm shift potential of project actions. The protection of water resources is the mandate of regulatory agencies within the Government structure, with significant human and financial resources being required to manage these resources. However, the approach proposed by the project will see the involvement of communities in the daily management and protection of water resources through actions that minimize anthropogenic impacts to the water systems. The shifting of traditional practices and increased understanding of the value of water resources and mechanisms to secure the resource for future use at the community level, will decrease the financial and human resources needed to promote sustainable water resource utilization by regulatory agencies. Actions to restore forest resources will also improve the functionality of the watershed, thereby providing the requisite ecosystem services which will secure the water resources. These actions also provide communities with additional provisional and protection ecosystem services. The minimization of anthropogenic impacts will also result in decreased stress to the water resources, natural resources and improved management championed by community members. The latter should secure the supply of water resources in the community. The cost of this Component is USD $300,000.

The integration of a new governance Approach and training programs will enable the EE and Local Water Boards to manage systems and project interventions success in the long-term. The latter contributes to the cost effectiveness of Component Three. By building formal structures and national capacity to integrate and manage the new systems and ecosystem-based actions, the proposed actions within the project will be beneficial to the country, beyond the one-off investment. Training on the day-to-day management will ensure that the systems are maintained to function at optimal capacity. The peer exchange programme will enable the adaptation of modified systems in other communities in Belize that are experiencing similar water availability issues to be exacerbated by climate change. Programs such as this one can be easily replicated in country. The cost of this Component is USD $376,108.

F. Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist. If applicable, please refer to relevant regional plans and strategies where they exist.

The proposed 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. 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 contributes to achievement of Critical Success Factor 2 and 3 of the GSDS via the development of livelihood programs, the protection of ecosystems via effective ecosystem management and building national resilience to climate change.

Actions are also linked to **Belize's National Climate Change Policy, Strategy and Action Plan (NCCPSAP)** via the actions to increase the resilience of water resources, which is a key sector of the NCCPSAP. The

Nationally Determined Contribution of Belize has similarly prioritized actions to protect and manage water resources. Other national polices include the Forest Policy, National Adaptation Strategy and Action Plan for the Water Sector, the Integrated Water Resources Management Policy which call for a holistic approach to water management via the protection of the corresponding forested areas. The project is aligned with **Belize's National Gender Policy (2013)** and will fully integrate and ensure that the needs of women, men and children are addressed effectively in the project.

The Project also contributes to the achievement of Sustainable Development Goals (SDGs) 5- Gender Equality, 6 -Clean Water and Sanitation, 7 – Affordable Clean Energy, 11 – Sustainable Cities and Communities, 13 – Climate Action and 15 – Life on Land.

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

The project will ensure compliance with relevant technical standards such as building and construction codes for the development of the water supply, storage and distribution systems. Including potable water standards being adhered to in country, which have been established by the World Health Organization (WHO) Guidelines on Drinking Water. All materials will be examined by the Belize Bureau of Standards to ensure compliance with technical standards of materials and equipment.

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 marginalized and vulnerable groups and indigenous peoples. The project will ensure that the activities contained within are properly assessed to determine the necessity for an EIA or a limited level study as per the EIA Regulations of the Subsidiary Laws of Belize (2003), which contains a list of activities for which an EIA is required. If required all stipulated conditions will be met to ensure the Project activities are in full compliance with its requirements.

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

Actions included within the proposed project will complement the series of ongoing and planned projects in country. There are no known duplications of project actions within the target communities. Other pipeline projects funded by other entities focus solely on the electrification of villages that currently have no access to electricity. One such project, the European Union Electrification Project valued approximately 3 million Euros aims to install mini grids in 6-7 villages, in first instance, that currently have no access to electricity. The project is in the information gathering phases, that will result in the development of community profiles for 36 communities without electricity across Belize. One of the main outcomes of the project is the creation of a National Sustainable Energy Road Map for Belize that provides a framework for the supply of electricity, water and telecommunication services to all local communities. The project is being implemented by the Ministry of Public Utilities. Energy and Logistics via the Energy Department.

Other Projects, such as those being implemented by the Belize Social Investment Fund (BSIF), aim to rehabilitate existing water systems that are in dire need of an upgrade. The BSIF has three water system rehabilitation projects ongoing each with a potential financing capacity of BZD 1.4 million with financing provided by the Caribbean Development Bank (CDB). The first project is within the southern community of Crique Jute in the

Toledo District. The project endeavours to construct a new water extraction, treatment, transmission and distribution system for the community. The BSIF is working in conjunction with the EE to construct the system, which will be managed by a Local Water Board following its construction. The second project aims to upgrade the water supply system within Sarawee, a community located on the outskirts of Dangriga Town in southern Belize. The project, being completed in conjunction with BWSL, will upgrade the transmission and distribution network of the water system as well as improve the treatment of water. The water system will be managed by the BWSL upon completion. The third project targeting the villages of San Jose and San Pablo in the Orange Walk District, will conclude with the upgrading of the rudimentary water system serving both communities. The project will include the construction of new tanks, upgrading of equipment for the extraction of water and a pump house as well as a chlorinator to treat water prior to distribution. The upgrading of the system also expands the network and utilizes water monitoring devises, water meters. There is one other water system project in the pipeline for another community in the northern part of the country.

I. Describe the learning and knowledge management component to capture and disseminate lessons learned.

Component 3 will enable the EE to share knowledge and disseminate lessons learnt for the scaling up and modification of similar actions in different communities. The capturing of lessons learnt will better enable the EE and communities to address the impact of climate change and water security via the utilization of innovative technologies and the construction of climate adaptive infrastructure. Peer exchanges will support the long-term provision of knowledge dissemination beyond the lifespan of the project.

Empowering communities with knowledge of climate change impacts on water resources and adaptive methodologies better enable communities to adapt by promoting a shift in traditional utilization practices towards conservation and protection. This will be done through educational campaigns and public awareness sessions to enhance knowledge and learning of climate change. The project will also utilize multimedia platforms to increase awareness across the country and promote the innovative and sustainable technologies being utilized. As actions will target Indigenous Communities, an Indigenous Expert is key to the success of the actions. The EE will therefore work closely with the Ministry of Human Development, Families and Indigenous Peoples' Affairs. Awareness raising initiatives are important to build the resilience of local communities to adapt to imminent threats and promote ownership on initiatives.

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

As the project is multifaceted, its development involved the engagement of numerous entities and communities that will contribute to or will benefit from the project interventions. The EE conducted initial assessments of the target communities and engaged the community leaders on the proposed interventions from the four target communities of: Dolores, Boom Creek, Copper Bank and Otoxha. Discussion with entities that play a pivotal role such as the National Hydrological Service (NHS), Protected Areas Conservation Trust (PACT), Caribbean Community Climate Change Centre (CCCCC), Ministry of Health and Wellness (MOHW), Local Government (Community Leaders and Water Board Members) and local NGOs were consulted for input into the design of the project and its activities.

A committee has been formed within the Ministry of Rural Transformation, Community Development, Labour and Local Government to guide the process of concept development. A Technical committee will be established, which will be 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.

K. Describe how the project/programme draws on multiple perspectives on innovation from e.g., communities that are vulnerable to climate change, research organizations, or other partners in the innovation space, in the context in which the project/programme would take place.

The proposed project's success is built on the collaborative efforts of key entities and target communities. The projects actions were identified via observation and information gathering by Rural Development Officers in the districts within the EE as well as through consultations will community leaders and members. Other government ministries such as the MOHW have also noted the need for immediate interventions in communities, to safeguard human health and wellbeing. The National Hydrological Service (NHS) has continuously highlighted the need to assess, monitor and properly utilize water resources for future access to the commodity. The project builds on those needs and collaborative actions that have been clearly signalled by parties.

The EE, MOH and NHS have traditionally worked closely with communities across Belize to improve standards of living and access to basic needs. Through this project the relationships established will be further strengthened by further integrating communities and their climate adaptive needs into the proposed interventions. The community leaders as well as the local Water Boards will be pivotal in the action of construction and maintenance of the water systems being proposed. Similarly, community leaders and community members will work closely with the EE to devise suitable livelihood options that take into consideration the traditional and cultural practices of the communities to not infringe on their rights or threaten their way of life. The restoration actions will also seek the assistance of communities in the immediate and long-term monitoring and maintenance of the action.

Monitoring of the water system by the local water boards will require their inclusion in the design of a system and the provision of technical training for maintenance, participatory governance. The members of the Water Boards, who are also members of the communities, can provide local knowledge of potential sites for the water extraction and the design of the system to avoid negative environmental impacts or the poor design of the system. Community members will also be integral to the Ground Water Assessment and Monitoring Program, as they again, have local knowledge of all water extraction points in the village and can indicated areas where wells exist. It will also be beneficial for them to work along with the EE, via the District Coordinators, to monitor the well systems and provide timely updates that require immediate actions by the regulatory agency. Research will be done extensively by the EE, MOHW and NHS, to assess all aspects of water availability and health in the communities. Currently information obtained from the NHS and MOHW are used to guide the action of the EE. For this reason, there is the need to strengthen collaborative efforts and for national mandates to be recognized for seamless integration to build a better informed and functioning water management system which takes into consideration the ecological and human health aspects.

The strengthening of collaborative actions across all levels and the knowledge capturing aspects of the project, will prove useful to the scaling up of modified actions in other communities.

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

The actions included in the project would enable communities to adapt to the impacts of climate change that have altered water resources from traditional sources. These communities are not in areas that can be supplied with potable water by the national supply company. Water, in most cases, have been extracted from underground aquifers via wells but are experiencing insufficient water supplies to meet the very basic human right of access to water. Recent efforts to supply water to the communities from traditional sources have been futile with wells not being able to provide water to communities and new wells being unsuccessful. The installation of new water extraction, supply and distribution systems, which extract water from nearby water sources such as rivers and tributaries provides the opportunities for communities to have restored access to water. In the absence of such interventions the vulnerable member of the communities such as the elderly and disabled are excluded from the provision of a basic need. The cost of activities under this component is estimated at USD $3,439,375 over the lifespan of the project.

In order to protect the water resources and ensure its availability for the long term, project actions must take into consideration the maintenance and restoration of forests that function as water catchments. The restoration of watersheds enables the viability of water resources, and thus enable communities with increased access to potable water. A recent in-country assessment determined the need to restore degraded ecosystems, specifically functioning riparian forests, to ensure the future supply of water and resources anticipated to be severely impacted by climate change due to an increase in temperature and extended periods of drought. Restoration of forest ecosystem serves a dual purpose of increasing carbon sequestration, thereby mitigating climate change impacts. Alternative Livelihood actions will promote the sustainable utilization of forest resources and the protection of water resources via climate-friendly practices within agriculture that contribute to water security. Changing traditional agricultural farming methods, which may be destructive and reduce forest cover, and Belize's ability to mitigate and adapt to the impacts of climate change is a key transformative action to be employed. The transformative change to varied alternative livelihoods provided communities with the skills and tools to survive and adapt. The cost of actions under this Component is estimated at USD $300,000.

Financing from the AF will also enable the EE to carry out extensive awareness raising and capacity building actions in these communities and at the national level. In the rural communities of Belize, climate change impacts are visible but not clearly understood. It is the aim of the project to educate the communities on the impacts of climate change on water supply, forest ecosystems and demonstrate how unsustainable practices amplify the impacts. The project will also support the future scaling up of actions via the provision of skill building and training in local municipalities and regulatory agencies for the replication and scale-up of similar systems in other vulnerable communities. The cost of actions under this component is estimated at USD $376,108.

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

The project and intended goals are intrinsically linked to the operational mandate of the EE. As such it is the aims of the EE to replicate and promote the adoption of similar technologies in other communities. The introduction of new technologies/methodologies and the participatory governance approach to watershed management for the supply of potable water in rural communities will be beneficial to the country well beyond the lifespan of the project. The technologies and practices can be scaled up and modified to provide access to water in other communities that are still relying on traditional well and pump systems for the provision of water. The EE will continuously work with the target communities to manage and maintain the water systems and monitor its success within the communities.

The project includes peer exchanges which would enable other local municipalities to garner knowledge on the construction and operation of similar water systems in their communities. In conjunction with the EE, the country can invest in the installation of similar systems in other water deprived areas of the country. The engagement of the communities and their members in the process will also ensure the success of the project. The need for alternative water supply services has been highlighted as a need in the communities, hence support for the actions has been obtained from regulatory agencies and community leaders.

Restoration actions will enable the long-term protection of water resources, by maintaining the ecological functionality of the watersheds to catch, filter and store water for human utilization. This action will ensure that water resources are more readily available despite the changing climate. Restoration activities will also contribute to the maintenance of water quality. Component 3 -Alternative Livelihood activities are also sustainable as they provide members of the communities with a source of income taking into consideration their cultural and traditional practices. Following the Covid-19 pandemic, the communities in the poorest region of the country were severely impacted by the economic implications of the pandemic. This project aims to provide the communities with an alternative source of income and supply of food, that would enable them to recover from the impacts of the pandemic. By creating an alternative source of food and livelihood for the communities the actions of the project will enable communities to become independent and better provide for themselves beyond the one-off investment.

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

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	X	Low to No Risk The proposed project will ensure compliance with all relevant national legislations and international laws.
Access and Equity	X	Low to No Risk The project will provide communities with access to potable water thereby providing a basic human service. The project will not compromise the target community's access to health services, clean water and sanitation, energy, education, housing, safe and decent working conditions and land rights.
Marginalized and Vulnerable Groups	X	Low to No Risk The needs of marginalized and vulnerable groups will be taken into consideration for the development of the project proposal. The

		project actions have been formulated to provide the vulnerable members of the communities with increase access to a basic need to ensure public health and safety. The project will not impose any disproportionate adverse impacts on marginalized and vulnerable groups including children, women and girls, the elderly, indigenous people, tribal groups, displaced people, refugees, people living with disabilities, and people living with HIV/AIDS.
Human Rights	X	Low to No Risk The proposed project will respect and adhere to all relevant national legislation and international conventions on human rights.
Gender Equity and Women's Empowerment	X	Low to Minimal Risk Further assessment required during the full proposal development phase under the Gender/Social Assessment.
Core Labour Rights	X	Low to No Risk The proposed project will adhere to core labour laws and rights of all parties.
Indigenous Peoples		Low to Minimal Risk The project actions target Indigenous communities in Belize. Through its work with these communities, the EE have identified and will continue to provide the communities with their basic needs such as access to water and food. These communities have been engaged by the EE. This engagement has resulted in the identification of potable water needs in the selected communities and an assessment of current water utilization. Further engagement and assessment will be carried out during the project proposal development phase.
Involuntary Resettlement	X	Low to No Risk No project actions will involve the resettlement of communities.

Protection of Natural Habitats	X	Low to No Risk The project activities have been formulated based on the ecological functionality of watersheds. Hence the actions for restoration and alternative livelihoods have been devised to enhance the functionality and thus the protection of natural habitats within watersheds.
Conservation of Biological Diversity	X	Low to No Risk The actions will promote the protection and maintenance of forest and riparian ecosystem via the reforestation program; enabling the conservation and protection of biodiversity in the key ecosystems
Climate Change	X	Low to No Risk The activities included within the project are anticipated to minimize the impacts of climate change on water ecosystems in country and promote the sequestration of carbon dioxide via the restoration of degraded riparian forests.
Pollution Prevention and Resource Efficiency	X	Low to No Risk The project will produce minimal waste via the construction of water systems. The waste produced will be disposed as mandate by the laws of Belize including those included in the Environmental Protection Act. The project will also promote the utilization of solar energy thereby promoting energy efficiency. The latter will be done in consultation with the Energy Department.
Public Health	X	Low to No Risk The project will pose no risk to the health of target communities. The actions included are intended to supply communities with safe potable drinking water, thereby improve public health.
Physical and Cultural Heritage	X	Low to No Risk The project will pose no risk to physical and cultural heritage.
Lands and Soil Conservation	X	Low to No Risk The actions of the project are aimed at increasing the ecological functionality of forest

		and riparian landscape thereby preserving soils and decreasing erosion.

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

A. Record of endorsement on behalf of the government[1] *Provide the name and position of the government official and indicate date of endorsement for each country participating in the proposed project / programme. Add more lines as necessary. The endorsement letters should be attached as an annex to the project/programme proposal. Please attach the endorsement letters with this template; add as many participating governments if a regional project/programme:*

Mr. Joseph Waight *Financial Secretary* *Ministry of Finance, Economic Development and Investment* MINISTRY OF FINANCE BELMOPAN BELIZE	Date: 19/7/2021

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

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 Growth and Sustainable Development Strategy (GSDS) and the National Climate Change Policy Strategy and Action Plan (NCCPSAP) and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.
Nayari Diaz Perez *Executive Director* *Protected Areas Conservation Trust (PACT)* Implementing Entity Coordinator
Date: 15 July 2021 — Tel. and email: (501) 822-3637, ed@pactbelize.org
Project Contact Person: Denaie Swasey, Climate Change Technical Officer
Tel. And Email: (501) 822-3637, cc.techofficer@pactbelize.org

GOVERNMENT OF BELIZE
Ministry of Finance
Belmopan, Belize

C/GEN/120/01/21(8) VOL I

July 19, 2021

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

Dear Sir/Madam

Endorsement Request for Adaptation Fund Innovation Grant and Enhanced Direct Access (EDA) Grant

In my capacity as designated authority for the Adaptation Fund in Belize, I confirm that the national projects detailed below are in accordance with the government's national priorities in implementing adaptation activities to improve resiliency to climate change and disaster risk management.

Accordingly, I am pleased to endorse the following projects under the Adaptation Fund.

- *"Securing Water Resources through Solar energy and Innovative Adaptive Management"* under the Innovation Grant; and
- *"Building Community Resilience via Transformative Adaptation"* under the Enhanced Direct Access Grant.

Sincerely

MINISTRY OF FINANCE
BELMOPAN BELIZE

JOSEPH WAIGHT
Financial Secretary

c. Chief Executive Officer, Ministry of Sustainable Development, Climate Change and Disaster Risk Management
Executive Director, Protected Areas Conservation Trust (PACT)

ADAPTATION FUND

Project Formulation Grant (PFG)

Submission Date: 4th August 2021

Adaptation Fund Project ID:
Country/ies: **Belize**
Title of Project/Programme: **Securing Water Resources through Solar Energy and Innovative Adaptive Management**
Type of IE (NIE/MIE): **National Implementing Entity**
Implementing Entity: **Protected Areas Conservation Trust**
Executing Entity/ies: **Ministry of Rural Transformation, Community Development, Labour and Local Government**

A. Project Preparation Timeframe

Start date of PFG	**March 2022**
Completion date of PFG	**December 2022**

B. Proposed Project Preparation Activities ($)

Describe the PFG activities and justifications:

List of Proposed Project Preparation Activities	Output of the PFG Activities	USD Amount
Development of Project Proposal	Project Proposal in alignment with AF criteria	19,750
Stakeholder Consultations	Stakeholder Consultation Report	8,000
Management Fee		2,250
Total Project Formulation Grant		30,000

C. Implementing Entity

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

Implementing Entity Coordinator, IE Name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Mrs. Nayari Diaz-Perez		07/15/21	Denaie Swasey	(501) 822-3637	cc.techofficer@pactbelize.org

D. Record of endorsement on behalf of the government

Provide the name and position of the government official, Designated Authority of the Adaptation Fund, and indicate date of endorsement. The endorsement letter must be attached as an annex to the request.

Mr. Joseph Waight *Financial Secretary* *Ministry of Finance, Economic Development and Investment* MINISTRY OF FINANCE NEMOPAN BELIZE	Date: 19/7/2021

ADAPTATION FUND

Request for Project Formulation Assistance to undertake special technical assessments

Submission Date: 4th August 2021

Adaptation Fund Grant ID:
Country: **Belize**
Title of Project/Programme: **Securing Water Resources through Solar Energy and Innovative Adaptive Management**
Implementing Entity: **Protected Areas Conservation Trust**
Executing Entity/ies: **Ministry of Rural Transformation, Community Development, Labour and Local Government**

A. Timeframe of Activity

Expected start date of activity	**March 2022**
Completion date of activity	**December 2022**

B. Type of support requested

Describe the technical assessment(s) the implementing entity will undertake to support the design and development of adaptation projects and programmes

Type of Technical Assessment requested*.	Duration (months)	Type/name of provider for the requested support[1]	Requested budget (USD)
Gender Assessment	5	Consulting Firm	9,000
Social Assessment - Indigenous Peoples	5	Consulting Firm	9,500
Management Fee			$1,500
Total Grant Requested (USD)			**$20,000**

Footnote: Technical assistance could include EIA, VA, technical studies, gender assessment etc.

[1] Specify if it is an institution, consulting firm or individual consultant. When possible, provide the name of the institution, firm or individual identified or selected.

C. Implementing Entity

This request has been prepared in accordance with the Adaptation Fund Board's procedures

Head of Implementing Entity	Signature	Date (Month, day, year)	Implementing Entity Contact Person	Telephone	Email Address
Mrs. Nayari Diaz-Perez		07/15/21	Denaie Swasey	(501) 822-3637	cc.techofficer@pactbelize.org

D. Record of endorsement on behalf of the government

Provide the name and position of the government official, Designated Authority of the Adaptation Fund, and indicate date of endorsement. The endorsement letter must be attached as an annex to the request.

Mr. Joseph Waight *Financial Secretary* *Ministry of Finance, Economic Development and Investment* MINISTRY OF FINANCE BELMOPAN BELIZE	Date: 19/7/2021

Annex 1: Alignment of Proposed Project Objectives/Outcomes with Adaptation Fund Results Framework

Project Objective(s)[4]	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
1. Improved Potable Water Supply Systems	Number of communities with functional water supply and distribution systems supplied by solar energy	**Outcome 4:** Increased adaptive capacity within relevant development sector services and infrastructure assets	4.1. Responsiveness of development sector services to evolving needs from changing and variable climate	**$3,439,375**
			4.2. Physical infrastructure improved to withstand climate change and variability-induced stress	
		Outcome 8: Support the development and diffusion of innovative adaptation practices, tools and technologies	8. Innovative adaptation practices are rolled out, scaled up, encouraged and/or accelerated at regional, national and/or subnational level.	
2. Community Based Watershed Protection and Management	Percentage of watershed restored in communities	**Outcome 5:** Increased ecosystem resilience in response to climate change and variability induced stress	5. Ecosystem services and natural assets maintained or improved under climate change and variability-induced stress	**$300,000**
	Number of communities with successful alternative livelihoods projects	**Outcome 6:** Diversified and strengthened livelihoods and sources	6.1 Percentage of households and communities having more	

[4] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

	Percentage of communities engaged in alternative livelihoods projects	of income for vulnerable people in targeted areas	secure access to livelihood assets	
			6.2. Percentage of targeted population with sustained climate-resilient alternative livelihoods	
3. Improved Governance and Enhanced Appreciation for Water Resources	Percentage of communities with increased appreciation for climate interventions Percentage of Communities with increased knowledge of climate change impacts	**Outcome 2:** Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased	**$376,108**
		Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses	
			3.2. Percentage of targeted population applying appropriate adaptation responses	
		Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets	4.1. Responsiveness of development sector services to evolving needs from changing and variable climate	
			4.2. Physical infrastructure improved to withstand climate change and variability-induced stress	

Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator	Grant Amount (USD)
1.1 Installation of Water extraction, treatment and storage facility utilizing solar energy	Number of water systems constructed and functional	***Output 4:*** Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability	4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale)	**$3,435,375**
		Output 8: Viable innovations are rolled out, scaled up, encouraged and/or accelerated.	8.1. No. of innovative adaptation practices, tools and technologies accelerated, scaled-up and/or replicated	
			8.2. No. of key findings on effective, efficient adaptation practices, products and technologies generated	
1.2 Construction of distribution system	Number of distributions systems constructed	***Output 4:*** Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability	4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale)	
		Output 8: Viable innovations are rolled	8.1. No. of innovative adaptation practices, tools	

		out, scaled up, encouraged and/or accelerated.	and technologies accelerated, scaled-up and/or replicated	
			8.2. No. of key findings on effective, efficient adaptation practices, products and technologies generated	
2.1. Restoration of Riparian Forests	Acres of riparian forests restored	***Output 5:*** Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	5.1. No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets)	**$300,000**
2.2. Develop and implement alternative livelihood programs in target communities	Number of livelihood program functional (male and female participation)	***Output 6:*** Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	6.1.1.No. and type of adaptation assets (tangible and intangible) created or strengthened in support of individual or community livelihood strategies	
3.1. Develop and implement a awareness raising campaign	Number of communities with enhanced awareness of climate change	***Output 3.1***: Targeted population groups participating in adaptation and risk reduction awareness activities	3.1 No. of news outlets in the local press and media that have covered the topic	**$376,108**
3.2 Develop training program for the maintenance of solar technologies and	Number of communities trained on the utilization of solar technology systems	***Output 3.2:*** Strengthened capacity of national and subnational	3.2.1 No. of technical committees/associations formed to ensure transfer of knowledge	

scale up in other communities		stakeholders and entities to capture and disseminate knowledge and learning		
			3.2.2 No. of tools and guidelines developed (thematic, sectoral, institutional) and shared with relevant stakeholders	
3.3 Develop an integrated training programs for the management of the water systems	Number of water board members trained under the program (male and female)	**Output 2.1:** Strengthened capacity of national and sub-national centers and networks to respond rapidly to extreme weather events	2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events (by gender)	
			2.1.2 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)	
3.4 Digitization of water system	Number of water system digitized to reduce wastage	***Output 4:*** Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability	4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale)	
3.5 Ground Water Monitoring Program	Number of ground water systems assessed for long term monitoring	***Output 3.2:*** Strengthened capacity of national and subnational stakeholders and	3.2.1 No. of technical committees/associations formed to ensure transfer of knowledge	

		entities to capture and disseminate knowledge and learning	3.2.2 No. of tools and guidelines developed (thematic, sectoral, institutional) and shared with relevant stakeholders	