**SUSTAINABILITY AND CLIMATE CHANGE ANNEX**

Operation modality: investment loan.[1]

# *CLIMATE CHANGE ANALYSIS*

# *"WATER AND SANITATION PROGRAM FOR RURAL AREAS"*

# *BL-L1045, BL-J0006*

## 1. Summary

### 1.1 Objectives

The general objective of this program is to contribute to improve the quality of water services in Belize's rural areas through the following specific objectives: (i) improving the drinkability of water in rural areas; and (ii) strengthening the institutional capacity of Belize's water sector.

### 1.2 Components

**Component 1. Improving the drinkability of water (IDB-OC: US$2,755,100; IDB-GRF: US$600,000).** This component will finance the installation of innovative disinfection technologies in rural villages, namely generation (OSG) options with two alternatives depending on water supply conditions: (i) OSG sodium hypochlorite, recommended when no quality problems are detected in raw water; and (ii) OSG mixed oxidants, recommended when water quality problems are detected in raw water, such as the presence of iron, manganese, or organic matter. This component will also finance small rehabilitations at the system level, including pipe replacement, electromechanical equipment, and storage tanks.

**Component 2. Strengthening the Institutional Capacity of the water sector (IDB-OC: US$844,900; IDB-GRF: US$40,000).** This component will finance training for VWB on O&M, financial management and water sources' protection, as well as the development and deployment of a financial management system to address the issue of manual bookkeeping. It will also finance training to promote the participation of women and migrants in VWB. It will also finance information campaigns at the household level on tariff payment, water conservation and use, and tap water consumption. In addition, it will support the implementation of pilot to identify the effect of introducing micro-metering on water consumption and service payment. It will also finance a study to identify the potential of innovative technologies in improving the environmental conditions of the New River, including an analysis on the impact of these technologies in ameliorating certain pollution parameters generated by industrial and wastewater discharges such as phosphorus, total coliform, and dissolved oxygen.

### 1.3 Risk classification

**Climate Change Risk**: Moderate

The Disaster Risk and Climate Change Risk (DRCCR) of the operation has been classified as Moderate related to the risk of hurricanes, earthquakes, drought, riverine, floods, or others, including those caused or exacerbated

[1] For policy-based loans or operations with financial intermediaries, please use different format.

by climate change, which may moderate impact the project, especially under Component 1: Improving the drinkability of water service quality.

### 1.4 Alignment of the operation with the goals of the Paris Agreement

The investment or reform program has been reviewed and considered not to present risks of inconsistency with mitigation and adaptation objectives of the PA.

### 1.5 Green and climate finance:

Green Finance in the operation[2] (Relative): 100%
Climate Finance in the Operation: $ 2.322.201
Total Climate Finance in the operation (relative): 50,05%

## 2. Assessment: Alignment with the mitigation goals of the Paris Agreement

### 2.1 Uniform assessment criteria:

Based on the comparison between the activities financed by the operation and the list of activities considered universally aligned and universally not aligned to the mitigation goals of the Paris Agreement (Annex 1 of the MDB Joint Framework for Assessment of Paris Alignment):

| U1. Are all activities in the project included in the 'universally aligned list' with activities that have a positive or negligible impact on the climate? | |
|---|---|
| ☒YES | ☐NO |

All activities of the operation are included in the 'universally aligned list' contained in 'Annex 1 of the MDB Joint Framework for the Paris Alignment Assessment', as listed below.

| Annex 1-MDB | | Operation IADB |
|---|---|---|
| Sector | Eligible operation type / Sub-category | Operation's activities |
| Water Supply and wastewater | Water supply systems (e.g., expansion, rehabilitation). | - Design of behavioral change campaign with a gender and diversity approach on water consumption, hygiene, service payments, other.<br>- Implementation of behavioral change campaign with gender and diversity approach on water consumption, hygiene, service payments, other.<br>- Design and preparation of technical and management training packages for VWBs.<br>- Implementation of training programs for VWBs with gender and diversity approach in the selected beneficiary locations.<br>- Design and preparation of a rural water policy proposal with a gender and diversity approach.<br>- Preparation of a technical study and pilot project for the decontamination of the New River. |
| | Water quality improvement | |

[2] Addition of Climate Finance and any additional amount that qualifies for broader environmental objectives according to IDB Group Green Finance methodology.

| | | |
|---|---|---|
| | | - Purchase and installation of water meters in selected villages.<br>- Rehabilitation of water systems at the village level (power supply, pump house infrastructure, water tanks, wells, other) - (3 domestic solar panels). |

| U2. Is any activity in the project included in the 'universally non-aligned list' with activities that have a negative impact on the climate? (exploitation or generation from carbon or peat) | |
|---|---|
| ☐YES | ☒NO |
| Justification: The project does not include activities included in the 'universally non-aligned list'. | |

| U3. As stated in the ERM Climate Change Filter, does this operation have an activity or activities that require(s) a specific assessment to validate its alignment with mitigation objectives of the PA? | |
|---|---|
| ☐ YES | ☒NO |
| Name of the activity (or activities) that do(es) not fit in the list of activities universally aligned: No apply. | |

2.2 Specific assessment criteria: alignment to the mitigation objectives of the PA considering national and sectoral circumstances (Only when U3 is "Yes")

Based on the analysis of the operation's activities, it was concluded that none of them is related to the activity(ies) considered not universally aligned.

| SC1 Is the operation/economic activity inconsistent with the NDC of the country in which it takes place? | | |
|---|---|---|
| ☐YES | ☒NO | ☐N/A |
| SC2 Is the operation/economic activity, over its lifetime, inconsistent with the country's LTS or other similar long-term national economy-wide, sectoral, or regional low-GHG strategies compatible with the mitigation goals of the Paris Agreement? | | |
| ☐YES | ☒NO | ☐N/A |
| SC3 Is the operation/economic activity inconsistent with global sector-specific decarbonization pathways in line with the Paris Agreement mitigation goals, considering countries' common but differentiated responsibilities and respective capabilities? | | |
| ☐YES | ☒NO | ☐N/A |
| SC4 Does the operation/economic activity prevent opportunities to transition to Paris-aligned activities, OR primarily support or directly depend on non-aligned activities in a specific country/sectoral context? | | |
| ☐YES | ☒NO | ☐N/A |
| SC5 Is the operation/economic activity economically unviable, when taking into account the risks of stranded assets and transition risks in the national/sectoral context? | | |
| ☐YES | ☒NO | ☐N/A |

## 3. Climate vulnerability context and alignment with national adaptation priorities

### 3.1 Main climate change impacts in the context of this operation's investments.

Based on the analysis of the ESG documents concerning Standard 4 for disaster and climate change resilience and BB2 Assessment Framework (the MDB Joint Framework for Assessment of Paris Alignment):

| C1 Is the operation (including assets, stakeholders, and systems as relevant) at physical climate risk? | | |
|---|---|---|
| ☒YES | ☐NO | ☐N/A |

**Summary:** The Disaster Risk and Climate Change Risk (DRCCR) of the operation has been classified as Moderate related to the risk of hurricanes, riverine, floods, earthquakes, drought or others, including those caused or exacerbated by climate change, which may moderately impact the project, and/or the project may moderately exacerbate the risk from natural hazards to human life, property, and/or the environment.

Belize is exposed to hurricane, earthquake, riverine floods, and risks related to climate change such as drought, precipitation change and water scarcity as well as sea level rise and extreme weather events. However, due to the dispersed nature of the project samples, the project sites may be subject to one or more natural disaster risks, making the natural disaster risk considered Moderate, and these may have some impact on the project. The planned interventions are one-off and of small magnitude. Although the risks of Hurricane Wind and Heat Wave are high, the type of intervention the characteristics of the interventions (e.g. rehabilitation of equipment) does not present a substantial exacerbation of natural disaster risk to human life, property, and/or the environment. Belize has a National Climate Change Strategy and Action Plan that update Belize's Nationally Determined Contribution (NDC) and includes actions aligned with the operation such as activities to building adaptation and resilience to climate change and reduce disaster risk and promote based nature sustainable activities supporting vulnerable groups and reduce poverty, promotes stakeholder engagement and develops the tourism, blue economy and agricultural sector among others.

a) General climate context.

Belize is characterized by a moist tropical climate with two seasons, wet (rainy) and dry. Its wet season occurs during the months of June to November, starting in the south of the country and moving northward. During this season, the average monthly rainfall is 150-400 mm in the south of the country, while the rest of the country receives less than 100 mm of rain per month (World Bank Group, 2021). Its dry season begins in February and lasts until April. The average annual temperature oscillates between 23 and 27°C. The country's average maximum temperature varies between 27 and 32°C, while the average minimum temperature varies between 18 and 23°C (Figure 1).

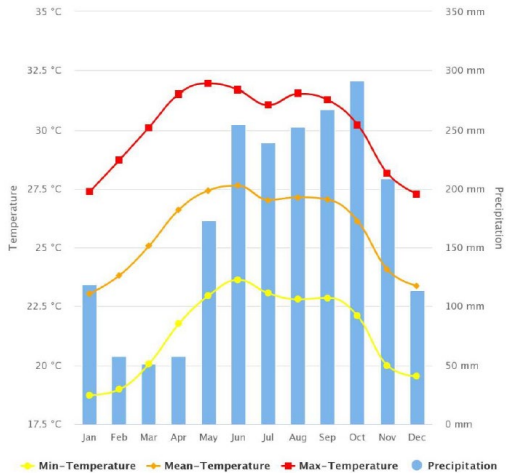


Figure 1. Monthly Climatology of Belize Temperatures & Precipitation 1991-2020. Source: World Bank Group.

In addition to the dry and wet seasons mentioned above, Belize has a hurricane season that runs from early June to the end of November and results in strong winds, heavy rainfall and flooding. Specifically, Ambergris Caye, the

island on which the city of San Pedro is located, has a sub-tropical climate like most of Belize, but it is the driest region of the country getting less than 60 inches of rain a year. The dry season in this region extends from December to May, and the wet season from June to November. Temperatures at Ambergris Caye varies between 21 and 32°C and the difference between nighttime and daytime at costal locations are moderated by the warm offshore water.

In Cayo, the district in which Harmonyville is located, rainfall reaches almost 300 mm in months such as September and October, and experiences low rainfall months (below 100 mm per month) such as February, March and April. The temperature profile is similar to that of the entire Belize region, with average annual temperatures varying between 22.5 and 27.5 °C, average minimum temperature between 18 and 23°C, and average maximum temperature between 27 and 32°C, as shown in Figure 2.

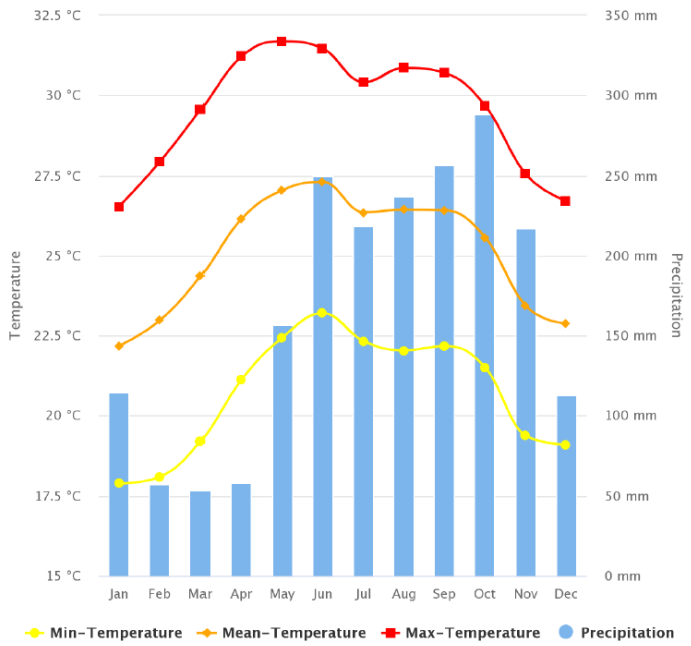


Figure 2. Monthly Climatology of Cayo District Temperatures & Precipitation 1991-2020. Source: World Bank Group.

### b) The operation's exposure, sensitivity and overall vulnerability to climate hazards.

Belize is exceptionally vulnerable to natural disasters and climate change. It already faces hurricanes, flooding, sea level rise, coastal erosion, coral bleaching, and droughts, with impacts likely to intensify given expected increases in weather volatility and sea temperature. (IMF, 2018). Over the period 2000-2019 Belize ranks 8th globally in terms of climate related economic losses expressed as a percentage of GDP (Germanwatch, 2021).

Climate change is predicted to lead to increased extreme climactic events by frequency and magnitude featuring higher temperatures, less frequent but more intense rainfall, rising sea levels leading to coastal inundation. Coupled with rising demand for water for agricultural development and population growth Belize must carefully manage water resources going forward and minimise the impacts of extreme weather on water supply services where possible.

- Impact of climate hazards on water services:

- Flooding and Hurricanes: Belize has experienced recurrent flooding particularly associated with tropical storms and hurricanes. While climate model projections report an overall tendency for decreases in precipitation in Belize, there is the potential for an overall increase in the intensity and in the frequency of storm events associated with heavy rainfall events, including hurricanes. In addition, research suggests a correlation between hurricane size and sea surface temperature, meaning that hurricane destructive potential may increase in the future (Climate Studies Group Mona, 2020).

  Figure 3 provides an overview of flood risk areas for Belize and Figure 4 for Belize City, where BWS assets and central office are located adjacent to Haulover Bridge within an area on the map at risk of flooding.

  Between 1980 and 2007, Belize experienced five hurricanes, three tropical storms (two of which were category 3) and two stronger hurricanes of category five. More recently, in 2016, Belize was hit by Hurricane Earl. In addition, in November 2020, Hurricane Eta was responsible for significant floods events across the country. During this event, the National Emergency Management Organisation (NEMO) reported 30,000 people being affected in the Cayo Belize and Stann Creek Districts (NEMO, 2021). As a consequence, water supply in different villages and municipalities was impacted: efforts to address flood waters, dredge drainages and restore road network resulted in underground water supply system being compromised.

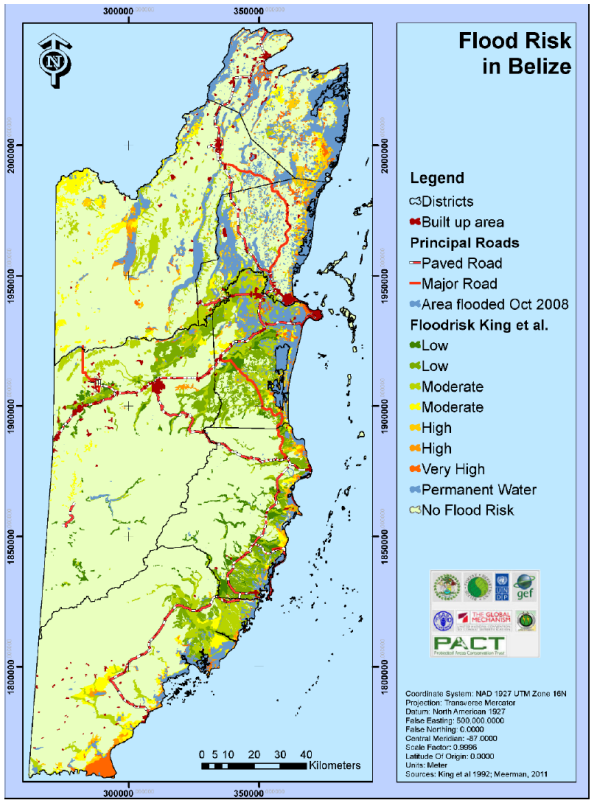


Figure 3. Map showing the most vulnerable areas to flooding. HR Wallingford (2021) Vulnerability Assessment and Water Sector Adaptation Planning Project.

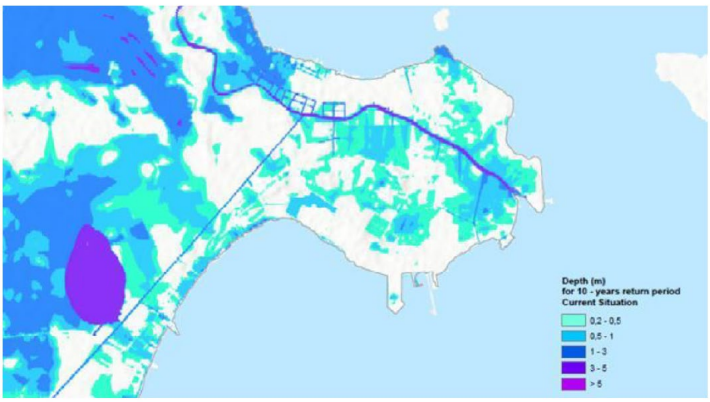


Figure 4. Flood depth for a 1:10 year return period event in Belize City. HR Wallingford (2021) Vulnerability Assessment and Water Sector Adaptation Planning Project

- Drought: Belize's water availability impacted by episodes of drought, many of which are dictated by the El Niño Southern Oscillation (ENSO). Some BWS systems suffer from limited source water availability, while the impacts on Village Water Board operated systems during periods of drought are not well quantified and are likely to be highly variable depending on location and water source. The agricultural sector is typically the most severely impacted by periods of drought especially in the drier northern parts of the country, Corozal and Orange Walk. Recently Belize was hit by two draught episodes. In 2019, El Niño caused drier conditions during the months of June to August.

  In 2020, the amount of rainfall from April to September was still below normal, and a drought warning for the districts of Corozal, Orange Walk Cayo Belize, Stann Creek and Toledo were released. Prior to these events, Belize was hit by another major drought episode in 2004-2005. This led to a decrease in surface water, which coincided with the 25-year minimum. Groundwater level also declined, increasing the pumping costs. In 2015, BWS commissioned a study to look at saltwater intrusion in Belize River. Findings are suggesting that the saltwater wedge is moving upstream towards a water treatment plant which cannot treat saline water. If rainfall decreases, watersheds cannot be replenished, increasing the level of saltwater intrusion in the river. It is also worth noting that any change in the hydrological cycle has significant consequences for hydropower production on which Belize depends for energy security.

- Sea Level Rise: Sea Level Rise (SLR) is a significant threat to the country, given that most of the Belize's Northern region and coasts are characterized by lowlands plains and that some key economic activities are concentrated in the Cayes. Another issue related to SLR is salt-water intrusion into groundwater resources, which can exacerbate water scarcity in a warmer climate regime. Saline intrusion can be made even worse by reducing recharge of groundwater. In SLR is also likely to enhance storm surges associated with higher intensity, landfalling and tropical cyclones, pushing the saltwater lens farther inland and increasing salinization rates.

- Climate change projections: climate change projections are derived from the outputs of General circulation models (GCMs) and Regional Climate Models (RCMs) reported in a number of literature sources, each of which covers slightly different time horizons, spatial extents, and carbon emissions scenarios. These have been synthesized to provide an overview of the magnitude and range of potential

future climate changes for annual average temperature, annual average precipitation, rainfall extremes, storm events and sea level rise.

Table 1 and Table 2 below provide a synthesis of the projections reviewed giving an indication of the lower, central and upper estimates for the 2050s time horizon (referred to as the medium time horizon) (Table 4.2) and 2090s time horizon (referred to as the long-time horizon) (Table 2). The lower, central and upper estimates include the emissions scenario uncertainty, but do not cover the full range of uncertainty across all climate models. These projections are intended to provide a general indication of the potential changes for the purpose of inferring impacts on water services.

| Climate Variable | Lower | Central | Upper | Notes |
|---|---|---|---|---|
| Average Temperature change (°C) | 1.0 | 1.3 | 2.1 | Lower, central and upper based on CMIP5 projections for Belize extracted from KNMI Climate Change Atlas for RCPs 2.6, 4.5 and 8.5 respectively. |
| Rainfall (% change) | 0 | -6 | -9 | Lower, central and upper based on CMIP5 projections for Belize extracted from KNMI Climate Change Atlas for RCPs 2.6, 4.5 and 8.5 respectively. Note that the Caribsave Atlas (based on older CMIP3 data projected closer to a 10% reduction for all emissions scenarios). |
| Sea level rise (m) | #N/A | 0.28 | 0.33 | Based on CMIP5 and RCP 4.5 and 8.5 respectively, reported in the State of the Caribbean Climate Report. |
| Rainfall extremes – 95th percentile (%) | -10 | 0 | 5 | Based on CMIP3 data reported in CARIBSAVE Climate Change Atlas for Belize. High degree of uncertainty in rainfall extremes. |
| Storm and hurricane wind speed change (%) | 2 | 6 | 11 | Based on State of the Caribbean Climate Report, and projections are for the end of the century. |

Table 1. Medium term time horizon (2050s) summary of climate change projections for Belize. Source: Table completed using the climate change projections reported in Appendix B. HR Wallingford (2021) Vulnerability Assessment and Water Sector Adaptation Planning Project.

| Climate Variable | Lower | Central | Upper | Notes |
|---|---|---|---|---|
| Average Temperature (°C) | 1.0 | 2.1 | 3.6 | Lower, central and upper based on CMIP5 projections for Belize extracted from KNMI Climate Change Atlas for RCPs 2.6, 4.5 and 8.5 respectively. |
| Rainfall (% change) | 0 | -8 | -16 | Lower, central and upper based on CMIP5 projections for Belize extracted from KNMI Climate Change Atlas for RCPs 2.6, 4.5 and 8.5 respectively. Note that the RCM driven by SRES scenario A1B data projected closer to a 20% reduction for all emissions scenarios). |
| Sea level rise (m) | #N/A | 0.52 | 0.71 | Based on CMIP5 and RCP 4.5 and 8.5 respectively, reported in the State of the Caribbean Climate Report. |
| Rainfall extremes – 95th percentile (%) | -12 | 0 | 8 | Based on CMIP3 data reported in CARIBSAVE Climate Change Atlas for Belize. High degree of uncertainty in rainfall extremes. |
| Storm and hurricane wind speed change (%) | 2 | 6 | 11 | Based on State of the Caribbean Climate Report, and projections are for the end of the century. |

Table 2: Long term time horizon (2090s) summary of climate change projections for Belize. Source: Table completed using the climate change projections reported in Appendix B. HR Wallingford (2021) Vulnerability Assessment and Water Sector Adaptation Planning Project.

- Implications of climate change projections on water supply services:

  - Declining rainfall and increasing temperature impacts on water availability and quality: climate change has the potential to alter source yields for surface and groundwater sources. Increasing temperatures are likely to increase evaporative losses from vegetation and soils, reducing the volume of rainfall which contributes to groundwater recharge and river flows. Coupled with reduced rainfall, this is likely to reduce average river flows and groundwater recharge. Periods of drought conditions and extremely low flows in surface waters are likely to increase, potentially

limiting water available for abstraction and increasing the concentration of pollutants in surface water sources.

- Rising demand for water as a result of development and climate change: climate change is also occurring within the context of rising demand for raw water due to agricultural developments, as well as rising demand for potable water due to growing demand due to general population growth and development hotspots such as Placencia. During periods of extended drought there is the potential for competition over limited resources. Agricultural water abstractors may increase demand for water as a result of climate change reducing rainfall and increasing temperatures, thus necessitating increased irrigation to maintain crop yields. Climate change is virtually certain to increase temperatures, and in turn increase the incidence of heatwaves which may result in increases in peak water demand from consumers. On the demand side there is a need to generate projections of future demand for water for water using sectors in order to generate a supply demand balance for a long-term planning of supply and demand side options to maintain a sufficient headroom to provide a consistent level of service in future.

- Sea level rise: Sea Level Rise (SLR) is a significant threat to the country, given that most of the Belize's Northern region and coasts are characterized by lowlands plains. SLR coupled with an inadequate sea level defense system and drainage, will increase the likelihood of storm surge impacting on water infrastructure. Another issue related to SLR is salt-water intrusion into groundwater aquifers, which if left unchecked may necessitate abandoning production wells. Saline intrusion could be exacerbated in a drier future climate by the reducing recharge of ground water, although the dynamics of these processes would require detailed modelled to predict.

- Impacts of extreme weather events on assets: there is the potential for a greater number of category 4 and 5 hurricanes, and more intense rainfall events, although uncertain.

| C2 Have climate adaptation and resilience measures been identified to reduce physical climate risks and/or contribute to building climate resilience? | | |
|---|---|---|
| ☒YES | ☐NO | ☐N/A |

Belize is exposed to hurricane, earthquake, riverine floods, and risks related to climate change such as drought, precipitation change and water scarcity as well as sea level rise and extreme weather events. However, due to the dispersed nature of the project samples, the project sites may be subject to one or more natural disaster risks, making the natural disaster risk considered Moderate, and these may have some impact on the project. The planned interventions are one-off and of small magnitude. Although the risks of Hurricane Wind and Heat Wave are high, the type of intervention the characteristics of the interventions (e.g. rehabilitation of equipment) does not present a substantial exacerbation of natural disaster risk to human life, property, and/or the environment. Belize has a National Climate Change Strategy and Action Plan that update Belize's Nationally Determined Contribution (NDC) and includes actions aligned with the operation such as activities to building adaptation and resilience to climate change and reduce disaster risk and promote based nature sustainable activities supporting vulnerable groups and reduce poverty.

The ESMS will include an Emergency and Disaster Preparedness Plan and the ESMF will include specific measures for the works of sample and out-of- sample works for climate change and natural disaster risks. During E&S Due

Diligence the above-mentioned plans and activities will be assessed for their alignment with the IDB's Disaster and Climate Change Risk Assessment Methodology. This Plan shall be part of the ESMP for each site in the sample and the ESMF and shall be consistent in all aspects of disaster risk and climate change of ESPS4. All the risks indicated above will be confirmed during due diligence.

### 3.2 Relevant policies/strategies and priorities for climate resilience (*required*)

Based on the analysis of the ESG documents concerning Standard 4 for disaster and climate change resilience and BB2 Assessment Framework (the MDB Joint Framework for Assessment of Paris Alignment):

| C3 Is the operation inconsistent with relevant policies/strategies and with private sector or community-driven priorities for climate adaptation and resilience? | | |
|---|---|---|
| ☐YES | ☒NO | ☐N/A |
| The operation is consistent with relevant policies/strategies and with private sector-driven priorities for climate adaptation and resilience. The operation contributes to Belize's compliance with its Nationally Determined Contribution (NDC 2021) in the adaptation component (NDC – Sector "Water Resources" and "Land use, human settlements, and infrastructure") and its National Climate Change Strategy and Action Plan that includes actions aligned with the operation such as activities to building adaptation and resilience to climate change and reduce disaster risk and promote based nature sustainable activities supporting vulnerable groups and reduce poverty.<br><br>This operation also supports the implementation of Water Supply Services Adaptation Plan, specifically programs 1 and 3. The Program 1 focuses on actions which are predominantly within BWS's remit with actions to enhance resilience of BWS water supply services through infrastructure, planning and capacity development actions, and the Program 3 respond to the challenges identified in water resources management and focus on the institutional arrangements for IWRM as well as information and capacity development actions to secure sustainable water resources. | | |

## 4. Green Finance

Finally, the Project is rated with a GFM 2 because its general objective is fully aligned with the environmental sustainability objective "Sustainable use and protection of water and marine resources" and its results matrix presents several indicators related to this objective. Therefore, it is a project with 100% green financing.

## 5. Climate finance (*CF*)

Table 3 includes the components and subcomponents that contribute to reducing the vulnerability to climatic risks of the operation.

Table 3: Climate Finance – Components and Sub-components.

| COMPONENTS | OUTPUTS | TOTAL | CF | | | | CONTRIBUTION TYPE -CF |
|---|---|---|---|---|---|---|---|
| | | TOTAL | Adaptation | | Mitigation | | |
| | | | Total | % | Total | % | |
| COMPONENT 1: IMPROVING THE DRINKABILITY OF WATER IN RURAL AREAS | Output 1.2: Water systems rehabilitated | 1,343.100 | 1,343.100 | 57.84 | 0 | 0 | With the operation is expected that the beneficiary communities will have measurement tools to regulate their consumption levels, especially in the face of extreme weather events such as droughts. The activity of this component that will contribute to climate financing in adaptation is the following: Activity 1.3.1: |

# SUSTAINABILITY AND CLIMATE CHANGE ANNEX

| COMPONENTS | OUTPUTS | TOTAL | CF | | | | CONTRIBUTION TYPE -CF |
|---|---|---|---|---|---|---|---|
| | | TOTAL | Adaptation | | Mitigation | | |
| | | | Total | % | Total | % | |
| | Output 1.3: Water meters installed | 50,200 | 50,200 | 2.16 | 0 | 0 | Purchase and installation of water meters in selected villages.<br><br>The rehabilitation of the transport infrastructure and water tanks correspond to systematic improvements to the entire supply network (collection at the source, transport, distribution in homes), which will allow for a more efficient transport system. This will reduce the impact that an extreme climatic event of drought could have, since there is a reliable system that prevents water loss and allows a constant supply.<br><br>Additionality, the operation will contribute to improving the water systems, especially, between 2 and 3 domestic solar panels. These will replace the existing water supply systems (2 or 3), improving the climate resilience of the infrastructure against extreme weather events. The activities associated are the following:: Activity 1.2.1: Rehabilitation of water systems at the village level (power supply, pump house infrastructure, water tanks, wells, other). Activity 1.2.2: Supervision of rehabilitation works at the village level |
| COMPONENT 2: STRENGTHENING THE INSTITUTIONAL CAPACITY OF BELIZE'S WATER SECTOR | Output 2.1: Behavioral change campaign designed with a gender and diversity approach | 37,000 | 18.500 | 0.80 | 0 | 0 | The operation will finance training and activities in the beneficiary villages to promote the efficient use of water, which will help reduce demand and pressure on water resources, especially during extreme weather events such as droughts. This will allow communities to improve their levels of climate resilience, especially in the face of scarcity of water for human consumption. The activities associated are the following:<br><br>- Activity 2.1.1: Design of behavioral change campaign with a gender and diversity approach on water consumption, hygiene, service payments.<br>- Activity 2.2.1: Implementation of behavioral change campaign with gender and diversity approach on water consumption, hygiene, service payments.<br>- Activity 2.3.1: Design and preparation of technical and management training packages for VWBs.<br>- Activity 2.5.1: Implementation of training programs for VWBs with gender and diversity approach in the selected beneficiary locations.<br>- Activity 2.6.1: Design and preparation of a rural water policy proposal with a gender and diversity approach.<br>- Activity 2.7.1: Preparation of a technical study and pilot project for the decontamination of the New River. |
| | Output 2.2: Behavioral change campaign implemented with a gender and diversity approach | 163,600 | 81,800 | 3.52 | 0 | 0 | |
| | Output 2.3: Training materials package for the strengthening of the Village Water Boards developed with a gender and diversity approach | 40,000 | 40,000 | 1.72 | 0 | 0 | |
| | Output 2.5: Village Water Boards trained with a gender and diversity approach | 164,300 | 164,300 | 7.08 | 0 | 0 | |
| | Output 2.6: Rural water policy proposal developed with a gender and diversity approach | 40,000 | 40,000 | 1.72 | 0 | 0 | |
| | Output 2.7: New River Study developed | 400,000 | 400,000 | 17.23 | 0 | 0 | |
| Total for alignment type | | | 2,137,900 | | 0 | | |
| Climate Finance (CF1) | | | 2,137,900 | | | | |
| CF (PROJECT MANAGEMENT + EVALUATIONS + EXTERNAL AUDITS) (CF2) | | | 184.302 | | | | |
| Climate Finance (CF1 + CF2) | | | 2,322,201 | | | | |
| TOTAL | | | 4,640,000 | | | | |
| % Climate Finance | | | 50,05 | | | | |

Table 3: Climate Finance – Components and sub-components.

Table 4 shows the calculation of the items considered as Climate Finance (CF).

# SUSTAINABILITY AND CLIMATE CHANGE ANNEX

| COMPONENTS AND SOURCE OF FUNDS | TOTAL | | | CF | | | |
|---|---|---|---|---|---|---|---|
| | IDB | GRF | TOTAL | Total | | Adaptation | |
| | | | | Total | % | Total | % |
| **I. DIRECT COSTS** | **3,600,000** | **640,000** | **4,240,000** | | | | |
| **COMPONENT 1: IMPROVING THE DRINKABILITY OF WATER IN RURAL AREAS** | **2,755,100** | **600,000** | **3,355,100** | | | | |
| Output 1.1: Disinfection equipment installed | 1,361,800 | 600,000 | 1,961,800 | | | | |
| Activity 1.1.1: Purchase and installation of disinfection equipment | 1,215,666 | 535,700 | 1,751,366 | | | | |
| Activity 1.1.2: Provision of technical assistance for operation and management of the equipment | 115,778 | 51,019 | 166,797 | | | | |
| Activity 1.1.3: Supervision and performance evaluation | 30,357 | 13,281 | 43,637 | | | | |
| Output 1.2: Water systems rehabilitated | 1,343,100 | 0 | 1,343,100 | | | | |
| Activity 1.2.1: Rehabilitation of water systems at the village level (power supply, pump house infrastructure, water tanks, wells, other) | 1,303,993 | 0 | 1,303,993 | 1,303,993 | 56.15 | 1,303,993 | 56.15 |
| Activity 1.2.2: Supervision of rehabilitation works at the village level | 39,107 | 0 | 39,107 | 39,107 | 1.68 | 39,107 | 1.68 |
| Output 1.3: Water meters installed | 50,200 | 0 | 50,200 | | | | |
| Activity 1.3.1: Purchase and installation of water meters in selected villages | 50,200 | 0 | 50,200 | 50,200 | 2.16 | 50,200 | 2.16 |
| **COMPONENT 2: STRENGTHENING THE INSTITUTIONAL CAPACITY OF BELIZE'S WATER SECTOR** | **844,900** | **40,000** | **884,900** | | | | |
| Output 2.1: Behavioral change campaign designed with a gender and diversity approach | 37,000 | 0 | 37,000 | | | | |
| Activity 2.1.1: Design of behavioral change campaign with a gender and diversity approach on water consumption, hygiene, service payments, other | 37,000 | 0 | 37,000 | 18,500 | 0.80 | 18,500 | 0.80 |
| Output 2.2: Behavioral change campaign implemented with a gender and diversity approach | 153,600 | 10,000 | 163,600 | | | | |
| Activity 2.2.1: Implementation of behavioral change campaign with gender and diversity approach on water consumption, hygiene, service payments, other | 153,600 | 10,000 | 163,600 | 81,800 | 3.52 | 81,800 | 3.52 |
| Output 2.3: Training materials package for the strengthening of the Village Water Boards developed with a gender and diversity approach | 40,000 | 0 | 40,000 | | | | |
| Activity 2.3.1: Design and preparation of technical and management training packages for VWBs | 40,000 | 0 | 40,000 | 40,000 | 1.72 | 40,000 | 1.72 |
| Output 2.4: Village Water Boards equipped | 40,000 | 0 | 40,000 | | | | |
| Activity 2.4.1: Provision and distribution of software solution/system for billing and administration | 40,000 | 0 | 40,000 | | | | |
| Output 2.5: Village Water Boards trained with a gender and diversity approach | 134,300 | 30,000 | 164,300 | | | | |
| Activity 2.5.1: Implementation of training programs for VWBs with gender and diversity approach in the selected beneficiary locations | 134,300 | 30,000 | 164,300 | 164,300 | 7.08 | 164,300 | 7.08 |
| Output 2.6: Rural water policy proposal developed with a gender and diversity approach | 40,000 | 0 | 40,000 | | | | |
| Activity 2.6.1: Design and preparation of a rural water policy proposal with a gender and diversity approach | 40,000 | 0 | 40,000 | 40,000 | 1.72 | 40,000 | 1.72 |
| Output 2.7: New River Study developed | 400,000 | 0 | 400,000 | 400,000 | 17.23 | 400,000 | 17.23 |
| Activity 2.7.1: Preparation of a technical study and pilot project for the decontamination of the New River | 400,000 | 0 | 400,000 | | | | |

# SUSTAINABILITY AND CLIMATE CHANGE ANNEX

| COMPONENTS AND SOURCE OF FUNDS | TOTAL | | | CF | | | |
|---|---|---|---|---|---|---|---|
| | IDB | GRF | TOTAL | Total | | Adaptation | |
| | | | | Total | % | Total | % |
| II. PROJECT MANAGEMENT | 310,000 | 0 | 310,000 | 142,834 | 6.15 | | 0.00 |
| SALARIES - PERSONNEL/CONSULTANTS FOR PROGRAM EXECUTION - BWS PROJECT PLANNING UNIT | 254,400 | 0 | 254,400 | | | | |
| Program General and Technical Coordination | 144,000 | 0 | 144,000 | | | | |
| Financial Management | 0 | 0 | 0 | | | | |
| Procurement Administration | 48,000 | 0 | 48,000 | | | | |
| Planning, Monitoring and Evaluation | 0 | 0 | 0 | | | | |
| Environmental and Social Management | 62,400 | 0 | 62,400 | | | | |
| ASSETS FOR PROGRAM EXECUTION | 8,700 | 0 | 8,700 | | | | |
| Office Equipment | 4,200 | 0 | 4,200 | | | | |
| Office Space and Furniture | 4,500 | 0 | 4,500 | | | | |
| Vehicles | 0 | 0 | 0 | | | | |
| OPERATING COSTS FOR PROGRAM EXECUTION | 46,900 | 0 | 46,900 | | | | |
| Office Materials | 0 | 0 | 0 | | | | |
| Vehicles | 0 | 0 | 0 | | | | |
| Other Operating Costs | 46,900 | 0 | 46,900 | | | | |
| III. EVALUATIONS | 50,000 | 0 | 50,000 | 23,038 | 0.99 | | 0.00 |
| MID-TERM EVALUATION | 25,000 | 0 | 25,000 | | | | |
| FINAL EVALUATION | 25,000 | 0 | 25,000 | | | | |
| IV. EXTERNAL AUDITS | 40,000 | 0 | 40,000 | 18,430 | 0.79 | | 0.00 |
| INDEPENDENT EXTERNAL AUDITORS | 40,000 | 0 | 40,000 | | | | |
| TOTAL | 4,000,000 | 640,000 | 4,640,000 | | | | |
| Total climate finance ($) | | | | 2,322,201 | 100 | 2,137,900 | 92 |
| Climate finance (as % of total IDB investment) | | | | 50,04 | | | |

Table 4: Climate Finance -. Components and source of funds.

## 6. Sustainability and climate change indicators (*if applicable*)

| Indicator |
|---|
| ☐ *Emissions avoided (annual tons CO2 equivalent)* |
| ☒ *Beneficiaries of enhanced disaster and climate change resilience (#)* |
| ☐ *Habitat that is sustainably managed using ecosystem-based approaches (hectares)* |
| ☐ *Installed power generation capacity from renewable sources (MW)* |
| ☐ *Value of investments in resilient and/or low- carbon infrastructure ($)* |
| ☐ *Other (1): Increase in the number of households with the capacity to maintain safe water access during climate shocks (Households located in areas threatened by drought).* |
| ☐ *Other (2):* |

Table 5: Sustainability and climate change indicators

## References

BELIZE (2021). Belize's Updated Nationally Determined Contribution (NDC).

BID (2022) IDB Group Paris Alignment Implementation Approach.

BID (2021) Identification of climate resilience opportunities and metrics in financing operations: a technical reference document for IDB project teams.

COMMONWEALTH CLIMATE FINANCE ACCESS HUB (2021). National Climate Finance Strategy of Belize 2021–2026.

COP 26 (2021). BB1 and BB2 Technical Note - Joint MDB Assessment Framework for Paris Alignment for Direct Investment Operations.

HR Wallingford (2021) Vulnerability Assessment and Water Sector Adaptation Planning Project

# Climate Change and Sustainability Filter

*Please map ALL known and expected activities that will be financed by the project and consider all of them when filling out this form.*

*Please consider that the progress in the completion of this form cannot be saved. There is a maximum of 4,000 characters per response.*

Hi, Luis. When you submit this form, the owner will see your name and email address.

* Required

1. **Title and number of the operation** *

   WATER AND SANITATION PROGRAM FOR RURAL AREAS (BL-L1045, BL-J0006)

2. **Roles.** Team Leader and CCS/sector (if assigned) *

   German Sturzenegger (INE/WSA)
   Alfred Grunwaldt (CSD/CCS)
   Luis Mora (CSD/CCS)

3. **Investment Lending Category**
*If the operation is a global credit program with intermediary financial institutions, please complete the following form: https://forms.office.com/r/wzZZGFstbT* *

- ○ Investment Loan (single)
- ◉ GOM (Multiple Works)
- ○ Policy-based Loan / Results-based Loan
- ○ Other

4. **Activities considered universally aligned** to the mitigation goals of the PA. Review **ALL** activities to be financed by the operation and evaluate if support can be considered universally aligned to the mitigation goals of the PA by ticking on the categories in the options (can be more than one).

*For interpretation of these categories, please refer to the Paris Alignment Implementation Approach (PAIA) and its Technical Guidance available here: https://idbg.sharepoint.com/teams/ez-VPS/CCS/Strategic%20Planning%20and%20Governance/CCS%20Methodologies/PAIA%20IDB%20Group%20OPC.pdf*

*Note that categories marked with * must present additional information to validate their universal alignment based on PAA technical guidance.* *

- [ ] **ENERGY.** Generation of renewable energy (RE) and/or conversion to electricity applications / energy efficiency/ electrification
- [ ] **ENERGY.** Rehabilitation + desilting of existing hydropower with climate resilience
- [ ] **ENERGY.** District heating or cooling systems with negligible lifecycle GHG emissions
- [ ] **ENERGY.** Green hydrogen
- [ ] **ENERGY.** Electricity transmission and distribution networks, mini-grids based on RE, smart grids and digitalization (excluding data centers), energy storage in batteries
- [ ] **ENERGY.** Regional integration for energy transport and exchange
- [ ] **ENERGY.** Decommissioning of fossil fuel power plants
- [ ] **ENERGY.** Cleaner cooking technologies
- [ ] **ENERGY.** Actions of the just transition agenda (for energy sector)
- [ ] **ENERGY.** Energy demand-side management investments
- [ ] **AGRICULTURE.** Afforestation, reforestation, sustainable forest management, soil health improvement, including recuperation of degraded lands or ecosystems

- [ ] **AGRICULTURE.** Climate smart agriculture*, agroecology*, sustainable fishing* and aquaculture*
- [ ] **AGRICULTURE.** Conservation of natural habitats and ecosystems; coastal protection
- [x] **WATER AND SANITATION.** Efficiency in water management use, water management at watershed level
- [ ] **WATER AND SANITATION.** RE- based irrigation systems
- [x] **WATER AND SANITATION.** Water and sanitation works connected to the electricity grid or that depend on their own RE generation
- [ ] **WATER AND SANITATION.** Separate waste collection
- [ ] **WATER AND SANITATION.** Composting & anaerobic digestion of biowaste
- [ ] **WATER AND SANITATION.** Material recovery, mechanical biological treatment (MBT), refuse-derived fuel (RDF) or solid recovered fuel (SRF)
- [ ] **WATER AND SANITATION.** Landfill gas recovery from open and closed landfills
- [ ] **WATER AND SANITATION.** Drainage and flood control and management (e.g. macro and micro drainage works, urban drainage, separation of rainwater)
- [ ] **WATER AND SANITATION.** Water management: projects to conserve and restore ecosystems, control erosion and stabilize riverbanks (including those conducted at basin level)
- [ ] **TRANSPORT.** Electric and non-motorized urban mobility
- [ ] **TRANSPORT.** Electric passenger or freight TSP, vehicles that do not depend on fossil fuels
- [ ] **TRANSPORT.** Low transit roads that provide access*
- [ ] **TRANSPORT.** Road upgrading, rehabilitation, reconstruction, and maintenance without capacity expansion*
- [ ] **TRANSPORT.** Short sea shipping of passengers and freight ships that do not depend on fossil fuels

- [ ] **TRANSPORT.** Port infrastructure (maritime inland waterways) that do not depend on fossil fuels
- [ ] **TRANSPORT.** Inland waterways passenger and freight transport vessels
- [ ] **TRANSPORT.** Rail infrastructure
- [ ] **BUILDINGS.** Buildings that meet green certification criteria by IDB Group
- [ ] **TECHNOLOGY.** Information & communication (excluding data centers)
- [ ] **SERVICES.** Professional, scientific, R&D, and technical activities
- [ ] **SERVICES.** Fiscal support that does not increase dependency in fossil fuels nor in any other activities that require a specific assessment.
- [ ] **SERVICES.** Public administration and compulsory social security. This also includes services such as labor intermediation and skills development
- [ ] **SERVICES.** Human health and social work activities (non-infrastructure/buildings)
- [ ] **SERVICES.** Arts, entertainment, and recreation (non-infrastructure/buildings)
- [ ] No universally aligned activities are financed by the operation
- [ ] Other

5. **Justification and/or additional comments for universal alignment.** If applicable (*), provide relevant information to justify why activities are considered universally aligned to the mitigation goals of the PA.

   *Categories marked with * must present additional information to validate their universal alignment based on PAA technical guidance.*

   Based on the analysis of the activities financed by the operation, it is considered that the project is universally aligned with the mitigation goals of the Paris Agreement, sector: “water supply and wastewater”, subsectors: “water supply systems” and “water quality improvement”. This considering that the project does not contemplate the use of fossil fuels and will not generate GHG

6. **Activities that require a specific analysis (not automatically aligned).** Is there an activity that is not in the universally aligned list (for example due to its GHG intensity)? Consider the boundaries of the operation**[1]** and please select the applicable categories (it can be more than one) or tick the "Not applicable" option.

*Note that the following categories are a non-exhaustive list of activities that require a specific assessment to validate alignment to the mitigation goals of the PA (if needed use the option "Other" and provide details). The following activities also do not fit in under the universally aligned list and require a specific assessment to validate alignment; activities where:*
*i. The economic feasibility depends on external fossil fuel activities (e.g., a port that will have income from gas exports)*
*ii. The economic feasibility depends on existing fossil fuel subsidies (e.g., a fishing fleet unfeasible in the absence of diesel subsidies)*
*iii. The operation relies significantly on the direct utilization of fossil fuels (e.g., a production plant that makes use of diesel pumps).*
***In the case of these activities, please provide details in the option marked as "Other".***

***[1]*** *To determine the boundary, please consider the definition of relevant present and reasonably foreseeable developments associated with an operation as defined in the ESPF and ESSP. Also, acknowledge that "in some instances, the extent of assessment needs to take into account the broader economic activity in which the operation takes place". Alignment with mitigation goals should consider: i) inputs; ii) outputs (goods and services delivered by the operation and iii) regulations upon which the viability of the operation depends.*

*

- [ ] **ENERGY.** Activities or policies related to midstream oil or gas (e.g. transportation, exports)
- [ ] **ENERGY.** Activities or policies related to downstream oil or gas (e.g. oil refining; gas processing and/or last mile distribution)
- [ ] **ENERGY.** Construction of new hydroelectric plants with reservoir
- [ ] **ENERGY.** First generation biofuels (e.g. from crops)
- [ ] **ENERGY.** Non-green hydrogen (from fossil fuels with CCS)
- [ ] **ENERGY.** Energy storage with reversible pumping or with hydrogen
- [ ] **ENERGY.** Significant use of fossil fuels in non-energy intensive industry/ energy intensive industry

- [ ] **ENERGY.** Technologies for carbon capture, use and storage (CCUS) or gas flaring reduction in fossil fuel projects
- [ ] **AGRICULTURE.** Support for GEI-intensive crop farming (e.g. increased use of fertilizers and pesticides)
- [ ] **AGRICULTURE.** Support for agricultural production of items that could be associated with high levels GHG emissions such as livestock and flooded rice systems
- [ ] **AGRICULTURE.** Support for agricultural production of items that could be associated to sectors with potential links to land use change
- [ ] **WATER AND SANITATION.** Construction or expansion of sanitary landfills
- [ ] **WATER AND SANITATION.** Open Dump Closures
- [ ] **WATER AND SANITATION.** Desalination plants
- [ ] **WATER AND SANITATION.** Solid Waste Incineration
- [ ] **WATER AND SANITATION.** Carbon-based pumping
- [ ] **WATER AND SANITATION.** Individual sanitation solutions/latrines
- [ ] **TRANSPORT.** Road upgrading with significant addition of lanes or that rely on short-term increase of traffic to be economically viable
- [ ] **TRANSPORT.** Other works that can be considered capacity expansion of roads
- [ ] **TRANSPORT.** Projects in the aviation sector
- [ ] **TRANSPORT.** Other transportation investments that significantly depend on fossil fuels
- [ ] **TECHNOLOGY.** Data centers
- [ ] **BUILDINGS.** Buildings that do not comply with Green Building certification criteria
- [x] Not applicable
- [ ] Other

7. **PA Alignment Strategy.** Note that, for operations that require it, drafting a preliminary version of the "PA alignment specific assessment" is strongly advised.

   The final specific assessment should be included in the Climate and Sustainability Annex by QRR. To that effect, if applicable, describe how the project team will feed the final PA alignment specific assessment (e.g. introducing climate variables in feasibility studies).

   Enter your answer

8. **Climate Finance.** Has the project team identified a potential to contribute to Climate Finance (CF) in the operation?

   **This filter is applied on a preliminary basis, with information available at the PP level. Please note that climate finance is formally assessed when project documents are available at the QRR (POD) level. CF Tracking confirms the climate contribution at that stage.* *

   - (●) Yes
   - ( ) No
   - ( ) Unsure

9. (Optional) If the answer to the previous question was "Yes" please mention briefly the project's activities that you consider have potential to contribute to CF.
*[for example: green buildings, early warning systems for floods, etc.]*

The main activities of the project that have climate financing are:

1. Design of behavioral change campaign with a gender and diversity approach on water consumption, hygiene, service payments, other.
2. Implementation of behavioral change campaign with gender and diversity approach on water consumption, hygiene, service payments, other.
3. Design and preparation of technical and management training packages for VWBs.
4. Implementation of training programs for VWBs with gender and diversity approach in the selected beneficiary locations.
5. Design and preparation of a rural water policy proposal with a gender and diversity approach.
6. Preparation of a technical study and pilot project for the decontamination of the New River.

10. **Green Finance.** Has the project team identified a potential to contribute to the environmental objectives that complement climate action (i.e. water and marine resources, pollution, disaster and risk management, environmental goods and services, circular economy, environmental governance and biodiversity)?

**This filter is applied on a preliminary basis, with information available at the PP level. Please note that green finance is formally assessed when project documents are available at the QRR (POD) level. CF Tracking confirms the green contribution at that stage.*
*

- ○ Yes
- ◉ No
- ○ Unsure

11. (Optional) If the answer to the previous question was "Yes" please briefly describe.

**Note that project activities aimed at minimizing, restoring, or offsetting adverse impacts caused by the project itself, as required under IDB Group's policies or applicable national law and regulations, would not be considered Green Finance. You can consult the Green Finance Tracking Methodology at this link: https://idbg.sharepoint.com/sites/SEC_LEGACY/Pages/getdocument.aspx?Lang=EN&LangCode=EN&SecRegNbr=GN-3101*

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