Scaling up the Deployment of Integrated Utility Services (IUS) to Support Energy Sector Transformation in the Caribbean (Phase I) Programme

Annex 6: Environmental and Social Management Framework (ESMF)

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Acronyms / Abbreviations

1BUR	First Biennial Update Report
AE	Accredited Entity
BMCs	Borrowing Member Countries
BNCF	Belize Nature Conservation Fund
CBO	Community Based Organisation Food and Agricultural Organisation
CCCCC	Caribbean Community Climate Change Centre
CDB	Caribbean Development Bank
CDB	Caribbean Development Bank
CRSAP	Climate Resilience Strategy and Action Plan
CZM	Coastal Zone Management
CZMAI	Coastal Zone Management Institute
DERs	Distributed Energy Resources
DOE	Department of the Environment
DOE	Department of Environment
EE	Energy Efficiency
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
ENSCO	National Conservation commission
EPA	Environment Protection Agency
EPD	Environmental Protection Department
ESCO	European Southern Oscillation
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESS	Environmental and Social Standard
GCF	Green Climate Fund's
GDP	Gross Domestic Product
GEF	Global Environment Facilities
GHG	Green House Gas
GIZ	Gesellschaft für Internationale Zusammenarbeit
GNI	Gross National Income
GNP	Gross National Product
GSDs	Growth and Sustainable Development Strategy
HDI	Human Development Index
IADB	Inter-American Development Plan
ICV	Intertropical Convergent Zone
ICZM	Integrated Coastal Zone Management
IFAD	International Fund for Agricultural Development
IOM	International Organisation for Migration
IPCC	Intergovernmental Panel on Climate Change
IUS	Integrated Utility Services
JICA	Japan International Cooperation Agency
LAC	Latin America and Caribbean
LCDS	Low Carbon Development strategy

LMP	Land Management Product
LPG	Liquefied Petroleum Gaz
MAR	Meso-American Reef
MESTPU	Ministry of Energy, Science and Technology and Public Utilities
MFFSD	Ministry of Forestry, Fisheries and Sustainable Development
MHURECC	The Ministry of Housing, Urban Renewal, Environment and Climate Change
MIYCN	Maternal Infant and Young Child Nutrition
MMABE	Ministry of Maritime Affairs and the Blue Economy
MOE	Ministry of Education
MWLECC	Ministry of Water, Land, Environment and Climate Change
NAP	National Adaptation Plan
NBSAP	National Biodiversity Strategy and Action Plan
NCCPAP	National Climate Change Policy and Action Plan
NCCPSAP	National Policies and the National Climate Change Policy, Strategy and Action Plan
NCDs	Non-Communicable Disease
NDC	Persistent Organic Pollutant
NGO	Non-governmental organisation
NIWRA	National Integrated Water Resources Authority
NPAS	National Protected Area System
NSWMP	National Solid Waste Management Policy
OCC	Office for Climate Change
OCHA	Office for the Coordination of Humanitarian Affairs
OECD	Organisation for Economic Co-operation and Development
OUR	Office of Utility Regulation
PACT	Protected Area Conservation Trust
PAP	project Affected People
PUC	Public Utilities commission
RE	Renewable Energy
REDD+	Reduction of emission of greenhouse gases on forest degradation and deforestation
SDG	Sustainable Development Goals
SEP	Stakeholder Engorgement Plan
SIB	Statistical Institute of Belize
STI	Science Technology and Innovation
TCPA	Town and Country Planning Act
UMIC	Upper Middle-Income Country
UNDP	United Nations Development Programme
UNESCO	United Nation Educational Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nation International Children Emergency Fund
URCP	Regional Program Coordination Unit
USAID	United States Agency for International Development
WFP	World Food Program
WMU	Watershed Management Unit
WOAH	World Organization for Animal Health

WRI	World Resource Institute

Executive Summary

This document constitutes the Environmental and Social Management Framework (ESMF) for the programme: “Scaling up the Deployment of Integrated Utility Services (IUS) to Support Energy Sector Transformation in the Caribbean”. The programme is being co-financed by the Green Climate Fund (GCF) and Caribbean Development Bank (CDB), and will be implemented in Barbados, Belize and Jamaica. The CDB also serves as the Accredited Entity and will therefore lead programme implementation.

The ESMF describes the relevant legal and institutional framework (Section 2) for this programme, which also includes a detailed description of how E&S risks will be identified, assessed, mitigated and managed throughout programme implementation. In particular, a utility-specific Environmental and Social Management Plan (ESMP) will be developed with each utility during the first year of programme implementation (PY1) that will provide more granular guidance to key programme execution stakeholders – notably the participating electric utilities, which serve as national Executing Entities – on E&S risk management. The utility-specific ESMPs will guide key stakeholders to ensure E&S risks are properly identified, assessed, mitigated and managed throughout the sub-project workflow, including by using standardised E&S risk screening checklists and (when needed) developing and implementing simplified Environmental, Social, Health and Safety (ESHS) plans. The envisaged sub-project workflow is also described in more detail in Section 2 of this ESMF.

The ESMF further includes detailed information on the environmental and social baseline (Section 3) as well as a preliminary assessment of potential E&S risks and impacts as well as suitable corresponding risk mitigation and management measures (Section 4). Overall, this preliminary assessment shows that the potential risks and negative impacts associated with the IUS programme are modest and manageable. The ESMF also includes a budget (Section 5) and Stakeholder Engagement Plan (Section 6). This is followed by detailed information about the programme-level Grievance Redress Mechanism (Section 7) as well as the grievance/complaints mechanisms managed by both CDB and the GCF Secretariat, all of which can be used to submit grievances and complaints related to the IUS programme. Finally, the ESMF includes information on the monitoring and reporting arrangements (Section 8).

1 Introduction and Objective

In this chapter, we introduce the programme and the countries involved in the programme, including the relevant challenges in the different countries that the programme seeks to address. In addition, the rationale and scope of the Environmental and Social Management Framework is presented.

1.1 Introduction

1.1.1 Context

The Programme "Scaling-up the deployment of integrated utility services to support energy sector transformation in the Caribbean" is an initiative to be implemented in Belize, Barbados, and Jamaica in response to the regional climate change impacts, as well as energy shortage and rising energy demand in the region. Indeed, access to energy is one of the most serious challenges faced by the Caribbean. As a result, it is important for the subregion to improve energy efficiency as well as to promote the use of alternative sources of energy. Energy efficiency (EE) and renewable energy (RE) are especially relevant to the Caribbean since the subregion holds substantial renewable energy potential in relation to solar, wind and geothermal energy, but remains highly dependent on fossil imports for its energy needs. The programme proposes to scale up the deployment of Integrated Utility Services (IUS) to Support Energy Sector Transformation in the Caribbean in the three beneficiary countries.

The three beneficiary countries are highly vulnerable to climate change, mainly due to the high poverty rates in the region and their pronounced exposure to climate change hazards. Consequently, many communities in the most vulnerable sections of target countries have insufficient capacity to develop and implement climate change mitigation measures, including the development of RE. Therefore, the resources required to achieve a paradigm shift in the resource management approach exceed those that can be supplied through public sector funding.

Therefore, through the Caribbean Development Bank (CDB), the proposed programme has been nominated to access the Green Climate Fund's (GCF) resources, foreseeing the importance of contributing to the achievement of national and regional goals related to climate change mitigation, and the development priorities that each country expresses in its policies and strategies.

In turn, the GCF requires all institutions to assess and manage the environmental and social risks that may arise from Project or programme activities implementation, demonstrate the ability to identify risks and impacts, proper management to eliminate, reduce or mitigate, and effectively monitor them (WRI, 2015)[1]. Consequently, the GCF has published a Sustainable Guidance Note to evaluate Project/programme activities (GCF, 2019)[2], to ensure that accredited entities establish a system that contains measures to manage and mitigate the identified risks and impacts, in accordance with the GCF Environmental and Social Safeguard Standards and its Environmental and Social Policy (GCF, 2019)[3]

The Environmental and Social Standards (ESS) aim to avoid, minimise, mitigate or compensate environmental risks, impacts and adverse social issues of projects, generate guidelines to

[1] WRI. 2015. Environmental and social safeguards at the Green Climate Fund.

[2] GCF. 2019a. Sustainability guidance note: screening and categorizing GCF-financed activities. P.15.

[3] GCF. 2019. Sustainability guidance note: screening and categorizing GCF-financed activities. P.15.

manage these risks and impacts and improve environmental and social performance. The 8 ESS of the Green Climate Fund are:

- ESS 1: Assessment and Management of Environmental and Social Risks and Impacts.
- ESS 2: Labour and Working Conditions.
- ESS 3: Resource Efficiency and Pollution Prevention.
- ESS 4: Community Health, Safety and Security.
- ESS 5: Land Acquisition and Involuntary Resettlement.
- ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.
- ESS 7: Indigenous People.
- ESS 8: Cultural Heritage.

1.2 Objective and scope of the ESMF

In line with **ESS 1 and the Environmental and Social Policy of the GCF**, this report presents the Programme's ESMF, in order to identify and assess social and environmental risks and impacts associated with the Programme activities and generate mitigation measures and actions to improve decision-making and thus achieve environmental and social outcomes consistent with the Environmental and Social Safeguards of the Fund. Indeed, an ESMF is the chosen instrument for this programme because specific sites for all sub-projects will not be fully known at the time of programme approval (and thus an ESMF is more appropriate than an Environmental and Social Impact Assessment [ESIA] or Environmental and Social Management Plan [ESMP]). The IUS programme will comprise sub-projects to be further refined during implementation. The inability to confirm specific sub-project prior to project appraisal requires that ESMF be prepared.

1.2.1 Objectives

The ESMF's general objective is to ensure that the "Scaling-up the deployment of integrated utility services to support energy sector transformation in the Caribbean" programme activities, consider an adequate management of the environmental and social aspects linked to the Programme, and comply with national legislation guidelines of the countries involved, Belize, Barbados, and Jamaica and with the Environmental and Social Standards of the Green Climate Fund (GCF) and the CDB's ESRP.

More specific objectives include the following:

- Define the institutional arrangement of the environmental and social risk management.
- Establish the Programme's baseline, including the environmental and social aspects, legislation of the three countries, and the institutional framework of the Programme.
- Develop an analysis of environmental and social risks and impacts of the activities to be done.
- Establish mitigation measures, guidelines and criteria that must be applied to mitigate, reduce or eliminate the identified risks and impacts.

The Environmental and Social Management Framework will guide the operation of the institutions and those responsible for implementing the Programme's activities.

1.2.2 Key components of this ESMF

The remainder of this ESMF presents:

- A brief description of the Programme, the Regulatory Framework applicable to the Fund's Environmental and Social Safeguard Standards of each Programme country, as well as the Programme Institutional Framework.
- A Baseline overview which presents a summary of the main environmental and social characteristics of each country in order to understand initial conditions of the population and ecosystems in which the Programme plans its implementation, and thus generate a better analysis of the risks, impacts and also benefits generated by the proposed activities.
- A discussion of social and environmental risks and analysis of impacts. Based on the impact and risk analysis of each Programme activity, guidelines and measures are established to mitigate, reduce or eliminate environmental and social risks and impacts, which must be adopted and developed by the Project/programme Team during the next phase.
- A proposed budget for the implementation of the ESMF, followed by concluding remarks, the stakeholder engagement plan, the grievance redress mechanism, as well as monitoring, evaluation, and reporting arrangement for the ESMF.

2 Legal and Institutional Framework

This chapter describes the programme and its components, as well as the initiatives of the members countries which addresses compliance with the Environmental and Social Performance Standards of the GCF related to the proposed programme. The chapter also presents the institutional framework or stakeholders that will be responsible for further environmental & social risk identification, assessment, mitigation, management, and monitoring during the implementation of the programme.

2.1 Programme Description

The energy sectors in Barbados, Belize, and Jamaica remain heavily dependent on imported fossil fuels. These countries have also made ambitious commitments to reduce greenhouse gas (GHG) emissions from their energy sectors, including from electricity generation. Although the countries have already made progress toward these goals, the penetration of RE and uptake of EE measures remains limited – particularly among businesses and households who have a pivotal role to play in the transition to a low-emissions and more climate-resilient regional energy sector. The proposed programme aims to rectify this by supporting participating electric utilities to launch and operate IUS at scale. In so doing, the utilities will broaden their business models to provide energy service company (ESCO)-type services to their customers, thereby increasing investment in distributed energy resources (DERs) such as renewable power and efficient cogeneration systems, battery systems, energy management and smart applications, and efficient end-use technologies. In so doing, the utilities will address barriers (e.g., limited ESCO capacity) that are inhibiting investment in distributed RE, EE and other DERs, while also leveraging their own comparative advantage (i.e., lower costs of capital, potential to achieve economies of scale, existing institutional capacities and networks). This will enable more rapid and widespread uptake of such technologies as “utility-based ESCOs”.

The programme will be implemented in two phases. Phase I will support Barbados, Belize, and Jamaica. Phase II will be developed/submitted at a later stage and aim to scale up this support to additional Borrowing Member Countries (BMCs), drawing on the lessons learned and good practices from Phase I. The CDB will serve as the Accredited Entity. The programme will include a “national project” in each country, for which the electric utilities will serve as the National Executing Entities. Each project will include a series of sub-projects through which distributed RE, EE and other DERs will be procured/installed at the premises of the utilities’ customers (mostly residential and commercial customers, as well as some industrial customers and public sector entities) to achieve concrete emissions reductions and enhance resilience.

2.1.1 Programme components

The programme has two components namely:

Component 1: Establish and promote IUS as a core element of electric utilities’ business models in the Caribbean. Under this component, the programme will lay the groundwork for the electric utilities in Barbados, Belize, and Jamaica to be able to implement the IUS model at scale (which they will do under component 2), making this innovative approach to supporting adoption of distributed RE, EE and other DERs a key element of their overall business model. Component 1 will accomplish this by: strengthening the enabling environment for IUS in each of the participating BMCs; enhancing outreach to customers to stimulate interest in distributed RE, EE

and other DERs, as well as demand for sub-projects (to be delivered under Component 2); and supporting collaborative networks through which electric utilities and other sectoral stakeholders can support one another during and after the programme to continue scaling up DERs using the IUS model.

Component 2: This component will focus on scaling up investment in distributed RE, EE and other DERs by implementing the IUS model at scale in the participating BMCs. This second component of the programme will build on the work done under component 1 to finance a series of distributed RE, EE and other DER sub-projects for participating households, business and public sector entities. As such, component 2 will constitute the core investment component of the proposed programme.

The sub-projects to be financed through the IUS programme are expected to be small-scale investments in the following eligible technologies, which will occur at the existing premises of utility customers (i.e. households, local businesses and public sector customers):

- Rooftop solar PV (with and without batteries), with limitations for residential customers (max. 20 kW installations) and commercial customers (max. 100kW installations)
- Energy-efficient air conditioners/cooling
- Energy-efficient lighting
- Solar water heaters

These technologies have been prioritised based on, *inter alia*: their potential to deliver significant climate change mitigation benefits; the fact that the markets in the participating countries are conducive to supporting further investment in/adoption of these technologies by households and businesses; and the ease with which they can be deployed at scale, including with regards to E&S risk management.

The beneficiaries for this programme include the utilities, households, businesses, the public and private sector.

2.2 Legal Framework

The legislation and policy of the Programme members countries which addresses compliance with the Environmental and Social Performance Standards of the GCF related to the proposed programme is presented below.

2.2.1 Barbados

Name of law or Policy	General description	Relevant institutions
ESS1. Assessment and Management of Environmental and Social Risks and Impacts		
Barbados' National Climate Change Policy	The primary goal of the policy is to establish a national process for adapting to climate change effects and minimising greenhouse gas emissions over the short, medium and long term, in a manner that is co-ordinated and consistent with the broader sustainable development aspiration.	Ministry of Environment and National Beautification
Planning & Development (Amendment) Act, 2020.	Planning and Development (Environmental Impact Assessment) Regulations, 2021 that promotes and apply environmental impact assessment for projects in the country	Ministry of Environment and National Beautification
Barbados Comprehensive Disaster Management Country Work Program 2019-2023.	Cabinet approval of the Barbados Comprehensive Disaster Management Country Work Program 2019-2023. This includes the financial protection mechanism for contingent liabilities from natural hazard-induced disaster shocks; system of annual stress testing of insurance firms of their capacity to absorb natural and man-made disasters and development of the appropriate measures to address identified weaknesses.	Ministry of Environment and National Beautification
ESS2. Labour and Working Conditions		
Safety and Health at Work Act 2005 (2005-12).	The Act is concerned not only about safety in the workplace but also about health. The act also embraces provisions relating to the welfare facilities for employees. The provisions relating to health and welfare are to be found in Parts IV and V, respectively, of the act. These provisions concern matters such as the cleanliness of the workplace, proper lighting, the control of noise and vibration and the prevention of overcrowding. The welfare provisions cover such matters as the supply of adequate quantities of drinking water, washing facilities, lunchrooms, sanitary conveniences and first aid appliances.	Ministry of Labour and Social Partnership Relations
ESS3. Resource Efficiency and Pollution Prevention		
2030 Agenda for Sustainable Development	This presents an opportunity for SIDS to optimize the potential benefits of implementing the 17 SDGs and enhance the capacity of national frameworks to guide coherent policy design and integrated cross-sectoral	Ministry of Finance and Economic Affairs, Barbados

Name of law or Policy	General description	Relevant institutions
	implementation of development objectives. Barbados uses targeted policy formation and a monitoring mechanism on progress that identifies the achievement of its national development goals and their ability to ensure that actual development leaves no one behind; and that different groups of people; inclusive of women, youth, persons with disabilities, older persons and rural dwellers, are all engaged in and benefit from national development efforts.	
Barbados National Energy Policy (2019 – 2030)	The policy is designed to achieve the 100% renewable energy and carbon neutral island- state transformational goals by 2030. These include: Provision of reliable, safe, affordable, sustainable, modern and climate friendly energy services to all residents and visitors.	Ministry of Energy and Business Development
The Barbados National Cooling Strategy	This Strategy provides recommendations to mitigate much of the waste of electricity and the impacts of refrigerant gasses through a range of voluntary and regulatory approaches.	Ministry of Environment and National Beautification
National Strategic Plan of Barbados 2005-2025	Goal Four of the National Strategic Plan of Barbados 2005-2025 requires the protection, preservation and enhancement of physical infrastructure, environment and scarce resources as Barbados seek to advance its social and economic development. Barbados pursues to find the right balance between its development and the preservation of its physical surroundings. Goal Four calls for access to adequate water and energy supplies, a good transportation system and the development and maintenance of sound infrastructure.	Ministry of Environment and National Beautification
Barbados NDC	This strategic document lays out strategies to for climate change mitigation and adaptation in the country including in the use of renewable technologies as well as energy efficient technologies	Ministry of Environment and National Beautification
ESS4. Community Health, Safety and Security		
Animal Health and Veterinary Public Health Bill, 2022	This Bill would make provision for the establishment of the Veterinary Authority as the competent authority for the regulation of terrestrial and aquatic animal health in Barbados; the prevention of the introduction and spread of animal and zoonotic diseases in Barbados; the control of	The Barbados Parliament

Name of law or Policy	General description	Relevant institutions
	the movement of animals, animal products and animal related items into, out of and within Barbados in order to safeguard animal health and veterinary public health; the control of veterinary medicinal products; the implementation of animal health and animal welfare standards in accordance with the World Organization for Animal Health (WOAH) standards contained in the Terrestrial Animal Health Code and the Aquatic Animal Health Code; and for related matters	
Protection of Agricultural Products Bill, 2022	This Bill would make provision for the protection of agricultural products and matters related thereto.	The Barbados Parliament
Pandemic Contribution Levy Bill, 2022	This Bill would make provision for the imposition of a levy to be known as the "Pandemic Contribution Levy" and matters related thereto.	The Barbados Parliament
ESS5. Land Acquisition and Involuntary Resettlement		
Town and Country Planning Act of Barbados	The legislative base for determining planning applications is set out in the Town and Country Planning Act (TCPA) in Chapter 240. Planning is also determined by subsidiary legislation to the TCPA. That is the Town and Country Planning Development Order of 1972. The Town and Country Planning Act defines development as "The carrying out of building, engineering, mining or other operations in, on, over or under any land, the making of any material change in use of any buildings, or other land or the subdivision of land.	Ministry of Environment and National Beautification
Exclusive Economic Zone (EEZ)	The Ministry of Maritime Affairs and the Blue Economy (MMABE) was established on June 1, 2018, to define and implement a regime of good governance of Barbados' EEZ.	Ministry Of Maritime Affairs & Blue Economy
ESS6. Biodiversity Conservation and Sustainable Management of Living Natural Resources		
National Biodiversity Strategy and Action Plan (NBSAP) for Barbados	It seeks to highlight objectives, strategies and actions necessary for the conservation and sustainable utilization of Barbados' biological resources. It is envisaged that this document will serve as a repository for local biodiversity information to all citizens, as well as international interests. The NBSAP is also designed to provide the framework for effective management of local biological diversity and to	Ministry of Environment and National Beautification

Name of law or Policy	General description	Relevant institutions
	guide future activities of the biodiversity programme in the Ministry	
Green Paper on 2020 Water Protection and Land Use Zoning Policy.	This policy describes the existing groundwater protection zoning policy, outlines its strengths and shortcomings and proposes a new integrated approach to protection of all of the island's water resources, including coastal waters.	Barbados Water Authority
Integrated Coastal Zone Management (ICZM): the Barbados Policy Framework (2020-2030)	This includes an approval of the Coastal Zone Management Plan that aims to incorporate natural capital categories in national assets accounting	Coastal Zone Management Unit, Barbados
Plant Protection Bill, 2022	This Bill provides for the protection of plant resources by preventing the introduction of plant pests and controlling the spread of plant pests, in order to facilitate the trade in plants and plant products in accordance with the obligations under the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures, the International Plant Protection Convention and the International Standards on Phytosanitary Measures; and for related matters.	The Barbados Parliament
ESS7. Indigenous Peoples		
There is no known national law or policy in Barbados that is specifically related to Indigenous Peoples.	N/A	N/A
ESS8. Cultural Heritage		
Museums and Historical Society Act 1933	Contains provision for the protection of cultural sites in the country.	Prime Minister's Office, National Cultural Foundation Barbados
Cultural Industries Development Act 2013-15	The establishment of a regulatory framework to facilitate and encourage the sustainable growth and development of cultural industries; funding for cultural projects; and duty-free concessions and income tax benefits in respect of cultural projects	National Cultural Foundation Barbados

2.2.2 Belize

Name of law or Policy	General description	Relevant institutions
ESS1. Assessment and Management of Environmental and Social Risks and Impacts		
Belize Environmental Protection Act	The Environmental Protection Act established the Department of the Environment (DOE), and entrusted it the responsibility to monitor the implementation of the Act and subsequent Regulations and to take necessary action to enforce the provisions of the Act and Regulations. The Act regulates Environmental Impact Assessment (EIA) in Belize by ensure that projects that cause hard to the environment undergo EIA.	Ministry of Sustainable Development, Climate Change and Disaster Risk Management
A National Climate Change Policy, Strategy and Action Plan to Address Climate Change in Belize	The document establishes a list of priority sectors for the Government of Belize to focus efforts upon, including agriculture, tourism, energy, forestry and fisheries. This strategy is meant to serve as a roadmap for all official bodies of the Government of Belize, including the National Climate Change Office under the Ministry of Forestry, Fisheries and Sustainable Development. The Policy guides the short, medium and long-term processes of adaptation and mitigation of Climate Change in accordance with national objectives for sustainable development in addition to regional and international commitments.	Ministry of Forestry, Fisheries and Sustainable Development (MFFSD) and Caribbean Community Climate Change Centre (CCCCC) Belmopan, Belize
Planned Relocation Guidelines: A framework on climate induced relocation of the Government of Belize 2021.	Belize faces widespread and significant risk of climate related sudden-onset disasters. The risk of displacement from coastal rural communities to urban communities, as well as underdeveloped areas have become more apparent. In Belize, a voluntary planned and coordinated relocation process may eventually need to take place as an anticipatory measure where hazards threaten to render certain areas uninhabitable. These guidelines are developed to support the Government of Belize in its planning and implementation of planned relocation activities for vulnerable populations and provide concrete suggestions to Government, non-government, and community stakeholders to implement these plans with a view to protect the people that it serves from disasters and environmental change.	Ministry of Labour, Local Government Rural Development and National Emergency Management International Organization for Migration of Belize

Name of law or Policy	General description	Relevant institutions
Belize's First Biennial Update Report to The United Nations Framework Convention on Climate Change (2020)	Pursuant to Decision 2/CP.17 of the UNFCCC, Belize submitted its first Biennial Update Report (1BUR) to the United Nations Framework Convention on Climate Change. This report provides an update and analysis of the national context and domestic actions and policies implemented to address climate change. 1BUR provides an overview of current national circumstances, a national inventory of greenhouse gases updated for reference years 2012, 2015 and 2017, the actions developed to mitigate climate change, and the needs and support received regarding climate change for the reporting period of 2015-2018	National Climate Change Office, Ministry of Forestry, Fisheries, the Environment and Sustainable Development
A Climate Change Communication Strategy for the Government of Belize	In pursuit of assisting the Government and affected communities in understanding the migration and climate change nexus, IOM and the Government of Belize, through the Ministry of Sustainable Development, Climate Change and Disaster Risk Management, and its National Climate Change Office, and in alignment with National Policies and the National Climate Change Policy, Strategy and Action Plan (NCCPSAP), seek to devise a Communication Strategy for the project "Building the capacities of the government of Belize to address the challenges associated with migration and climate change in vulnerable coastal communities".	Ministry of Sustainable Development, Climate Change and Disaster Risk Management, and its National Climate Change Office International Organization for Migration of Belize City, Belize: UN MIGRATION
Belize Updated Nationally Determined Contribution	Climate change is already affecting the livelihoods of Belizeans. Belize, as a small country with relatively minor contributions to global greenhouse gas emissions, has limited capacity to contribute to mitigation of global climate change. However, the country is committed to achieving the ultimate objective of the Convention and supports more ambitious target to limit the increase in global average temperature to 1.5°C, compared to pre-industrial levels. As a member of the High Ambition Coalition, Belize has committed to increasing emissions reduction ambition in this updated NDC, including using nature-based solutions in the FOLU sector intended to increase removals, whilst underpinning the NDC development process with more robust and realistic data and projections in all sectors.	Ministry of Sustainable Development, Climate Change and Disaster Risk management, Belize.

Name of law or Policy	General description	Relevant institutions
	Belize is committed to developing a long-term strategy aligned with achieving net zero global emissions by 2050.	
HORIZON 2030	One of its four main pillars of HORIZON 2030 is responsible environmental stewardship. The strategies to achieve this pillar include integrating environmental sustainability into development planning and promoting sustainable energy for all, as well as addressing the areas of concern relating to Belize's emission profile	Ministry of Economic Development
The National Climate Resilience Investment Plan of 2013	The plan provides the framework for an efficient, productive and strategic approach to building economic and social resilience and development. Special importance is given to building climate resilience and reducing disaster risk	Ministry of Forestry, Fisheries, and Sustainable Development, Belize
Roadmap for the Development of A Low Carbon Development Strategy and Belize Action Plan 2021	The Road map creates a platform for low carbon growth in new areas while still attaining the national development targets. The roadmap compliments the NCCPSAP and GSDS by focusing on building technical capacity, strengthening institutions and policies, facilitating public-private partnerships and engaging stakeholders to adopt sustainable practices which should lead to national resilience to the impacts of climate change. The Action Plan provides fundamental details and strategies for achieving a low carbon economy in Belize	Ministry of Forestry, Fisheries, and Sustainable Development, Belize
ESS2. Labour and Working Conditions		
Labour Act No 25 of 2020 (AMENDMENT)	This Act amends the Labour Act and provides for employers to reduce wages where the working hours of an employee have been reduced in special circumstances; to provide for leave of absence without pay in special circumstances; and prohibit force labour.	Ministry of Rural Transformation, Community Development, Labour and Local Government, Belize
ESS3. Resource Efficiency and Pollution Prevention		
Belize National Sustainable Energy Strategy 2012-2033	The National Sustainable Energy Strategy 2012-2033 set the 2033 goals of becoming a net electricity and biofuels exporter, increasing GDP energy intensity by 30%, tripling energy recovery from waste streams, and reducing fossil fuel imports by 50%. In addition, it restates Belize's goal of generating over 50% of electricity from renewable energy. The strategy also establishes the target to increase	Ministry of Public Utilities, Energy and Logistics

Name of law or Policy	General description	Relevant institutions
	hydropower from 55MW to 70MW by 2033 and to supply 5MW of electricity from municipal solid waste.	
Belize National Energy Policy Framework	The framework aims to provide options that Belize can pursue for energy efficiency, sustainability and resilience over the next 30 years.	Ministry of Public Utilities, Energy and Logistics
National Implementation Plan on Persistent Organic Pollutants (POPS)	The main objective of this Plan is to identify, characterized and quantify POPs in use, POPs stored, and POPs unintentionally produced or released to the environment.	Ministry of Natural Resources and Agriculture
Integrated Water Resources Administration	In 2011, the National Integrated Water Resources Act came into effect to provide for the management, controlled allocation and the sustainable use and protection of the water resources of Belize, water quality control, and for the establishment of a National Integrated Water Resources Authority (NIWRA).	Ministry of Natural Resources and Agriculture
Strategic Action Plan for the Gulf of Honduras	The Plan aims to reduce pollution from maritime transport in the gulf. A draft Maritime Pollution Bill has also been prepared for Belize and is currently under review.	Regional Program Coordination Unit (URCP)
Strategic Plan 2012-2017: “Integrating energy, science and technology into national development planning and decision making to catalyze sustainable development”	This 2012-2017 Strategic Plan provides a summary of the strategies the newly established Ministry of Energy, Science and Technology and Public Utilities (MESTPU) plans to implement in order to streamline, manage and integrate related activities and programmes. To achieve this, the MESTPU intends to develop a framework that will result in transitioning the energy sector and economy toward low carbon development, as well as development of a plan that provides for the coordination and implementation of a comprehensive, integrated and transparent approach that develops a longer-range culture of investment and support for Science, Technology and Innovation (STI).	Government of Belize, Ministry of Energy, Science & Technology and Public Utilities
THE National Solid Waste Management Policy (NSWMP)	This is the main public policy instrument regarding the management of solid waste (e.g., municipal, industrial and hazardous types of waste, among others) for Belize. Its overall goal is to ensure that “The system for managing solid wastes in Belize is financially and environmentally sustainable, and contributes to improved quality of life," while also contributing to the promotion of sustainable	Ministry of Natural Resources and Agriculture

Name of law or Policy	General description	Relevant institutions
	development by preventing, re-using, recycling or recovering waste wherever feasible and beneficial. The measures outlined in the NSWMP is implemented in accordance with the National Solid Waste Management Strategy and Implementation Plan which have also been prepared.	
Pollution Regulations. S.I 56/1996 and amendments 2009.	These regulations establish the rules and consequences for the emission of pollutants into the air, water and land, while also establishing rules and consequences for noise pollution.	Department of Environment
Ministry of Energy, Science & Technology and Public Utilities (MESTPU) Strategic Plan 2012-2017	The document provides an outline for the Sustainable Energy Strategy in the development of a low carbon economy by 2033". Within the Strategic plan, specific goals mentioned include: • Reduce per capita energy intensity of at least 30% by 2033 • Develop an Energy Efficiency and Conservation Policy 2012-2033 • 50% reduction of the electricity bill for public sector buildings for cooling and lighting to US $3.4MM	Ministry of Energy, Science & Technology and Public Utilities (MESTPU)
ESS4. Community Health, Safety and Security		
Public Health Act (Revised 2000)	Provides the legal basis for the Minister and Director of Health Services to establish and enforce regulations to ensure public health, and outlines the public health rights of citizens and responsibilities of the government.	Ministry of Health and Wellness
Pollution Regulations. S.I 56/1996 and amendments 2009.	As outlined above, these regulations establish the rules and consequences for noise pollution (in addition to rules and consequences for rules for the emission of pollutants into the air, water and land).	Department of Environment
ESS5. Land Acquisition and Involuntary Resettlement		
Land Acquisition and Involuntary Resettlement Policy Framework, 2010	The objective of this Policy is to improve and maintain municipal service delivery in selected towns of Belize. Where land acquisition is unavoidable, the policy is designed to minimize adverse impact on the Project Affected People (PAP), especially the vulnerable groups.	Ministry of Labour, Local Government Rural Development and National Emergency Management

Name of law or Policy	General description	Relevant institutions
Land Management Program (LMP)	The Land Management Program (LMP), funded by an IDB loan and counterpart funding from the Government of Belize intends to improve land management in Belize by completing four components – national cadastre and property rights registration, the expansion of land administration, land use planning and development review and land policy reform and ministry-wide strengthening	Ministry of Natural Resources and the Environment of Belize
Sustainable Land Use policy	In 2011 the Policy was completed and submitted for review by the official authorities and Cabinet. The vision for the land use policy was articulated as an environmentally and socially responsible use of land resources that enables national development.	Ministry of Natural Resources and the Environment
ESS6. Biodiversity Conservation and Sustainable Management of Living Natural Resources		
Belize Integrated Coastal Zone Management Act	As a result of the multiple uses and increasing demand for coastal lands, the government of Belize passed the Coastal Zone Management (CZM) Act in 1998 to address issues such as rapid development, overfishing, and population growth. The CZM Act mandates the Coastal Zone Management Authority and Institute (CZMAI) as the entity responsible to design a National Integrated Coastal Zone Management (ICZM) Plan. The goal of the ICZM Plan is to recommend actions that will ensure sustainable coastal resources use by balancing conservation ideals with the economic and social needs of the country.	Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, and Coastal Zone Management Authority
Belize National Protected Areas Policy and System Plan	The general objective of this policy document is to provide a set of guiding principles for the declaration, modification and re-designation where necessary; management and administration; socio-economic assessment and analysis; ecological assessment and analysis and monitoring and evaluation of marine and terrestrial protected areas in Belize. Additionally, the policy document seeks to promote conservation of the rich biodiversity of Belize in perpetuity for present and future generations to use the nation's biological resources in a sustainable manner that ensures that the resource base is not compromised, and to ensure the fair and equitable sharing of benefits arising from the	Ministry of Forestry, Fisheries and Sustainable Development - Government of Belize

Name of law or Policy	General description	Relevant institutions
	utilization of the nation's biologically diverse resources among all Belizeans.	
National Biodiversity Strategy and Action Plan of Belize	The National Biodiversity Strategy and Action Plan is based on Belize's commitment to the conservation and sustainable development of national biological diversity. The Action Plan is focused on achieving the national NBSAP vision, based on fifteen guiding principles grouped under four areas – respect, responsibility, environmental context and commitment.	Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, Belize
Belize National Biodiversity Policy	In 2006 the Belize National Biodiversity Policy was articulated to provide a framework for specific actions and measures to be taken at the national, regional and international levels in support of the various issues connected with the sustainable use and conservation of biodiversity	Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, Belize
ESS7: IPP. GCF's Indigenous Peoples Policy		
Maya land rights	In a 2-1 decision, the Court found that Maya of Toledo possessed rights to land and resources in Southern Belize based on their longstanding use and occupancy. The Court further concluded, however, that the Supreme Court erred in finding that the Constitution of Belize imposes a positive obligation on the Government to adopt affirmative measures to protect the rights of the respondents. Based on this conclusion, the Court of Appeal struck out the Supreme Court's injunction against Government interference with Maya land.	Minority Rights Group International (MRG) and Belize Government
ESS8. Cultural Heritage		
National Cultural Heritage Preservation Act (2017)	This Act aims to protect and preserve the cultural heritage assets of Belize, including by clearly defining the functions of the National Institute of Culture and History (NICH) of Belize.	Ministry of Education, Youth, Sports and Culture NICH

2.2.3 Jamaica

Name of law or Policy	General description	Relevant institutions
ESS1. Assessment and Management of Environmental and Social Risks and Impacts		
Update of NDC of Jamaica	A crucial feature of Jamaica's NDC is that it is based on the analytical work of the policies and grounded ambitious commitments that the country has already made. This ensures that the commitments are robust, benefiting from both political support and implementation plans already in place. This approach is crucial in both ensuring the legitimacy of Jamaica's NDC to domestic constituents and in enhancing the credibility of the international process governing emission reductions.	Ministry of Economic Growth & Job Creation, Climate Change Division
National Adaptation Plan (NAP)	Preparatory work for this pilot began last fiscal year and will be significantly advanced during this fiscal year. At least four selected municipal corporations will benefit from capacity building and financing opportunities such as performance-based grants over two fiscal cycles.	Ministry of Housing, Urban Renewal, Environment and Climate Change
Climate Change Policy Framework for Jamaica	The Policy Framework, adopted in September 2015, aims primarily to support the goals of Jamaica's Vision 2023 by reducing the risks posed by climate change to Jamaica's economy and its development goals. The Policy Framework creates an institutional mechanism and structures to facilitate the development, coordination and implementation of policies, sectoral plans, strategies, and legislation to address the impacts of climate change.	Ministry of Water, Land, Environment and Climate Change (MWLECC)
Climate Change Policy Framework and Action Plan	The Policy and Action Plan intends, primarily, to support the goals of the country's National Development Plan, Vision 2030 Jamaica, by reducing the risks posed to sectors such as: water, energy, agriculture, fisheries, coastal and marine resources, health, mining, tourism, planning, and disaster risk reduction and response management measures to address identified weaknesses.	Ministry of Water, Land, Environment and Climate Change (MWLECC)
Vision 2030 Jamaica National Development Plan	This is a long-term Plan designed to put Jamaica in a position to achieve a developed country status by 2030. Vision 2030 Jamaica is based on a fundamental vision	Ministry of Education (MOE)

Name of law or Policy	General description	Relevant institutions
	to make “Jamaica the place of choice to, live, work, raise families and do business”, and on guiding principles which put ‘people’ at the centre of Jamaica’s transformation. Twelve strategic priorities have been identified as critical elements in fulfilling the objectives of the plan.	
ESS2. Labour and Working Conditions		
Labour Relations and Industrial Disputes Act (Amendment 2014)	This Act covers rights and requirements related to labour relations, collective bargaining, and industrial dispute resolution.	Ministry of Labour and Social Security
Minimum Wage Act (Amendment 2011)	This Act provides the legal basis for the Minister to establish/fix minimum rates of wages in Jamaica.	Ministry of Labour and Social Security
Holidays with Pay Act (Amendment 2009)	This Act enables the Governor in Executive Council to make provision for Holidays and sick leave with pay for workers other than casual workers, in certain occupations and for the grant of gratuities and sick benefit to casual workers in certain occupations and for other matters incidental to or connected with any of the foregoing purposes.	Ministry of Labour and Social Security
Employment (Termination and Redundancy Payments) Act (Amendment 2008)	This Act provides for the notice required to be given for the termination of contracts of employment, for the right of certain employees to certain facilities for returning to their homes on the termination of their contracts of employment, for the making by employers of payments to employees dismissed by reason of redundancy, and for purposes incidental to or connected with the matters aforesaid.	Ministry of Labour and Social Security
ESS3. Resource Efficiency and Pollution Prevention		
The National Energy Policy (2009 – 2030)	This Strategic Framework or policy is comprehensive and is expected to be durable to 2030 and beyond yet be flexible and adaptable to meet new challenges and opportunities as they arise. It establishes a goal of 20% of renewable energy in the energy mix by 2030.This Strategic Framework also addresses both supply and demand energy issues the country faces and as such places priority attention on seven key areas: Security of Energy Supply through diversification of fuels as well as	Ministry of Science, Energy Telecommunication and Transportation (MSETT)

Name of law or Policy	General description	Relevant institutions
	development of renewables; Modernizing the country's energy infrastructure; Development of renewable energy sources such as solar and hydro; Energy conservation and efficiency; Development of a comprehensive governed/regulatory framework; Enabling government ministries, departments and agencies to be model/leader for the rest of society in terms of energy management; Eco-efficiency in industries.	
National Renewable Energy Policy 2009 – 2030	The National Renewable Energy Policy of Jamaica focus on introducing measures that will allow Jamaica to achieve the targets set for renewable energy as defined in the National Energy Policy 2009 – 2030. This Policy furthermore commits the Government to several enabling strategies to ensure that renewable energy becomes a significant part of its energy portfolio over the same period.	Ministry of Science, Energy Telecommunication and Transportation (MSETT)
Jamaica National Energy Conservation & Efficiency Sub-Policy 2009 – 2030 (draft) and the Climate Change Trading Sub-Policy 2009-2030 (draft)	The main objective of this Policy is to improve energy conservation and efficiency in all sectors of the economy and accelerate the introduction of new, innovative technologies. The policy comprises a long-term Strategic Framework setting out goals, strategies and actions for policy implementation and an Institutional Framework describing the roles and responsibilities of the various stakeholders. The goals of the Strategic Framework are: Continued adoption, by households and businesses, of energy conservation and efficiency practices towards reducing Jamaica's carbon footprint; Creating an enabling legislative and regulatory environment for the promotion of energy conservation and efficiency; Government institutions leading by example; Modernisation of the energy sector. The policy supports the goals of the National Energy Policy, the Renewable Energy Policy, and the Policy for the Trading of Carbon Credits. The Climate Change Trading Sub-Policy 2009-2030 (draft) is designed to facilitate carbon trading in Jamaica as a strategy to reduce carbon emission from the different sectors of the economy	Ministry of Science, Energy Telecommunication and Transportation (MSETT)

Name of law or Policy	General description	Relevant institutions
ESS4. Community Health, Safety and Security		
National Strategic and Action Plan for the Prevention and Control Non-communicable Diseases (NCDS) in Jamaica	Urgent action is required to mitigate health impact in Jamaica the government has developed the country's NCDS policy framework for the prevention and control of major NCDs and their risk factors.	Ministry of Health
ESS5. Land Acquisition and Involuntary Resettlement		
Land Acquisition and Resettlement Policy Framework	The Land Acquisition & Resettlement Policy Framework apply to all World Bank assisted Second Inner-City Basic Services for the Poor Project. For JSIF funded community projects, the Policy Framework supplements existing Jamaican law pertaining to land acquisition and resettlement by introducing additional compensation measures to achieve compensation at replacement cost, screening and obtaining informed consent for voluntary land donations, together with implementation and consultation arrangements to minimize land acquisition impacts. The Policy Framework forms part of JSIF's Operational Manual for community projects.	Department of Land Environment and Climate Change
ESS6. Biodiversity Conservation and Sustainable Management of Living Natural Resources		
National Strategy and Action Plan on Biological Diversity in Jamaica	The National Strategy and Action Plan for Biological Diversity in Jamaica (NBSAP) was prepared as an update to the strategy and action plan prepared in 2003. This document has provided an update of Jamaica's conservation efforts since the 2003 strategy and action plan and now includes biodiversity conservation which are aligned to the Convention on Biological Diversity Achi Targets. The matter of mainstreaming of biodiversity is one of the main elements of the NBSAP.	Department of Land Environment and Climate Change
Jamaica: ODPEM Developing Coastal Management Plan	The Coastal Management and Beach Restoration Guidelines for Jamaica-activity had the overall objective to support national policy and institutional development regarding coastal resources, natural hazards and climate related impacts, and sustainable development.	Department of Land Environment and Climate Change
EE7. Indigenous Peoples		

Name of law or Policy	General description	Relevant institutions
There is no known national law or policy in Jamaica that is specifically related to Indigenous Peoples.	N/A	N/A
ESS8. Cultural Heritage		
National Culture Policy	Major issues addressed in this policy are Culture for the Promotion of Social Health and National Well-being; Repositioning Culture in Education; Culture Creativity and Innovation; and Culture, Heritage and Promotion of Museums and Artefacts. Other areas include Culture and the Creative Economy, with particular emphasis on Training and Human Capital; Financing; Research and Development; the Creative Economy and Marketing; the Creative Economy and Tourism; and the Creative Economy and the Festival Economy.	Ministry of Culture, Gender, Entertainment and Sport
National Cultural Heritage Law	The law promotes World Heritage partnerships for conservation by ensuring that World Heritage sites in the country sustain their outstanding universal value in an increasingly challenging mission in today's complex world, where sites are vulnerable to the effects of uncontrolled urban development, unsustainable tourism practices, neglect, natural calamities, pollution, political instability, and conflict.	Ministry of Culture, Gender, Entertainment and Sport

2.3 Gap analysis

The legal and regulatory framework in all the three countries is robust enough to ensure that the risk and impacts identified will be properly mitigated and managed. In fact, these frameworks comply with the CDB and GCF standards. That said, enforcement, compliance, and the capacity of stakeholders to implement these laws remain a major issue. This is the reason why capacity building and monitoring are fundamental components of the budget that is necessary for the implementation of the ESMF. Specifically, the programme will supplement the capacity of stakeholders by contracting (i) a National Energy Consultant to work with/in each electric utility; and (ii) an Implementation Support Consulting Firm that will include an E&S Specialist.

The only exceptions to the above relate to: (i) disposal of waste, particularly end-of-life disposal of the sustainable energy technologies to be supported through the programme; and (ii) Indigenous Peoples. For these reasons, the process of developing a utility-specific ESMP with each of the participating utilities will also include: the development of a waste disposal plan for all three countries; and the development of an Indigenous Peoples Plan for the countries that have recognized Indigenous Peoples / Tribal Groups.

2.4 Institutional Framework

The institutional framework and stakeholders that will be responsible for programme implementation as well as further environmental & social risk identification, assessment, mitigation, management, and monitoring during the implementation of the programme, as well as ensure the compliance of environmental and social considerations set in this ESMF is presented below.

2.4.1 Accredited Entity

The proposed program will be implemented over a period of six years. The CDB will be the Accredited Entity (AE) for the programme, and will be responsible for overseeing the implementation, financial management, evaluation, reporting and closure of the programme. As the AE, CDB will oversee programme implementation, using its experience having successfully implemented similar project activities involving financial intermediation across the region. CDB will be responsible for financial management and will be accountable for the use of GCF resources under the programme It will maintain program accounts, facilitate staff recruitment and procurement processes and will monitor resource mobilisation of baseline as well as co-finance. In addition, as the AE, CDB will: i) ensure that the programme is executed in accordance with GCF standards; ii) supervise, oversee and manage the implementation of program interventions; iii) report on program progress; and iv) ensure that program activities are well coordinated and aligned with countries' national priorities.

2.4.2 National level institutions

At the national level in each country, the following institutions or stakeholders in the table below will play a vital role in program implementation.

Barbados

Figure 2-1: Institutions and their role in IUS programme implementation in Barbados

Entity	Role
Government Ministries, Department and Agencies	**Role**
Ministry of Energy, Small Business and Entrepreneurship	The role of this ministry is to promote and facilitate energy security reliability and affordability and establish and maintain a sustainable energy sector

	for Barbados. In this vein, the ministry will provide technical expertise for program implementation given that this is an energy program.
Government Electrical and Engineering Department	The department deals with all matters relating to electricity and electrical engineering. The programme deals with the production of renewable energy for electricity generation. Therefore, this department will provide national program guidance regarding solar energy production and energy efficiency within the framework of the project
Environmental Protection Department (EPD)	The role of EPD is to protect and improve Barbados' quality of life and its natural and built environment, through the promotion of sustainable practices, education, partnerships and the enforcement of legislation. This department will also be responsible for further identification, assessment, mitigation, management, and monitoring of social and environmental risks during the implementation of the programme.
Electricity regulator	**Role**
Fair Trading Commission	The electricity regulatory authority regulating the electricity sector in Barbados and responsible to advance the regulatory IUS model through adequate supportive and transparent regulatory framework.
Electric utility	**Role**
Barbados Light and Power Company Limited	Serve as the National Executing Entities of the programme in Barbados.
Technology Service Providers	**Role**
Various TSPs	They will work with the utilities to produce and distribute RE products for the programme. They will also invest in RE, EE and other DER sub-projects.
Others	**Role**
Barbados Renewable Energy Association	They will support in capacity building and programme outreach.

Belize

Figure 2-2: Institutions and their role in IUC programme implementation in Belize

Entity	Role
Government Ministries, Department and Agencies	**Role**
Ministry of Public Utilities, Energy and Logistics	This Ministry is responsible for the implementation of the country's energy policy. Thus, they will provide advisory support that is necessary for program implementation.
Ministry of Rural Transformation, Community Development, Labour and Local Government	The Ministry empowers and build the capacity of local authorities to enhance their effectiveness, efficiency, and accountability, responsibility, autonomy, and self-sustenance. Therefore, this ministry may be leveraged to support programme implementation at the community level.
Electricity regulator	**Role**
Public Utilities Commission	The purpose of the Public Utilities Commission is to regulate the electricity water, and telecommunications sectors in Belize to efficiently provide the highest quality services at affordable rates ensuring the viability and sustainability of each

	sector. The Commission will play a regulatory role in the program especially with regards to electricity regulation produced within the framework of the programme.
Electric utility	**Role**
Belize Electricity Limited	Electric utilities will serve as the National Executing Entities of the program in Belize.
Technology Service Providers	**Role**
Various TSPs	They will work with the utilities to produce and distribute RE products for the programme. They will also invest in RE, EE and other DER sub-projects.
Others	**Role**
Statistical Institute of Belize (SIB)	The primary functions of SIB are to collect, compile, extract, analyse and release official statistics pertaining to the demographic, social, environmental, economic and general activities and conditions of Belize on an impartial basis and in accordance with professional standards and ethics. This institute will therefore provide the necessary existing equipment import information.
Department of Environment (DOE)	The DOE functions with full autonomy to enforce the Environmental Protection Act which grants broad regulatory and enforcement authority for the prevention and control of environmental pollution, conservation and management of natural resources. The DOE will therefore be providing the relevant inputs with regards to renewable energy and energy efficiency for the programme as the project serves to mitigate climate change through renewable energy production (solar energy). Additionally, this department will also be responsible for further identification, assessment, mitigation, management, and monitoring of social and environmental risks during the implementation of the programme.
Ministry of Finance Economic Affairs and investment	This ministry will support the execution of financial transactions within the framework of the programme. They are the NDA for the Belize Green Climate Fund
Ministry of Sustainable Development, Climate Change and Disaster Risk Management	This ministry is responsible for implementing Agenda 2030 which serves to promote environmental stewardship in the country. This ministry will therefore provide technical support for the programme in the domain solar energy production and energy efficiency.

Jamaica

Figure 2-3: Institution and their role in IUS programme implementation in Jamaica

Entity	Role
Government Ministries Departments and Agencies	**Role**
Ministry of Science Telecommunication and Transportation	This ministry is responsible for the implementation of the country's National Energy Policy. This ministry will therefore influence the program by providing advisory renewable energy services during program implementation.
Ministry of Economic Growth and Job Creation (MEGJC)	The Ministry of Economic Growth and Job Creation (MEGJC) is charged with drafting the blueprint to

	drive economic growth and sustainable development in Jamaica. The ministry could therefore play an advisory role in the solar energy production and energy efficiency.
Climate Change Division (CCD)	The CCD represents the Government of Jamaica at regional and international climate negotiations and other fora and acts as the national focal point or national designated authority to various climate bodies involved in the management of the climate crisis, including the United Nations Framework Convention on Climate Change (UNFCCC), the Caribbean Community Climate Change Centre (CCCCC), the Climate Technology Centre and Network, and the Green Climate Fund (GCF), among others. Broadly, the core strategies of the Division are the NDA for programme implementation in Jamaica
Ministry of Housing, Urban Renewal, Environment and Climate Change (MHURECC)	The Ministry of Housing, Urban Renewal, Environment and Climate Change (MHURECC) is responsible for overseeing the sustainable growth and development of Jamaica in key portfolio areas such as environment and risk management, housing policy and research, real estate, climate change among others. This ministry will thus be providing the requisite technical support in the domain of renewable energy technology during program implementation. This Ministry may also be responsible for further identification, assessment, mitigation, management, and monitoring of social and environmental risks during the implementation of the programme.
Other important government agencies	**Role**
Government Procurement Entity	Executive agency mandated to undertake procurement of new grid level electricity generation capacity by processing new generating capacity, managing and administering the process for the procurement, by means of competitive bidding, of generation capacity by potential Independent Power Producers (IPPs) for sale of electricity to the Single Buyer. The GPE is responsible for leading and manage the implementation and replacement of baseload generation in keeping with the Integrated Resource Plan (IRP).
Technology Service Providers	**Role**
Various TSPs	They will work with the utilities to produce and distribute RE products. They will also invest in RE, EE and other DER sub-projects.
Electricity regulator	**Role**
Office of Utilities Regulation (OUR)	OUR is responsible for the regulation of Electricity, Water and Sewerage, and Telecommunications (Telephony and Internet) sectors in Jamaica. The Office will therefore oversee the activities of the utility company in Jamaica.
Other	**Role**
Government Electrical regulator	They are the regulator for standards and certification of building, and licensed electricians and will therefore play a role solar energy production and electrical efficient.

Utilities	Role
JPSCo	Electric utilities especially the JPSCo will be the executing entity of the IUS programme in Jamaica.

2.4.3 National-level Processes and Hypothetical Sub-project Workflow Description

National-level process

During the first year of programme implementation (PY1), the CDB-contracted Implementation Support Consulting Firm will assist the relevant national counterparts in each country – notably the electric utilities that will serve as national Executing Entities under Component 2 – to develop a country-specific Environmental and Social Management Plan (ESMP). These ESMPs will provide detailed guidance to the electric utilities and other relevant stakeholders (including TSPs) on exactly how E&S risks and impacts should be identified, assessed, mitigated and managed throughout programme execution. They will also provide/include:

- detailed guidance on the specific E&S risks associated with each type of eligible technology;
- a detailed screening checklist to be used by the electric utilities when reviewing sub-project applications to ensure such risks are clearly identified and sub-projects can be properly categorised, which will be an adapted version of the draft checklist that is appended to this ESMF;
- actionable guidance on which associated risk mitigation/management measures should be implemented in each country, how they should be implemented, and by whom;
- templates and associated guidance to support the development of the corresponding Environmental, Social, Health and Safety (ESHS) plan for any sub-project for which the screening identifies notable E&S risks and thus is categorised as a Cat B sub-project;
- templates and associated user-friendly guidance for TSPs on how to adhere to the E&S requirements outlined in the ESHS plans, and how to report to the utilities to demonstrate compliance with such requirements;
- Contractual integration guidance to assist utilities on how to integrate the ESHS plan implementation and reporting requirements into contracts/service documents with TSPs; and
- a utility-specific disposal plan that outlines country-specific requirements associated with the collection, storage and final disposal of waste (e.g. old AC units and other technologies that are removed during installation, as well as programme-supported RE, and end-of-line management of programme-supported equipment).

    Note that waste disposal in line with such disposal plans often involves accumulating enough waste equipment and then exporting it from the country for proper disposal or recycling in another jurisdiction that has more robust facilities.

The guidance contained in the country-specific ESMPs will help equip all relevant national stakeholders to ensure E&S risks are properly identified, assessed, mitigated and managed for each sub-project, in line with the overall hypothetical sub-project workflow outlined below.

Hypothetical sub-project workflow

To ensure that E&S risks are properly identified, assessed, mitigated, and managed for each sub-project that is financed during programme implementation, we present below a hypothetical sub-project workflow showing the various steps in sub-project preparation, approval and implementation and the role sand responsibilities of the different stakeholders with regards to risk identification, mitigation and management.

Step 0: Sub-project preparation and (pre-)feasibility.

Description: In some instances, electric utility customers (e.g. MSMEs, households) may engage with their electric utility before submitting a sub-project application to seek support that can inform sub-project design and preparation. For example, customers from lower-income and vulnerable groups may be eligible to apply for subsidized or free energy audits. This iterative process between the customer (and TSP if the customer is already working with one) and the electric utility may provide the utility with preliminary information about pipeline sub-projects, enabling them to conduct an initial screening and identify preliminary environmental and social (E&S) risks and potential impacts.

Primary responsibility: Electric utilities (as National Executing Entities).

Note: Although the electric utilities generally have staff with the expertise needed to identify E&S risks and potential impacts associated with the eligible technologies, they do not have sufficient capacity to systematically conduct such assessments. That being the case, the programme will supplement their capacity by contracting (i) a National Energy Consultant to work with/in each electric utility; and (ii) an Implementation Support Consulting Firm that will include an E&S Specialist.

Supporting roles:

- Customers (preparing sub-projects)
- TSPs (occasionally supporting customers to prepare sub-projects)
- CDB (supervising and quality-assuring the work of the National Executing Entities)

Step 1: Sub-project submission.

Description: Utility customers will prepare and submit sub-project applications to their respective electric utility (as a National Executing Entity). Customers will not be expected to include a screening for E&S risks as part of their sub-project application as this is beyond their remit and area of expertise. That being the case, this step in the sub-project workflow would not involve any specific E&S-related actions.

Primary responsibility: Utility customers.

Supporting roles:

- TSPs (occasionally supporting customers to prepare/submit sub-projects)

Step 2: Sub-project review.

Description: The electric utility (as a National Executing Entity) will review the submitted sub-project application, including to ensure alignment with the eligibility criteria. The electric utility may decide to approve or reject the application or revert to the customer to request additional information and/or adjustments to the application. If the electric utility is inclined to approve the application, it will also complete a screening for E&S risks and potential impacts with due consideration to the technology-specific E&S risks and potential impacts. This screening will utilise a specific screening checklist that will be developed with (and for) each electric utility and included in their respective utility-specific ESMP, building on the draft checklist that is appended to this ESMF. If the screening determines that the sub-project entails limited/no E&S risks and impacts, the sub-project can be approved. If the screening determines that the sub-project entails modest (i.e. Category B) E&S risks and potential impacts, the utility (with assistance from the Implementation Support Consulting Firm) will develop an

Environmental, Social, Health and Safety (ESHS) plan for the sub-project prior to approval. The ESHS plan will include a set of risk mitigation/management measures to be implemented as part of sub-project implementation, along with clearly defined roles and responsibilities for ESHS implementation, monitoring and reporting. Given the nature of the programme and the sub-projects that are expected to be financed, the ESHS plans are generally expected to involve measures to be taken by TSPs when installing the technologies/assets at the premises of the beneficiary customers (see Steps 4-7 below).

> *Note: All E&S screenings will be reviewed by the E&S Specialist from the Implementation Support Consulting Firm before they are finalized. Similarly, the E&S Specialist will work directly with the electric utilities to prepare the ESHS plans if/when these are needed.*

Primary responsibility: Electric utilities. *Note* that when implementing this and other steps outlined in this workflow, the electric utilities will often draw on contributions from (i) the National Energy Consultants and (ii) the E&S Specialist from the Implementation Support Consulting Firm.

Supporting roles:

- CDB (supervising and quality-assuring the work of the National Executing Entities)

Step 3: Sub-project (TSP) contracting.

Description: Once the electric utility has approved a sub-project, it will enter into a contract with a qualified TSP for the procurement and installation of the relevant technology/ies that the customer requested in their sub-project application. If an ESHS plan was developed for the sub-project (Step 2), the electric utility will include provisions in the contract that oblige the TSP to implement any relevant measures that were specified in the ESHS plan (e.g. occupational safety and health measures when installing rooftop PV, proper handling of coolants when installing/replacing air conditioners, etc.). Similarly, the utility will include provisions in the contract that oblige the TSP to document the implementation of the relevant risk mitigation/management measures (Step 4), and include this documentation in the reporting that they submit to the utility after the installation has been completed (Step 5).

Primary responsibility: Electric utilities.

> *Note: The electric utilities do not currently have standard forms of contract that include the above-described types of provisions. The Implementation Support Consulting Firm (notably its E&S Specialist and Legal Specialist) will therefore assist the utilities to prepare such contract templates when preparing each utility-/country-specific operational manual during the first year of programme implementation.*

Supporting roles:

- TSPs (negotiating/concluding contracts with the electric utilities)
- CDB (supervising and quality-assuring the work of the National Executing Entities)

Step 4: Sub-project implementation.

Description: The TSP that has been contracted by the utility will coordinate with the relevant customer to install the technology/ies at the customer's premises. During the installation period, the TSP will (in line with its contract with the utility) implement all relevant risk mitigation/management measures that are outlined in the ESHS plan. The TSP will also document where/how the measures were implemented to be able to provide the necessary E&S-related reporting to the electric utility (Step 5). In some instances, representatives of the electric utility may conduct site visits during the technology installation phase of the sub-

project implementation period to ensure ESHS plan measures are implemented and thus further confirm adherence with the relevant E&S standards.

Primary responsibility: TSPs.

Note: Some TSPs may require capacity-building support to properly mitigate/manage all types of E&S risks and potential impacts that could be expected under this programme. To address this need, the programme will provide training for all participating TSPs on E&S risk management, including to: (i) raise awareness of the types of E&S risks and potential impacts that may be expected; (ii) demonstrate how best to mitigate/manage such risks and potential impacts; and (iii) assist TSPs to understand how to properly document that they have implemented the necessary risk mitigation/management measures. This is expected to help equip the TSPs to fully comply with the obligations that will be integrated into their contracts with the utilities and (by extension) adhere to the E&S standards of the programme.

Supporting roles:

- Electric utilities (supervising on-site work by TSPs if/as needed)
- CDB (supervising and quality-assuring the work of the National Executing Entities)

Step 5: Sub-project reporting (post-installation reporting).

Description: Once the TSP has installed the technology/ies, and thus the installation phase of the sub-project has been completed, the TSP will submit post-installation reporting to the electric utility in line with its contractual obligations. This reporting will confirm successful installation of the technology/ies and that the customer is able to use them. As part of this reporting, the TSP will include evidence that all relevant ESHS plan measures were implemented during the technology installation phase and thus demonstrate adherence with the necessary E&S standards. In instances where a representative of the electric utility conducted a site visit during the installation phase, any evidence gathered during this site visit will also be integrated into the utility's records for the relevant sub-project. The electric utility will then review all E&S-related reporting/records as part of their broader determination as to whether the TSP has fulfilled its contractual obligations, and thus whether final payment should be processed and disbursed.

Primary responsibility: TSPs.

Supporting roles:

- Electric utilities (receiving, processing and reviewing post-installation reporting)
- CDB (supervising and quality-assuring the work of the National Executing Entities)

Step 6: Continued sub-project monitoring and reporting.

Description: For any sub-projects in which the E&S screening identifies risks and potential impacts (and for which the ESHS plan includes measures to be taken) *after* the installation phase of the sub-project, the electric utility will follow up with the customer at the appropriate time to ensure the necessary risk mitigation/management measures are implemented. For example, the proposed technologies and services under the IUS programme requires effective disposal at the end of their useful life. Solar panels, battery storage systems, HVAC, etc. may contain harmful materials or chemicals that are hazardous in nature if not disposed properly. Therefore, it is important to minimize their environmental impact and ensure efficient disposal and recycling of this equipment. That being the case, each utility-specific ESMP under the IUS programme will include a disposal plan that outlines the procedures for

decommissioning, dismantling, and safely disposing of RE and EE equipment installed during programme implementation. This plan should address environmental considerations, worker safety, and recycling strategies. Some specific measures that may be included in such plans (the implementation of which may be monitored under Step 6) are as follows:

- Public awareness and education: Educate stakeholders, including TSPs, customers, and the public, about the importance of responsible e-waste management. Promote awareness of locally available recycling options and encourage participation in recycling programs.
- Strengthen and enforce compliance: Strengthen and enforce compliance with local, regional, and national regulations regarding the disposal and recycling of electronic waste, including solar panels, BESS, HVAC, etc. This may include obtaining necessary permits and following specific guidelines for handling hazardous materials.
- Component separation and recycling infrastructure: Disassemble the solar panels and BESS into their individual components to facilitate recycling. Separate materials such as metals, glass, plastics, and electronic components for proper recycling or disposal. There are several recycling and waste management companies in the participating BMCs who could be partnered under the programme for recycling and disposal. Ensure that these recycling and waste management facilities adhere to applicable local, regional, or national environmental standard and guidelines on electronic waste management.
- Hazardous material handling: Implement safe handling practices for hazardous materials, such as lead-acid batteries in BESS or cadmium in thin-film solar panels or coolant in HVACs. Use appropriate personal protective equipment (PPE) and containment measures to prevent environmental contamination.

Primary responsibility: Electric utilities and national environmental ministries/bodies responsible for electronic waste management.

Supporting roles:

- Customers (engaging with electric utilities to facilitate follow-up sub-project monitoring and reporting)
- CDB (supervising and quality-assuring the work of the National Executing Entities)

A workflow that summarizes the steps and the roles and responsibilities of the stakeholders is presented on the next page.

Step 1: Sub-project submission

Utility customers will prepare and submit sub-project applications to their respective electric utility (as a National Executing Entity). Customers will not be expected to include a screening for E&S risks as part of their sub-project application as this is beyond their remit and area of expertise. That being the case, this step in the sub-project workflow would not involve any specific E&S-related actions.

Step 3: Sub-project (TSP) contracting

Once the electric utility has approved a sub-project, it will enter into a contract with a qualified TSP for the procurement and installation of the relevant technology/ies that the customer requested in their sub-project application. If an ESHS was developed for the sub-project (Step 3), the electric utility will include provisions in the contract that oblige the TSP to implement any relevant measures that were specific in the ESHS (e.g. occupational safety and health measures when installing rooftop PV, proper handling of coolants when installing/replacing air conditioners, etc.).

Step 5: Sub-project reporting (post-installation)

Once the TSP has installed the technology/ies, and thus the installation phase of the sub-project has been completed, the TSP will submit post-installation reporting to the electric utility in line with its contractual obligations. This reporting will confirm successful installation of the technology/ies and that the customer is able to use them. As part of this reporting, the TSP will include evidence that all relevant ESHS measures were implemented during the technology installation phase and thus demonstrate adherence with the necessary E&S standards.

Step 0: Sub-project preparation and (pre-) feasibility

In some instances, electric utility customers (e.g. MSMEs, households) may engage with their electric utility before submitting a sub-project application to seek support that can inform sub-project design and preparation.

Step 2: Sub-project review

The electric utility (as a National Executing Entity) will review the submitted sub-project application, including to ensure alignment with the eligibility criteria. The electric utility may decide to approve or reject the application, or revert to the customer to request additional information and/or adjustments to the application. If the electric utility is inclined to approve the application, it will also complete a screening for E&S risks and potential impacts with due consideration to the technology-specific E&S risks and potential impacts.

Step 4: Sub-project implementation

The TSP that has been contracted by the utility will coordinate with the relevant customer to install the technology/ies at the customer's premises. During the installation period, the TSP will (in line with its contract with the utility) implement all relevant risk mitigation/management measures that are outlined in the ESHS.

Step 6: Continued sub-project monitoring and reporting

For any sub-projects in which the E&S screening identifies risks and potential impacts (and for which the ESHS includes measures to be taken) after the installation phase of the sub-project, the electric utility will follow up with the customer at the appropriate time to ensure the necessary risk mitigation/management measures are implemented. For example the proposed technologies and services under the IUS programme requires effective disposal at the end of their useful life. Solar panels, battery storage systems, HVAC, etc. may contain harmful material or chemicals that are hazardous in nature if not disposed properly. Therefore, it is important to minimize their environmental impact and ensure efficient disposal and recycling of this equipment.

2.4.4. Project Exclusion Checklist

The project exclusion checklist is presented below. It is mainly the different sub-projects that may not be financed by the programme. They include the following:

- Category A sub-projects (i.e. those with potential for diverse, unique, irreversible or otherwise significant environmental or social impacts).
- Sub-projects that are located in wetlands or protected areas.
- Sub-projects that adversely affect cultural and historical heritage by destroying, diminishing or restricting access to assets of cultural and historical value.
- Sub-projects that include ammunition and weapons, military and police equipment or infrastructure.
- Sub-projects that include radioactive materials.
- Sub-projects which result in limiting people's individual rights and freedoms, or violation of human rights.
- Sub-projects that are unacceptable in environmental and social terms, in line with the exclusion list in the CDB ESRP.
- Activities prohibited by national legislation, regulations or ratified international conventions.
- Ethically or morally controversial sub-projects.
- Sub-projects that focus first and foremost on any of the following technologies:
    - Surge protection at the meter
    - Battery storage (Grid scale)
    - E-mobility
    - Building energy management system
    - Motors and drives
    - Combined heat and power
    - Power factor correction and other ancillary power quality services

3 Environment and Social Baseline

In this chapter, we present a detailed analysis of the environmental and social context in which the programme operates in the different countries. The environmental and social parameters that are presented and analysed include demography, occupation, income, hydrology and climatology, climate change and vulnerability, protected areas, land use, food security, ethnic group, gender, and safety conditions.

3.1 Introduction

This chapter of the report describes and analyses the environmental and social context in which the programme will operate. The main purpose of this step is to provide an understanding of current environmental and social conditions that form the baseline against which programme impacts can be predicted and measured during program implementation. The analysis focuses on the immediate context of the programme countries and aspects that relate to the identified impacts in order to be relevant to decisions about programme design, operation, or mitigation measures. The analysis covers a range of physical, biological, socio-economic and cultural conditions relevant and/or potentially impacted by the programme.

3.2 Barbados

Barbados is an island country located in the Caribbean located between latitude 13^0 N and longitude 59^0 W, with the nearest landmass located approximately 160 km away. The island is 34 km long and 23 km wide with a total land area of approximately 432 km^2, 92 km of coastline and an Exclusive Economic Zone (EEZ) of over 167,000 square kilometers[4]. A large part of the population of Barbados is settled along the west, south-east and south coasts of the island, mainly in the coastal areas of parishes like St. James, St. Philip, St. Michael, St. Peter and Christ Church. Suburbanization is a recurrent trend in Barbados with the capital city Bridgetown experiencing a decrease in its population, while other less densely population areas especially in east, northwest and north of Bridgetown are experiencing a gradual increase in their population[5]. Tourism is the main driver of economic growth in Barbados.

3.2.1 Demography

Statistics presented by countrymeters[6] in February 2023 based on analysis of data obtained from the Population Division of the United Nations Department of Economic and Social Affairs reveals that, as of February 18, 2023, the population of Barbados is estimated to be 290,176 inhabitants which is an increase of 0.33% compared to the population of 289,096 in 2022. Natural increase is positive, as the number of births exceed the number of deaths. Barbados has a relatively high level of immigration which has contributed to increase the population. The sex ratio of the total population is 0.985 (985 males per 1,000 females) which is lower than the global sex ratio. Barbados has a total area of 430 km^2 and a population density of 674.5 people per square kilometer as of February 2023. The population of Barbados has grown from less than 220,000 inhabitants in 1951 to the present 290,176 inhabitants. The population growth rate has however declined continuously from just over 2% in the 1950s to less than 0.5% in 2023. Barbados currently has the following population age distribution: 54,886 young people under 15 years old (27,445 males / 27,445 females); 206,730 persons between 15 and 64 years old

[4] Barbados National Assessment Report (2010). https://sustainabledevelopment.un.org/content/documents/1180barbados.pdf
[5] http://www.pnuma.org/publicaciones/FINAL%20Barbados%20NES%20Nov%202010-%20edited.pdf
[6] Countrymeters (2023). Barbados Population. https://countrymeters.info/en/Barbados#:~:text=Demographics%20of%20Barbados%202022,number%20of%20deaths%20by%20506.

(101,767 males / 104,960 females); 28,434 persons above 64 years old (11,109 males / 17,325 females).

Statistics from countrymeters equally reveal that, the total dependency ratio of the population in Barbados is 40.3% which is relatively low. This statistic which is less than 50% means that the pressure on the productive population in Barbados is relatively low. Child dependency ratio in Barbados is 26.5% while aged dependency ratio is 13.8%. Total life expectancy (both sexes) at birth for Barbados is 74.3 years. This is above the average life expectancy at birth of the global population which stands at 71 years (according to the Population Division of the Department of Economic and Social Affairs of the United Nations). Male life expectancy at birth is 72.1 years while female life expectancy at birth is 76.6 years.

3.2.2 Occupation

The main occupations in Barbados can be classified under the primary, secondary and tertiary sectors. Primary sector occupations include agriculture, animal husbandry, fishing, forestry and mining. For agriculture, major food crops grown are yams, sweet potatoes, corn, eddoes, cassava, and several varieties of beans and vegetables; while cash crops include sugarcane and cotton. Animal husbandry is equally an important activity with different types of livestock including cattle, sheep, goats and poultry. However, inadequate pasture is a major constraint to animal husbandry in Barbados. The fishing industry on its part employs over 2,000 persons, with a fleet of over 500 powered boats involved in the activity. The main types of fish caught are: turbot, flying fish, kingfish, tuna, swordfish and dolphin fish. Forestry is also an important activity that employs thousands of people although less than 20 hectares (49 acres) of original forests remain owing to sugarcane cultivation and the expansion of settlements and other agricultural activities. Mining is mainly carried out on deposits of limestone and coral. Clays and shale, sand and gravel, and carbonaceous deposits are also being exploited.

Secondary sector occupations include manufacturing and construction. Currently, over 15,000 Barbadians work in manufacturing notably in sectors such as electronics, sugar refining, rum distilling, cement production as well as sectors such as tinned food, drinks, and cigarettes.

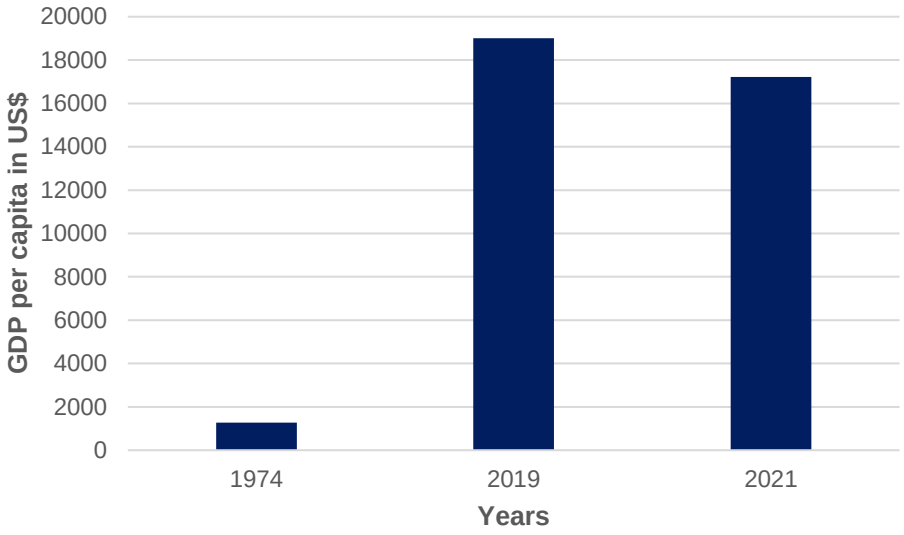
Tertiary sector occupations include tourism, informatics, financial services, cruise industry, rum and retail[7]. Since the 1960s, tourism is a crucial economic activity in Barbados employing over 10% of the active population (more than 30,000 people). The sector offers a range of services including tourist accommodations (from luxury hotels to modest self-catering establishments). The main tourist destinations are; St. George, St. James, St. John, St. Philip, St. Michael, St. Andrew, St. Joseph, St. Lucy, St. Thomas, St. Peter and Christ Church. Informatics is also a crucial economic sector, employing roughly 1,700 Barbadians yearly since 1999. The international business and financial services sector continue to be an important contributor to the economy of Barbados employing thousands of Barbadians. Retailing has equally emerged as an important economic activity, especially in Bridgetown where there are large department stores and supermarkets. In the countryside, most stores are small and family-run. Over 18,000 people work in the retail sector in Barbados.

3.2.3 Economy and Income Sources

Barbados like most Caribbean and small island states have a small, open economy. According to World Bank national accounts statistics, Barbados with a GDP of US$ 5.21 billion and a per capita Gross National Income (GNI) of US$ 17,380 is classified as a high-income country. World Bank national accounts and OECD national accounts data reveal that the GDP per capita for Barbados (in US$), increased significantly from 1,268.3 in 1974 peaking at 19,003 in the year 2019 before dropping to 17,225.5 in 2021 (Figure 3-1).

[7]Nations Encyclopedia (2023). Barbados – Services. https://www.nationsencyclopedia.com/economies/Americas/Barbados-SERVICES.html

Figure 3-1: GDP per capita



Since independence, Barbados has diversified its economy from a low-income agricultural economy into a more diversified economy, built on tourism and offshore banking making her one of the countries in the Caribbean's with the highest per capita income[8].

3.2.4 Hydrology and climatology

Hydrology

Barbados has no rivers and very little surface water of any kind. The country has abundant coral reefs and is surrounded by the Caribbean Sea to the west and the North Atlantic Ocean to the east[9]. There are a few springs fed by underground water stored in limestone beds, and some ravines which are temporarily filled during heavy rains. Cole's Cave found in the middle of the island is the best-known underground water channel in Barbados. Two small streams known as Joes River and Indian River cannot be used for either fishing or navigation. The western coast of Barbados borders the Caribbean Sea, and its eastern coast borders the North Atlantic Ocean. The low-lying island is almost totally ringed with undersea coral reefs. Freshwater supply is a problem in Barbados owing to droughts and frequent contamination of groundwater from flooding, saline intrusion and soil or pollutant infiltration. Barbados is ranked as one of the most water scarce countries in the world[10] with the main provider of potable water across the island coming from underground aquifers. Carter and Singh (2010) noted that "available supply of water in Barbados is well under the 1000 m^3 per capita set internationally as the limit below which a country is classified as 'water scarce".

Climatology

According to the World Bank's Climate Change Knowledge Portal[11], Barbados has a tropical, oceanic climate with hot and humid conditions throughout the year owing to its location on the windward side of the Caribbean archipelago. The average annual temperature is 26.8°C, with no drastic changes in either seasonal or daily temperatures. There are two distinct weather seasons which are the wet and dry season. The wet season runs from June to November which coincides with the Atlantic hurricane season. Monthly average rainfall ranges from a peak of

[8] UNFCCC (2021). Barbados 2021 Update of The First Nationally Determined Contribution. https://unfccc.int/sites/default/files/NDC/2022-06/2021%20Barbados%20NDC%20update%20-%2021%20July%202021.pdf
[9] https://www.nationsencyclopedia.com/geography/Afghanistan-to-Comoros/Barbados.html#ixzz7tf3ksTJe
[10] FAO 2016. *Country Profile – Barbados*. Food and Agriculture Organization of the United Nations (FAO). http://www.fao.org/aquastat/en/countries-and-basins/country-profiles/country/BRB
[11] World Bank (2021). Current Climate of Barbados https://climateknowledgeportal.worldbank.org/country/barbados/climate-data-historical

approximately 168.4mm from June to November (the wet season), to a low of approximately 39 mm, from December to May (the dry season). The weather is generally characterized by warm days, cool nights and relatively low rainfall during the dry season while high humidity, low wind speeds and high rainfall characterize the dry season. Maximum air temperatures are experienced during the wet season, peaking in September–October, with cooler temperatures occurring during the dry season. The climate of Barbados's is heavily influenced by the El Niño Southern Oscillation (ENSO). The El Niño phenomena brings hotter and drier conditions during the months of June to August while La Niña brings colder and wetter conditions to the region. These phenomena have been historically the main determinants of the severity of weather events in the country.

3.2.5 Climate change and vulnerability

A report presented by the Government of Barbados titled "Barbados 2021 update of the first Nationally Determined Contribution[12] reveals that the climate change risk profile of Barbados is dominated by coastal and weather effects, notably the intensity and frequency of hurricanes, sea level rise, increased tropical storms and storm surges coupled with other more slow-onset environmental impacts, such as droughts and floods. Barbados suffers from water scarcity, which is exacerbated considerably by changes in rainfall patterns. The frequency and intensity of extreme weather events like sargassum seaweed influxes, hurricanes and droughts are already adversely impacting Barbados which is worsened by socio-economic factors, location of Barbados' beaches and coastline characteristics. Since 2010, hurricanes Tomas (2010), Ernesto (2012), Harvey (2017), and Elsa (2021) and the tropical storms Matthew, Maria, Kirk and Gonzalo (2020) have impacted the island causing enormous damage and disrupting lives tremendously. Irrespective of the size of the storms and their epicenters, Barbados is usually disproportionately impacted owing to the peculiar characteristics of its coastline.

The high level of vulnerability of Jamaica to climate change is a major handicap to the development of its energy sector as energy infrastructure are exposed to enormous damage during extreme weather/climate events. The damages amounting to millions of US$ makes it difficult for the state to set up new infrastructure or repair damaged energy infrastructure. The consequence is recurrent blackouts across the entire country.

The reports of the World Bank[13] indicate that Barbados is among the most vulnerable countries in the world owing to its location along the hurricane belt where most transatlantic hurricanes pass. This makes Barbados vulnerable to all the major impacts associated with hurricanes, including flooding and storm surges. The hurricane season coincides with the wet season which runs from June to November with increased frequency during the months of September to November. Barbados is also at risk to other phenomena which are not classified as hurricanes such as floods, storms, droughts, and landslides. Climate change is a huge threat to economic growth and prosperity in Barbados as it affects the natural environment as well as socio-economic stability. In the Caribbeans, the vulnerability of Barbados is worsened by specific factors such as: water scarcity as a result of the country's unique hydrogeology; the country's location on the edge of the Caribbean and its exposure to extreme maritime conditions; high population density, which leads to high demand for already scarce resources, competition for space, exacerbated risk of natural hazards; relatively early socio-economic development compared to other Small Island Developing States (SIDS) in the region, which has led to unsustainable development practices in the past, a highly modified natural environment, lack of green spaces, loss of ecosystem services, ageing infrastructure and housing stock.

[12] UNFCCC (2021). Barbados 2021 Update of The First Nationally Determined Contribution. https://unfccc.int/sites/default/files/NDC/2022-06/2021%20Barbados%20NDC%20update%20-%2021%20July%202021.pdf

[13] World Bank (2021). Barbados – Historical Hazard risks. https://climateknowledgeportal.worldbank.org/country/barbados/vulnerability

3.2.6 Protected areas

Barbados has a plethora of protected areas consisting of national parks, marine parks, parks, nature reserves, marine reserves, private reserves, wildlife reserves, other protected areas and wetlands of international importance. The National Conservation Commission (NCC)[14] reports the following protected areas in Barbados: National Parks (Barbados); Marine Parks (Northeast Coast); Parks (Folkestone); Nature Reserves (Turner's Hall Woods); Marine Reserves (Carlisle Bay; Folkestone); Private Reserves (Flower Forest; Welchman Hall Gully); Wildlife Reserves (Barbados); Other Protected Areas (Chancery Lane Swamp; Graeme Hall Swamp Reserve; Harrison's Cave; Jack-in-the-Box Gully); Wetlands of International Importance (Ramsar) (Graeme Hall Swamp). The National Conservation Commission is a department of the Ministry of the Environment, Water Resources, and Drainage. It has played a crucial role in the enhancement of the environment and the conservation of natural flora and fauna over the years, as well as working on the preservation and sustainability of the Barbadian environment. The NCC, formerly the Parks and Beaches Commission, was established in 1970 and is in charge of environmental management. Its functions are many and varied, and include: the conservation of the natural beauty, topographic features, historic buildings, sites and monuments of Barbados; the control, maintenance and development of public parks, public gardens, beaches of Barbados.

3.2.7 Land use

The study of Gohar et al (2018) reported the main land use categories in Barbados to be agriculture, residential high density, residential low density, resource extraction, transportation, natural features, and vacant terrain. Land allocated for various uses in Barbados has undergone notable change over the past three to four decades. Carter and Singh (2010), based on information from the Barbados Report to Habitat II (1996), indicated that over the period 1966-1976, land reserved for urban development increased from 21.2% to 37.6%, while the amount of arable land declined from 57.7% to 46.2%. Given current trends, land formerly reserved for agricultural use risk being transformed to residential and other development (especially in some areas like St. Thomas, St. Michael and St. George) which goes against the drive to ensure a vibrant agricultural sector in the face of food insecurity. These changes are indicators of the pressure on Barbadian land resources which trigger negative environmental impacts. The increasing trend towards the transformation of agricultural lands into settlement areas for example increases the coverage of hard surfaces that result in increased runoff and potential for flooding.

3.2.8 Food security

The COVID-19 pandemic and the war between Russia and Ukraine have triggered food insecurity across the Caribbean in general and Barbados in particular owing to high dependence on food imports[15,16]. The impact on food security is disproportionately felt by vulnerable and low-income households. The CARICOM Caribbean COVID-19 Food Security and Livelihoods Impact Survey, conducted in collaboration with the World Food Programme in February 2022 found that across the Caribbean region, there has been an overall rise of 1 million people who are food insecure since the pandemic began, with several thousands in Barbados alone. The number of severely food insecure persons accounts for approximately 10% of the Barbadian population. The severity of food insecurity has increased by 44% within the past year and over 72% since the start of the pandemic in 2020. According to the World Food Programme (WFP), the high dependence on food imports by Barbados and other Caribbean countries has been compounded by the Russia-Ukraine conflict. Although there has been a slight improvement of the food

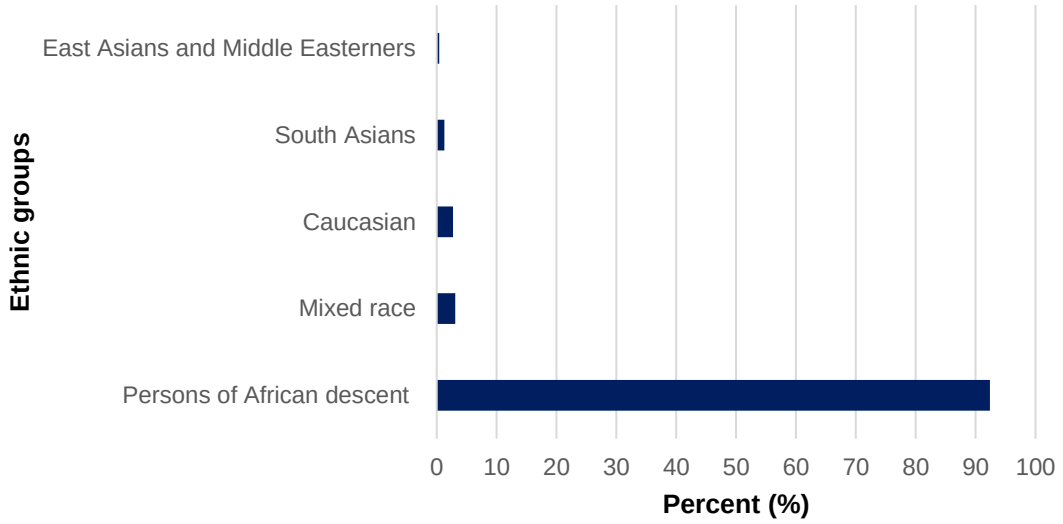
[14] Parks.It (2023). Parks, reserves and other protected areas in Barbados. http://www.parks.it/world/BB/Eindex.html
[15] WFP and CARICOM (2020). Caribbean COVID-19 Food Security & Livelihoods Impact Survey. https://docs.wfp.org/api/documents/WFP-0000116248/download/
[16] Forbes (2022). Caribbean Food Security likely to be impacted by Russia-Ukraine conflict. https://www.forbes.com/sites/daphneewingchow/2022/02/27/caribbean-food-security-likely-to-be-impacted-by-russia-ukraine-conflict/?sh=2520046639d4

insecurity situation of Barbados post the COVID-19 pandemic, increasing global demand for food, high energy prices, extreme weather, supply chain bottlenecks, tightening food stocks and export restrictions have strained food markets exacerbated by the war in Ukraine. Increasing food insecurity has adversely impacted the livelihoods of Barbadians.

3.2.9 Ethnic groups

Barbados has a population made up predominantly of persons of African descent (92.4%), with the other ethnicities being mixed race (3.1%), Caucasian (2.7%) and South Asians (1.3%); with East Asians and Middle Easterners constituting the remaining the remaining 0.4%[17] (Figure 3-2).

Figure 3-2: Ethnic groups in Barbados



3.2.10 Gender

A report by the UN Women Country fact sheet for Barbados18 indicates some progress on women's rights in Barbados. A majority of the legal frameworks (83.3%) promoting, enforcing and monitoring gender equality in line with the SDG indicator, with emphasis on violence against women exists already in Barbados. According to statistics from UN Women (2023), 69.9% of women of reproductive age (15-49 years) have satisfactorily adopted modern methods of family planning. Much still needs to be done however, to achieve gender equality in Barbados as 29.2% of women between the ages of 20 and 24 were married or in a union before their 18th birthday. The adolescent birth rate is 49.7 per 1,000 women aged 15-19 as of 2007, up from 45.8 per 1,000 in 2006 (UN Women, 2023). As of February 2021, only 20% of seats in parliament were held by women. Several indicators needed to monitor gender issues in line with the SDG on gender remain unavailable in Barbados. As of December 2020, just 36.9% of indicators needed to monitor the SDGs from a gender perspective were available (UN Women, 2023), with gaps in key areas, notably: unpaid care, violence against women and domestic work as well as major labour market indicators, such as the gender pay gap. Moreover, several issues – such as physical and sexual harassment, gender and poverty, gender and the environment, and women's access to assets (including land), lack comparable methodologies for regular monitoring. These gaps need to be closed in order for Barbados to achieve the gender related SDG commitments.

[17] PopulationU (2023). Barbados Population. https://www.populationu.com/barbados-population
[18] UN Women (2023). Barbados country study. https://data.unwomen.org/country/barbados

3.2.11 Safety conditions

A study on crime and safety condition in Barbados conducted by the Inter-American Development Bank (IDB) shows that Barbados is an exception when it comes to rising violent crime and insecurity in the Caribbean sub-region[19],[20]. In this report, the IDB says "Barbados seems to be the exception to the high rates of violent crime in the Caribbean region. It has one of the lowest homicide rates in the Latin American and Caribbean region (11 per 100 000 in 2015), although that rate has increased in recent years." It also indicated that: "Victimization rates for the five crimes measured in the survey were among the lowest in the region. However, there are two key factors to highlight: violent crime – specifically assault and threat – while low for the region have increased in the last decade and are still high compared to the international average." The IDB highlights the fact that, despite lower levels of homicide, violence indirectly affects a high percentage of the population. Again, the IDB noted that "Barbados is at a point where anti-crime efforts (both crime prevention and control), that are evidence-based and targeted at high-risk individuals and geographic areas, could prevent higher crime rates in the future. Moreover, according to the IDB "A comparison of the national victimization rates reported in 2015 with those of 2002 in Barbados shows that the percentage of the population victimized by burglary has gone down (3.2 per cent to 1.7 per cent), while rates of assaults and threats have gone up significantly (3.2 per cent to 5.1 per cent). Robbery (0.8 per cent to 1.1 per cent) and theft of private property (2.5 per cent to 2.7 per cent) increased slightly, though not significantly. The Greater Bridgetown Area has some of the lowest victimization rates for common street crimes compared to five other capital cities covered in the report. Only 3.4 per cent of residents reported being a victim of theft of private property (stealing without violence) and 1.9 per cent of robbery (stealing with violence) in a 12-month period. These victimization rates were significantly lower than international averages. Prevalence of burglary in Bridgetown (3.2 %) was slightly lower than Caribbean regional and international averages (4.1 and 4.5 respectively)".

3.3 Belize

Belize is a country found along the Caribbean coast of Central America bordered by Guatemala and Mexico to the south, west and north, respectively. It constitutes part of the Yucatan Peninsula and lies between latitude 15°45'and 18°30'north and longitude 87°30' and 89°15' west. Belize has a land area of 8,867 square miles (22,960 km^2), 95% being the mainland and 5% being different island coastal cayes (over 1,060). Belize has a coastline that extends for over 168 miles (280 km) which hosts the largest barrier reef in the northern hemisphere and the second largest in the world – the Belize Barrier Reef Complex. With the addition of the territorial sea, the total national territory of Belize is 18,000 square miles (46,620 km^2). There are six (06) administrative districts in Belize namely Cayo (found in the west and central), Corozal and Orange Walk (found in the north), Stann Creek and Toledo (found in the south) and Belize (found in the east and central)[21]. Topographically, the landscape of Belize is divided into two main physiographic regions. The first region comprises the Maya Mountains which dominate the western and central portions of the country with an altitude of 3688 ft (1,124 m) above sea level, and associated plateaus and basins dominating most of the southern part of the country. The second region is made up of the northern lowlands and a narrow coastal plain in the south. Close to 70% of the land cover is made up of natural vegetation with 40% being protected forest integrated into the Mesoamerican Biological Corridor.

[19] Nationnews (2017). What can be done to reduce crime in Barbados? https://www.nationnews.com/nationnews/wp-content/uploads/sites/2/2017/05/What-Can-Be-Done-to-Reduce-Crime-in-Barbados.pdf

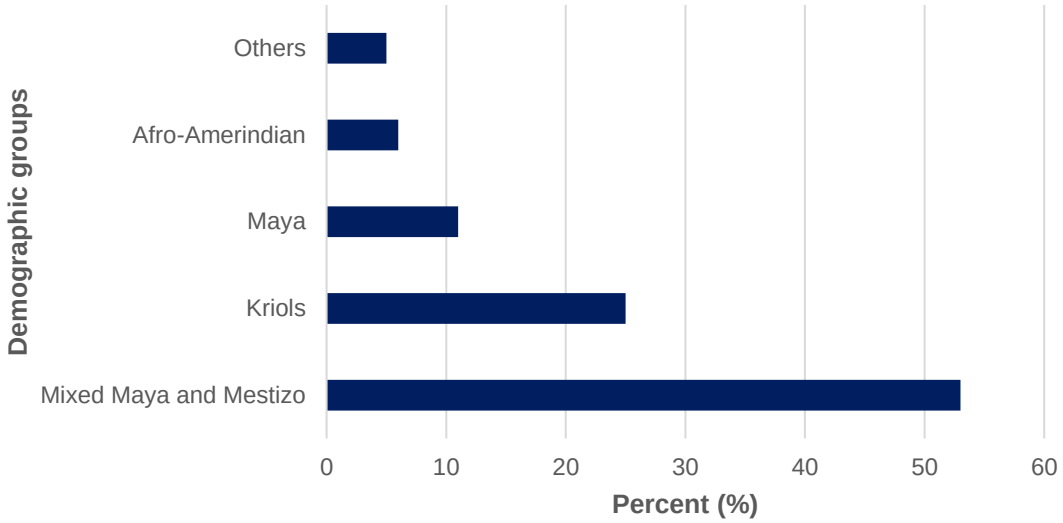
[20] Bailey, C. (2015) Crime and Violence in Barbados: IDB Series on Crime and Violence in the Caribbean. Retrieved from https://policycommons.net/artifacts/306575/crime-and-violence-in-barbados/1224636/ on 18 Feb 2023. CID: 20.500.12592/s4qrr2.

[21] Belize National Sustainable Development Report (2020). https://sustainabledevelopment.un.org/content/documents/1012belize.pdf

3.3.1 Demography

Belize is a multiracial country where approximately 53% of the population is of mixed Indigenous (Maya) and European (Mestizo) descent, 25% are Kriols, 11% are Maya and 6% are Afro-Amerindian (Figure 3-3). The rest of the population is made up of Chinese, North American, East Indian and Middle Eastern. The Europeans are mainly descendants of British and Spanish colonial settlers.

Figure 3-3: Demographic groups in Belize



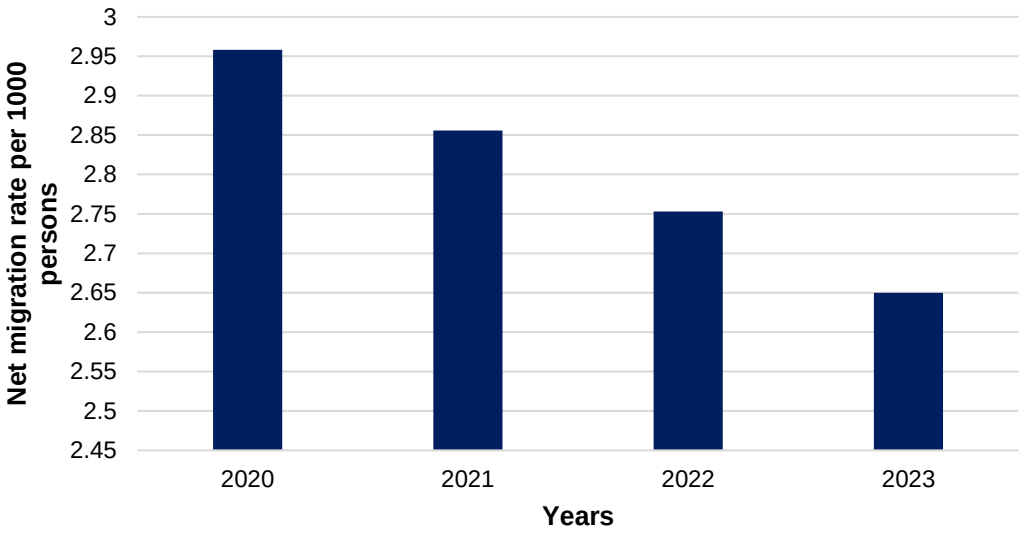
The population of Belize has grown from less than 100,000 persons in 1951 to over 400,000 inhabitants in 2023 (World Bank, 2021; Countrymeters, 2022)[22,23]. As of February 2023, the population of Belize stands at 421,754 inhabitants (Countrymeters, 2022)[24]. With a total surface area of 22,970 km^2, the population density of Belize stands at 18.4 persons per km^2. Between 1960 and 2019, the annual population growth rate in Belize hovered around 1.5% and 3.5%. Since the year 2020, the annual population growth rate of Belize has been hovering around 2%. With respect to the age structure of the population of Belize, as of February, 2023, there are 154,957 young persons under the age of 15 (79,048 males and 75,909 females); 250,911 persons between the ages of 15 and 64 (126,951 males and 123,960 females); and 14,891 persons over 64 years old (7,081 males and 7,809 females). The sex ratio in Belize stands at 0.97 (208,020 men to 213,751 women) with the median age being 23.5 years. Life expectancy in Belize is 68.2 years (66.5 years for men and 70 years for women), with the literacy rate being 82.7%. The total dependency ratio of the population is 67.7% with the child (15 years and below) dependency ratio being 61.8% and the aged (65 years and above) dependency ratio being 5.9%. Projections by the United Nations Department of Economic and Social Affairs: Population Division, reveals that by the year 2100, the population of Belize will be 687,935 inhabitants with a declining population growth rate reaching -0.08% in the year 2100.

The net migration rate in Belize has been on a decline since the year 2020 (Figure 3-4). The current net migration rate for Belize in 2023 is 2.650 per 1000 population, a 3.74% decline from 2022.The net migration rate for Belize in 2022 was 2.753 per 1000 population, a 3.61% decline from 2021. The net migration rate for Belize in 2021 was 2.856 per 1000 population,

[22] World Bank, 2021. Population, total – Belize. https://data.worldbank.org/indicator/SP.POP.TOTL?end=2021&locations=BZ&start=1960&view=chart
[23] Countrymeters, 2022. Belize Population. https://countrymeters.info/en/Belize#population_2022
[24] Countrymeters, 2022. Belize Population. https://countrymeters.info/en/Belize#population_2022

a 3.45% decline from 2020. The net migration rate for Belize in 2020 was 2.958 per 1000 population, a 3.36% decline from 2019.

Figure 3-4: Net migration rate in Belize from 2020 to 2023



3.3.2 Occupation

There are different occupations in Belize with agriculture, forestry, fishing, mining, manufacturing and the service sector among the most prominent[25].

Agriculture employs roughly one-fifth of the population. Although agriculture is a major occupation in Belize, just a small proportion of the land is actively used for farming with most of the farms being smallholdings of less than 40 hectares. Most of these farms are temporary forest clearings also known as milpas. Shifting cultivation is a common practice among farmers largely due to the nutrient-poor soils especially in the lowlands. Besides the smallholdings, there are plantations which are mainly devoted to the growing of export or cash crops like sugarcane, bananas and citrus fruits.

Forestry is equally an important occupation in Belize, although much of the forest has been destroyed by logging. Furniture and timber constitute the main products of the forestry industry with many sawmills dotted all over the country. Most of the logging in Belize is done by foreign logging companies with locals employed to carryout different activities.

Fishing is largely carried out in the coastal waters of Belize and plays an important role in nutrition/food security, employment and the livelihood of the population.

The main mining activity in Belize is gold mining. Locals also exploit minerals and resources like limestone, sand, clay, marble and gravel which are used for the construction industry.

Although the manufacturing sector is not well developed in Belize, it still plays an important role as an avenue for employment of the population. Belize has animal feed and fertilizer plants which serve the agricultural sector. There are also sawmills, roofing-materials plant and a wire and nail plant which serve furniture manufacturing and construction industries. There are also footwear, beer, soft drinks, rum, textile and cigarettes plants. The sugar refinery at Tower Hill is a life wire for the food processing industry. The processing of beef, canned fish, rice and citrus is also central to the food processing industry in Belize.

[25] Britannica (2023). Economy of Belize. https://www.britannica.com/place/Belize/Economy

The service sector employs a large portion of Belize's labour force and contributes enormously to the gross national product (GNP) of the country. Tourism and ecotourism are the main service sectors in Belize with several popular tourist attractions namely the Belize Barrier Reef (where swimming, fishing, diving and sport fishing are common), and the Mayan ruins notably El Pilar, Caracol, Cahal Pech and Xunantunich. Tourism remains predominant when compared to ecotourism.

3.3.3 Economy and Income Sources

The World Bank classifies Belize as an upper middle-income country with an estimated GDP per capita of $6,228.3 USD (2021 statistics)[26]. However, with the population living below the poverty line being 41% and an unemployment rate of 11.1%, this classification is put to question owing to the huge disparities in income levels. High rates of unemployment, drug abuse, poverty, malnutrition and violence in Belize can be attributed to heavy indebtedness, high vulnerability to environmental disasters and economic shocks, as well as weak national capacity.

3.3.4 Hydrology and climatology

Hydrology

There are 18 major and 16 minor or sub river catchments which Drain Belize's Maya Mountains and discharge into the Caribbean Sea[27]. Boles[28] identified 16 major watersheds grouped into six (06) watershed regions following general characteristics of soils, land use, rainfall, geology and topography. The watersheds are: the Northern, Northeastern, Central, Southeastern, Southwestern and Southern watershed regions. A World Bank report in 2010 reported that Belize has enormous freshwater resources with the renewable internal freshwater resources per capita being 48.02 thousand cubic meters. Besides the numerous rivers that flow across the country, there are several lakes and lagoons within Belize's low-lying coast. According to the Rural Water Unit of the Ministry of Rural Development, ground water represents an important source of freshwater for rural communities, where 95% of freshwater supply is obtained from ground water.

Climatology

The climate of Belize ranges from tropical to extra-tropical which is despite its subtropical location[29]. This is due to incoming cooler continental air from the north during winter months facilitated by the large landmass of neighbouring Mexico. The climate is characterized by a distinct wet and dry season separated by a cool transitional period with temperatures ranging from 21 to 32^{o}C. The annual mean humidity of Belize is 81.1%. Average annual rainfall varies between the northern and southern parts of Belize with the southern part having more rainfall (150 inches) than the northern part (60 inches). This dramatic increase is the result of the orographic effect of warm moist tropical air moving in from the east and rising over the Maya Mountains that increases the intensity of the rainfall. Most of part the rainfall (60%) occurs in the rainy season which begins in May in the southern part and June in the northern part. There are on average, 12 cold fronts across Belize which lower the yearly temperatures to 4 degrees centigrade.

The climate is influenced by three (03) large global/regional climatic systems which are the Pacific Ocean Climatic system, the Atlantic Ocean Climatic System, and sometimes by changes in the North American weather systems. The El Niño Southern Oscillation (ENSO) heavily

[26] World Bank (2023). GDP per Capita (Current US$)-Belize. https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=BZ
[27] Wikiwand (2023). Water resources management in Belize. https://www.wikiwand.com/en/Water_resources_management_in_Belize
[28] Boles, Ed. (1999) The Sibun River Watershed Atlas. Sibun Watershed Association and The Government Printer, Belmopan, Belize
[29] Belize National Sustainable Development Report (2020). https://sustainabledevelopment.un.org/content/documents/1012belize.pdf

influences Belize's climate, in addition to the intensification of the Inter-Tropical Convergence Zone (ITCZ)[30]. The El Niño phenomenon generally produces warmer conditions during the months of June to August, whereas La Niña produces wetter conditions typically associated with the tropical Atlantic cyclones. Mean annual temperatures have increased significantly in Belize since the 1800s. Recent reports from the Intergovernmental Panel of Climate Change (IPCC) reveal that the temperature in Belize is rising faster than the global average. The rate of increase in temperatures in Belize for the past 40 years has been 0.40 per decade along the coast and 0.45 in the interior, exceeding both the global 50-year and 25-year trends. According to the World Bank, Belize is ranked 8th out of 167 countries for climate risk.

3.3.5 Climate change and vulnerability

Belize is highly exposed to climate change and its adversities. World Bank statistics[31] show that mean annual temperatures have increased by 0.45°C at an average rate of 0.10°C per decade since 1960. The frequency of hot days and hot nights has increased by over 60 days per year while the frequency of cold days and cold nights has decreased by over 21 days per year. For rainfall, mean annual rainfall over Belize has decreased at an average rate of 3.1 mm per month per decade since 1960. Belize is also prone to the adverse impacts of hurricanes since it lies in the direct path of most Atlantic storms.

Belize is identified as one of those countries most vulnerable to the adverse impacts of climate change. A 2009 UNDP Development Studies paper analyzed the costs of inaction on climate change, characterizing the vulnerability of three economic sectors in Belize to the effects of climate change: agriculture and fisheries, energy and tourism. The results alluded to significant adverse impacts to the national economy should national and sector planning bodies not immediately include considerations of climate change/climate variability adaptation and mitigation in planning deliberations and processes. Floods and hurricanes have wreaked havoc on productive sectors and infrastructure especially energy infrastructure. According to the World Bank[32], Belize has several key vulnerabilities: Belize is prone to cyclone events and has experienced 14 storm events during the period 1931-2010, which adversely impacted the tourism and agriculture sectors in particular; the low-lying terrain in coastal areas makes it prone to flooding due to storms and hurricanes; Belize has so many rivers that take their rise from the mountains in the East which increases the risk of flooding during torrential rainfall; Belize's major infrastructure such as transportation, commercial and health facilities as well as public buildings are located on or near the coast, making them highly susceptible to sea level rise; droughts occur annually in some areas of Belize, and the projected increases in temperature makes it highly likely that these areas will experience more frequent drought conditions.

The energy sector in Belize is among the most vulnerable to the adversities of climate change especially the electricity grid system which is prone to being pulled down by floods or extreme cyclones triggering blackouts across the country. Recurrent droughts also make it difficult for the HEP stations to power the turbines and supply electricity across the country.

Belize is equally vulnerable to economic shocks owing to a plethora of factors including over dependence on external trade, limited diversification beyond agricultural production and tourism, regional competition and the loss of preferential market access to Europe.

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[30] World Bank (2023). Current Climate/climatology of Belize. https://climateknowledgeportal.worldbank.org/country/belize/climate-data-historical#:~:text=Belize%20is%20prone%20to%20hurricane,the%20majority%20of%20Atlantic%20storms.&text=Mean%20annual%20temperatures%20have%20increased,C%20per%20decade%20since%201960.

[31] World Bank (2023). Current Climate/climatology of Belize. https://climateknowledgeportal.worldbank.org/country/belize/climate-data-historical#:~:text=Belize%20is%20prone%20to%20hurricane,the%20majority%20of%20Atlantic%20storms.&text=Mean%20annual%20temperatures%20have%20increased,C%20per%20decade%20since%201960.

[32] World Bank (2023). Belize's vulnerability to natural hazards. https://climateknowledgeportal.worldbank.org/country/belize/vulnerability

3.3.6 Protected areas

Belize's national conservation trust which is represented by the Protected Areas Conservation Trust (PACT) Act was passed in 1996. This has led to the expansion of the protected areas landscape in Belize. There are presently over 103 protected areas in Belize which form the National Protected Areas System (NPAS) made up of different categories including Nature reserves; Wildlife sanctuaries; Forest Reserves; Marine reserves; Private reserves; National parks; Archaeological reserves; and Natural monuments (Figure 3-5). Some examples of these protected areas include: Billy Barquedier National Park; Bladen Nature Reserve; Blue Hole Natural Monument; Caye Caulker Marine Reserve; Cockscomb Basin Wildlife Sanctuary; Corozal Bay Wildlife Sanctuary; Crooked Tree Wildlife Sanctuary; Community Baboon Sanctuary; Fresh Water Creek Forest Reserve; Gladden Spit And Silk Cayes Marine Reserve; Golden Stream Corridor Preserve; Guanacaste National Park; Half Moon Caye Natural Monument; Honey Camp National Park; Laughing Bird Caye National Park; Maya Mountain North Forest Reserve; Mayflower Bocawina National Park; Rio Blanco National Park; Rio Bravo Conservation And Management Area; Sarstoon-Temash National Park; Shipstern Conservation And Management Area; Spanish Creek Wildlife Sanctuary; St. Herman's Blue Hole National Park; Tapir Mountain Nature Reserve; and the Victoria's Peak National Monument[33].

The PACT Act is the blueprint for conservation in Belize and it has been accredited as the national implementing entity status for the Adaptation Fund and guides the activities of agencies like the World Bank, the Global Environment Facility (GEF), the Meso-American Reef Fund (MAR Fund) and the Belize Nature Conservation Fund (BNCF). Protected areas managed by non-governmental organizations (NGOs), community-based organizations (CBOs) as well as the government of Belize with most day-to-day activities carried out by NGOs and CBOs. Protected areas in Belize have evolved over the years from focusing just on conservation to embracing ecotourism which is going a long way to foster conservation while improving the livelihoods of local communities.

[33] APAMO (2023). Protected areas in Belize. https://apamobelize.org/resources/belize-protected-areas/

Figure 3-5: Protected areas in Belize

Source (https://apamobelize.org/resources/belize-protected-areas/)

3.3.7 Land use

Belize's land use is dominated by smallholder and large-scale farms, settlements, forests, and pasturelands. Since the year 2000, forest cover has given way to smallholder and large-scale farms as well as pasturelands and settlements[34]. Smallholder and large-scale farms expanded by over 50% between the year 2000 and early 2020. Most of the expansion in croplands has occurred in the northern and central regions of Belize where the Mennonite community is largely involved as well as different sugar plantations and factories. Pasturelands have also grown exponentially especially with the high demand for beef and the export of live cattle to neighbouring countries like Mexico and Guatemala. There has also been an increase in the

[34] UNCCD (2020). Land Degradation Neutrality Target Setting Programme Final Report-Belize. https://www.unccd.int/sites/default/files/ldn_targets/2020-10/Belize_LDN%20TSP%20Final%20Report%20%28English%29.pdf

number of ranches across the country. Pasturelands have grown by over 35% between the year 2000 and early 2020.

3.3.8 Food security

According to a FAO report presented in 2021, Belize is one of the most food insecure countries in Latin America and the Caribbean[35]. The findings from the FAO report indicate that 45.5 % of the population in Belize is affected by moderate or severe food insecurity in 2021, compared to 40.9% in Latin America and the Caribbean as a whole. This situation is attributable to some individuals being forced, at certain times of the year, to reduce the quality of their diet, for lack of money or other resources, which leads to the reduction of the quantity of food consumed. The findings also reveal that the prevalence of severe food insecurity in 2021 estimated at 5.9% represents individuals who have almost surely reduced the quantity of food consumed and have at least a fifty percent probability of having gone for an entire day without eating, because of lack of means to get food. Food insecurity is higher in rural areas compared to urban areas. At least half of rural households experience moderate or severe food insecurity. In contrast, a third of urban households are affected by moderate or severe food insecurity. The gap is narrower for severe food insecurity only, with a prevalence of 6.46 % in rural areas and 4.26 % in urban areas. However, according to the Belize Global Nutrition Report (2018), Belize is 'on course' to meet three (03) targets for maternal, infant and young child nutrition (MIYCN) which is laudable.

3.3.9 Ethnic groups

The country is a melting pot of many races and over the years the multi-racial make-up has risen through the influx of many people of Central America, Asia, Europe and the Caribbean. The last population census (2010) shows that the main ethnic groups are: Mestizo, Creole, Ketchi, Yucatec and Mopan Mayas, Garifuna and East Indian maintains a large percent of Belize's population; with other ethnic groups being: German and Dutch Mennonites, Chinese, Arabs and Africans accounts for a small percentage of the population. The ethnic groups, however, are heavily intermixed[36].

3.3.10 Gender

According to the UN Women Country Fact Sheet[37], there has been some progress on women's rights in Belize. As of 2016, 64.9% of women of reproductive age (15-49 years) in Belize had their need for family planning satisfied with modern methods. However, there is still some work to be done in Belize to achieve gender equality. 33.5% of women aged 20–24 years old were married or in a union before age 18. The adolescent birth rate is 58.2 per 1,000 women aged 15-19 as of 2019, down from 65.4 per 1,000 in 2018. As of February 2021, only 12.5% of seats in parliament were held by women. In 2018, 7.8% of women aged 15-49 years reported that they had been subject to physical and/or sexual violence by a current or former intimate partner in the previous 12 months. Monitoring gender issues in Belize is difficult owing to the lack of indicators. The UN Women Country Fact Sheet for Belize reports that, as of December 2020, only 36.9% of indicators needed to monitor the SDGs from a gender perspective were available, with gaps in key areas, particularly: information and communications technology skills, and unpaid care and domestic work. In addition, many areas such as physical and sexual harassment, gender and the environment, gender and poverty, and women's access to assets (including land), lack comparable methodologies for regular monitoring. UN Women remarks that, "closing these gender data gaps is essential for achieving gender-related SDG commitments in Belize".

[35] FAO (2021). Prevalence of Food Insecurity in Belize. http://sib.org.bz/wp-content/uploads/FIES_AnalysisReportBelize.pdf
[36] UNFPA (2023). About Belize. https://caribbean.unfpa.org/en/news/about-belize#:~:text=The%20last%20population%20census%20(2010,large%20percent%20of%20Belize's%20population.
[37] UN Women (2023). Belize Country Factsheet. https://data.unwomen.org/country/belize

3.3.11 Safety conditions

Belize is reported to have one of the highest per capita murder rates in the world with increased incidents of violent crimes like home incursions, sexual assaults and murder, and armed robberies[38]. Cases of armed gangs operating in the densely forested parts of Belize have been reported especially close to the border with Guatemala where there are several tourist sites. This has led to regular patrols by the Belize Defence Force. Most of the assaults, robberies and murders take place in Belize City, although common all over the country, including tourist destinations like San Ignacio, San Pedro, Placencia and Caye Caulker.

3.4 Jamaica

Jamaica is an island country found in the West Indies. It is the third largest island in the Caribbean Sea, after Cuba and Hispaniola. Jamaica is about 235 km (146 miles) long and varies from 35 to 82 km (22 to 51 miles) wide[39]. It is situated some 160 km (100 miles) west of Haiti, 150 km (90 miles) south of Cuba, and 630 km (390 miles) northeast of the nearest point on the mainland, Cape Gracias a Dios, on the Caribbean coast of Central America[40]. The national capital is Kingston. Jamaica is a multi-racial country with a population of over 2.9 million, largely made up of African, European, East Indian and Chinese heritage[41].

3.4.1 Demography

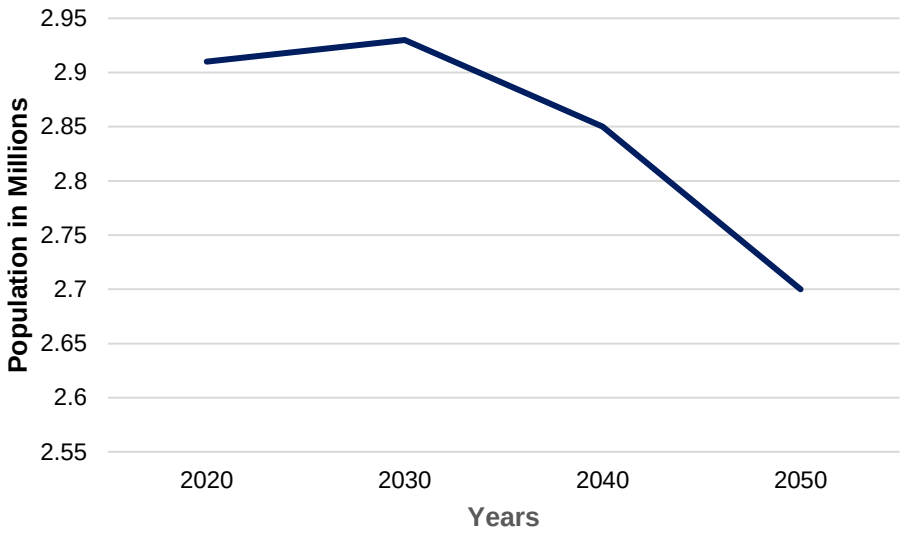
According to countrymeter statistics[42] analysed from UN population data, as of February 19, 2023, Jamaica has a population of just over 2.9 million inhabitants which represents 0.04% of the world's population. With a total area of 10,990 square kilometers, Jamaica has a population density of 272 persons per square kilometer. The sex ratio of Jamaica is 0.97 (1,471,507 men to 1,518,222 women). The median age is 29.4 years and life expectancy is 73.5 years (71.8 for men and 75.2 for women). Jamaica has a literacy rate of 88.7%. Statistics from the World Population Review[43] reveal that, over the past 50 years, Jamaica has experienced a highly unstable population growth with several ups and downs, with the most prominent being a very steep drop in population growth from 1980 to 1990. Population growth in Jamaica has slowed drastically in the past 15 years with a 0.26% growth in 2019. There is currently a decline in the 0-14 years age group, with the active and retired population experiencing the fastest growth – a scenario typical of developing countries[44]. The Planning Institute of Jamaica notes that Jamaica is on track to stabilize its population growth thereby staying in line with UN recommendations. Projections reveal that, Jamaica's population growth rate will continue to slow, before starting to slowly decline by the year 2030. The main contributing factors for this scenario are that net migration will remain at least -16,000 over the next 30 years with birth rate staying under 2 children for the average Jamaican woman. Current projections (Figure 3-6) believe that the growth rate will be down to -0.62% by the year 2050 and that the population of Jamaica will be roughly 2.91 million in 2020, 2.93 million in 2030, before beginning to decline towards 2.85 million in 2040 and 2.70 million by 2050[45]. Thus, Jamaica's population growth will increase very slowly over the next decades.

According to the International Organization for Migration's (IOM) 2018 report[46], thousands of Jamaicans have emigrated to other countries notably the United States, the United Kingdom, and Canada. Annually, roughly 20,000 Jamaicans are granted permanent residence in the

[38] GOV.UK (2023). Foreign Travel Advice Belize. https://www.gov.uk/foreign-travel-advice/belize/safety-and-security
[39] SIDS (2019). Jamaica. https://sids.paris21.org/en/country/caribbean/6-jamaica
[40] Britannica (2023). Jamaica. https://www.britannica.com/place/Jamaica
[41] UN (2023). Basic Facts about Jamaica. https://www.un.int/jamaica/jamaica/basic-facts
[42] Countrymeters (2022). Jamaica's population. https://truyenhinhcapsongthu.net/en/jamaica-population-2022-live-countrymeters/rO40SAh4IEOJ6x4
[43] World Population Review (2023). Jamaica's population. https://worldpopulationreview.com/countries/jamaica-population
[44] Countrymeters, 2022. Jamaica Population. https://countrymeters.info/en/Jamaica#population_2022
[45] Countrymeters, 2022. Jamaica Population. https://countrymeters.info/en/Jamaica#population_2022
[46] IOM (2018). Migration in Jamaica: A country profile 2018. https://publications.iom.int/books/migration-jamaica-country-profile-2018

United States. Jamaicans have also been emigrating to neighbouring Caribbean countries like Cuba, Guyana, Puerto Rico and the Bahamas. An estimated number of some 1.3 million Jamaican-born persons are residing abroad, amounting to at least 36.1 per cent of the national population.

Figure 3-6: Population projections for Jamaica 2020 to 2050



3.4.2 Occupation

The main occupations in Jamaica are in agriculture, forestry, fishery, mining and manufacturing as well as in the services industry notably trade, tourism, finance and transportation[47].

Agriculture has remained one of the mainstays of Jamaica's economy accounting for roughly one-twentieth of the GDP and about one-sixth of the labour force. Forestry is an important activity in Jamaica, employing many persons. There is however very limited timber production making the country to resort to importation of wood, paper and cork to satisfy local demand. The government is actively encouraging afforestation in order to increase timber production. Fishing is equally a major activity in Jamaica, providing jobs to thousands of people. Mining is not very important and accounts for just a small fraction of the GDP and employment. The main minerals mined include bauxite, Iron ore, gypsum, marble, Silica sand and limestone, with others being peat, gravel, and smaller quantities of lignite, copper, lead, zinc, phosphates, and Jamaica's black sands which contain some titanium.

Jamaica's manufacturing sector accounts for approximately one-eighth of the Gross Domestic Product (GDP) and one-tenth of the labour force. The major products are textiles, metal products, chemicals, printing, processed foods (sugar, molasses, rum), as well as clay products and cement.

Jamaicans are also employed in the trade sector as trade constitutes roughly one-fourth of the GDP and employs one-sixth of the labour force. The main exports are bauxite and aluminium, coffee, sugar, bananas and other agricultural products as well as beverages, chemicals and tobacco. Trading partners of Jamaica include the United States (by far the main trading partner), Trinidad and Tobago, Canada, China, Venezuela, Mexico, the Netherlands, Russia, the United Kingdom as well as the Caribbean Community (CARICOM).

Finance, tourism, and other services are huge components of Jamaica's economy, providing about half of both the GDP and employment. The financial sector is dominated by commercial

[47] Britannica (2023). Economy of Jamaica. https://www.britannica.com/place/Jamaica/Economy

banks, life insurance companies, credit unions and building societies which provide loans for housing, agriculture, industry and tourism. The financial sector provides jobs to thousands of Jamaicans. Jamaica's tourism sector is one of the most developed in the world, with tourists spending several days or weeks on the island. The main bases of activity for the tourism sector are Falmouth, Ocho Rios and Montego Bay, Kingston and other towns on the northern coast. Jamaica is famous for its pleasant climate, fine beaches, and superb scenery, including the waters of Montego Bay and the majestic Blue Mountains.

The transportation sector is a major contributor to Jamaica's economy employing many Jamaicans. Jamaica has a well-developed network of land, air and water transport which serves both the locals and the millions of tourists that visit the island annually.

3.4.3 Economy and Income Sources

According to the Statistical Institute of Jamaica (2022)[48], the economy of Jamaica expanded by 5.6 percent year-on-year in the third quarter of 2022, picking up from the 4.6 percent growth in the previous quarter. This was the sixth consecutive period of yearly growth, with support from both the goods and the services-producing industries as the economy continued to recover from the impact of the COVID-19 pandemic. Output growth accelerated for agriculture, forestry, and fishing and manufacturing. Despite slowing down, output was also high for hotels and restaurants, largely due to short-stay accommodation and restaurants, bars, and canteens. On a seasonally adjusted quarterly basis, the Jamaican economy grew by 2.1 percent, the most in five quarters, and compared to the 1.3 percent increase in the previous period.

According to the World Bank (2021), the Gross Domestic Product (GDP) for Jamaica was 15 billion US dollars in 2021 representing 0.01 percent of the world economy. GDP per capita stood at US$ 5,183.6 with income inequality being a major issue to be addressed by policymakers[49].

3.4.4 Hydrology and climatology

Hydrology

Jamaica is blessed with numerous rivers and streams which take their rise from the central highlands and flow downstream, although many disappear intermittently into caves and karst sinkholes. Because most of the rivers rapidly descend from the mountains, few are navigable for a long distance. The longest river in Jamaica is Rio Minho in central Jamaica which flows for some 100 km from the Dry Harbour Mountains to the Carlisle Bay. Rio Cobre near Kingston and the Black River in the west each flow for over 50 km. Jamaica is divided into 10 hydrological basins (Figure 3-7). These basins are areas that are drained by a specific surface water system. Generally, there is no flow from one basin to another. These ten (10) basins are further divided into 26 Watershed Management Units (WMUs) for the purposes of water management, development, and assessment. Each WMU is a watershed or group of watersheds that are drained by one river system. Generally, all the rivers flow north or south from a central mountainous area. An exception is the Plantain Garden River, which follows a fault and flows from west to east. Also, it can be generally stated that rivers flowing northward have a more constant flow; and they carry less sediment, due to geology, and less human activity. Jamaica equally has a plethora of aquifers including limestone aquifers, alluvial aquifers, other aquifers, and brackish to saline aquifers[50].

[48] Trading Economics (2023). Jamaica GDP Annual Growth Rate. https://tradingeconomics.com/jamaica/gdp-growth-annual
[49] https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=JM
[50] World Bank (2023). GDP per capita (Current US$) Jamaica.
https://www.sam.usace.army.mil/Portals/46/docs/military/engineering/docs/WRA/Jamaica/Jamaica%20WRA%20-%20English.pdf

Figure 3-7: Jamaica hydrological basins

Basin Number (See Fig. C-1)	River Name	Drainage Area (km^2)	Rainfall (Mm^3/yr)	Evapo-transpiration (Mm^3/yr)	Surface Water Runoff (Mm^3/yr)	Surface Water Reliable Yield[1] (Mm^3/yr)
I	Blue Mountain South	759	1,694	912	662	101.8
II	Kingston	232	312	208	81	10.2
III	Rio Cobre	1,218	2,009	1,450	187	11.40
IV	Rio Minho	1,892	2,420	1,641	225	26.7
V	Black River	1,274	2,530	1,530	346	48.9
VI	Cabarita River	946	1,890	1,019	420	0
VII	Great River	886	1,685	863	467	58.6
VIII	Martha Brae River	616	1,154	673	279	19.70
IX	Dry Harbour Mountains	1,574	2,450	1,302	457	27.6
X	Blue Mountain North	1,551	5,068	2,346	2,452	333

Source : Miller et al. (2001)[51]

Climatology

Jamaica has a tropical climate influenced by the northeast trade winds and the sea which occur throughout the year[52]. Coastal breezes blow onshore by day and offshore at night. During the winter months, from December to March, colder winds known locally as “northers” reach the island from the North American mainland. There is significant variation in temperature according to elevation owing to mountains, although there is little change from season to season. At the coasts, temperatures can reach lows of 32ºC and minimum temperatures in the low 4ºC have been recorded in the very high peaks. Average diurnal temperatures at sea level in Kingston, range between the high 31 °C and the low 22 °C. At Stony Hill, located 427 metres above sea level, the maximum and minimum means are only a few degrees cooler. Rains are seasonal and fall mainly in the months of October and May, although there are occasional thunderstorms which bring heavy showers in the summer months from June to September. The average annual rainfall in Jamaica is 2,100 mm, although there are considerable regional variations. The mountains force the trade winds to deposit more than 3,300 mm annually on the eastern parish of Portland, while little rainfall occurs on the hot, dry savannahs of the southwest and south. Hurricanes have occasionally struck Jamaica especially during the summer months, notably in 1951, 1988, 2004, and 2007.

3.4.5 Climate change and vulnerability

Jamaica is highly exposed to the adverse effects of climate change. Extreme climate events such as sea level rise, changing rainfall patterns, tropical and extratropical storms and cyclones, increasing air and sea surface temperatures have become recurrent triggering many other negative effects such as flooding, freshwater degradation, erosion and health issues[53,54]. Examples of how each extreme climate event is affecting Jamaica and its communities specifically is presented on the Figure 3-8;

[51] Miller, N.K., Harlan, A.E. and Waite, L. (2001). Water Resources Assessment of Jamaica. US Army Corps of Engineers Mobile District & Topographic Engineering Center, 67p. https://www.sam.usace.army.mil/Portals/46/docs/military/engineering/docs/WRA/Jamaica/Jamaica%20WRA%20-%20English.pdf
[52] Britannica (2023). Climate of Jamaica. https://www.britannica.com/place/Jamaica/Climate
[53] Tia T. (2018). Climate change in Jamaica: Examining the risks of climate change in Jamaica, http://www.aksik.org/node/3568
[54] Climate Studies Group, Mona - CSGM (2017). State of the Jamaican Climate 2015: Information for Resilience Building (Full Report). Produced for the Planning Institute of Jamaica (PIOJ), Kingston Jamaica. Retrieved from https://www.pioj.gov.jm/Portals/0/Sustainable_Development/WEB_FULL%20DOCUMENT_The%20State%20of%20the%20Jamaican%20Climate%202015.pdf

Figure 3-8: Extreme climate events, manifestations and impacts on Jamaica and its communities

Extreme climate events	Manifestations and Impacts on Jamaica and its communities	References
Sea level rise (SLR)	Tourism generated USD 2.2 billion in 2015 and USD 1.4 billion in 2016. But SLR in combination with different hydrometeorological events is threatening this source of revenue.	• CSGM, 2017
	Coastal erosion at Long Bay has occurred at a rate between 0.2 and 1.4 meters/year with an overall 62.6 meters of coastal erosion in the past 45 and 15 meters of shoreline erosion.	• CSGM, 2017 • McDougall, 2017
	Sea levels in Negril have increased by about 0.9 meters/year.	• CSGM, 2017
	Hydrometeorological events, such as hurricanes and floods, have exacerbated Negril's SLR induced coastal erosion, causing further negative impacts, including displacement of tourism, salt water intrusion and more severe storm surges.	• CSGM, 2017
Changing rainfall patterns	Jamaican residents have observed more unpredictable rainfall patterns. RCM projections indicate an overall drying trend for Jamaica. However, some communities are threatened by more intense rainfall and flooding.	• CSGM, 2017
	Warmer and wetter climate conditions with changes in precipitation may also contribute to more outbreaks of dengue in Jamaica.	• CSGM, 2017
	RCM projections indicate an overall drying trend for Jamaica.	• CSGM, 2017
	Bluefields has experienced increased dry periods and drought.	• CSGM, 2017
	However, extreme rainfall events in combination with SLR threaten Rio Minho and Portmore with flooding and storm surges, causing flooding, bank slips and erosion.	• CSGM, 2017
Tropical and extratropical storms and cyclones	Increased hurricane frequency also threatens Jamaica with decreased freshwater availability, erosion, and damage to infrastructure.	• CSGM, 2017
	Hurricane Mitch in 1998 caused a loss of 10 m^3 of beach sand near West End and Long Bay.	• CSGM, 2017
	Hurricane Ivan (2004), Wilma (2004) and Dean (2007) also caused substantial erosion in Jamaica. These events caused flooding, damage to infrastructure and harm to Negril's Coral Reef Park.	• CSGM, 2017
Increasing air and sea surface temperatures	Increasing air and sea surface temperatures in the Caribbean have been linked to increased tropical storm and hurricane activity in the region.	• Baptiste et al., 2016
	Increasing sea surface temperatures are also affecting biodiversity in Jamaica and health complications.	• Baptiste et al., 2016
	Warmer sea temperature is resulting in events like mass coral bleaching.	• Baptiste et al., 2016
	Overall increased temperatures influence diseases like leptospirosis; increasing temperatures, changing precipitation patterns and decreasing water availability and quality are conducive to these kinds of epidemics.	• IPCC, 2014

Source: Adapted from Tia T. (2018)[55]

[55] Tia T. (2018). Climate change in Jamaica: Examining the risks of climate change in Jamaica, http://www.aksik.org/node/3568

Jamaica is highly vulnerable to the adversities of climate change owing mainly to its dependence on freshwater sources, reliance on different economic goods and services as well as infrastructural inadequacies. Vulnerability to changing rainfall patterns is high in Jamaica because groundwater- which decreases with decreasing rainfall constitutes a large portion (84%) of its exploitable water supply (USAID, 2018). Jamaica's infrastructure largely located near beaches makes the country vulnerable because hurricanes and storm surges can easily destroy them (MacDougall, 2017). Moreover, high dependence on tourism and agriculture which are weather/climate dependent makes Jamaica highly vulnerable to climate change. As reported by Tia (2018), the most vulnerable communities in Jamaica include: Annotto Bay is laid in a flood prone area and lacks adequate building regulations for draining during different hydrometeorological events. In addition to these factors, development in Annotto Bay is incentivized by low building costs, placing development in harm's way; Communities like St. Catherine do not have access to running water because it would take too much energy to pump water over its hilly terrain, so they have to depend on consistent rainfall and groundwater; St. Elizabeth experiences poor irrigation systems, making it more vulnerable to less frequent rainfall and drought; Despite policy meant to help protect the area, the Jamaican government has allowed for mining in Long Bay, subtracting even more sand from the already eroding beach barrier system. The government has allowed for development and construction for beachfront tourist attractions. This has made Negril's beaches and people even more vulnerable to climate change hazards.

The high vulnerability of Jamaica to the adversities of climate change has a major impact on the energy sector notably Jamaica's energy infrastructure which suffers enormous damages during extreme weather/climate events such as tropical cyclones. This often results to recurrent blackouts.

3.4.6 Protected areas

Jamaica has several protected areas consisting of marine parks and forest reserves some of which are Hellshire (Healthshire) Hills Forest reserve, Blue and John Crow Mountains National Park (encompassing the Blue Mountains and the John Crow Mountains as well as the Port Royal Mountains), Cockpit Country Forest reserve, Portland Bight and Negril, Litchfield Forest reserve[56]. The Blue and John Crow Mountains National Park covers 780 square kilometres and is home to thousands of tree and fern species, insects and rare animals such as the Homerus swallowtail and the largest butterfly in the western hemisphere. In 1992, the first marine park was established in Montego Bay, covering 15 square kilometres. Other marine parks are found at Ocho Rios and Negril. In 2015 the Blue and John Crow mountains were collectively designated a UNESCO World Heritage site. They were cited as a mixed (cultural and natural) site on the basis of their biodiversity and their role in Jamaica's history as a place of shelter and settlement for escaping Taino slaves and Maroons (enslaved Africans who fled captivity and formed communities in the highlands).

3.4.7 Land use

Human settlements, forestry and agriculture are by far the most widespread land uses in Jamaica with agriculture and forestry occupying over 87% of the land area[57]. With just over 4% of the land area occupied by rural and urban residential settlements, they are a distant third from agriculture and forestry. Three (03) main types of agricultural use dominate the landscape of Jamaica namely plantation crops grown for export; mixed farming of food crops for export and local consumption; as well as pasture for beef and dairy cattle for domestic consumption. Agriculture is not achieving the required objectives of food self-sufficiency, livelihood improvement and sustained development owing to several factors including: small inefficient farms located on low productivity lands; unavailability of land and security of tenure; under-

[56] Britannica (2023). Jamaica: Introduction and Quick Facts. https://www.britannica.com/place/Jamaica
[57] National Environment and Planning Agency - NEPA (2020). Landuse Management. https://websitearchive2020.nepa.gov.jm/policies/neap/landuse.htm

utilization of large acreages of arable lands; and over-intensive cultivation and misuse of steep slopes.

There are currently a great number of conflicts among competing land uses in Jamaica for the choicest locations and sites and for government-owned land within the public sector. Large swaths of fertile agricultural land and areas of valuable mineral deposits are being used for other purposes by the informal and formal sectors. In some cases, public amenities are being built in inappropriate locations owing to the ease of acquisition of these sites. The poor land use management situation has been worsened by factors like: inadequate planning at the national and regional levels; a low level of participation by local communities, community-based organizations and NGOs in the planning and monitoring process resulting in a lack of commitment at the implementation stage; the goals enunciated by the National Physical Plan have not been achieved primarily due to the lack of co-ordination between economic and physical planning, consequently land use planning tends to be isolated from national economic development strategy; and an inadequate land information data-base; duplication of effort and inefficient use of resources with too many agencies in Government having responsibility for land management.

Less than optimum land use management has been manifested in rural/urban drift and a plethora of environmental and socio-economic problems in the human settlements of the urban areas; deforestation and the destruction of watersheds; and inefficient and destructive agriculture.

3.4.8 Food security

According to the UN Office for the Coordination of Humanitarian Affairs (2022)[58], in the past few years, Jamaica's agricultural production has witnessed a sharp decline while the country's bill for food importation has risen continuously. Owing to the devastating impact of the COVID-19 pandemic on livelihoods, there has been a doubling of the number of people suffering from food insecurity in Jamaica to over 400,000 which is approximately 13% of the total population – with a disproportional adverse impact on female-headed households. A recent survey on food security and livelihood led by CARICOM[59] revealed that more than 40% of respondents reduced their food consumption in the face of rising prices.

3.4.9 Ethnic groups

Jamaica's population is largely (90 per cent, 2006 Census) made up of people of West African origin. There are also people of mixed heritage with combinations that include European-African, Afro-indigenous, Chinese-African and East Indian-African[60]. People of mixed heritage are fewer in number and most trace their ancestry to the United Kingdom, India, China, the Middle East, Portugal, and Germany[61]. As of 2011, 92.1% of the population are Afro-Jamaicans, 6.1% mixed and 0,8% Indian.

3.4.10 Gender

According to the UNICEF Country Report and Situational Analysis for Jamaica (2007)[62], close to half of Jamaican households are headed by a woman (46.3%) and in the poorest quintile, this proportion increases to 54%. While in the richest quintile, female headed households make up only 37% of all households. The main characteristics of female and male headed households according to this report are: Female Headed Households (FHH) are larger in size, with a greater

[58] OCHA (2022). Jamaica-Country Profile. https://reliefweb.int/report/jamaica/jamaica-country-profile-june-2022
[59] WFP (2022). Caribbean food security and livelihoods survey. https://docs.wfp.org/api/documents/WFP-0000142384/download/?_ga=2.236376705.1810298908.1676807078-122960444.1676807078
[60] Minority Rights (2023). Minorities and Indigenous Peoples in Jamaica. https://minorityrights.org/country/jamaica/#:~:text=The%20majority%20of%20the%20population,African%20and%20East%20Indian%2DAfrican.
[61] Britannica (2023). People of Jamaica. https://www.britannica.com/place/Jamaica/People
[62] UNICEF (2007) Situational Analysis on Gender Disparities in Jamaica. https://www.unicef.org/jamaica/reports/situation-analysis-gender-disparities-jamaica

number and proportion of children than Male Headed Households (MHH), overall (37% and 28%, respectively) and resources available to children in FHH are smaller and scarce than for children living in MHH, especially for the poorest quintile. The report equally notes that, in more than 78% of cases, FHH are actually single female headed households, which means that children living in 36% of the Jamaican households grow up without an adult male figure - as many men "are either in prison, dead due to violence, or do not care" and very often without having the possibility of knowing their fathers, whose name is absent from birth certificates.

According to the World Banks's Jamaica Country Gender Scorecard 2021 report[63], Jamaica has made significant strides towards gender equality in the last two decades. Gains have been made in various areas, including declines in fertility and the achievement of gender parity in primary school enrollment and completion. However, persistent challenges remain, and the COVID-19 pandemic has contributed towards widening gender gaps, which potentially reverses decades of gains. For instance, adolescent fertility rates remain higher than those for the average Latin American country; boys are less likely than girls to enroll in secondary education (72% vs. 76%, respectively) and children are not learning the basics in school. Test scores are particularly low for boys who tend to drop out of school to engage in paid work. Similarly, 35% of women are enrolled in tertiary compared to 20% of men. The report further notes that, men appear to be disadvantaged in specific areas. They are significantly more likely than women to die from non-communicable diseases, due to the prevalence of major risk factors such as increasing levels of physical inactivity, unhealthy diets, and the use of tobacco. Homicide rates are particularly high among young men, especially when compared with other countries in the Caribbean. In addition, the report indicates that, despite improvements in educational attainment, Jamaican women do not have the same access to economic opportunities as men. With only 59% of women in the workforce (compared to 72% of men in 2019), Jamaica still trails some countries in the region in terms of female labor force participation. This is partly due to the disproportionate responsibility they have for unpaid domestic and care work and gender norms that dictate the role of women and men in society. When women do participate, their jobs on average tend to be of lower quality and poorly paid, particularly in rural areas.

The World Bank's Jamaica Country Gender Scorecard 2021 report equally highlights the fact that the COVID-19 pandemic has further exacerbated existing gender gaps and reversed recent gains in economic opportunities for women. The labor market impact of the crisis at its onset fell disproportionately on women, partly because they had a higher participation in sectors that have been hardest hit by the pandemic, including tourism, accommodation, and personal services. Jamaican women have also experienced a significant increase in the time allocated to unpaid domestic and care work due to school closures and confinement measures. Recent household phone survey data collected in June 2021 show that 61% of women reported increases in the amount of time allocated to childcare during the pandemic, compared to 51% of men. Gender gaps in labor market outcomes have also widened with the pandemic. While 25% of women reported that they were no longer working post COVID-19 outbreak, the figure was 11% among men (World Bank High Frequency Survey 2021, HFS)[64]. Gender-based violence mainly affecting women continues to be a concerning phenomenon in the country. Although there is a scarcity of reliable data on gender-based violence in Jamaica, the existing evidence indicates that one in every four Jamaican women (25.2%) have experienced physical violence from a male partner, while almost half (47.3%) of all partnered women have been subject to controlling behaviors.

3.4.11 Safety conditions

A report by the UN Office for the Coordination of Humanitarian Affairs[65] revealed that in 2021 – and for the second year running, Jamaica had the highest murder rate in Latin America and the

[63] World Bank's Jamaica Country Gender Scorecard 2021 report, https://documents1.worldbank.org/curated/en/824961645691156835/pdf/Jamaica-Country-Gender-Scorecard .pdf
[64] World Bank (2021). COVID-19 high frequency phone survey. https://microdata.worldbank.org/index.php/catalog/4533
[65] OCHA (2022). Jamaica: Country Profile. https://reliefweb.int/report/jamaica/jamaica-country-profile-june-2022#:~:text=In%202021%2C%20for%20the%20second,100%2C000%20in%20the%20deadliest%20districts.

Caribbean. The island recorded more than 1,460 murders in 2021, pushing the murder rate to nearly 50 per 100,000 people, while reaching a staggering 190 per 100,000 in the deadliest districts. According to Government authorities, gangs accounted for nearly three quarters of the country's homicides in 2021. Amid spiraling violence and insecurity, the Government continues to expand Zones of Special Operations across the island, providing authorities with the power to conduct searches without warrants and impose curfews.

4 Environmental and Social Risks and Impacts and Mitigation Measures

This chapter presents the process for ensuring that environmental and social risks are taken into consideration during project implementation and that safeguards are applied in order to minimize risks.

4.1 Methodological approach

At the screening stage, the programme was deemed to be a Category B programme for environmental and social risks. This is because the nature of the investments to be made through the sub-projects have the potential for limited adverse environmental and social impacts and/or risks, all of which can be readily identified, mitigated and managed. Screening was done at the conceptual phase of the programme by the CDB. The screening and analysis were specifically documentary. During the preparation of the programme document, we undertook environmental and social risk evaluation and management analysis with emphasis on exchange with stakeholders in the three countries (See Appendix A for stakeholders consulted). The results are presented here and are based on:

- Application of the GCF environmental and social safeguard standards.
- Documentary analysis.
- Interviews with stakeholders who are well-informed on risks associated with programmes and projects in the three countries.

The identified environmental and social risks, their links with the safeguards, an assessment of the magnitude of the probability and impact of each risk, a description of the risk and the risk mitigation measures are presented below.

4.2 Results

4.2.1 Risk and impact of the programme in the three countries

Before presenting the risk and impacts associated with the programme in the three countries, it is important to describe the technologies that are most likely to be financed through this programme. These technologies include the following:

- LED/efficient lightening
- Efficient A/C cooling/HVAC
- Solar rooftop PV (With or without storage
- Solar water heater

The decision to select them was borne out of the following consideration:

- They provide mitigation and adaptation benefits;
- They provide capital cost that is low enough to be financially feasible;
- Is an established /proven technology with likelihood of local capacity to implement;

- They are scalable and replicable;
- They are relatable to the IUS programme.

Figure 4-1 summarises the results of the risks and impacts of the IUS programme on GCF's ESS in the three BMCs. These risks and impacts are assessed based on document review such as policies, reports, etc. as well as stakeholder consultations.

Figure 4-2 elaborates possible risk mitigation measure for the risks categorized as medium impact, moderate risk.

The following key can be used in referring to the table.

Key	
	Low risk low impact
	Medium impact, Moderate risk

Figure 4-1: Summary results of the risks and impacts of the pragramme in the three countries

Environmental and Social Standards	Environmental & Social Risks and impacts	Barbados	Belize	Jamaica
Gender	The Integrated Utility Service (IUS) programme provides an opportunity for utility customers to opt-in to participate in the initiative irrespective of their gender. The programme activities are not expected to inadvertently create, exacerbate or perpetuate gender-related inequality issues. In contrast, the programme will provide much needed access to financing for the procurement of Renewable Energy (RE) and Energy Efficiency (EE) technologies, without prejudice to gender. Given the unprejudiced access to programme support, women and by extension girls will be in a better position to procure both RE and EE technologies that can result in electricity bill savings. Furthermore, the Programme Operations Manual, as well as programme-supported communication and business development strategies will emphasise and actively support gender and social inclusion. The programme has also envisaged gender sensitization training for key stakeholders. The programme is therefore expected to have an overall positive impact on gender-related inequality. That said, women and other marginalized groups (e.g. PWD) face barriers that (if left unaddressed) may inhibit them from fully participating in/benefiting from the programme. To respond to this need, the programme design is therefore informed by a Gender Assessment and Gender Action Plan (GAP), which includes specific measures that actively aim to assist women and other marginalized groups to overcome such barriers. The GAP (rather than the E&S risk management process and instruments) is considered to be the most appropriate and effective means of addressing such challenges and inequalities.	Not known to occur; low impact Low risk	Not known to occur; low impact Low risk	Not known to occur; low impact Low risk
	The programme design also recognizes that there are potential risks associated with Gender-Based Violence (GBV) and Sexual Exploitation, Abuse and Harassment (SEAH) that must be considered and addressed. There are two main situations to be considered in this regard: (i) during the installation of RE/EE technologies (particularly if the installation is happening indoors at the customer's premises, e.g. for efficient air conditioners) that will occur as part of sub-project implementation; and (ii) during in-person trainings, energy audits, and	Could occur; medium impact Moderate risk	Could occur; medium impact Moderate risk	Could occur; medium impact Moderate risk

Environmental and Social Standards	Environmental & Social Risks and impacts	Barbados	Belize	Jamaica
	other events that are organized as part of the TA component. The risks associated with the first situation are best addressed at sub-project level as part of the E&S risk management process and are therefore further elaborated in Table 4-2. The risks associated with the second situation are best addressed as part of the broader package of measures being implemented as part of the GAP, as the mitigation and management of such risks is primarily shaped by how these relevant TA activities are designed and delivered.			
Indigenous Peoples	As noted above, the IUS programme utilizes an opt-in model through which customers have the opportunity to develop and submit applications for support. The programme activities are not expected to inadvertently create, exacerbate or perpetuate discrimination against Indigenous Peoples (IPs). The involvement of/support to IPs is not among the primary objectives of the programme, but they may nevertheless benefit from programme support (notably in Belize and Jamaica) if they opt to do so. The programme aims to promote an innovative business model and facilitate clean energy and energy efficiency adoption among all residents of the participating countries. Similar to addressing the gender elements, the programme will ensure socially inclusive elements in its Programme Operations Manual, as well as in the programme-supported communication and business development strategies etc. The programme has also envisaged environmental and social inclusion training for key stakeholders. Accordingly, IPs that do pursue sub-projects will benefit from affordable RE/EE technologies that can, inter alia, lower their electricity costs. The programme is therefore expected to have an overall positive impact on IPs. However, IPs face barriers that (if left unaddressed) may inhibit them from fully participating in/benefiting from the programme, including language constraints and limited financial literacy, among others. Such barriers are primarily linked to whether/to what extent IPs are able to 'opt-in' to the programme (i.e. entry into the pipeline), rather than being risks that can be effectively mitigated/managed as part of the implementation of specific sub-projects. That being the case, such barriers will be addressed through the development of country-specific Indigenous Peoples Plans (IPPs) for Belize and Jamaica, which will be	Could occur; medium impact Moderate risk	Could occur; medium impact Moderate risk	Could occur; medium impact Moderate risk

Environmental and Social Standards	Environmental & Social Risks and impacts	Barbados	Belize	Jamaica
	developed during the first year of programme implementation (PY1) in close consultation with indigenous groups. Each IPP will be guided by the key principles and requirements that are outlined in the Indigenous Peoples Planning Framework (IPPF) that is attached to this ESMF as Appendix C.			
Community health safety and security	If air-conditioning units and solar rooftop panels are not properly disposed after usage, there is a possibility that the refrigerant/coolant from the ACs or the toxic chemicals in the solar panels might inflict adverse risks and impacts to community health and safety. In addition, the programme can result in increased use of renewable energy products, encouraging the bi-directional flow of energy and the use of smart grids. There might be a suggestion that this can result in increased cyber risks on the electricity grid. The process of installing some of the eligible technologies – particularly rooftop PV and solar water heaters, as this would be done outdoors – may also create noise and dust that could negatively affect nearby households and businesses. Given the simple and small-scale nature of the eligible technologies, this is generally not expected to be a significant risk/concern, but is noteworthy nonetheless.	Could occur; medium impact Moderate risk	Could occur; medium impact Moderate risk	Could occur; medium impact Moderate risk
Child labour and forced labour	Although there are reported incidences of child labour and forced labour in the Caribbean, this is not known to be an issue in the professional energy services sector. The Technology Service Providers (TSPs) with/through which the programme will work will all be established service providers with professional and highly trained staff. The TSP qualification criteria (with which compliance is mandatory for a TSP to receive a contract under the programme) to be developed during PY1 will further reinforce the fact that only established service providers with qualified and professionally trained staff will be eligible, and that the use of any form of child labour or forced labour by such service providers will be strictly prohibited.	Not known to occur; Low risk	Not known to occur; Low risk	Not known to occur; Low risk
Biodiversity conservation	The construction and placement of RE projects (i.e., Solar PV projects) can negatively harm the ecosystem. For example, ground-mounted Solar panels can take up land space and drive animals out of their habitat	Could occur; medium impact Moderate risk	Could occur; medium impact Moderate risk	Could occur; medium impact Moderate risk

Environmental and Social Standards	Environmental & Social Risks and impacts	Barbados	Belize	Jamaica
Labor and working conditions	If there is no protection from unsafe practices which could occur for any activity at roof level, there is the danger that when installing solar rooftop. workers installing rooftops might fall off if safety equipment are not used.	Could occur; medium impact Moderate risk	Could occur; medium impact Moderate risk	Could occur; medium impact Moderate risk
Resource efficiency and pollution prevention	Given that the IUS program advocates customer procurement of eco-friendly technologies such as RE and EE technologies, there is no risk that the program activities might lead to the releasing of pollutants (chemicals and other hazardous materials) to the environment. Furthermore, the program will not lead to significant emissions of short- and long-lived greenhouse gases, given its designed to promote renewable energy technologies	Not known to occur; low impact Low risk	Not known to occur; low impact Low risk	Not known to occur; low impact Low risk
Land acquisition and involuntary resettlement	The program will not acquire land or lead to involuntary resettlement of the population in the three countries. It is designed to provide renewable energy products like solar roof top, efficient lightening, and air conditioning to customers. Indeed, the program actions are within private and personal properties and will not be affecting communal lands parks or public lands.	Not known to occur; low impact Low risk	Not known to occur; low impact Low risk	Not known to occur; low impact Low risk
Cultural heritage	The program will not be implemented in areas that are considered to have archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values or contains features considered as critical cultural heritage	Not known to occur; low impact Low risk	Not known to occur; low impact Low risk	Not known to occur; low impact Low risk

4.3 Mitigation of risks and impacts

Figure 4-2: Environment and social risk and mitigating measures

Environmental and Social Standards	Environmental & Social Risks and impacts	Potential risk or impact	Mitigating Measures
Community health safety and security	If air-conditioning units and solar rooftop panels and not properly disposed after usage, there is a possibility that the refrigerant/coolant from the ACs or the toxic chemicals in the solar panels might inflict adverse risks and impacts to community health and safety. In addition, the programme can result in increased use of renewable energy products, encouraging the bi-directional flow of energy and the use of smart grids. There might be a suggestion that this can result in increased cyber risks on the electricity grid. The process of installing some of the eligible technologies – particularly rooftop PV and solar water heaters, as this would be done outdoors – may also create noise and dust that could negatively affect nearby households and businesses. Given the simple and small-scale nature of the eligible technologies, this is generally not expected to be a significant risk/concern, but is noteworthy nonetheless.	Medium impact, Moderate risk	As part of the country-level ESMPs to be developed during PY1, a utility-specific disposal plan will also be developed with each utility. This will provide clear guidelines for the proper disposal of used air-conditioning units and solar rooftop panels, as well as other programme-supported technologies as relevant. In addition, there should be increased education in cybersecurity, and ensuring that the necessary frameworks to protect against the various cyber risks are in place, monitored and enforced. The programme could also use Li batteries which are not as impactful as lead acid or sealed gel batteries. Also, vitrified panels could be used. Batteries have second life and could be recyclable to limit their impact on the environment. To mitigate risks associated with the creation of noise and dust, training for TSPs will cover, *inter alia,* measures to mitigate such risks in line with the Good International Industry Practices (GIIP) published by the World Bank Group, which recommend keeping noise to maximum 55 dB during daytime in residential settings, and 70 dB in commercial and industrial settings.
Gender	When programme-supported technologies are being installed during sub-project implementation, there is a	Medium impact, Moderate risk	Utilities will screen sub-project applications for potential GBV and SEAH risks and ensure suitable risk mitigation measures

Environmental and Social Standards	Environmental & Social Risks and impacts	Potential risk or impact	Mitigating Measures
	potential risk of GBV and SEAH that must be addressed. The risk is considered more significant if/when installation is happening indoors at the customer's/beneficiary's premises, for example for sub-projects that involve the procurement and installation of energy efficient air conditioners or other energy efficient appliances.		are in place, including , inter alia: ensuring multiple members of the household/business will be present when the Technology Service Provider (TSP) is scheduled to install the technologies; ensuring installation occurs during daytime; sending a utility representative to the customer's premises to supervise installation; and/or ensuring a utility representative follows up (e.g. by phone) with the customer/beneficiary during or immediately after installation. In addition, all TSPs will be trained on environmental and social standards, including on the code of conduct and zero-tolerance approach to GBV and SEAH, before they are contracted and can start supporting the implementation of programme-supported sub-projects.
Indigenous Peoples	The knowledge, culture, practices and unique needs of IPs may not be recognized as part of the delivery of key TA activities, as further elaborated in Appendix C: IPPF. Information to be disseminated when executing the TA component may not be prepared in an inclusive, culturally appropriate and accessible manner, as further elaborated in Appendix C: IPPF. Application documents and processes may not consider the unique needs of IPs, reducing the extent to which IP households	Medium impact, moderate risk	Mitigation measures to be implemented via the IPP (mostly through the TA component and programme design, and not to be mitigated and managed at the level of sub-project implementation as with the other risks and impacts listed here): - Ensure the knowledge, culture, practices and unique needs of IPs are recognised and considered when delivering the technical assistance and capacity building activities. - Ensure information and promotional materials are developed in an inclusive, culturally appropriate and accessible manner for IP groups.

Environmental and Social Standards	Environmental & Social Risks and impacts	Potential risk or impact	Mitigating Measures
	and IP-led households and businesses can benefit from the investment component of the programme. Traditional indigenous housing structures may not be built to code and thus able to accommodate all eligible technologies, particularly rooftop solar PV. The high incidence of poverty among IP groups – particularly in Belize – may result in some of them not being eligible to access support under the investment component of the programme.		- Support the electric utilities to develop application processes and systems in a manner that enhances inclusivity and accessibility. - Provide flexibility with regards to the proportion of programme financing that each utility can use for various eligible technologies, thus allowing the utilities to support IP beneficiaries to install some technologies that respond to their needs (e.g. efficient ACs to enhance resilience against heat stress) even if their structures cannot accommodate rooftop solar PV in the short run. In addition, small-scale ground-mounted PV installations will also be possible. - Support the development of IUS products/service offerings that respond to the needs of highly vulnerable and low-income segments of the population, including IPs. Note that these measures are further elaborated in Appendix C: IPPF.
Biodiversity conservation	The construction and placement of RE projects (i.e., Solar PV projects) can negatively harm the ecosystem. For example, ground-mounted Solar panels can take up land space and drive animals out of their habitat. Also larger projects for solar requires land clearing.	Medium impact, Moderate risk	Since we are dealing with small scale distributed generation projects there will be no material land/bio-diversity/forest risk
Labor and working conditions	There is danger when installing solar rooftop. Workers installing rooftops might fall off if safety equipment are not used.	Medium impact, Moderate risk	The need for safety equipment and safety standards for installation of solar rooftops

5 ESMF Budget

Funding for implementation of the ESMF is included in the Project budget. The estimated costs are indicated in Figure 5-1 below.

Figure 5-1: Breakdown of costs associated with ESMF implementation

Item	Amount (USD)
Professional fees	
Professional fees for 3 National Energy Consultants (1 per country) to support timely implementation of ESMP requirements. Estimated as 10% of total costs associated with these consultants.	108,000
Professional fees for Implementation Support Consulting Firm to support the preparation of country-specific operational manuals that include E&S requirements, as well as country-specific ESMPs.	90,000
Professional fees for Implementation Supporting Consulting Firm to prepare and deliver trainings to electric utilities and other national stakeholders on programme-related compliance requirements and standards, including on E&S risk management. E&S-specific costs estimated as 25% of total costs associated with this sub-activity.	35,500
Professional fees for Implementation Support Consulting Firm to prepare and deliver trainings to TSPs on programme-related compliance requirements and standards, including on E&S risk management. E&S-specific costs estimated as 25% of total costs associated with this sub-activity.	19,125
Professional fees for Implementation Support Consulting Firm to provide hands-on support with sub-project appraisal. E&S-specific costs estimated as 40% of total costs associated with this sub-activity.	48,000
Supplementary data gathering costs to support robust monitoring and reporting throughout the programme implementation period, including to verify compliance with E&S requirements. E&S-specific costs estimated as 25% of total costs associated with this sub-activity.	88,125
Training	
Costs for venue, catering, etc., for trainings for electric utilities and other national stakeholders on key programme-related compliance requirements and standards, including on E&S risk management.	60,000
Costs for venue, catering, etc., for trainings for TSPs on key programme-related compliance requirements and standards, including on E&S risk management.	45,000
Total	**493,750**

6 Stakeholder Engagement Plan

This chapter describes how stakeholders were consulted and maps out the different program stakeholders and their characteristics, their interest in the program as well as the plan for their engagement with the framework of the program implementation. The chapter concludes with monitoring and follow-up of the plan.

6.1 Introduction

This Stakeholder Engagement Plan (SEP) addresses the importance of ensuring the comprehensive and effective participation of all stakeholders in the development and implementation of the Programme. The stakeholder participation and consultation processes are top priority in the development, implementation, evaluation and monitoring of programme activities, as they ensure that the perceptions, concerns, needs and interests of the stakeholders involved are taken into account in the execution of each of the activities, with the purpose of avoiding and / or mitigating the adverse impacts that may be caused, and improving the well-being of vulnerable populations, including indigenous populations and women.

This SEP serves as a participation strategy that provides the Project/programme team with basic guidelines and guidance on how to meet the requirements for stakeholder participation and consultation. This strategy is based on the principles of transparency, inclusion, non-discrimination and action without harm, which meets the guidelines of the GCF to ensure a significant participation of stakeholders, as described in the document "Design and guarantee significant stakeholder participation in projects supported by the GCF" (GCF, 2019b)[66].

Therefore, the participation strategy will be used by the project/programme team as a guideline to involve all stakeholders from an early stage which allows them, on one hand, to announce Project/programme detailed activities and risks, impacts and benefits in a clear, accessible and understandable manner for each stakeholder, and on the other, acknowledge stakeholder concerns and needs, so that they can be integrated in the project activities, either to make changes or improvements.

This plan will provide the basic mechanisms and methodologies to guarantee such participation in each of the Project/programme activities, as well as stakeholder engagement strategies with special attention to those parts traditionally marginalised or underrepresented. It will be the basis for the SEP implementation and for developing the monitoring, follow-up and evaluation of both, the participation strategy and the implementation of project/programme activities.

6.2 Stakeholder consultation

Stakeholders including government officials, the regulators, and the utilities were consulted via a questionnaire-based survey while virtual face-to-face interviews were held with technology service providers (TSP). Consultations were done between April and May 2023. Apart from responses obtained through questionnaire-based surveys, during interviews, notes were taken and each interview lasted for about thirty-five minutes. To minimize the occurrence of biased responses, we avoided leading the interviewees during the interviews and reacted in a neutral manner by not signaling preferred answers.

[66] GCF. 2019b. *Designing and ensuring meaningful stakeholder engagement on GCF-supported projects. P.9.*

Phases to develop the Stakeholder Participation Strategy

In accordance with the Green Climate Fund's guidelines for the development of the Project participation strategy, the following steps must be followed:

6.3 Participation strategy design

In this phase, the entire participation plan will be elaborated in detail, taking into account the specific characteristics of each country and each group of stakeholders. This phase seeks to:

- To link a team of experts
- Hold informative meetings with stakeholders identified in the stakeholder map and under the proposed relationship criteria, to present the project/programme and to obtain the perceptions, concerns, interests and needs of each stakeholder, and understand how to work successfully with each one of them.
- Conduct training activities with the entire work team, especially those who will be in the field, on the economic, political, social and cultural context of the places where they will work, ensuring that they will carry out their work in a respectful manner and in compliance with the guidelines proposed.
- Design the participation plan for each activity and sub activity of the project. The team of experts and the technical team of the project describe each of the activities to be implemented with each of the stakeholders and the methodologies to be used to achieve the proposed participation objectives and follow the relationship guidelines proposed in this plan.
- Update the stakeholder map with the new information collected;
- Set a work schedule in which the time for doing the participation activities is determined, the time for analysing information, coupled with the activity implementation schedule and sub activities of the project/programme, so that they are fully coordinated. This schedule must be presented to all stakeholders taking into account their contribution to it and receive their confirmation of receipt and agreement.

The specific characteristics and features of each of the groups of stakeholders should be considered, which means considering also the places where they are located and from where they will participate in the Project/programme. This implies an understanding and reflection on the economic, political, social and cultural contexts of the target areas of the project/programme and of each of the stakeholders.

These considerations will provide a better understanding of who the stakeholders are, and properly identify those who are most vulnerable due to their socioeconomic conditions and are subject to oppression due to their gender, race / ethnicity and class status, which will therefore avoid producing or increasing these oppressions at any time. Likewise, stakeholders in positions of economic and political power could better understand and not exercise this power over the other vulnerable stakeholders during the Project/programme implementation, using that power to serve Project's objectives instead.

With this in mind, it is essential to balance the levels of influence of each stakeholder in the Project/programme implementation with the effort and purpose of giving voice and decision-making power to those who historically have had less access to decision-making and to whom the project/programme will impact more directly. This is the main goal of developing a participation plan as one of the backbones of the programme.

These considerations also imply that the entire work team, from the Project´s/programme's general coordinators, to those who work on field, have clarity about the context in which they will work and the importance of considering the specific characteristics of each of the stakeholders, especially the rural, ethnic and female populations. The participation plan must then guarantee respect, transparency, inclusion, non-discrimination and action without harm.

Team

It is essential that in each country a team of specialists with extensive experience in research and intervention work in the specific Project/programme areas is created, with knowledge on local, community, institutional and private stakeholders, as well as economic, social and political dynamics. This team will oversee the designing of specific instruments and activities for each Project/programme stages, as well as analysing the information and providing recommendations to those responsible of each activity.

Methodology

The methodologies to be developed must guarantee the effective participation of all stakeholders ensuring all stakeholders play a tangible part in decision making. They must consider the characteristics of the stakeholders with whom they are going to work with and the objectives of each activity, in this sense it should be considered whether the population is literate or not, if they speak English or not, what their cultural references are, among others, in order to develop appropriate resources and know which language to use. Each of the activities to be developed must contemplate the methodologies that have already been used successfully in other projects/programmes with similar populations, contexts and focus; similarly, methodologies proposed from the social sciences can be included, as social mapping, in-depth interviews focus groups, age and gender groups, food flows diagrams, and other resources.

6.4 Stakeholder mapping

The complete stakeholder map provides a detailed knowledge of the stakeholders, their incidence level, their responsibility in the process, their interests, the areas in which they are and act, and their relevance in each of the Project/programme activities, which enables them to determine the best way to establish a relationship with them, as well as to generate more appropriate strategies for dialogue and consultation that lead to a more horizontal, transparent and respectful dialogue of its individuals.

The map serves to identify and provide the characteristics of the stakeholders, their perceptions, interests and concerns regarding the project, the position they assume in relation to the project, their location, and involvement in the proposed activities. This is valuable information that helps to determine more accurately the forms or mechanisms of dialogue, as well as having better analysis through the information received from the stakeholders.

In addition, this map should be constantly updated, since during the process it is possible that new stakeholders may appear, that they change positions, that new interests arise, that new alliances or tensions occur, or that with the modification of some activity the most directly impacted stakeholders are changed.

During project formulation, initial stakeholder mapping, socialization exercises and meetings about project/programme activities must be done. Therefore, the following existing information on the types of stakeholders, their levels of incidence and responsibility in the Programme are as follows.

a) **Government Institutions**: These public stakeholders consist of local, regional and national government institutions that deal with some aspects of the project. These are represented by public officials. These institutions are responsible for part of the process as many of these institutions make environmental, social and cultural policies which directly affect the project. Likewise, it is their responsibility to guarantee the consultation and concertation rights of the citizens and be able to monitor the Project/programme achievements.

b) **Regulators:** The regulatory entity are the law executing bodies that will be responsible for regulating specific actions of the utilities in all the three countries.

c) **Utilities:** The Electric utilities are the main project implementing bodies in the three countries. They will serve as the National Executing Entities of the programme in all the three countries.

d) **Technological service providers:** They will work with the utilities to produce and distribute RE products for the programme. They will also invest in RE, EE and other DER sub-projects.

Figure 6-1: The different types of mapped stakeholders for each country

Stakeholders				
Government	**Regulators**	**Utilities**	**Technological Service providers**	**Others**
Barbados				
Ministry of Energy, Small Business and Entrepreneurship	Fair Trading Commission	Barbados Light and Power Company Limited		
Government Electrical and Engineering Department				
Environmental Protection Department (EPD)				
Belize				
Ministry of Public Utilities, Energy and Logistics	Public Utilities Commission	Belize Electricity Limited	JICA Solar Farm	Statistical Institute of Belize (SIB)
Ministry of Rural Transformation, Community Development, Labour and Local Government			JICA Solar Farm	Department of Environment (DOE)
Ministry of Finance Economic Affairs and investment			Belize Cogeneration Energy Limited	
Ministry of Sustainable Development, Climate Change and Disaster Risk Management			Blair Athol Power Company	
			Farmers Light Plant	

Stakeholders				
			Corporation Limited	
			Santander Sugar Energy Limited	
			Go Green Limitted	
			Belize Chambers of Commerce and Industry	
Jamaica				
Ministry of Science Energy and Technology	Office of Utilities Regulation (OUR)	Jamaica Public Service Company	South Jamaica Power Company	
Ministry of Housing, Urban Renewal, Environment and Climate Change (MHURECC)		JPSCo	Jamaica Energy Partners	
Ministry of Economic Growth and Job Creation (MEGJC)			Jamaica Private Power Co.	
Climate Change Division (CCD)			Wigton Wind Farm	
Government Procurement Entity			JAMALCO	
			BMR Jamaica Wind Ltd	
			Enterprises Solar	
			Solar Farm	
			Alternative Power Sources (Jamaica) Limited	

6.5 Stakeholder engagement

This phase gives the basic guidelines of establishing a relationship with the stakeholders so that:

- There is transparency, respect, non-discrimination and action without harm.
- The specific characteristics and features of the stakeholders are taken into account, especially those that are most vulnerable.

- Clear, accessible, understandable and smooth communication between the stakeholders and the work team is achieved.
- The stakeholders have the conditions to freely express their concerns, needs and interests.

By fully identifying the stakeholders involved in the initial map it is possible to determine the ways in which relations with them will develop throughout the project. This identification implies reaching the people and groups identified to deepen the understanding of people's expectations, interests and motivations. In addition, initial approaches provide the opportunity to share detailed information about activities, gather ideas on the most appropriate approaches to communication and engagement, and help refine the stakeholder map and participation strategy.

It is crucial to meet with all the stakeholders identified in the mapping exercise and not just those that are closer or more interested or are more susceptible to the project/programme. This requires creativity in terms of the multiple ways and mechanisms to bring closer and dialogue with all parties throughout the entire process.

It is essential to create some relationship rules that involve big and small details and that take into consideration the characteristics of each group: Therefore, the following paragraphs explains how the program will continue to engage with all the key stakeholders

1. **Utilities**: with these stakeholders all decisions must be made in a systematic manner so that the same people and organisations can decide the means by which they want to be informed, where to meet, how and who can provide services, establish communication channels and means of communication.

2. **Technological service provider**:

    - With these organisations it is crucial that they are always all equally invited to meetings and activities.
    - With these stakeholders, it is important to take advantage of the information and documentation generated by them that meets the needs of the project.
    - Keep information channels open with them.

3. **Government institutions and regulators**: With these group of stakeholders:

    - Ensure that the same people always participate in the whole process, which allows for continuity in the process and in decision making.
    - Ensure that those who participate have the capacity to decide and influence within their institutions, allowing the established agreements to be fulfilled.
    - Establish a channel and means of communication that allows constant dialogue, flow of information and also enable the discussions and decisions taken within the institutions and that affect the project/programme in some way to be communicated quickly.

6.6 Monitoring and following up

This is a transversal phase to the others as is important to constantly review and receive feedback of the entire Project/programme, especially the participation plan, as this enables the following:

- Update the stakeholder map.
- Design new, more successful methodologies.
- Fulfil the commitments pledged among the stakeholders.
- Respond to interests and needs.
- Resolve conflicts generated in the implementation

The time in which to conduct the evaluation must be specified, it can be established for certain periods of time or at the end of each activity. It is also important to establish a methodology to carry out the evaluations within the work team and between the team and the stakeholders, through extensive exercises, generating comfortable spaces in which the stakeholders can freely express their agreements and disagreements, and with methodologies that enable agreements to be reached.

6.7 Training for the implementation of E & S Instruments

The Programme would have a strong focus on building capacity for the implementation at county and sub-project levels. Capacity building/training would be provided to all key institutional participants and the principal stakeholders in order that the programme is properly understood, and the different parties are able to implement their assigned responsibilities. Key information and outreach materials would be produced according to the specific audience being addressed (e.g., government, private sector etc.).

The programme would identify community and other stakeholder capacity-building needs, supported by effective information, education and communication activities. This includes the needs for specific trainings such, supervision and reporting needs, including measures (i.e. environmental approvals, local permits, compliance with specific international guidelines and standards, compensation, grievance mechanisms, etc.).

6.8 Planned stakeholder engagement methods and actions

During programme implementation, stakeholders will be consulted during field visits. The consultations will be done via face-to-face meetings. Technical Assistance (TA) activities that will be a cornerstone of the stakeholder engagement process will include trainings or capacity building of these stakeholders on risks, identification, mitigation, management, and monitoring. Specifically, the programme will supplement the capacity of stakeholders by contracting (i) a National Energy Consultant to work with/in each electric utility; and (ii) an Implementation Support Consulting Firm that will include an E&S Specialist.

7 Grievance Redress Mechanism

This chapter provides the mechanism that addresses all inquiries, complaints and claims that may have a place during the Project/programme activities implementation, both from the general community and from all Project/programme workers, including community workers. First, the characteristic of the mechanism is provided, followed by the methods for the mechanisms and communication channels through which grievances can be channelled.

7.1 Introduction

Each National Executing Entity must establish and operate a Grievance Redress Mechanism that addresses all inquiries, complaints and claims during programme implementation, both from the general community and from all programme-contracted workers, including community workers.

The mechanism established by each National Executing Entity must comply with the following characteristics:

- The mechanism should allow citizens and project/programme workers to access Programme information in a timely manner and enable them to express their concerns or dissatisfactions regarding the development of project/programme activities in each country.
- The mechanism must support the Executing Entity in strengthening their relationships through a participatory and inclusive communication process.
- The mechanism must have an instruction document for communications reception and to respond in an appropriate and timely manner.
- In order to generate corrective measures in case there are activities that generate discomfort in the community or the Technology Service Providers, all communications received, and responses given must be shared with the Accredited Entity.
- According to the International Labour Organisation, it is essential to ensure the recognition and guarantee indigenous peoples rights of their territory, their culture, autonomy, self-government, and their right to take part in decision making (prior consultation), through appropriate procedures and in particular through their representative institutions, whenever legislative measures are envisaged.
- Appropriate inter-institutional coordination between different agencies of the Programme to generate timely and transparent responses regarding the communications received must be ensured.
- The stakeholder map in each country must be considered including specific needs and traditional forms for information access of people, women, and facilitate the manifestation of complaints, claims and conflict resolution.
- The mechanism must guarantee anonymity option for filing complaints and claims, as well as establish means of communication to notify the results of the nonconformity management made by the Programme team.

7.2 Mechanism Methodology

The methodology of the Grievance Redress Mechanism must contemplate the following procedures:

1. Receipt and registration of petitions, complaints, claims or suggestions.

2. Confirmation of receipt, assessment of the request, complaint, inquiry, suggestion or claims, and assignment of communication to project staff in charge of responding.

3. Response communication to the citizen and its follow-up; the response should be issued in less than 15 calendar days, when possible

4. Closing the petition, complaint, allegation or suggestion process. In the event that an answer could not be given, it should be redirected to another area of the Project and commence the proceedings.

7.3 Communication channels

In order to efficiently address all communications from Project workers and community, the following service channels are proposed to be developed by each National Executing Entity:

1. The development of a virtual platform, that allows the population to access a web page to complete their requests through a form and receive a tracking number with which they can follow up on their request. This channel is convenient as it guarantees 24 hours a day access.

2. Creation of a specific email to attend to citizens communications, which would be in operation exclusively to handle complaints and inquiries and ensure timely response. Communications received by this means must have a tracking number assigned which can be followed up.

3. Enable a telephone number, fixed or mobile, in each of the three participating countries, for calls reception. This number must be attended by the Programme focal point in each country, who must manually fill a communications form (similar to the one on the website), to document the complaint, query or claim. This document must also have a tracking number, just like other channels, in order to guarantee the follow-up and timely response of the communication presented by the citizen or Programme workers.

4. Make use of the existing communication channels for each utility and leverage them and also set up a dedicated email channel which could be monitored by the programme team at the utility.

5. Allocate a physical mailbox to receive any questions, complaints or claims associated with the Programme implementation. This mailbox can be located in a public entity office.

To complement the GRMs to be establish/operated by each National Executing Entity, CDB has a fully functional Projects Complaints Mechanism (PMC) managed by the Office of Integrity, Compliance and Accountability (ICA), through which complaints can be submitted through six channels: a webform; a hotline; email; telephone; mail; and office visits. Guided by the CDB Projects Complaints Mechanism Policy[67], such complaints are reviewed and handled independently by the CDB ICA in accordance with its detailed PCM Procedures. The CDB PMC provides an additional avenue through which complaints related to the IUS programme can be submitted and addressed in a timely manner.Complaints may be submitted to the Office of Integrity, Compliance and Accountability. Allegations may be made by a variety of sources including staff, consultants, contractors, and other persons who may consider themselves participants in, witness to or victims of wrongdoing. Complaints can be filed:

[67] This policy remains in effect and is publicly accessible here: https://www.caribank.org/about-us/policies-and-strategies/projects-complaints-mechanism-policy.

(a) anonymously online through a portal: https://secure.ethicspoint.com/domain/media/en/gui/55678/index.html;

(b) through a whistle blower hotline (770-409-5029), via telephone (246-539-1777);

(c) via email (ica@caribank.org); and

(d) via mail to:

Head, Office of Integrity Compliance and Accountability
Building A
Caribbean Development Bank
P.O. Box 408
Wildey
St. Michael
Barbados, W. I. BB11000

Complaints related to the programme can also be filed to anticorruption@caribank.org; Projectscomplaints@caribank.org

Furthermore, the GCF also has an Independent Redress Mechanism that can be used by project workers, communities and other affected stakeholders as needed to submit complaints/grievances directly to the GCF. More information about the GCF Independent Redress Mechanism is accessible at the following link:

https://irm.greenclimate.fund/

Specific complaints can be submitted to the GCF Independent Redress Mechanism via the following link:

https://irm.greenclimate.fund/case-register/file-complaint

8 Monitoring, Evaluation, and Reporting Arrangement

Monitoring and evaluation arrangements allow the Project/Programme to obtain information on safeguards compliance and assess the success of mitigation, reduction or elimination measures of environmental and social risks and impacts set out in the Environmental and Social Management Plan. Therefore, this chapter contains the main indicators to be measured periodically to verify compliance with the safeguards, and subsequently the steps to ensure monitoring and evaluation.

8.1 Indicators

Indicators established as part of the monitoring and evaluation system of a Project/programme, are the tools that allow planning and general management of the project/programme, generate useful information to improve the decision-making process and the implementation of activities. The following indicators will measure mitigation measures compliance, therefore must be assessed in particular in each of the three countries where the Programme will be implemented, in order to ensure compliance of GCF safeguards, and the mitigation, reduction or elimination of potential risks and impacts that the programme could trigger.

Figure 8-1: Key project activities and indicators for monitoring

Activities	Monitoring indicators
Component 1: Establish and promote IUS as a core element of electric utilities' business models in the Caribbean	
Activity 1. Immediately address policy and/or regulatory barriers impeding the implementation of the IUS model under component 2	• Development and implementation of policy documents that address policy barriers, • Development and implementation of regulatory documents that address regulatory barriers
Activity 2: Enhance partner utilities' capacities to apply IUS.	• Number of utilities adopting the IUS programme • Number of training sessions organized on IUS for utilities
Activity 3. Address broader policy and/or regulatory needs to strengthen prospects and incentivizes for investment in distributed RE, EE and other DERs	• Development of policy documents that will incentivize the IUS programme • Development of regulatory document that will incentivize the IUS programme • Number of utilities who identify (and plan to address) any upgrades to their transmission and distribution systems
Activity 4. Raise awareness of opportunities and potential savings related to distributed RE, EE and other DERs	• Number of training sessions/awareness campaigns provided to customers on IUS programme • Number of customers adopting IUS programme
Activity 5. Promote the IUS model and associated services	• Sensitization of customers on IUS model

Activities	Monitoring indicators
	• Number of customers investing in the IUS programme
Activity 6. Provide customers with hands-on support to identify and develop distributed RE, EE and other DER sub-projects	• Number of barriers that inhibit the participation of customers in IUCS progarmme • Number of support programs on the development of IUS programme
Activity 7. Facilitate knowledge exchange among the targeted BMCs	• Number of training sessions on good practices and lessons learned on the IUS programme by utilities • Number of utilities implementing the IUS programme
Activity 8. Support information exchange with other (non-partner) countries	• Number of success stories, lessons learnt and good practices on the IUS model
Component 2: Scaling up investment in distributed RE, EE and other DERs by implementing the IUS model at scale in the participating BMCs.	
Activity 9: Finance a series of distributed RE, EE and other DER sub-projects for participating households, business and public sector entities.	• Number of RE, EE and other DER sub-projects for participating households, business and public sector entities.

8.2 Monitoring provisions

The Environmental and Social Safeguards Officer of the programme will be responsible for monitoring the Project indicators in each of the three countries and for carrying out the respective analysis and evaluation.

The Project Executing Entity will regularly monitor and supervise the Environmental and Social Management Plan, as is the one who work in Project management regionally, conduct technical supervision, and will establish strategies to correct any negative indicators results.

In addition, both TSPs and the beneficiaries will be directly involved in/contributing to monitoring for the overall programme, and with regards to the implementation of E&S measures. In particular:

- As outlined in Section 2 of this ESMF, the TSPs will be contractually required to document how they complied with the ESHS plans and share this with the electric utilities.

- Beneficiaries will be contacted by programme-contracted consultants (including the Implementation Support Consulting Firm and National Energy Consultants) and asked to provide additional information on, *inter alia*, the completion of the sub-project installation phase, the performance of their technologies, and the updated meter readings that should demonstrate the actual performance-related benefits of the technologies. This will provide avenues for the programme-contracted consultants to discuss and verify the suitability and full implementation of the E&S risk management measures. Furthermore, the Supplementary Data Gathering Firm that will follow up with beneficiaries on a rolling basis throughout PY2-6 will also gather additional (more detailed) information from a sample of customers to verify and triangulate the data gathering referenced above. This will provide further opportunities to check/verify the implementation of E&S risk management measures.

8.3 Procedure for review, clearance and implementation of sub-projects

In order to evaluate the eligibility of proposed investments in the context of the Programme, as well as anticipate the level of further studies which will be required before approving the investment, financial institutions and the Accredited entity will be required to review, cleared, and categorise the proposed investment. This will be done in alignment with the GCF guidelines for project review, clearance, and categorisation. The categories applied by the CGF are listed in the figure below

Figure 8-2: Overview of GCF E&S risk categories.

Category	Level of E&S risk
A	Business activities with potential significant adverse environmental or social risks and/or impacts that are diverse, irreversible, or unprecedented
B	Business activities with potential limited adverse environmental or social risks and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures.
C	Business activities with minimal or no adverse environmental or social risks and/or impacts.

9 Conclusion

The following are a number of key conclusions that are gleaned from the forgoing analysis:

- The Programme will provide significant benefits for customers in the three participating countries. The proposed programme will support participating electric utilities in the three countries to launch and operate IUS at scale. In so doing, the utilities will broaden their business models to ESCO-type services to their customers, thereby increasing investment in DERs such as renewable power and efficient cogeneration systems, battery systems, energy management and smart applications, and efficient end-use technologies.
- However, the risk analysis identified some risks and impacts that may be triggered by the implementation of some activities of the programme and mitigation measures are provided. Indeed, at the screening stage, the programme was deemed to be a Category B programme for environmental and social risks. This is because the nature of the investments to be made through the sub-projects have the potential for limited adverse environmental and social impacts and/or risks, all of which can be readily identified, mitigated and managed. Screening was done at the conceptual phase of the programme by the CDB. The screening and analysis were specifically documented.
- During the implementation phase of the Programme, a specific Stakeholder Engagement Plan should be developed so that specific actions and strategies can be designed and appropriately involve the stakeholders related to each activity.
- A budget for the ESMF is also vital and has been provided as well as a grievance redress mechanism for the programme implementation.
- Similarly, indicators and guidelines set out in the Monitoring and Evaluation Arrangements chapter should be applied to each country.

Appendix A List of stakeholders consulted

Name	Organization	Designation	Contact details
Regional Stakeholders			
Devon Gardner	CCREEE	Head of Technical Programmes	devon@ccreee.org
Barbados			
Charles Harris	Barbados Light and Power		charles.harris@blpc.com.bb
Angela Ward	Barbados Light and Power		angela.ward@blpc.com.bb
Rudolph Browne	Barbados Light and Power		Rudolph.browne@blpc.com.bb
Andrew Gittens	Ministry of Energy, Small Business, and Entrepreneurship	Permanent Secretary	andrew.gittens@barbados.gov.bb ps.energy@barbados.gov.bb
Brian Haynes	Ministry of Energy, Small Business, and Entrepreneurship	Chief Project Analyst	bhaynes@energy.gov.bb
Mr. Tyrone White	Government Electrical and Engineering Department	Chief Electrical Officer	tyrone.white@publicworks.gov.bb
Mr. Anthony Headley	Environmental Protection Department (EPD)	Director	epd.secretary@epd.gov.bb
Kathyann Belle	Fair Trading Commission	Director of Utility Regulations	kathyann.belle@ftc.gov.bb
Dr. Troy Waterman	Fair Trading Commission	Director of Fair Competition	troy.waterman@ftc.gov.bb
Dr. Marsha Atherley-Ikechi	Fair Trading Commission	CEO	mikechi@ftc.gov.bb
Stephen Worme	Barbados Renewable Energy Association	Vice president	stephen.worme@gmail.com
Robert Goodridge	Barbados Renewable Energy Association	President	president@brea.bb
Belize			
Carlos Pol	Ministry of Finance, Economic Affairs and Investment (NDA)	Director of the Climate Finance Unit	carlos.pol@med.gov.bz
Dr. Osmond Martinez	Ministry of Finance, Economic Affairs and Investment (NDA)	CEO/NDA	ceo@med.gov.bz
Leroy Martinez	Ministry of Finance, Economic Affairs and Investment (NDA)	Economist/GCF Focal Point	leroy.martinez@med.gov.bz
Jose Urbina	Ministry of Public Utilities, Energy and Logistics	CEO	ceo@moysegov.gov.bz
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Name	Organization	Designation	Contact details
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Scaling up the Deployment of Integrated Utility Services (IUS) to Support Energy Sector Transformation in the Caribbean programme

Annex 6: ESMF

Appendix B: Draft E&S checklist

This document constitutes a draft of the checklist that will be used by each electric utility (as a National Executing Entity) when reviewing a sub-project application from an eligible customer. This draft checklist will be further refined during the first year of programme implementation (PY1), and a final version will be included in each country/utility's national-level Environmental and Social Management Plan (ESMP) that will similarly be developed during PY1.

The checklist is meant to help the utility determine if the proposed sub-project involves environmental and social risks that would require the development of an Environmental, Social, Health and Safety (ESHS) plan.

(a) Project description:

(b) Project proponent/applicant:

(c) Project location:

(d) Project cost:

Identification of key issues associated with the project:

Which of the following technologies are included in the scope of the sub-project?

□ Renewable energy

□ Battery energy storage system

□ Energy-efficient air conditioner/cooling

□ Energy-efficient lighting

□ Solar water heater

Provide further information about the technology/ies (e.g. size of RE installation, size of battery installation, etc.):

Does the customer have existing technologies that would have to be removed/replaced during the installation of the new technology/ies?

□ Yes*

□ No

□ Unknown

** if yes, describe.*

Will workers have to climb on the customer's roof when installing the technology/ies?

□ Yes*

□ No

□ Unknown

** if yes, confirm that the roof is able to handle the weight of the technology/ies, and that of the workers when they are conducting the installations.*

Is the project located in or near a sensitive area, including, but not limited to, the following? (Identify all that apply):

□ Areas protected by national law or international convention

□ Important marine areas such as coral reefs, spawning areas

□ Important seashore areas such as mangroves, wetlands

□ Areas prone to erosion

□ Areas prone to natural hazards such as flooding, hurricanes, volcanoes, earthquakes

□ Areas of high biological diversity or habitats of endangered species

□ Tropical or sub-tropical forests

□ Areas of importance to ethnic groups or other vulnerable populations

□ Areas of importance to freshwater supply including groundwater

□ Areas of archaeological, cultural or historical significance

□ Other areas of particular environmental or social sensitivity (provide detailed description)

□ Unknown.

Will the project result in resettlement of local population, permanent or temporary economic displacement, significant loss of employment, and/or have adverse impacts on vulnerable groups?

□ Yes*

□ No

□ Unknown

** if yes, describe the scale of resettlement and/or economic displacement*

Will the project result in adverse environmental and/or social impacts pertaining to the following issues during construction; operation and/or decommissioning of the project? (Identify all that apply):

□ Air quality

□ Noise

□ Water quality

□ Fresh water supply/watershed management

□ Erosion

□ Conversion of previously undeveloped land

□ Hazardous substances or hazardous wastes (e.g. PCBs)

□ Contaminated land or water

□ Endangered species and/or migratory species

□ Pest management

□ Health and safety

□ Child labour

□ Gender equality

□ Loss of employment

□ Other issues (please describe)

□ Unknown.

Is the Borrower aware of any public opposition or criticism against the proposed project?

□ Yes*

□ No

**If yes, describe the concerns associated with the criticism and describe any public consultation activities that have occurred with relevant stakeholders, (append extra page as necessary).*

Conclude with a summary judgment of the overall environment and social acceptability of the project

Scaling up the Deployment of Integrated Utility Services (IUS) to Support Energy Sector Transformation in the Caribbean programme

Annex 6: Environmental and Social Management Framework (ESMF)

Appendix C: Indigenous Peoples Planning Framework – Guidelines for developing Indigenous Peoples Plans

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List of abbreviations

BENIC	Belize National Indigenous Council
CCJ	Caribbean Court of Justice
CDB	Caribbean Development Bank

DFC	Development Finance Corporation of Belize
DFIs	Development finance institutions
ESS	Environmental and social safeguards
FPIC	Free, prior and informed consent
GCF	Green Climate Fund
IACHR	Inter-American Commission on Human Rights
IFAD	International Fund for Agricultural Development
ILO	International Labour Organization
IPs	Indigenous peoples
IPC	IPC - Internationale Projekt Consult GmbH
IPP	Indigenous Peoples Plan
IPPF	Indigenous Peoples Planning Framework
MLA	Maya Leaders Alliance
MSMEs	Micro, small and medium-sized enterprises
SATIIM	Sarstoon-Temash Institute for Indigenous Management
TA	Technical assistance
TAA	Toledo Alcaldes Association
TEA	Toledo Ecotourism Association

1 Introduction

1.1 Programme overview

This document comprises the Indigenous Peoples Planning Framework (IPPF) for the Green Climate Fund (GCF) Programme "Scaling up the Deployment of Integrated Utility Services (IUS) to Support Energy Sector Transformation in the Caribbean" which will support Barbados, Belize and Jamaica. The programme aims to address the fact that the penetration of renewable energy (RE) and uptake of energy efficiency (EE) measures remains limited – particularly among businesses and households who have a pivotal role to play in the transition to a low-emissions and more climate-resilient regional energy sector. The proposed programme aims to rectify this by supporting participating electric utilities to launch and operate IUS at scale. In so doing, the utilities will broaden their business models to provide energy service company (ESCO)-type services to their customers, thereby increasing investment in distributed RE, EE and other distributed energy resources (DERs). In so doing, the utilities will address barriers (e.g., limited ESCO capacity) that are inhibiting investment in distributed RE, EE and other DERs, while also leveraging their own comparative advantage (i.e., lower costs of capital, potential to achieve economies of scale, existing institutional capacities and networks). This will enable more rapid and widespread uptake of such technologies as "utility-based ESCOs".

The programme will be implemented in two phases. Phase I will support Barbados, Belize, and Jamaica. Phase II will be developed/submitted at a later stage and aim to scale up this support to additional Borrowing Member Countries (BMCs), drawing on the lessons learned and good practices from Phase I. The CDB will serve as the Accredited Entity. The programme will include a "national project" in each country, for which the electric utilities will serve as the National Executing Entities. Each project will include a series of sub-projects through which distributed RE, EE and other DERs will be procured/installed at the premises of the utilities' customers (mostly residential and commercial customers, as well as some industrial customers and public sector entities) to achieve concrete emissions reductions and enhance resilience.

The programme comprises the following components:

Component 1: Establish and promote IUS as a core element of electric utilities' business models in the Caribbean. Under this component, the programme will lay the groundwork for the electric utilities in Barbados, Belize, and Jamaica to be able to implement the IUS model at scale (which they will do under component 2), making this innovative approach to supporting adoption of distributed RE, EE and other DERs a key element of their overall business model. Component 1 will accomplish this by: strengthening the enabling environment for IUS in each of the participating country; enhancing outreach to customers to stimulate interest in distributed RE, EE and other DERs, as well as demand for sub-projects; and supporting collaborative networks through which electric utilities and other sectoral stakeholders can support one another during and after the programme to continue scaling up DERs using the IUS model.

Component 2: This component will focus on scaling up investment in distributed RE, EE and other DERs by implementing the IUS model at scale in the participating BMCs. This second component of the programme will build on the work done under component 1 to finance a series of distributed RE, EE and other DER sub-projects for participating households, business and public sector entities. As such, component 2 will constitute the core investment component of the proposed programme.

1.1 Background and objective

Recognising that indigenous peoples (IPs) have valuable contributions for climate change adaptation and mitigation and acknowledging that IPs often have different aspirations and ways of life than mainstream groups, the GCF developed an Indigenous Peoples Policy to ensure that all GCF-funded

activities promote, respect and encourage the safeguarding of IPs.[1] The policy aims to safeguard indigenous peoples so that they may:

(1) benefit from the GCF activities and projects in a culturally appropriate manner; and
(2) not be harmed or negatively impacted by adverse effects of GCF activities and projects.

The policy allows the GCF and Accredited Entities implementing GCF-funded activities to incorporate considerations regarding IPs into decision-making. This includes the anticipation and avoidance of adverse impacts that may be caused by the funded activities or, if avoidance is not possible, minimisation, mitigation and/or compensation of the impacts.

Considering there is no universally accepted definition of indigenous peoples, this document takes as reference the GCF's Indigenous Peoples Policy, which refers to indigenous peoples as a:

"distinct social and cultural group possessing the following characteristics in varying degrees:

(a) *Self-identification as members of a distinct indigenous social and cultural group and recognition of this identity by others;*
(b) *Collective attachment to geographically distinct habitats, ancestral territories, or areas of seasonal use or occupation as well as to the natural resources in these areas;*
(c) *Customary cultural, economic, social, or political systems that are distinct or separate from those of the mainstream society or culture; and*
(d) *A distinct language or dialect, often different from the official language or languages of the country or region in which they reside. This includes a language or dialect that has existed but does not exist now due to impacts that have made it difficult for a community or group to maintain a distinct language or dialect"*

The IPPF builds on (and directly complements) the broader Environmental and Social Management Framework (ESMF) for the IUS programme (Annex 6 to the GCF Funding Proposal) as well as the Gender Assessment & Gender Action Plan (GAP) (Annex 8 to the GCF Funding Proposal). These other documents include additional information about, *inter alia*, the Grievance Redress Mechanisms and processes available in the context of this programme – see in particular Annex 6. The IPPF includes the initial considerations for the involvement of IPs in the development and implementation of activities which may impact IPs, specifically in Belize and Jamaica. In Belize, the following two groups of indigenous peoples are recognised: the Maya and the Garifuna. In Jamaica, the following two groups are recognised: the Maroons and the Taíno.

Following the Caribbean Development Bank's (CDB) Environmental and Social Review Procedures and GCF's Environmental and Social Safeguards, Environmental and Social Policy and Indigenous Peoples Policy, the Indigenous Peoples Planning Framework will be applied at the national level in Belize and Jamaica to guide the development of an Indigenous Peoples Plan (IPP) in each country that will form part of each country's national Environmental and Social Management Plan (ESMP) – all of which will be prepared during the first year of programme implementation (hereafter referred to as "PY1"). The IPPF is designed to support the Programme to avoid, mitigate, or compensate any adverse impacts it may have on indigenous peoples, as well as enhance the likelihood that the benefits of the Programme are shared with these groups.

1.2 Methodological approach

This document was developed through desk review that was conducted using publicly available documents and information. The baseline demographic data for Belize was collected from the country's Population and Housing Census of 2010. At the time that the IPPF was written, the 2010 Census was the most recent document with disaggregated demographic data which included the ethnic groups of Belize.[2] There is no official national website or hub for information on these groups which made it difficult to find updated and official demographic information. Additional information was also collected from the World's Directory of Minorities and Indigenous Peoples, Indigenous Peoples Major Group for Sustainable Development and International Fund for Agricultural Development's (IFAD) Belize Technical Note on Indigenous Peoples' Issues. Meanwhile, the data for Jamaica was collected from

[1] Green Climate Fund (GCF) 2018
[2] The Population Census that was planned for 2020 was postponed due to the Covid-19 pandemic.

various sources, including data provided by Minority Rights Group and the World Directory of Minorities and Indigenous Peoples. Data was also sourced from a CDB-commissioned study (not published/publicly available) undertaken in the context of the regional project *Development of a Framework for Enhancing Engagement with and Support for Indigenous Peoples in the Caribbean.*

2 Baseline information

Belize recognises two ethnic groups as its indigenous peoples: the Maya and the Garifuna.[3] The Maya are direct descendants of the Mayans of the Yucatan peninsula. The Garifuna are descendants of an Afro-Indigenous community originally from the island of St. Vincent. In Jamaica, the main groups are the Taíno and the Maroons. The modern-day Taíno (Yamaye Guani Taino) are descendants of Arawak-speaking peoples originally from Belize and the Yucatan Peninsula. The modern-day Maroons are the descendants of Africans who fled slavery to settle in the interior of Jamaica.[4] The section below outlines the baseline information on these groups, their representation, and relevant legal framework.

2.1 The Maya[5]

The Mayan indigenous population of Belize descends directly from the Yucatan peninsula's original indigenous inhabitants.[6] They account for 11.3% of the total population in the country and are divided into three main groups: Ketchi, Mopan and Yucatec.[7] As shown in the table below, the Mayan Ketchi have the largest population (20,600) and in all three groups the number of men and women are similar.

Table 1: Population by Maya ethnic group affiliation and sex, Belize 2010

	Total	Males	Females
Maya Ketchi	**20,616**	10,342	10,274
Maya Mopan	**13,022**	6,436	6,586
Maya Yucatec	**2,869**	1,520	1,349

Source: IFAD 2017 based on the Belize Population and Housing Census 2010, p. 02

The majority of Mayan indigenous people of Belize live in the district of Toledo (see **Error! Reference source not found.**). In this district the indigenous population is equal to circa 66.5% of the total district population.[8] Most of the indigenous people of Belize live in rural areas.[9] The economic activities of the communities vary according to the region, in the North of Belize the Yucatecan grow sugarcane to produce sugar for export, meanwhile the communities in the south use traditional cropping methods for subsistence farming.[10]

Table 2: Population by Maya ethnic group affiliation and district (2010)

	Country total	Corozal	Orange Walk	Belize	Cayo	Stan Creek	Toledo
Maya Ketchi	**26,616**	399	254	1,118	1,904	1,852	15,089
Maya Mopan	**13,022**	169	297	926	2,371	3,910	5,349

[3] Statistical Institute of Belize (SIB) 2010
[4] https://webarchive.archive.unhcr.org/20230518102835/https://www.refworld.org/docid/4954ce122d.html
[5] Most of the baseline information is based on Belize's last national census which was in 2010 which is the most up to date information available.
[6] Statistical Institute of Belize (SIB) 2010
[7] IFAD 2017
[8] SIB 2010
[9] Grupo Mayor de los Pueblos Indígenas 2020
[10] IFAD 2017

	Country total	Corozal	Orange Walk	Belize	Cayo	Stan Creek	Toledo
Maya Yucatec	**2,869**	590	226	278	1,699	47	29

Source: IFAD 2017 based on the Belize Population and Housing Census 2010, p. 03

The three groups speak three different languages: Q'eqchi' (Ketchi) Mayan, Mopan Mayan and Yucatecan Mayan. While 86% of the Mopan Mayan people consider Mopan Mayan as their first language and 96% of Ketchi Mayans consider Q'eqchi' Mayan to be their first language, the Yucatecan Mayan is being displaced by Spanish.[11]

As shown in , the adult literacy rate of indigenous peoples is lower than the national average (circa 80%).[12] It is also worth noting that even though in the national average women's literacy rate (circa 84%) is higher than men's (circa 75%), amongst the Ketchi and Mopan women's literacy rate is below their male counterparts.

Table 3: Adult literacy rate per indigenous ethnicity

	Total			Males			Females		
Ethnic Groups	Population	Completed At Least Standard Five	Literacy Rate	Population	Completed At Least Standard Five	Literacy Rate	Population	Completed At Least Standard Five	Literacy Rate
Population 15 + Years (Adult Literacy Rates)									
Maya Ketchi	11,101	7,222	65.1	5,613	3,764	67.1	5,488	3,458	63.0
Maya Mopan	7,466	5,525	74.0	3,711	2,856	77.0	3,755	2,669	71.1
Maya Yucatec	2,152	1,684	78.3	1,153	897	77.8	999	787	78.8

Source: Grupo Mayor de los Pueblos Indígenas 2020, p. 15 adapted from Belize Population and Housing Census 2010

In terms of access to services, though there are no disaggregated data for indigenous peoples in Belize, the data per district shows that Toledo – the district with the highest indigenous population – is the district where people have the least access to public services such as public electricity and piped water.[13] Additionally, Toledo is the district where the use of wood for cooking activities is most common, and the use of biogas is least common.[14] The poverty rate for the Maya is circa 77%, much higher than the national average of 52%.[15] It is also worth noting that the indigenous peoples who live in cities live mostly in marginalised neighbourhoods with low access to basic services such as water and sanitation.[16]

There are many Mayan communities which still rely on traditional ways of life and have strong connection to the land and forest. For example, the Maya Ketchi in the south of Belize still rely on subsistence farming practices, growing corn, beans and rice.[17] The forest also provides them with shelter and medicine.[18]

[11] IFAD 2017
[12] SIB 2010
[13] SIB 2010
[14] SIB 2010
[15] SIB 2021
[16] Grupo Mayor de los Pueblos Indígenas 2020
[17] Ch'oc 2010
[18] Ch'oc 2010

2.2 The Garifuna

The Garifuna (Garinagu) are descendants of an Afro-indigenous population of the island of St. Vincent who were exiled to the Honduran coast in the 18th century and later migrated to Belize.[19] The first settlement in Belize was established at Dangriga, which still holds the largest Garifuna population in the country. They account for 6.1% of the total population (15,000) and reside mainly on the coast, in the districts of Stann Creek and Belize (see table below).[20] Circa 85.4% of the population is under the age of 50.[21]In terms of sex, there are circa 7,800 women in the Garifuna population.[22] The Garifuna language is being displaced by Creole,[23] with only about 2.9% of the population able to speak the language.[24]

Table 4: Garifuna population by district (2010)

	Country total	Corozal	Orange Walk	Belize	Cayo	Stann Creek	Toledo
Garifuna	**15,082**	244	268	3,735	1,061	8,267	1,507

Source: SIB 2010, p. 78

Garifuna are amongst the ethnic groups with the highest adult literacy rate at 94.5%.[25] The poverty rate among the Garifuna is 52%, which is about the same as the national average.[26] The Garifuna rely mainly on agriculture, fishing and foreign remittances, while those who live in urban areas often pursue professional occupations.[27]

2.3 The Taíno

Robust national-level survey data on the number of Taíno in Jamaica is not readily available, but some estimates suggest that the population is around 3,000 individuals.[28] Communities that include Taíno are found in the parishes of St. Mary, St. Elizabeth, Westmoreland, Hanover, St. Catherine, St. Ann's, Portland, St. Thomas and Manchester.

A significant proportion of people who identify as Taíno engage in farming, fishing and handicrafts. More detailed socio-economic data is not readily available.[29]

More broadly, it is important to note that many stakeholders in Jamaica had previously not recognized the existence of modern-day Taíno, and this awareness gap remains among some segments of the population. Nevertheless, there has been a significant Taíno resurgence in recent years. Taíno people and communities have become more active and sought to preserve and revive ancestral gardens, and also revive Taíno cultural practices, rituals and ceremonies. These are among the findings of community-level consultations that were organised in the Taíno Woodside community in the context of the CDB-financed regional project *Development of a Framework for Enhancing Engagement with and Support for Indigenous Peoples in the Caribbean.* These consultations have also pointed to community needs and challenges as well as potential solutions. Those that are relevant to the IUS Programme are briefly summarized below.

- Consultations with representatives from the Taíno community of Woodside indicated that the need for enhanced infrastructure and utilities was a top priority. Although their primary needs in this context relate to improved water access and wastewater connections, the need for sustainable energy solutions was also highlighted.

[19] Minority Rights 2017b
[20] SIB 2010
[21] SIB 2010
[22] SIB 2010
[23] IFAD 2017
[24] SIB 2010
[25] SIB 2010
[26] SIB 2021
[27] Minority Rights 2017b
[28] https://minorityrights.org/communities/yamaye-taino-people-in-jamaica/
[29] Ibid.

- The need for fit-for-purpose financial support was also identified as being among the key measures required to help address the above-mentioned infrastructure and utilities-related challenges. Indeed, enhanced financial support and improved access to financial solutions was identified by both the Taíno and Maroon communities as the number one type of resource needed to sustain and build on the achievements they have made to date with regards to social and economic development.
- Consultations with Taíno peoples indicated that engagement during workshops and trainings has often been limited, and that more active outreach to such communities coupled with fit-for-purpose materials would be needed to enhance engagement and buy-in.
- When asked about climate change, 25% of Taíno respondents indicated that heat stress is becoming an increasingly significant challenge, with rising temperatures directly affecting daily life and forcing many to remain indoors during extreme heat.
- The Taíno representatives from Woodside who were consulted indicated that the reliability of power supply has been an issue since the passage of Hurricane Beryl in 2024, and that decentralized sustainable energy solutions should be considered to enhance reliability and resilience.

2.4 The Maroons

Robust national-level survey data on the number of Maroon people living in Jamaica is not readily available, although data from the Institute of Jamaica suggests that there are about 700 Maroon individuals living in the four main self-reliant Maroon villages of Charles Town, Moore Town, Accompong Town and Scott's Hall.[30] A number of Maroon communities also acknowledge their Taíno ancestry and continue to practise Taíno traditions along with their African heritage.

In the four main Maroon villages, agriculture and tourism are among the key sources of livelihoods. More detailed socio-economic data is not readily available.

The consultations organized in the context of the CDB-financed regional project *Development of a Framework for Enhancing Engagement with and Support for Indigenous Peoples in the Caribbean* helped identify many of the same community needs, challenges and solutions in the Maroon community of Charles Town as those that were identified among the Taíno. Those that are relevant to the IUS Programme are briefly summarized below.

- Similar to the Taíno community of Woodside, representatives from the Maroon community of Charles Town indicated that the need for enhanced infrastructure and utilities – including sustainable energy solutions such as distributed solar – was a top priority.
- As with the consultations in Woodside, the Charles Town consultations pointed to the need for fit-for-purpose financial support to make the kinds of investments (incl. in sustainable energy solutions) that are required.
- These consultations also reinforced the need for more active outreach to Maroon communities coupled with fit-for-purpose materials to enhance engagement and buy-in.
- The Maroon individuals who were consulted echoed the fact that heatwaves and heat stress are becoming a more pronounced issue as the climate changes.
- Similar to the Taíno, the consultations in Charles Town also indicated that Maroon communities have had challenges with the reliability of the power supply since the passage of Hurricane Beryl in 2024, and that decentralized sustainable energy solutions should be considered to enhance reliability and resilience.

2.5 Representation of indigenous groups

Belize is a parliamentary democracy and political representation in the country is limited to the party system. Indigenous people in Belize are not allowed to form traditional, non-party government structures. [31] At the local level, although the country's constitution does not contemplate local

[30] https://instituteofjamaica.org.jm/
[31] IFAD 2017

governance structures, there have nevertheless been attempts to introduce legislation which provides the framework for local governance, such as the *alcalde* system.

The *alcalde* system is used predominantly by indigenous communities in the south and contemplates an elected leader – the *alcalde* - who is the administrative head of the village but also has judiciary powers.[32] This leader has the power to decide who can live in the village and is responsible for maintaining the order.[33]

Some Mayan leaders have come together to form groups such as the Mayan Leaders Alliance, Mayan Cultural Council of Toledo, the Q'eqchi Council of Belize, the Maya Women's Council of Toledo, the Xunantunich, Ukuxtal Masewal Association, the Maya Institute of Belize.

The Garifuna have formed the National Garifuna Council, which together with the aforementioned organisations, founded the National Indigenous Council of Belize (BENIC). These associations are active in the defence of indigenous customary rights, especially land rights.

In Jamaica, the Taíno community does not have its own formal governance structures. In this sense, the Taíno are different from the Maroons. The four principal Maroon villages (Charles Town, Moore Town, Accompong Town and Scott's Hall) are self-governing with an elected council. However, it is also important to note that residents often utilize the formal Jamaican judicial system.

In addition to local-level councils, the Yamaye Council of Indigenous Leaders (YCOIL) represents both Taíno and Maroon communities in Jamaica. This body was formerly known as the Maroon Secretariat, but in 2019 it began representing Taíno communities (and advocating for their interests) as well. The YCOIL is currently composed of the Maroon Indigenous Women's Circle, the Moore Town Maroons, the Scott's Hall Maroons, the Charles Town Maroons and the Yamaye Guani Taíno People of Jamaica.

2.6 National policies and international commitments

Belize

The 1982 Constitution of Belize recognises the right to "*freedom from prejudice on the basis of race, place of origin, political opinion, colour, credo or sex (article 3), and prohibiting discrimination* (article 16)"[34] and its amendment preamble affirms that the State needs to protect the cultural identity and values of all Belizeans – including indigenous peoples. However, it does not recognise indigenous customary rights or jurisdiction and there is legal insecurity in terms of land rights, access to education, technology, as well as access to capital to invest in socio-cultural resources.[35]

Indigenous land rights are not fully recognised, and this is one of the main issues for the communities in Belize. Indigenous communal lands (reservations) are under a land tenure regime designed during the colonial period and which gives the Government the right to manage these lands.[36] The government has authorised the exploration of natural resources, such as mining and logging, in the reserves without the consent of the communities.

The Inter-American Commission on Human Rights (IACHR) published a report in 2004 recognising the collective rights of land that was traditionally occupied by the Maya and the Government of Belize was found to have violated the Maya people's rights. Considering the IACHR report, the Maya Leaders Alliance and the Toledo Alcaldes Association took the government to court in 2007 and the Supreme Court of Belize ruled in favour of the communities, recognising the property rights of the Q'eqchi and Mopan Maya Communities. Since then, the Supreme Court has ruled in favour of the indigenous communities in other cases. In 2013, the Sarstoon-Temash Institute for Indigenous Management (SATIIM) won a case in the Supreme Court against oil exploration in the park without the indigenous

[32] OAS 2015
[33] AOS2015
[34] IFAD 2017, p. 08
[35] IFAD 2017
[36] IFAD 2017

community's consent, gaining recognition of the communities' rights within the park.[37] In 2015, the Court recognised the rights to customary and traditional lands of the Maya in Southern Belize. The Court ruling also required the government to start working on a consultation process for the necessary administrative and legal provision for the demarcation and registration of communal lands.[38] In spite of these rulings being seen as some progress and recognition of the indigenous rights over their lands, the government of Belize has not completely fulfilled the requirements stipulated in these rulings.[39]

Free, Prior and Informed Consent (FPIC) has also been an issue for Belize's Indigenous peoples. Belize is not signatory to the International Labour Organisation (ILO) Convention 169. Meanwhile, in 2015 the Caribbean Court of Justice (CCJ) issued a Consent Order requiring the government to obtain and uphold FPIC, to which the government responded by adopting an FPIC protocol on 25 January 2022.[40] Nevertheless the protocol has received criticism from the Toledo Alcaldes Association (TAA), the Maya Leaders Alliance (MLA) and from the Garifuna Nation representative. The main criticism is that the representative organisations were not properly consulted, there was no participation from the Garifuna people, as well as the fact that the document submitted by the government changed in many instances[41].

International Commitments

The table below summarises the status of adoption of the most relevant treaties.

Table 5: Status of relevant international treaties

Status	International Convenant on Economic, Social and Cultural Rights	ILO Convention No.169	Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)	Optional Protocol to CEDAW	Belem do Para Convention
Signed	September 2000	-	March 1990	-	November 1996
Ratified	March 2015	-	May 1990	December 2002	November 1996

Source: UN Treaties no date

The country has also supported the adoption of the Declaration on the Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities and of the United Nations Declaration on the Rights of Indigenous People.

Jamaica

Although there is widespread recognition of the Maroon culture and peoples, and increasing recognition of the modern-day Taíno, neither the Maroons nor Taíno are formally recognised by the government as Indigenous Peoples. Stemming in part from this, there is no national policy or law related to the rights and treatment of Indigenous Peoples in Jamaica. Similarly, there is no clearly defined framework for ongoing engagement between the government and the Taíno or Maroon communities. Specifically with regards to the Maroons, the government has largely respected the Maroon peace treaties/agreements that predate Jamaican independence, but available sources indicate that the government has not formally ratified them.

The Jamaican government provides key infrastructure for the four main Maroon villages – i.e. Charles Town, Moore Town, Accompong Town and Scott's Hall. The government does not collect taxes on Maroon lands, but because of issues with the recognition of Maroon land rights, the people cannot sell the land or use it as collateral (e.g. for a loan).

[37] Sarstoon-Temash Institute for Indigenous Management (SATIIM) no date
[38] Minority Rights 2017a
[39] Minority Rights 2017a
[40] Ministry of Human Development, Families and Indigenous Peoples' Affairs 2022
[41] Magnusson 2022; Amandala 2022

Although there is no formal national policy or law in Jamaica specifically related to Indigenous Peoples and their rights, the Government of Jamaica has signed and ratified several relevant international treaties and conventions.

Status	International Convenant on Economic, Social and Cultural Rights	ILO Convention No.169	Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)	Optional Protocol to CEDAW	Belem do Para Convention
Signed	December 1966	-	July 1980	-	2005
Ratified	October 1975	-	October 1984	-	2005

In addition, Jamaica voted 'yes' on the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), which was adopted by the United Nations General Assembly in 2007.

In line with these international treaties and UNDRIP, many stakeholders in Jamaica are actively advocating for the government to formally recognize both the Taíno and Maroons as Indigenous Peoples. The desire for such recognition was also echoed during the consultations organized as part of the CDB-financed regional project *Development of a Framework for Enhancing Engagement with and Support for Indigenous Peoples in the Caribbean.*

3 Key findings and analyses of impact, risk and opportunities

3.1 Assessment of impact, risks and opportunities

The following potential risks and impacts, as well as opportunities, associated with programme activities were identified during the programme design.

Table 6: Overview of potential risks and impacts

Output	Risks and impacts	Opportunities
1.1 Strengthened regulatory and institutional frameworks facilitating the deployment of distributed RE, EE and other DER technologies.	• The knowledge, culture, and practices, as well as unique needs, of IPs are not recognised in the context of the updated regulatory and institutional frameworks that are supported through the programme, and which will help guide the development trajectory of the energy sector – notably the transition toward more distributed energy systems – over the coming years.	• Efforts to advocate for enhanced understanding of the unique needs of IPs when updating regulatory and institutional frameworks can contribute to broader efforts to improve overall recognition of IP groups, their rights, and the needs and challenges they face.
1.2 Enhanced capacity of customers to invest in distributed RE, EE and other DERs through the IUS model.	• Information about the benefits of RE, EE and other DERs is not prepared in an inclusive, culturally appropriate and accessible manner, and thus does not reach IP households and IP-led businesses. • Information about opportunities to access support/financing through the programme is not prepared in an inclusive, culturally appropriate and accessible manner, and thus does not reach IP households and IP-led businesses. • Information about potential costs and benefits of engaging with the IUS	• IP-led households and businesses that are not already fully aware of the benefits of distributed RE, EE and other DERs will develop an enhanced understanding of these technologies – and how they can help address some of the key challenges these communities face (including unreliable power supply, heat stress, etc.) as noted above. • IP-led households and businesses may develop an enhanced understanding of innovative financing solutions (i.e. IUS) that do not rely on the types of traditional bank-based financing models that can structurally disadvantage IPs

Output	Risks and impacts	Opportunities
	programme (including the risk of indebtedness) is not prepared in an inclusive, culturally appropriate and accessible manner, and thus does not reach IP households and IP-led businesses. • Information about how to apply for free energy audits is not prepared in an inclusive, culturally appropriate and accessible manner, thus limiting the extent to which IP households and IP-led businesses can apply.	due to, *inter alia*, limited land rights and ability to use land as collateral. • Through free energy audits, IP-led households and businesses can develop an improved understanding of their current energy use patterns and how best to optimize them – services that they may otherwise struggle to access, leaving them with a limited understanding of how sustainable energy solutions could be specifically catered to address their unique needs.
1.3 Increased technical capacity of utilities, TSPs and other stakeholders to deploy and maintain distributed RE, EE and other DER technologies.	• The knowledge, culture, and practices, as well as unique needs, of IPs are not recognised when strengthening the capacity of electric utilities and TSPs, both of which will help guide the development trajectory of the energy sector – notably the transition toward more distributed energy systems – over the coming years.	• Electric utilities and TSPs may develop an enhanced understanding of IP groups in their respective jurisdictions, and become more sensitized to their unique needs and circumstances – and (by extension) be better able to cater the provision of services accordingly.
2.1 Installation of distributed RE, EE and other DER technologies, as well as complementary smart meters/AMI, among a critical mass of utility customers, including households, businesses and public sector entities.	• Limited or low acceptance of eligible technologies. • Sub-project application documents and processes do not consider the culture and customary practices of IPs, reducing the extent to which IP households and IP-led businesses can benefit from the investment component of the programme. • Traditional indigenous housing structures may not be built to code and thus able to easily accommodate all eligible technologies, particularly rooftop solar PV. • The high incidence of poverty among IP groups – particularly in Belize – may result in some of them not being eligible to access financial support through the programme.	• Initial technical capacity has already been built in Toledo District (Belize) to deploy solar energy technologies through prior training of Maya women, who subsequently established their own company: Belize Power Connected Limited. • BEL has prior experience working with/supporting IP groups in Belize to improve access to electricity, providing a strong foundation for further support to such groups in the context of the IUS Programme.

3.2 Measures to avoid, minimise and mitigate negative impacts and enhance positive impacts and opportunities

The following indicative mitigation measures can be applied during programme implementation to ensure that risks to IPs are minimised and that positive benefits are enhanced.

Table 7: Overview of indicative mitigation measures to be potentially included in an IPP

Output	Mitigation measures
1.1 Strengthened regulatory and institutional frameworks facilitating the deployment of distributed RE, EE and other DER technologies.	• The knowledge, culture, practices and unique needs of IPs are to be recognised and considered as part of the technical assistance and capacity building activities that aim to strengthen the regulatory and institutional frameworks for the energy sector.

Output	Mitigation measures
1.2 Enhanced capacity of customers to invest in distributed RE, EE and other DERs through the IUS model.	• The following types of information are to be developed in an inclusive, culturally appropriate and accessible manner for the IP groups in Belize and Jamaica: (i) information about the benefits of RE, EE and other DERs; (ii) information about opportunities to access support/financing through the programme; (iii) information about the potential costs and benefits of engaging with the IUS programme (including the risk of indebtedness); and (iv) information about how to apply for free energy audits.
1.3 Increased technical capacity of utilities, TSPs and other stakeholders to deploy and maintain distributed RE, EE and other DER technologies.	• The knowledge, culture, practices and unique needs of IPs are recognised and considered as part of the technical assistance and capacity building activities (including trainings) for the participating electric utilities and TSPs. • Invite IP-led TSPs (including Belize Power Connected Limited, founded by Maya women as outlined in Table 6 above) to participate in the TSP trainings organized under Output 1.3.
2.1 Installation of distributed RE, EE and other DER technologies, as well as complementary smart meters/AMI, among a critical mass of utility customers, including households, businesses and public sector entities.	• Development of promotional materials in an inclusive, culturally appropriate and accessible manner to enhance understanding and acceptance of eligible technologies. • Support the development of IUS products/service offerings that respond to the needs of highly vulnerable and low-income segments of the population, including IPs. • Support the electric utilities to develop application processes and systems in a manner that enhances inclusivity and accessibility. • Work with local sustainable energy advocates/champions in IP communities (including the Maya women in Belize who have received certification as sustainable energy engineers, as outlined in Table 6 above) to support outreach to potential IP beneficiaries, help raise awareness about programme-related opportunities, stimulate demand among IP groups, and assist IP-led households and businesses to assess the suitability of specific technologies for their households/businesses. • When identifying suitable TSPs to support deployment/installation of technologies under Output 2.1, encourage IP-led TSPs (including Belize Power Connected Limited, founded by Maya women as outlined in Table 6 above) to seek pre-qualification, enabling them to be included in the list of pre-qualified TSPs (if they are able to meet the pre-qualification criteria). • Provision of flexibility with regards to the proportion of programme financing that can be used for various eligible technologies, thus allowing the utilities to support IP-led households and businesses to install some technologies that respond to their needs (e.g. efficient ACs to combat heat stress) even if their current structures cannot accommodate rooftop solar PV in the short run. In addition, ground-mounted PV installations will also be possible.

4 Guidelines for developing an Indigenous Peoples Plan (IPP)

4.1 Process and requirements

During PY1, the CDB-contracted Implementation Support Consulting Firm will assist national counterparts in Belize – particularly Belize Electricity Limited (BEL) – and Jamaica – particularly the Jamaica Public Services Company (JPS) – to each develop a national-level Environmental and Social Management Plan (ESMP) that will provide detailed step-by-step instructions on how to avoid, reduce, mitigate and manage environmental and social risks throughout the implementation of programme activities in their respective jurisdiction. As part of the development of the ESMPs for Belize and Jamaica, the Implementation Support Consulting Firm will also support the development of a

corresponding Indigenous Peoples Plan (IPP) in consultation with affected indigenous peoples communities. The IPP will account for all programme activities under Components 1 and 2, and will help ensure that all aspects of programme execution contribute to both: (i) avoiding, reducing, mitigating and managing any potential risks or negative impacts from the programme on IPs in Belize and Jamaica; and (ii) enhancing the ability of IPs in Belize and Jamaica to benefit from the programme.

Following the principles of CDB's Environmental and Social Review Procedures, the process of developing the IPP will involve, *inter alia*, the following steps and factors:

- Identification of the relevant/impacted indigenous groups;
- Involvement of these groups in a culturally appropriate gender inclusive and responsive way to assess the impacts and propose mitigation measures; and
- Making their preferences and views known to decision makers and reflecting them in the delivery of programme activities/support when possible.

In line with the CDB ESRP, the two IPPs to be developed during PY1 will include a time-bound work plan and will be fully budgeted. In this context, every effort shall be made to promote sustainable development benefits and opportunities for IPs in a manner that is inclusive and culturally appropriate.

4.2 Meaningful Engagement and Consultation

At national level

As outlined above, the national-level IPPs to be developed during PY1 will be designed and prepared in consultation with relevant indigenous groups, and the final Plan will be validated by these groups. When doing so, all information will be presented in a culturally appropriate manner. This consultative process will utilise key principles associated with FPIC, recognising that:

- Meaningful consultation requires the involvement of indigenous representative bodies and organisations, and when deemed necessary other community members such as indigenous women and youth.
- It is especially important to take into consideration the interests of those who can be marginalised, such as women, youth, people with disabilities and the elderly.
- The participation of the indigenous people needs to be legitimate, effective and free of manipulation.
- The consultations should happen as early as possible in the project development and should give the indigenous peoples time for internal deliberations and decision-making processes.

At sub-project level

FPIC is not expected to be required at sub-project level because the programme utilises an opt-in model and supports small-scale sub-projects for which the scope is limited to the premises of the customers that have decided to opt-in and access programme support. In other words, any/all sub-projects that involve or affect IPs would be developed and led by IP beneficiaries.

4.3 Indicative outline of the Indigenous Peoples Plan

Following the requirements of GCF's Indigenous Peoples Policy and CDB's ESRP, the IPP will be informed and guided by the IPPF, Social Assessment, and further consultations, including free, prior and informed consultation with the IPs as required. It is expected to include, inter alia, the following sections, while also being a 'living document' that can be updated if/as needed:

(a) Executive summary
(b) Detailed description of activities: A description of the activities to be undertaken under Components 1 and 2 of the programme.

(c) **Baseline Information**: A description of the indigenous peoples, existing environmental, social and gender conditions relevant to the project location and area of influence, as well as applicable legal and institutional framework.
(d) **Impacts and risks analysis**: Including analysis of the direct, indirect cumulative environmental, social, and gender impacts and risks. It should include opportunities for enhancing environmental, social and gender benefits.
(e) **Mitigation measures**: Measures to avoid, minimise and mitigate negative impacts and enhance positive impacts and opportunities.
(f) **Consultation processes**: Summary of the consultation process and results and description of consultation and consent processes planned for implementation.
(g) **Benefit sharing plans**: identified measures to ensure equitable social and economic benefits are received by the IP.
(h) **Grievance redress mechanisms**: Description of accessible procedures to address grievances that may be brought by the IP during implementation.
(i) **Costs, budgets, timetable, organisational responsibilities**.
(j) **Monitoring, evaluation, and reporting**: Including the description of processes and organisational responsibilities and ways to consider input from project-affected IPs processes and mechanisms.

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Scaling up the Deployment of Integrated Utility Services (IUS) to Support Energy Sector Transformation in the Caribbean programme
Annex 6: ESMF
Appendix D: Indicative outline for national-level ESMPs

As outlined in the ESMF, a national-level Environmental and Social Management Plan (ESMP) will be developed for/with counterparts in each of the three participating countries during the first year of programme implementation (PY1). These ESMPs will provide clear guidance and instructions to the relevant national counterparts – particularly the electric utilities that will serve as national Executing Entities – on how to properly identify, assess, mitigate and manage environmental and social risks during programme execution.

Each national-level ESMP is tentatively expected to include the following information, in line with the requirements outlined in CDB's Environmental and Social Review Procedures (ESRP). This information may be adapted to suit the specific needs of the IUS programme as well as those of each individual country for which the ESMP is being developed.

Summary of Potential Impacts
Summarises the potential environmental and social impacts which must be mitigated, as well as potential enhancement measures.

Planned Mitigation Measures
Describes the planned mitigation measures in relation to the impacts and conditions under which they are required; includes environmental assessment process to be conducted in case of major changes in project scope; and sets out clear and achievable targets and indicators for the level of mitigation to be achieved.

Monitoring Programmes and Parameters
Provide environmental performance indicators, parameters to be measured, methods to be used, sampling locations and frequency of measurements, detection limits and thresholds to signal the need for corrective actions.

Public Consultation
Provide a plan for public multi-stakeholder consultation during the preparation and implementation of the ESMP. The degree of consultation depends on the project and local situation, but normally includes information available in a timely manner, and in location(s), format(s) and language(s) that allow relevant stakeholders to form an opinion and comment on the proposed course of action. This process includes:
(a) notification of local communities when project activities are going to take place, how monitoring will occur, and proposed mechanisms for feedback; and
(b) disclosure of monitoring programme results and consultation on these findings.

Mechanisms for Feedback and Adjustment
Outlines the procedures and mechanisms that will be used to modify and reshape the project, in light of monitoring results, and the findings of consultations. A feedback mechanism should be included in the ESMP to provide for modifications to the project.

Institutional Arrangements for Mitigation and Monitoring

Define the organisational responsibilities to ensure implementation of the ESMP and the arrangements for information flow and coordination between responsible agencies. It also specifies the organisations and individuals that will be responsible for these tasks including enforcement of remedial actions. It should also describe the institutional responsibilities for staffing, training, and the provision of counterpart funding.

Measures for Capacity Building

Proposes any required institutional strengthening measures necessary to achieve these tasks, including the formation of new structures responsible for monitoring and reporting, as required; the recruitment of new staff and consultants; and associated training. A third party may be contracted for monitoring activities where the capacity of local authorities is limited.

Responsibilities for Reporting and Review

Specifies reporting responsibilities of contractors, Borrowers/sponsors, local authorities, and lenders; and clarifies who prepares, submits, receives, reviews, and approves key reports. The structure, content, and timing of reporting should be specified and should facilitate supervision by CDB.

Implementation Schedule and Work Plan

Provide details on the timing, frequency, and duration of mitigation measures and arrangements for monitoring and reporting. The responsibilities and requirements of contractors are to be clearly described and integrated into bidding/contract documents, to ensure that contractors are clear about their obligations. Where supervision identifies inadequacies in implementation of agreed actions, such documents provide a basis for enforcement and reporting.

Cost Estimates

All costs for implementation of the ESMP, including operation and maintenance, should be included as a budget.

Scaling up the Deployment of Integrated Utility Services (IUS) to Support Energy Sector Transformation in the Caribbean programme
Annex 6: ESMF
Appendix E: Key E&S-related tasks for programme-contracted consultants

As outlined in Annex 6: ESMF, several consultants will be contracted by/through the programme to support timely and effective execution of programme activities. These consultants will consistently fulfill many roles and contribute to many activities under Components 1 and 2. This Appendix therefore includes a list of the consultants whose mandates/responsibilities will include support for robust E&S risk management, along with information about how they will contribute. This will be reflected in the more detailed Terms of Reference that will be developed for each consultancy during the programme start-up phase, along with the numerous other tasks and responsibilities that these consultants will be expected to fulfil.

Consultant 1: Implementation Support Consulting Firm
The Implementation Support Consulting Firm will be procured and contracted by the CDB TA Execution Team to support timely and effective delivery of many activities under Components 1 and 2. A full overview of their expected contributions is included in the budget notes in Annex 4: Detailed Budget Plan. The team of Key Experts and non-Key Experts to be assembled by the Implementation Support Consulting Firm is expected to include a Safeguards Specialist who will play a particularly important role in ensuring the firm provides the following support:

- Supporting the three electric utilities (as national Executing Entities) to develop their respective country/utility-specific operational manuals, which will provide detailed guidance related to the execution of their respective lines of credit under Component 2 – including aspects related to E&S risk management.
- Supporting the three electric utilities (as national Executing Entities) to develop their respective Environmental and Social Management Plans (ESMPs), including disposal plans. These ESMPs and disposal plans will provide detailed guidance to support the proper identification, assessment, mitigation and management of E&S risks throughout the sub-project workflow/cycle.
- Support the preparation of national-level Indigenous Peoples Plans (IPPs) in Belize and Jamaica.
- Preparing and delivering trainings for the three electric utilities to capacitate them to comply with programme compliance requirements, including those related to E&S risk management.
- Preparing and delivering trainings for TSPs to capacitate them to comply with programme compliance requirements, including those related to E&S risk management.
- Supporting the three electric utilities (as national Executing Entities) to review/appraise individual sub-project applications, including by reviewing the E&S risk screening checklists and (if/as needed) supporting the preparation and/or review of ESHS plans.

Consultant 2: National Energy Consultants
Three (3) National Energy Consultants will be procured and contracted by the electric utilities (1 per utility) to support them in fulfilling their roles as national Executing Entities. The National Energy Consultants will particularly be involved in supporting the preparation of applications, the contracting of TSPs, as well as the monitoring and reporting of approved sub-projects. These consultants will therefore also assist the utilities to: (i) prepare ESHS plans if/as needed; (ii) ensure E&S-related provisions are reflected in the contracts between the utilities and TSPs for individual sub-projects; and (iii) support the utilities efforts to monitor/verify that TSPs have complied with the ESHS plans and fully implemented the agreed E&S risk mitigation and management measures.

Consultant 3: Supplementary Data Gathering Firm

The Supplementary Data Gathering Firm will be procured and contracted by the CDB TA Execution Team to gather supplementary data from beneficiaries on a rolling basis between PY2-6 to support robust programme monitoring and reporting. The firm will follow up with a sample of beneficiary customers to review and verify the data that has been reported through other/lower-cost avenues (i.e. review of electricity meter data, which will be the standard for checking performance progress associated with installed technologies in line with the process and requirements outlined in Annex 22). When following up with individual customers, the Supplementary Data Gathering Firm will also check/verify that the customers' perspectives on the implementation of E&S risk mitigation and management measures is consistent with the reporting provided by the TSPs as well as the monitoring and reporting done by the utilities (e.g. through their National Energy Consultants).