Caribbean Efficient and Green-Energy Buildings Project

This report is produced for the OECS Commission as part of the Project Preparation Activities of the Caribbean Efficient and Green-Energy Buildings with funding from the World Bank.

Task 5

Marketing and National Importing Board

Grenada - September 2025

This report was produced by SEG Ingeniería.

Content

1. Site Description and Scope of Works

1.1. Subproject Scope

This Environmental and Social Management Plan (ESMP) has been developed under the Caribbean Efficient and Green-Energy Buildings Project (CEGEB) supported by the World Bank, under the responsibility of the Organization of Eastern Caribbean States (OECS) at the regional level, and the Grenada's Ministry of Climate Resilience, the Environment and Renewable Energy (MCRERE) at the national level.

The ESMP document aligns with the requirements of the CEGEB Environmental and Social Management Framework -ESMF (March 2025 Draft)-. It aims to ensure that energy efficiency and renewable energy improvements are implemented sustainably, minimizing potential adverse impacts while enhancing positive outcomes.

The subproject addresses the **Marketing & National Importing Board (MNIB)** building located on River Road. The MNIB is a statutory body in Grenada responsible for the purchase, distribution, and export of fresh and processed agricultural produce, as well as the importation of essential food items to ensure national supply. It supports local farmers by facilitating market access, operates facilities for storage, refrigeration, and processing, and plays a key role in the country's food security. The site under study comprises a large facility with a total floor area of approximately 2,600 m². A main building houses warehouse space, cooling chambers, packing rooms and administrative offices, and an auxiliary building accommodates additional operations.

Implementation of the CEGEB Project at MNIB will result in a range of positive impacts, including:

- Reduced energy consumption, lowering operating costs and greenhouse gas emissions.
- Generation of clean, renewable energy via solar photovoltaic (PV) systems, supporting national climate resilience and energy independence goals.
- Improved indoor comfort and air quality for MNIB facility users, resulting from upgraded ventilation, temperature control, and filtration systems.
- Increased public awareness and demonstration of sustainable technologies, positioning the project as a visible model for energy-efficient and climate-smart infrastructure in the Caribbean.
- Local employment and capacity building opportunities, as contractors and technicians engage in clean energy installation and environmentally sound construction practices.

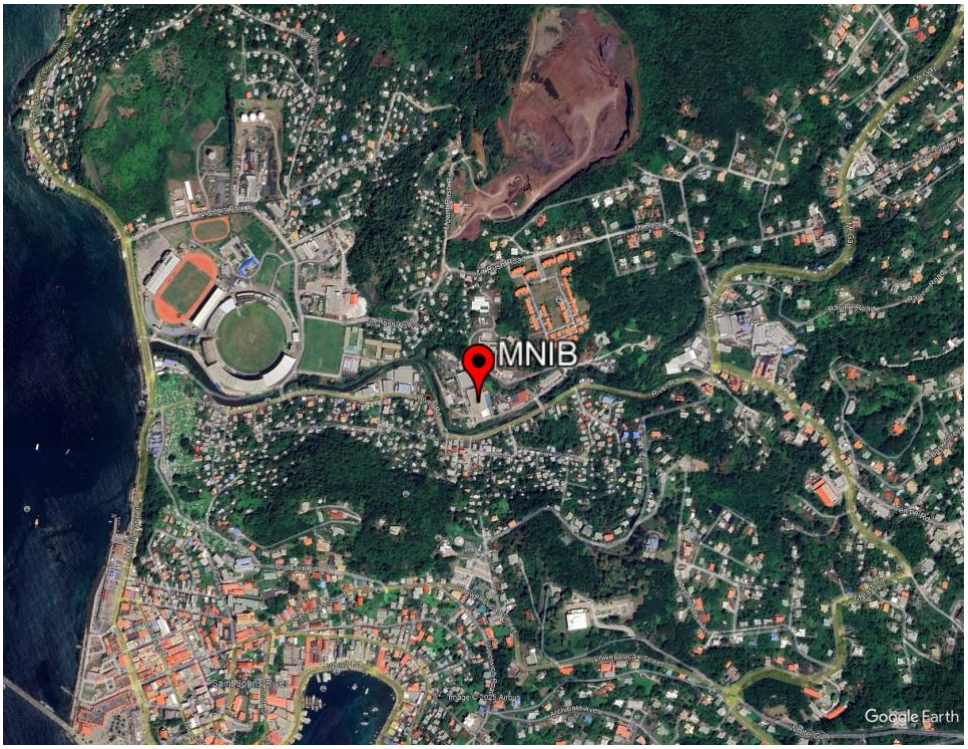

Figure 1.1. Location of the MNIB building

Figure 1.2. Front of the MNIB building

1.2. Geographic Conditions

The State of Grenada is in the south-eastern Caribbean Sea and forms part of the Windward Islands in the Lesser Antilles. It comprises three main islands: Grenada, the largest and most populous; Carriacou, located approximately 32 kilometres to the north-east; and Petite Martinique, a small island situated just east of Carriacou. While Grenada serves as the administrative, economic, and infrastructural centre of the country, Carriacou and Petite Martinique are more rural in character and maintain strong cultural and economic ties to traditional livelihoods such as fishing, boat building, and small-scale agriculture.

Grenada is a volcanic island. Its topography is shaped by a north–south ridge of mountains, with steeper slopes on the western side and a more gradual incline towards the east and south-east. The highest point is Mount Saint Catherine, which rises to 840 metres above sea level. The terrain is rugged, characterized by steep-sided valleys and a landscape that is both ecologically rich and visually striking. Numerous rivers and streams originate in the central highlands, providing freshwater resources that are essential for domestic use, agriculture, and biodiversity conservation. The soils, derived from volcanic parent materials, are generally fertile but prone to erosion, particularly in areas with steep gradients or insufficient vegetation cover.

Grenada's forested areas are of high environmental value. Nearly half of the country's total land area is covered by forests—approximately 10,000 acres (4,000 hectares). These forests fulfil multiple functions, including the production of timber, the provision of wildlife habitat, and the maintenance of essential ecosystem services such as watershed protection and carbon sequestration. Moreover, Grenada's forests significantly contribute to the country's tourism sector, offering a pristine and biodiverse landscape that supports eco-tourism and enhances the national economy.

The country experiences a tropical maritime climate, with warm temperatures year-round, high humidity, and a pronounced wet season. Rainfall is heaviest from June to November, coinciding with the Atlantic hurricane season. Annual precipitation varies significantly with elevation, ranging from approximately 1,500 millimetres in lowland coastal areas to over 3,800 millimetres in upland zones. Grenada is highly vulnerable to natural hazards, particularly hurricanes, tropical storms, landslides, and flooding.

Saint George's lies on the south-western coast of the island. The area is defined by rugged topography, with steep hills descending toward a natural horseshoe-shaped harbour known as The Carenage, regarded as one of the most scenic ports in the Caribbean. The urban layout is compact, with narrow, winding streets that follow the contours of the terrain, presenting challenges for traffic flow, infrastructure expansion, and accessibility. The historic commercial district of central Saint George's includes colonial-era architecture, and a mix of government offices, retail outlets, and market facilities

Due to its coastal location and steep topography, Saint George's is particularly vulnerable to climate-related hazards, including coastal flooding, tropical storms, and landslides.

1.3. Social and Institutional Conditions

According to the preliminary results of the 2021 Population and Housing Census conducted by the Central Statistical Office, the total population of the State of Grenada, comprising the main island of Grenada and the smaller islands of Carriacou and Petite Martinique, stands at 109,021. This represents a 2.2% increase from the 106,669 recorded in the 2011 Census.

The Parish of Saint George, situated on the southwestern coast of Grenada, is the country's most populous and densely populated administrative division, with approximately 44,777 inhabitants—around 41% of the national total. It encompasses the capital city of Saint George's and functions as Grenada's main administrative, commercial, and institutional centre. The parish is home to the national Parliament, key government ministries, the main public hospital, several educational institutions, and other critical public services.

Over the past few decades, Grenada's economy has experienced a structural transformation, shifting from a predominantly agriculture-based model to one increasingly driven by the services sector. Tourism now accounts for the largest share of gross domestic product (GDP), supported by government efforts to promote the country as a clean, safe, and unspoilt destination through strategic investments and international marketing campaigns. This evolution has heightened the importance of environmental protection and the development of sustainable infrastructure, particularly in public buildings that reflect national identity and support essential services.

In addition to its administrative and institutional significance, Saint George's plays a central role in the national economy, particularly in the tourism and services sectors. The urban core of the parish features hotels, restaurants, marinas, retail centres, and public markets, and sustains a high level of daily activity from both residents and international visitors.

1.4. Utility Services and Public Infrastructure

Water Supply and Sewerage System

At the national level, water supply and sewerage services in Grenada are managed by the National Water and Sewerage Authority (NAWASA). The authority is responsible for sourcing, treating, and distributing potable water, as well as managing sewerage systems in urban and semi-urban areas. Most water is drawn from surface sources, including rivers and springs originating in the island's central highlands. While piped water access is widespread in Saint George's, sewerage infrastructure remains limited, with most facilities—including government buildings—relying on septic systems for wastewater management.

At the MNIB building potable water is supplied through NAWASA's piped network. The building has internal plumbing and basic storage infrastructure to support daily operations.

Electricity

Electricity generation, transmission, and distribution across Grenada are managed by the Grenada Electricity Services Ltd. (GRENLEC). The national grid relies predominantly on imported diesel fuel, although integration of renewable energy—particularly through solar photovoltaic systems—is gradually increasing.

Electricity coverage in Saint George's is supported by GRENLEC's central substation infrastructure located nearby. The MNIB facility is directly connected to the national grid and records moderate to high electricity consumption due to the operation of lighting, refrigeration and cold storage units, air conditioning systems, and office equipment. Energy efficiency upgrades under the CEGEB Project will help reduce operational costs and support Grenada's national energy transition objectives.

Waste Management

Waste management in Grenada is overseen by the Grenada Solid Waste Management Authority (GSWMA), the statutory agency mandated to coordinate the collection, transport, treatment, and final disposal of solid waste throughout the tri-island state of Grenada, Carriacou, and Petite Martinique.

A waste collection schedule is in place nationwide, with frequencies ranging from two to seven times per week depending on population density and waste generation levels. This system services both residential and institutional areas, including public facilities such as markets, hospitals, and government buildings. The MNIB facility is included in the national collection system and, as a government-operated facility handling agricultural produce and related administrative functions, generates a mix of organic waste, packaging materials, and typical office waste. Special collections by the GSWMA are available on request for bulky or potentially hazardous materials such as electronic waste, refrigeration equipment, chemicals, or batteries.

The island's only official disposal facility is the Perseverance Landfill in Saint George, which also functions as a central hub for waste diversion initiatives. GSWMA has implemented systems at this site for metal baling, fluorescent bulb crushing, and wood chipping, as part of ongoing efforts to reduce the environmental footprint of landfill operations. The Authority also partners with private sector entities such as Spice Isle Recycling, Ecocell, and Southern Waste Management Services to promote localised recycling and public outreach programmes.

Grenada is a party to the Basel Convention and permits the export of hazardous and classified wastes under its provisions, in line with international environmental and safety protocols. Exports must follow national regulations and include prior informed consent, appropriate labelling and packaging, and full traceability through transport documentation.

An example of waste exports relevant to the CEGEB project refers to the shipment and recycling off island of mercury, that is safely collected in the process of bulb crushing and stored in special containers. This process is carried out at the Hazardous Waste Treatment Plant at Perseverance landfill. Similarly, a metal baling process is carried out for metal waste, which is compacted, processed, and subsequently shipped off island for recycling purposes.

Persistent challenges remain in areas such as source segregation, institutional waste handling practices, and public awareness. These gaps underscore the importance of integrating sustainable waste management strategies into infrastructure projects, including in public buildings such as the MNIB facility.

Transportation and accessibility

Saint George's is connected to the rest of the island by a network of paved roads, with public transportation provided mainly by privately operated minibuses. The MNIB facility analysed is accessed via River Road, also leading to the national stadiums.

Communications

Grenada has a well-developed telecommunications sector, with several service providers offering mobile, fixed line, and broadband internet services, available at the MNIB facility area.

Emergency services

Emergency services in Grenada are centrally coordinated and are readily available in the Saint George's area through the Royal Grenada Police Force, which includes Fire and Rescue Services and emergency medical response teams. The General Hospital provides both primary and secondary health care services, as well as emergency medical care. Fire stations and police headquarters are also located within the capital. Coordinated planning is essential to ensure that public buildings such as the MNIB are equipped with appropriate fire detection systems, clearly marked evacuation routes, and unobstructed access for emergency responders.

1.5. Cultural and Historic Sensitivity

Grenada possesses a rich and diverse cultural heritage shaped by its Indigenous Kalinago past, African ancestry, European colonial history, and Caribbean identity. This heritage is reflected in its architecture, oral traditions, festivals, religious practices, and historical sites. Many of the island's urban and rural areas, particularly within Saint George's, contain buildings and features of cultural, historical, and architectural significance. The historic town of Saint George's itself, with its colonial-era forts, churches, and the Carenage harbour, is recognized for its cultural value and scenic character.

The principal authority responsible for the protection, preservation, and promotion of Grenada's tangible and intangible cultural heritage is the Grenada National Trust, established under the

National Trust Act. The Trust identifies and conserves sites and structures of historical or architectural interest and works in collaboration with the Ministry of Culture and other agencies to raise public awareness, manage restoration programs, and maintain heritage registers. Additional institutional frameworks, such as the National Heritage Protection Act and the Physical Planning and Development Control Act, include provisions for the safeguarding of culturally significant buildings and landscapes, particularly in cases of infrastructure development or land-use change.

The MNIB building is constructed with a structural steel frame comprising columns and beams, combined with reinforced concrete elements. It is not designated as a building of heritage value.

2. Legal and Administrative Framework

2.1. National and Local Legal Framework

Grenada has a legal and institutional framework to support energy transition, environmental management, and social safeguards, aligned with the objectives of the CEGEB Project. Relevant instruments include:

Energy Policy and Regulatory Framework

- Electricity Supply Act (2016, Act No. 19): Establishes Grenada's legal framework for electricity sector liberalization. Promotes renewable energy development and efficient electricity generation. Amended in 2017 (Act No. 33) to expand the mandate for energy efficiency and require procurement procedures for new generation licenses.
- National Energy Policy (2011; updated 2022–2035): Provides Grenada's long-term energy vision. The 2022 update emphasizes achieving a sustainable, affordable, resilient, and secure energy system while moving toward full decarbonization. It highlights the need for a dedicated Energy Efficiency and Conservation Act and supports market-based mechanisms for energy efficiency.
- Public Utilities Regulatory Commission (PURC) Acts (2016, 2017): Create the PURC and outline its regulatory role, including licensing, consumer complaint procedures, and tariff oversight. PURC plays a central role in regulating the electricity sector, especially for renewable energy and consumer protections.
- Grenada Vision 2030 (2012): Includes a target of 100% renewable electricity and transport by 2030, focusing on utility-scale solar development.

Environmental Protection and Planning

- Environmental Management Act (2005): Creates the legal basis for environmental governance, including pollution control, environmental permits, and the protection of natural resources.

Land Use and Conservation

- Physical Planning and Development Control Act (2016, Act No. 23; amended 2017): Governs land development and construction activities in Grenada. It establishes the Planning and Development Authority under the Ministry of Climate Resilience, the Environment and Renewable Energy (MCRERE) and empowers it to oversee development control, review applications, and require environmental and social assessments, including Environmental Impact Assessments (EIAs) for projects with potential significant impacts.

Waste Management

- Grenada Solid Waste Management Authority Act (1995): Establishes the GSWMA to manage solid waste across the tri-island state. While not directly energy-related, proper waste handling is referenced in Grenada's Nationally Determined Contributions as a GHG mitigation sector alongside energy and forestry.

Social Protection and Labour Laws

- Labour Code of Grenada: Provides the legal framework for labour relations, workers' rights, occupational health and safety, and social protections in the workplace.

Disaster Risk and Climate Resilience

- Disaster Management Act (2016): Defines disaster risk reduction and response measures under the National Disaster Management Agency (NaDMA). Key to ensuring infrastructure, including energy systems, are climate resilient.

Climate Change

- National Climate Change Policy (2007): Integrated climate change into all national development sectors, forming the foundation for subsequent instruments like the NAP and NDCs.
- National Adaptation Plan (NAP): Grenada's National Adaptation Plan 2017–2021 was developed as the country's principal instrument for climate change adaptation under the UNFCCC framework, providing strategic guidance for building national resilience. Designed as a "living document," it allows for periodic updates. As of 2024, the government has initiated a revision process to establish a new planning cycle. Progress has been made through stakeholder consultations, technical assessments, and the continued implementation of sector-specific adaptation measures. The plan outlines strategies for key sectors, including energy, water, and infrastructure. In the energy sector, actions focus on promoting energy efficiency and renewable energy as means to enhance resilience.
- Nationally Determined Contribution (NDC): Grenada's Second NDC, submitted in 2020 to the United Nations Framework Convention on Climate Change (UNFCCC), reaffirms the national commitment to reducing greenhouse gas emissions by 40% by 2030 compared to 2010 levels, conditional upon international financial and technical support. It adopts a cross-sectoral, integrated approach, targeting key areas such as energy (including transport), waste, forestry, and industrial processes, while also recognising the mitigation co-benefits of adaptation measures. Although a third NDC has not yet been formally submitted, Grenada is actively engaged in the preparatory processes to update its climate commitments.

2.2. Environmental permits and documentation

Under Section 22 of the Physical Planning and Development Control Act No. 23 of 2016, the Planning and Development Authority may require an Environmental Impact Assessment for any development that could significantly affect the environment. An EIA is mandatory for projects listed in the Third Schedule, unless the Authority grants an exemption for justified reasons, and no development approval can be issued without first reviewing and considering the EIA report.

The Draft Environmental Impact Assessment (EIA) Administrative Manual (2022), issued by the Ministry of Climate Resilience, Environment and Renewable Energy (MCRERE), provides detailed

guidance on the administrative procedures to be followed for conducting the EIA process in Grenada.

According to the Physical Planning and Development Control Act (Schedule III), which specifies the types of activities that normally require an Environmental Impact Assessment (EIA), the procedure is not anticipated to be required for the CEGEB subproject, as the planned works are limited in scope and will be carried out entirely within existing buildings. However, the Contractor must consult the Ministry of Climate Resilience, the Environment and Renewable Energy (MCRERE), through the Planning and Development Authority (PDA), to obtain formal confirmation and complete any required environmental screening forms prior to commencing the works.

For managing any hazardous or special wastes generated, such as refrigerants, mercury-containing lamps, or electronic components, the Contractor shall notify the Grenada Solid Waste Management Authority (GSWMA). All handling, storage, and disposal activities must comply with the relevant procedures defined by the authority.

Approvals must be obtained from the Royal Grenada Police Force-Traffic Department to coordinate detours and ensure public safety, in case project works cause road closures, restricted access, or diversions near the MNIB area.

Securing required approvals is estimated to take approximately two to four weeks, depending on the completeness of the submissions and previous institutional arrangements.

3. Risk Assessment and Mitigation

3.1. Environmental, Health and Safety Guidelines

Project implementation shall align with World Bank Environmental, Health, and Safety Guidelines, as indicated in table below.

Environmental, Health and Safety Guidelines		
EHS Guideline	**Applicability**	**Observations**
Environmental		
Air Emissions and Ambient Air Quality	Applicable	Due to dust and minor exhaust emissions during construction (e.g. from drilling, machinery, or vehicles), especially relevant within an administrative and produce-handling environment.
Energy Conservation	Applicable	Core project goal is to improve energy efficiency and the use of renewable energy sources.
Wastewater and Ambient Water Quality	Limited applicability	Wastewater may result from cleaning activities, use of sanitary facilities, and stormwater runoff during construction.
Water Conservation	Limited applicability	Water-saving fixtures and practices are encouraged in building retrofits.
Hazardous Materials Management	Applicable	Refrigerants, mercury lamps and other potentially hazardous materials must be safely handled.
Waste Management	Applicable	Non-hazardous and hazardous waste will be generated during retrofits and panel installation.
Noise	Applicable	Noise generated during construction may temporarily interfere with MNIB facility operations and activities.
Contaminated Land	Limited applicability	While no prior contamination is expected, accidental leaks, spills or runoff may cause localised environmental impacts.
Occupational Health and Safety		
General Facility Design and Operation	Applicable	Project activities must follow safe design principles, especially electrical and structural changes.
Communication and Training	Applicable	Workers must be trained on safety, equipment use, and emergency procedures.
Physical Hazards	Applicable	Common construction risks: slips, trips, falls, working at heights, electrical.
Chemical Hazards	Applicable	Exposure risk from paints, sealants, refrigerants, cleaning agents.
Biological Hazards	Limited applicability	Mold, if encountered during works in the building, may pose health risks and should be monitored during implementation.
Radiological Hazards	Not applicable	No radiological sources have been identified.
Personal Protective Equipment (PPE)	Applicable	Required for all on-site workers.

Special Hazard Environments	Not applicable	Project does not involve confined spaces, underwater work, tunnels or other hazardous environments.
Monitoring	Applicable	Environmental and Health and Safety indicators must be systematically tracked.
Community Health and Safety		
Water Quality and Availability	Limited applicability	Potential impact on water resources may arise from leaks, spills, or improper disposal of construction-related water, though no direct effect on community supply is expected.
Structural Safety of Project Infrastructure	Applicable	Relevant for rooftop interventions such as solar panel installation. Structural integrity must be ensured.
Life and Fire Safety	Applicable	Essential to comply with fire codes and design standards post-retrofit.
Traffic Safety	Applicable	Construction activities may pose traffic safety risks due to increased vehicle movement and delivery operations.
Transport of Hazardous Materials	Applicable	Refrigerants and other potentially hazardous material must be transported following safety protocols.
Disease Prevention	Applicable	Relevant in case vector control or sanitation is required during construction.
Emergency Preparedness and Response	Applicable	Emergency routes, fire exits, and evacuation protocols must remain operational and visible throughout construction works.
Construction & Decommissioning		
Environment	Applicable	Dust, noise, waste, stormwater management and spill prevention measures are required during the works.
Occupational Health & Safety (Construction)	Applicable	All health and safety standards for construction works must be observed and enforced.
Community Health & Safety (Construction)	Limited applicability	Measures should be in place to manage access, minimise potential nuisances, and ensure the safety of people in and around the site.

Table 3.1 World Bank Environmental, Health, and Safety Guidelines relevant to CEGEB implementation at the MNIB.

3.2. World Bank Environmental and Social Standards

The World Bank Environmental and Social Standards (ESSs) provide the overarching framework to identify, assess, and manage environmental and social risks and impacts associated with project activities financed by the World Bank. Their application ensures that project interventions are designed and implemented in a manner that promotes sustainability, protects people and the environment, and supports inclusive stakeholder engagement.

For the CEGEB project, eight Environmental and Social Standards (ESSs) are applicable: ESS1 through ESS6, ESS8, and ESS10. These cover areas such as environmental and social risk

management, labour and working conditions, pollution prevention, community health and safety, biodiversity, cultural heritage, and stakeholder engagement.

The following section presents the environmental and social screening undertaken for the MNIB subproject, which documents the applicability of these ESSs.

3.3. Environmental and Social Screening

The table below indicates the World Bank Environmental and Social Standards (ESSs) that must be considered for the CEGEB subproject involving retrofitting and renewable energy installations at the MNIB:

Environmental and Social Screening			
Question	**Yes**	**No**	**Comments / Required Actions**
ESS1 - Assessment and Management of Environmental and Social Risks and Impacts			
Is the subproject likely to have significant adverse environmental impacts that are sensitive and unprecedented that trigger the 'Ineligible Activities' and exclusion?		X	The activities are limited in scope and do not entail operations with significant environmental sensitivity.
Does the subproject involve renovation or rehabilitation/upgrading of any small-scale infrastructure, such as windows, doors, ceilings, or shelters?	X		The subproject may involve dismantling of outdated lighting and air conditioning systems, and other minor works that do not compromise the building's structural integrity. Photovoltaic panels shall be installed in rooftops under conditions that meet the required structural requirements.
Is the site close to a water body?		X	The MNIB building under study is located more than 700 metres away from the coast.
Will the subproject require clearing of vegetation?		X	No vegetation clearance will be required.
Will the subproject be close to terrestrial/marine protected areas or sensitive area?		X	The building is not situated within, or in the immediate vicinity of, any terrestrial or marine protected area, and is located sufficiently far from the coast to avoid associated risks.
Will the subproject lead to sedimentation or soil erosion?		X	Interventions are not expected to cause any sedimentation or soil erosion.
ESS2 - Labour and Working Conditions			
Does the subproject involve use of goods and equipment involving forced labour, child labour, or other harmful or exploitative forms of labour?		X	The project will adhere to national and international labour standards and will be contractually monitored.
Does the subproject involve recruitment of workforce including direct, contracted,	X		The subproject will involve recruitment of direct, contracted, and primary supply workers.

primary supply, and/or community workers?			
Do workers need PPE relative to the potential risks and hazards associated with their work?	X		PPE must be required for all tasks, following national and international regulations.
Is there a risk that women may be underpaid when compared to men when working on the project construction?		X	There is no inherent risk that women will be underpaid compared to men for performing equal work within the project. All contractors and subcontractors must comply with national labour legislation and international labour standards, including those relating to gender equality and non-discrimination in employment.
Does the project lead to any risks and impacts on individuals or groups who, because of their circumstances, may be disadvantaged or vulnerable.		X	The site is a government facility with no known impact on vulnerable populations.
ESS3 - Resource Efficiency and Pollution Prevention and Management			
Is the project likely to generate solid or liquid waste that could adversely impact soils, vegetation, rivers, streams, or groundwater?	X		Efficient use of materials must be ensured, and a detailed solid and liquid waste management plan must be implemented by contractors.
Do any of the construction works involve the removal of asbestos or other hazardous materials related to construction works?	X		No asbestos was identified during the building assessments. Other hazardous materials (such as refrigerants and mercury-containing lamps) may require proper handling during retrofitting activities
Are works likely to cause negative impacts to air and/or water quality?	X		Potential impacts to air and water quality are expected to be minor and can be effectively mitigated with appropriate measures.
Does the activity rely on existing infrastructure that is inadequate to prevent environmental impacts?		X	The subproject is designed to align with existing building infrastructure, considered functional and sufficient to support planned interventions without causing adverse impacts.
Does the activity require civil works to support project activities?	X		Minor civil works will be carried out.
Does the activity require the use of pesticides, mildewcides or other chemicals?		X	The subproject does not involve the use of pesticides, mildewcides, or other chemicals as a primary activity. If any ancillary chemical interventions are required, they must be planned and carried out in close coordination with MNIB management.
Is there a potential that the works will involve sites that are affected by issues related to mold?	X		There is potential that the works will involve areas affected by moisture and mold-related issues. These conditions should be taken into account during project implementation, given the associated biological risks and the need for adequate ventilation and moisture control.

Could the construction activities be a nuisance to other activities at the site, such as from dust, noise, construction vehicles etc.?	X		Construction activities could cause temporary disruptions to the operations of the MNIB facility, particularly due to dust, noise, vibrations, and the movement of construction vehicles.
ESS4 - Community Health and Safety			
Is an influx of workers, from outside the community, expected?		X	The workforce is anticipated to be drawn from the local area, and no significant influx of external workers is foreseen.
Could the construction activities be a nuisance to community members, such as dust, noise, traffic etc.?	X		Although the site is not close to populated areas, measures must be implemented to mitigate risks associated with construction activities and traffic impacts.
Could the construction activities disrupt the primary use of the site?	X		The construction works could disrupt the primary functions of the MNIB, particularly during regular operating hours when administrative work, produce handling, and marketing activities are taking place.
ESS5 - Land Acquisition, Restrictions on Land Use and Involuntary Resettlement			
Does the subproject involve involuntary land acquisition?		X	Not applicable.
Does the subproject involve physical and/or economic displacement of people?		X	Not applicable.
ESS6 - Biodiversity Conservation and Sustainable Management of Living Natural Resources			
Do project activities alter or cause destruction to critical or sensitive natural habitats?		X	Not applicable.
ESS8 - Cultural Heritage			
Will the subproject involve any civil works that could involve demolition, renovations, or refurbishment to a historical or archaeological or culturally significant site or facility?		X	Not applicable.

Table 3.2 World Bank Environmental and Social Standards (ESSs) relevant to CEGEB implementation at the MNIB.

In addition, ESS10 –Stakeholder Engagement and Information Disclosure– is applicable. Meaningful and inclusive stakeholder engagement, along with ongoing, transparent information disclosure, is essential due to the involvement of public institutions and the integration with the surrounding urban and community context.

3.4. Environmental and Social Risks

Environmental and social risks have been identified and must be properly managed to ensure that the implementation of subprojects is conducted in a safe, compliant, and sustainable manner.

The probability and severity of the main risks and impacts associated with the subproject, as well as their description, are presented in the tables below.

Risk	Probability of risk	Severity of risk			
		Low	Moderate	Substantial	High
Waste generation	High		X		
Air pollution and noise	Moderate		X		
Water and soil pollution	Low	X			
Worker health & safety	Moderate		X		
MNIB facility user health & safety	Low		X		
MNIB facility operation disturbance	Substantial		X		
Community disturbance	Low	X			
Weather-related risks	Moderate		X		
Participation and transparency risks	Low	X			

Table 3.3. Probability and severity of the main risks and impacts relevant to the MNIB subproject.

Environmental and Social Risks	
E & S Aspect	**Risks**
Waste generation	Mixed disposal of hazardous and non-hazardous waste can result in contamination, regulatory violations, and increased disposal costs. Lack of on-site segregation (e.g., metals, cardboard, electronic components) may reduce recyclability and overload landfill systems. Components such as fluorescent tubes, ballasts, circuit boards, inverters, and wiring may contain lead, mercury, cadmium, and other toxic substances. Improper handling or disposal of e-waste can lead to soil and groundwater contamination or occupational exposure for workers. Fluorinated gases from the HVAC components have high global warming potential and are regulated under international protocols. Demolition debris, wood, plastic wraps, and foam packaging from delivered equipment may become wind-blown litter or block storm drains. Inadequate removal or cleanup of these materials can create trip hazards and visual pollution. Leftover adhesives, sealants, solvents, and cleaning agents can pollute the environment if not stored or disposed of correctly. Some materials may be classified as hazardous waste under national or international standards, requiring special permits and treatment.
Air pollution and noise	Activities such as drilling, cutting, or equipment installation may generate airborne dust, which could compromise air quality and infiltrate indoor spaces, potentially affecting the health and comfort of building users. Noise generated during works may further affect the general quality of the environment.

Water and soil pollution	While unlikely, minor leaks of fuel, oils, or chemicals from machinery or stored materials may potentially contaminate soil or local drainage systems.
Worker health & safety	Fall hazards for workers operating at heights in the absence of proper protective systems. Heat-related stress (e.g., dehydration, fatigue, heat exhaustion) for workers performing outdoor tasks under high temperatures and humidity. Risk of contact with pests (rodents, insects) during indoor or outdoor interventions. Exposure to spores in mold affected areas where work may be taking place. Electric shock or arc flash risks may arise during disconnection of electrical systems or modification of electrical panels, particularly if lockout/tagout procedures are not followed. Injury from tools, ladders, or machinery if personal protective equipment (PPE) and safety protocols are not enforced.
MNIB facility user health & safety	Respiratory irritation or allergic reactions due to mold spores released during ceiling or wall interventions. Discomfort or health concerns due to dust, noise, and vibration generated during construction works. Accidental exposure to tools, debris, or chemical substances (e.g., adhesives, sealants, cleaning agents) left unattended in shared or circulation areas, if work zones are not properly segregated or cleaned.
MNIB facility operation disturbance	Restricted access to essential services such as restrooms, emergency exits, or office areas. Temporary interruptions to meetings, calls, customer service, or other MNIB services during construction. Congestion or detours in internal circulation due to temporary blockages or simultaneous movement of workers and MNIB facility users. Lack of space for temporary storage of materials, equipment, or waste, affecting the normal functioning of the MNIB facility.
Community disturbance	Noise, dust, and perceived safety concerns may lead to community dissatisfaction or formal complaints. Disruption to vehicle and pedestrian circulation, including parking and access restrictions, especially during material deliveries or waste removal.
Weather-related risks	Tropical storms or heavy rainfall events may damage partially installed systems, such as solar panels, lighting, or air conditioning units, and displace construction materials or scaffolding if not secured properly. Frequent weather changes may disrupt construction schedules and access.
Participation and transparency risks	The potential exclusion from project activities of interested parties—such as social and environmental organisations, community representatives, MNIB staff, and service users—may lead to reduced transparency, diminished public trust, and missed opportunities to incorporate valuable local knowledge and stakeholder perspectives.

Table 3.4. Environmental and social risks relevant to CEGEB implementation at the MNIB.

Based on an integrated assessment of the risks and impacts associated with the subproject at the MNIB, the site has been classified as Moderate Risk based on the following considerations:

- The potential risks and impacts on human populations and/or the environment are not expected to be substantial or highly significant.

- Most identified risks and impacts are anticipated to be temporary and/or reversible in nature.
- Potential health risks are primarily linked to existing building conditions, rather than the subproject activities.
- The subproject impacts are expected to be compensated or mitigated through defined measures.

The risk of Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) is not anticipated, as it falls under the provisions of labour regulations. However, it should be explicitly addressed in the workers' Code of Conduct, together with other key labour standards.

Waste generation warrants particular attention during the construction phase. The table below provides an overview of the types of waste likely to be generated due to subproject implementation and the associated potential risks.

Waste type	Risk	Possible waste material
Construction and Demolition Waste	Non-Hazardous	Concrete, masonry, and brick debris from minor structural adjustments or reinforcements. Wood offcuts and discarded pallets, including untreated packaging wood. Insulation materials, such as fiberglass batts or foam board scraps. Metal components, such as mounting brackets or steel supports, recyclable as scrap.
Electrical and Electronic Waste	Potentially hazardous	Retired lighting fixtures and lamps, including fluorescent tubes, HID lamps, and LEDs. Wiring looms, control panels, sensors, switches, circuit boards, meters, and controllers removed during upgrades. Inverters and other PV system electronics that are damaged or replaced. May contain heavy metals (e.g., lead, cadmium, mercury) and must be handled as e-waste.
HVAC-Specific	Hazardous	Fluorinated refrigerants (R410A), which are ozone-depleting or high global warming potential gases. Used compressor oils that may contain pollutants or refrigerant traces. Contaminated filters, which may carry dust, mold, or biological matter, potentially requiring sanitary or biomedical disposal. Electronic control units from HVAC systems that may contain hazardous components.
Solar PV System Waste	Potentially hazardous	Damaged or substandard PV modules, composed of glass, silicon cells, and aluminium frames. Cable assemblies, junction boxes, and mounting hardware removed or left over from installation.

Chemical and Toxic Residues	Hazardous	Solvents, adhesives, sealants, and other chemical products used during retrofitting. Leftover cleaning agents or degreasers, often requiring proper labelling and disposal. Soldering residues, flux, or small capacitors from old equipment, potentially containing PCBs or heavy metals.
General Site and Office Waste	Non-Hazardous	Paper waste, food containers, and beverage bottles from workers' rest and meal areas. Used PPE (e.g., gloves, masks, disposable coveralls) and cleaning rags. Miscellaneous consumables, such as air filters, zip ties, and packaging films.
Packaging Waste	Non-hazardous	Cardboard boxes, wooden crates, and pallets from equipment and material deliveries. Plastic wraps, foam inserts, and cushioning materials from lighting, HVAC, and PV packaging. Strapping (metal or plastic) and other delivery packing residuals.

Table 3.5. Types of waste that may be generated during CEGEB project construction phase.

3.5. Environmental and Social Management

The environmental and social mitigation measures defined for the subproject have been organised in the table below to provide the technical basis for implementation and contractual obligations. The measures identified establish the requirements to manage environmental and social risks during construction and must be incorporated into the Contractor's Management Strategies and Implementation Plans (MSIPs).

Environmental and Social Management Matrix		
E&S Aspect	**Potential Impacts**	**Mitigation Measures**
Waste generation	Improper management of construction debris, electronic waste, hazardous substances, and packaging materials associated with PV components may result in pollution, health and safety risks, or regulatory non-compliance.	Develop and implement a Waste Management Plan detailing procedures for waste collection, segregation, on-site storage, transport, recycling or recovery, and final disposal. Coordinate with the Grenada Solid Waste Management Authority (GSWMA) in advance and throughout the construction phase to ensure proper handling, transport, and disposal of all waste streams. Provide training to workers on proper waste segregation, labelling, and safe handling procedures. Designate secure temporary storage areas within the MNIB building premises to hold waste until collection. Segregate waste streams at the source to facilitate appropriate handling, treatment, and disposal; ensure that incompatible waste types, particularly hazardous and non-hazardous materials, are not mixed.

		Maximize recycling and recovery of waste to the extent possible, with the aim of minimizing final disposal. Ensure safe recovery, labelling, and containment of refrigerants in accordance with standard operating procedures (SOPs) and arrange for their transport to licensed facilities. Ensure that all e-waste and hazardous materials are handled and disposed of by licensed and authorized entities. Handle project implementation waste separately from MNIB operation wastes. Contract waste collection and transport services only through entities authorized by GSWMA.
Air pollution and noise	Dust and noise from construction activities may affect indoor air quality and disturb MNIB facility users.	Wet surfaces during dust-generating activities. Use low-noise equipment and restrict noisy tasks to non-peak hours. Install dust barriers where needed. Regularly inspect and maintain equipment to minimise emissions.
Water and soil pollution	Spills or leaks during construction activities may affect water and soil in the surrounding area.	Spills or leaks must be contained immediately to prevent soil or water contamination.
Worker health & safety	Risk of falls, electrical shock, heat stress, mold exposure, and injury from equipment use.	Provide training to all workers and relevant staff on applicable occupational health and safety measures prior to the commencement of construction activities. Conduct daily safety briefings focused on site-specific hazards and planned activities. Always enforce the mandatory use of appropriate personal protective equipment (PPE) on site. Ensure access to potable water, shaded rest areas, and scheduled breaks to prevent heat stress and fatigue. Install and maintain fall protection systems in accordance with applicable safety standards wherever work at height is required. Remediation of mold-affected areas within MNIB facilities, if required, must be carried out using safe, approved methods by trained personnel, in coordination with the MNIB facility management. Implement pest control measures, if needed, through licensed and qualified contractors using approved methods that minimise health and environmental risks.
MNIB facility user health & safety	Exposure to mold, dust, noise, and restricted access to facilities may affect comfort and health.	Communicate work plans to MNIB facility users. Implement physical separation of work areas. Schedule work to minimise overlap with occupied areas. Ventilate affected rooms. Clean work areas daily. Activate and monitor a Grievance Mechanism accessible to workers.

MNIB facility operation disturbance	Noise, dust, and restricted access may disrupt the MNIB facility operations if not properly coordinated with management.	Schedule high-noise activities (e.g., cutting, drilling, demolition) outside peak MNIB operation hours or during periods of low occupancy. Coordinate and communicate the works schedule in advance with the MNIB facility management to avoid interference with key activities and operations. Erect temporary noise barriers near occupied spaces during noisy operations. Minimise dust infiltration by sealing openings and implementing ventilation controls in areas adjacent to work zones. Clearly demarcate and secure construction areas to prevent unauthorised access by personnel or visitors. Maintain safe pedestrian routes and ensure emergency exits always remain fully accessible. Appoint a liaison officer to facilitate ongoing communication with the MNIB personnel and respond promptly to disruption-related concerns.
Community disturbance	Temporary discomfort of community during deliveries, or due to perceived safety risks.	Developed MSIP for traffic management. Schedule material deliveries during low-traffic hours. Post public notices with work schedules at entrances and visible locations. Activate and monitor a Grievance Mechanism accessible to the community.
Weather-related risks	Construction runoff and exposure to tropical weather may cause flooding, erosion, or equipment damage.	Protect storm drains with barriers. Store materials off the ground and under cover. Keep temporary waste deposits covered to prevent wind or rain exposure. Schedule outdoor works during dry weather periods whenever possible to minimise environmental impacts and safety risks. Develop a storm preparedness plan aligned with national regulations and early warning systems.
Participation and transparency risks	Limited inclusion of the MNIB personnel and building users in project communication may lead to reduced trust, misalignment with institutional operations, or avoidable disruptions.	Implement a site-specific communication strategy. Provide regular updates to MNIB facility management and designated focal points. Ensure visibility of works schedule via noticeboards and digital channels. Activate and monitor a grievance mechanism accessible to all MNIB facility users and the community.

Table 3.6 Potential impacts and mitigation measures for the construction phase at the MNIB.

To ensure proper planning, accurate costing, and enforceability, the contractual clauses related to the proposed mitigation measures are presented in the table below. These

clauses are intended for integration into the bidding documents and the General Conditions of Contract (GCC).

E&S Contractual Requirements	
E&S Aspect	**Proposed GCC Clause**
Waste generation	*The Contractor shall develop and implement a comprehensive Waste Management Plan as part of the MSIPs, detailing procedures for the segregation, secure storage, collection, transport, recycling, and final disposal of all waste streams.* *The Contractor shall consult with the GSWMA and coordinate all waste management activities with the Authority throughout the construction phase.* *All hazardous waste shall be safely recovered, labelled, and transported only by licensed entities in compliance with national regulations and GSWMA requirements.* *All workers shall receive training on proper segregation, labelling, and safe handling procedures.*
Air pollution and noise	*The Contractor shall be responsible for implementing effective controls to manage dust, noise, and emissions throughout the construction phase.* *Works producing significant noise or dust shall, wherever practicable, be scheduled outside peak MNIB operating hours.* *Suitable dust and noise barriers shall be installed where necessary, and low-noise equipment shall be prioritised whenever available.* *All equipment shall be routinely inspected and maintained to reduce emissions and noise.* *Monitoring of air quality and noise levels shall be undertaken at appropriate intervals to verify compliance with applicable environmental regulations and contractual requirements.*
Worker health & safety	*The Contractor shall prepare and implement a site-specific Occupational Health and Safety (OHS) Plan, as part of the MSIPs. The approved OHS Plan shall be implemented throughout construction, and compliance shall be documented.* *The Contractor shall prepare and enforce a Worker Code of Conduct that complies with all applicable national labour regulations and the World Bank's Labour and Working Conditions.* *The Contractor shall comply with and support the implementation of the Project's Grievance Mechanism for workers.*
MNIB facility user health & safety	*The Contractor shall establish and implement a contingency plan specifically designed for the operational characteristics and occupancy type of the MNIB facility.* *Construction zones shall be fenced, clearly marked, and secured to restrict unauthorised access. Appropriate dust control measures, including sealing of openings and installing ventilation systems, shall be applied in adjoining areas.* *All internal and external circulation paths, including emergency exits, shall always remain unobstructed and fully operational.* *The Contractor shall coordinate in advance with MNIB facility management to ensure that all necessary measures to prevent health and safety risks are effectively applied.*

MNIB facility operation disturbance	*The Contractor shall ensure early coordination of the works schedule with MNIB facility management to minimise interference with essential operational functions.* *High-noise construction activities shall, whenever practicable, be undertaken outside peak MNIB operating hours or during periods of reduced occupancy. Temporary noise barriers shall be installed near occupied areas when required to reduce disruption.* *The Contractor shall maintain continuous communication with the appointed liaison officer to promptly address any disturbance-related concerns and shall comply with the Project's Grievance Mechanism, ensuring that complaints and concerns raised by MNIB facility users are managed in a timely and effective manner.*
Community disturbance	*The Contractor shall take all necessary measures to minimise disturbance to the surrounding community during construction.* *The Contractor shall develop and implement MSIP for traffic management. Material deliveries shall, wherever practicable, be scheduled during low-traffic hours to reduce congestion.* *Where works impact parking areas or traffic flow, traffic marshals shall be assigned to ensure safety and maintain order. Clear and safe pedestrian detour routes shall be established and maintained as required.* *The Contractor shall comply with and actively support the implementation of the Community Grievance Mechanism, ensuring that any concerns or complaints raised by community members are addressed promptly and effectively.*
Weather-related risks	*The Contractor shall implement appropriate measures to minimise weather-related risks during construction.* *Outdoor works shall, wherever practicable, be scheduled during dry weather periods.* *Storm drains shall be protected with adequate barriers to prevent blockages and flooding.* *All construction materials shall be stored off the ground and under proper cover, and waste deposits shall be securely contained to avoid exposure to wind or rain.* *The Contractor shall develop and implement a storm preparedness plan in compliance with national regulations and aligned with early warning systems, in coordination with the National Disaster Management Agency (NaDMA) when required.*
Participation and transparency risks	*The Contractor shall develop and implement a site-specific communication strategy to ensure transparency and effective stakeholder engagement throughout all construction phases.* *The Contractor shall establish, activate, and monitor the performance of the Project's Grievance Mechanism, ensuring timely responses and proper documentation of all complaints and resolutions.*

Table 3.7. Environmental and social contractual requirements for the construction phase at the MNIB.

4. Monitoring and Reporting

4.1. Monitoring Objectives

Effective monitoring is essential to ensure that the environmental and social risks identified for the MNIB subproject are properly managed throughout implementation. Monitoring should aim to:

- Ensure that mitigation measures are implemented as planned.
- Assess the effectiveness of mitigation measures
- Allow for corrective actions where needed.
- Track performance indicators to detect deviations or unexpected impacts.
- Enable timely corrective actions to minimise risks.
- Provide documentation for reporting to national authorities, the World Bank, OECS and project stakeholders.

4.2. Monitoring and Reporting Responsibilities

The monitoring and reporting responsibilities outlined below may be adjusted, if necessary, to align with the final arrangements established in the Project Operations Manual (POM).

Building Level Focal Point:

The Building Level Focal Point, designated by MNIB management, shall support monitoring and reporting by serving as the liaison between the Contractor, S&C Consultant, and facility users. Responsibilities include facilitating site access, communicating building-specific requirements, and relaying user feedback.

Contractor:

The Contractor shall be responsible for implementing and monitoring all environmental and social mitigation measures defined in the ESMP and the bidding documents. The Contractor shall appoint a qualified Environmental, Social, Health and Safety (ESHS) Officer to oversee effective performance and maintain accurate day-to-day monitoring records.

Supervision & Commissioning (S&C) Consultant:

The S&C Consultant shall ensure that all construction activities comply with the approved technical designs, contract, ESMP requirements, and work plans. The Consultant shall conduct regular site inspections, review the Contractor's monitoring data, and consolidate findings into monthly reports submitted to the National PIU. A dedicated Environmental and Social (E&S) Officer shall be appointed by the Consultant to verify the Contractor's

performance and oversee and inform the effective implementation of all mitigation measures.

National Project Implementation Unit (National PIU):

The National PIU shall be responsible for managing the implementation of environmental and social requirements at the country level. Its responsibilities include reviewing monitoring reports, conducting spot checks, coordinating closely with Contractors and S&C Consultants, and preparing consolidated progress reports. These reports shall be submitted to the OECS Regional PIU in accordance with the reporting procedures established in the Project Operations Manual (POM).

Ministry of Climate Resilience, the Environment, and Renewable Energy (MCRERE):

Shall provide national-level oversight and coordination with relevant national agencies to ensure compliance with regulatory requirements, permits, and policy priorities, and to ensure that subproject implementation remains consistent with Grenada's national development and climate resilience goals.

OECS Regional Project Implementation Unit (OECS PIU):

The OECS PIU shall receive consolidated reports from the National PIUs across participating countries, validate overall environmental and social performance, and submit aggregated reports to the World Bank in accordance with the reporting procedures established in the Project Operations Manual (POM).

All documents and reports relevant to project monitoring shall be stored in the project files and made available for review in accordance with the responsibilities of the key institutions.

4.3. Monitoring Indicators

The table below presents monitoring indicators associated with the environmental and social aspects relevant to the implementation of the CEGEB project. Additional indicators may be proposed as needed during subproject implementation.

E&S Aspect	Monitoring Indicators	Means of Verification	Proposed frequency	Responsible for Collecting Data
Waste management	Volume generated for each type of waste (kg or m^3). Percentage of waste streams properly segregated at source. Number of loads collected and removed by licensed waste handlers.	Waste segregation logs. Disposal manifests or receipts issued by licensed waste handlers. Photographic records of storage, segregation areas, and removal activities.	Weekly, and at time of waste removal	Contractor (ESHS Officer); reviewed by S&C Consultant

Air emissions and dust	Verification of dust suppression measures in place (e.g., water spraying, material covering, barriers) (yes/no). Air quality parameters measured where required and compared against national standards or project-specific thresholds. Number of dust-related complaints received and addressed.	Daily visual inspection logs with dust control checklists. Air quality measurement reports, including calibration certificates and laboratory analysis when applicable. Complaints register linked to the project's Grievance Mechanism.	Daily during works	Contractor (ESHS Officer); reviewed by S&C Consultant
Noise levels	LAeq,15min (dB(A)) measured at designated indoor points and the site perimeter, compared with applicable regulatory limits or project-specific thresholds. Number of noise-related complaints received and resolved.	Noise measurement logs. Photographic evidence of implemented noise control measures (e.g., barriers, enclosures). Records confirming maintenance of noise control measures (e.g., schedules, inspections). Complaints register linked to the project's Grievance Mechanism.	Daily during works	Contractor (ESHS Officer); reviewed by S&C Consultant
Water and soil pollution	Number of recorded spills or leaks and corresponding corrective actions. Verification of runoff containment systems in place, where required (yes/no).	Spill/leak incident reports. Photographic evidence of spill or leak incidents and restored/recovered areas. Runoff containment inspection report.	After rain; and incident-based	Contractor (ESHS Officer); reviewed by S&C Consultant
Worker health & safety	Pre-employment medical clearance for all workers (yes/no). All workers using required PPE (yes/no). Number of toolbox talks conducted per week. Percentage of worker attendance to toolbox talks. Number of reported incidents or accidents and corrective actions implemented. Medical evaluations conducted after reported work-related incidents (yes/no). Lost Time Injury Frequency Rate. Number of worker complaints received and addressed.	Valid medical fitness certificates or health cards for 100% of workers, issued by authorised occupational health professionals. PPE compliance checklists. Daily visual inspection logs of work areas. Toolbox talk records including date, topic, and participant attendance list. Incident/accident log with root cause analysis and corrective measures documented. Post-incident medical evaluation certificates. Worker complaints register linked to the project's Grievance Mechanism.	Daily during works	Contractor (ESHS Officer); reviewed by S&C Consultant
MNIB facility user health & safety	Verification of work zones segregation (yes/no). Number of incidents affecting MNIB facility users. Medical evaluations conducted after reported MNIB facility user health & safety issues (yes/no). Number of complaints received from MNIB facility users related to health and safety.	Work zone segregation checklists. Daily visual inspection logs. Incident/accident investigation reports. Medical evaluation certificates for affected MNIB facility users, issued following reported incidents. MNIB facility user complaint register linked to the project's Grievance Mechanism.	Daily during works	Contractor (ESHS Officer); reviewed by S&C Consultant
MNIB operation disturbance	Verification of planned disruptions communicated in advance (yes/no). Number of unplanned service interruptions.	Communication records shared with MNIB management. Copies of distributed notices. Service downtime logs.	Daily during works	Contractor (ESHS Officer); reviewed by S&C Consultant

	Average duration of unplanned service interruptions. Verification that emergency access routes or critical facilities remain unobstructed (yes/no). Advance notifications for high-impact works (yes/no). Number of complaints from MNIB facility users related to operational disruptions.	Contractor incident reports. Inspection checklists. Photographic evidence of working area conditions. MNIB facility user complaint register linked to the project's Grievance Mechanism.		
Community disturbance	Delivery scheduling procedures in place (yes/no). Traffic management measures implemented around the site (yes/no). Public notices issued to nearby residents or businesses (yes/no). Number of complaints from community members.	Delivery schedules. Contractor's delivery logs. Traffic management plans. Photographic evidence of traffic management measures. Copies of distributed notices, communication logs, and acknowledgement receipts when applicable. Community complaints register, linked to the project's Grievance Mechanism.	Daily during works	Contractor (ESHS Officer); reviewed by S&C Consultant
Weather-related risks	Materials stored securely and protected (yes/no). Storm preparedness plan active (yes/no). Number of weather-related damages or incidents reported after extreme weather events.	Storage inspection checklists. Photographic evidence of covered and secured materials. Approved storm preparedness plan. Storm preparedness plan activation records. Post-event inspection reports. Photographic evidence of affected areas and damaged materials.	Weekly; and before and after storms	Contractor (ESHS Officer); reviewed by S&C Consultant
Participation and transparency	Number of stakeholder communication events conducted. Percentage of grievances resolved within the defined timeframe.	Meeting agendas, attendance sheets and minutes. Photographic evidence of communication events. Grievance register linked to the project's Grievance Mechanism, resolution tracking logs, and confirmation records of closed cases.	Ongoing	Contractor (ESHS Officer); reviewed by S&C Consultant; validated by PIU Environmental Specialist
Overall E&S performance	Number of non-compliance findings. Percentage of corrective actions implemented within deadline.	E&S inspection reports, monitoring checklists, and non-compliance tracking logs verified by the S&C Consultant. Corrective action plans, follow-up inspection reports, and contractor's compliance confirmation records.	Weekly	Contractor (ESHS Officer); reviewed by S&C Consultant; validated by PIU Environmental Specialist

Table 4.1 Monitoring indicators proposed for each Environmental and Social Aspect.

5. Implementation Arrangements

The implementation of environmental and social measures under the Caribbean Efficient and Green-Energy Buildings Project (CEGEB) will involve close coordination among national agencies, project entities, and on-site actors. These arrangements will be designed to ensure full compliance with Grenada's environmental legislation and the World Bank's Environmental and Social Standards (ESSs), as outlined in the Environmental and Social Management Framework (ESMF).

The Project Implementation Unit (PIU), established under the Ministry of Climate Resilience, the Environment & Renewable Energy (MCRERE), will be responsible for planning, coordinating, and supervising project activities in full alignment with the ESMF and the Project Operations Manual (POM). The PIU will also oversee stakeholder engagement, environmental and social risk management, and the grievance redress mechanism, ensuring consistent implementation across all interventions.

MNIB building managers will play a central role at the site level, acting as focal points between the PIU, contractors, and users. They will support day-to-day coordination, ensure that disruptions are properly communicated, and facilitate the monitoring of mitigation measures.

While the MCRERE will provide overall leadership and strategic oversight for the project, the Environmental Management Department (EMD) within the MCRERE will ensure environmental compliance, approve relevant permits, monitor waste management practices, and oversee the implementation of the mitigation and monitoring measures defined in the ESMPs.

A National Coordination Committee (NCC), chaired by the MCRERE, will provide strategic oversight at the national level, facilitate inter-agency coordination, and ensure that CEGEB activities remain aligned with Grenada's energy, environmental, and infrastructure policies.

Other relevant agencies and their expected roles may include, but not be limited to:

- Ministry of Infrastructure and Physical Development, Public Utilities, Civil Aviation & Transportation: Oversee national infrastructure development, public utilities regulation, and transportation systems coordination.
- Ministry of Health, Wellness & Religious Affairs: Provide technical oversight in potential health-related issues.
- Ministry of Finance: Provide oversight on financial compliance and reporting.
- Department of Labour: Ensure that employers and employees comply with all Labour Laws.
- Grenada Electricity Services Ltd. (GRENLEC): Technical coordination, approvals, and grid connection support for solar PV systems and other energy efficiency measures.
- Public Utilities Regulatory Commission (PURC): Oversee the regulation of electricity and other utilities in Grenada, ensuring compliance with technical, environmental, and safety standards.

- Grenada Solid Waste Management Authority (GSWMA): Ensure that contractors follow national waste management regulations and coordinate disposal through licensed facilities.
- Grenada Fire Department: Ensure compliance with fire safety codes, including inspection of upgraded systems and access routes.
- Royal Grenada Police Force - Traffic Department: Responsible for traffic management, public access, and safety coordination in public areas.
- Marketing & National Importing Board (MNIB): Coordination with contractors and consultants to manage facility operations, ensure user safety, and communicate schedules and access restrictions during project implementation.

6. Stakeholder Engagement

6.1. Consultation Process and Outcomes

The Stakeholder consultation for the Caribbean Efficient and Green Energy Buildings (CEGEB) Project in Grenada was carried out in accordance with the Stakeholder Engagement Plan (SEP), with the objective of supporting risk identification, refining mitigation strategies, and ensuring that technical interventions respond to the operational context of each site.

Objectives

The consultation process was designed to:

- Involve stakeholders in identifying environmental and operational risks associated with project implementation.
- Collect information on building conditions, infrastructure vulnerabilities, and user priorities.
- Clarify expectations regarding the long-term operation and maintenance of installed systems.
- Promote transparency and raise awareness through the early disclosure of project objectives and scope.

Methodology

Stakeholder consultations were carried out using a structured questionnaire distributed primarily through Google Forms. To address potential barriers to digital access, individual interviews were conducted with stakeholders who were either unable or preferred not to respond online. This combined approach facilitated broader participation and ensured greater inclusivity while managing logistical constraints.

In total, 80 stakeholders representing all buildings included under the Grenada CEGEB subprojects were invited to participate. Although engagement presented some challenges, 66 valid responses were successfully collected, providing a solid basis for analysing stakeholder perspectives.

The questionnaire explored:

- Awareness and perceived relevance of the project.
- Anticipated environmental and social impacts.
- Recommended mitigation measures for construction works within operational buildings.
- Expectations regarding roles and responsibilities for long-term maintenance.
- Preferences forms of communication channels and grievance mechanisms during implementation.

Stakeholder Profile

Stakeholders included:

- Facility and infrastructure managers.
- Technical and maintenance staff with direct insight into building systems.
- Public servants and users of government facilities.
- Representatives of service providers and associated entities.

Although coverage varied across buildings, the sample included in most cases staff with operational responsibilities and building users, ensuring informed feedback. Stakeholders were classified according to their roles, influence, and interest levels.

Key Findings

Stakeholder insights were in general consistent with previous risk assessments and confirmed widespread support for energy efficiency improvements. No significant issues were raised regarding the MNIB subproject. The findings of the consultation process are summarised below:

- Project Awareness: Approximately 45.5% of respondents reported having prior knowledge of the CEGEB project before completing the survey.
- Stakeholder Relevance: 86.4% of respondents were directly associated with one or more of the assessed buildings, including facility staff, users, and technical personnel.
- Perceived Importance: Following a brief explanation of the project objectives, 94% of respondents rated the initiative as important or very important for both building users and the wider community.
- Disruption of Services: Respondents highlighted the need to minimise interference with routine operations during implementation. Specific concerns included noise, movement of equipment, and workspace disruptions. Emphasis was placed on ensuring close coordination with facility managers to schedule works appropriately and avoid critical times.
- Waste Management: Proper handling, secure temporary storage, and final disposal of obsolete equipment (e.g., air-conditioning units and lighting fixtures) were seen as critical. Respondents underscored the importance of pre-planning and early coordination with the Grenada Solid Waste Management Authority to manage associated waste streams effectively.
- Communication: Stakeholders expressed the need for timely communication prior to any intervention. Preferred channels included:
    - Email notifications
    - Direct updates through designated focal points
    - On-site noticeboards and visual cues
- Long-Term Responsibilities: Some respondents requested further clarification regarding:
    - Responsibility for maintenance of installed systems post-implementation.
    - Training timelines and target staff for system operation.
    - Expected lifespan and replacement planning for the equipment.

The stakeholder consultations underscored the need for a well-structured Grievance Mechanism to ensure that all project and subproject stakeholders have accessible, transparent, and efficient channels to express concerns and receive timely resolutions.

6.2. Grievance Mechanism

A Grievance Mechanism (GM) will be established and maintained throughout the implementation of the MNIB subproject to ensure that any concerns or complaints raised by stakeholders are received, addressed, and documented in a transparent, timely, and accessible manner.

The GM will be implemented in line with the CEGEB Environmental and Social Management Framework (ESMF) and the Grenada Stakeholder Engagement Plan (SEP) and will comply with the requirements of the World Bank Environmental and Social Standard 10 (ESS10), ensuring inclusivity, accountability, and effective resolution of grievances.

Objectives

- Provide an accessible and confidential platform for stakeholders to raise concerns related to project activities.
- Ensure timely and transparent resolution of grievances.
- Strengthen accountability, trust, and engagement with affected stakeholders.

Scope of complaints

The GM shall address, but not be limited to, the following types of complaints:

- Construction-related impacts (e.g. noise, dust, vibration, restricted access, inconvenience).
- Health and safety conditions for workers, MNIB facility users and the community.
- Accessibility concerns, particularly affecting persons with disabilities.
- Disruptions to MNIB facility services or regular operations.
- Waste management practices, including hazardous waste.
- Any other environmental or social risks identified by stakeholders.

Focal Points and Responsibilities

The GM shall be implemented through the following focal points:

- Building-Level Focal Points: MNIB facility managers or designated officers shall act as the initial point of receipt for grievances raised within their facility. They shall collect complaints and promptly forward them to the PIU or the assigned CLO for registration, documentation, and follow-up.
- Community Liaison Officers (CLOs): CLOs shall serve as the primary interface between MNIB facility users, the community, and the PIU. They shall register all grievances, ensure proper documentation, track their progress within the central GM system, and provide timely feedback to complainants. CLOs shall also consolidate

data received from Building-Level Focal Points for reporting purposes and support the overall management of grievances at the project level.

- PIU Environmental & Social Specialists: Shall manage, resolve, and document grievances in line with the procedures outlined in the CEGEB Environmental and Social Management Framework (ESMF) and the Grenada Stakeholder Engagement Plan (SEP). They shall ensure compliance with the World Bank's ESS10, maintain the central grievance database, prepare periodic reports, and coordinate with the OECS Regional PIU where relevant.
- Contractors: Contractors shall establish and operate a dedicated Worker Grievance Mechanism, aligned with ESS2 and the procedures defined in the SEP. They shall ensure confidentiality, non-retaliation, and fair resolution of workplace-related complaints. Contractor-level mechanisms shall be integrated into the central PIU grievance system to allow consolidated monitoring, reporting, and oversight.

Accessibility and non-retaliation

The GM shall ensure:

- Be accessible to all MNIB facility users and community members.
- Anonymous submissions shall be allowed.
- Protection from retaliation shall be guaranteed for all complainants.

Submission channels

Public noticeboards providing instructions and contacts for submitting grievances shall be widely available. Multiple submission channels shall be implemented, including:

- Secure complaint boxes located within the MNIB facility.
- Dedicated email address and secure web-based form managed by the PIU.
- Telephone hotline or WhatsApp number (where feasible).
- In-person submissions to building-level focal points, Community Liaison Officers (CLOs), or E&S Specialists within the PIU.

Timelines for Response

- Acknowledgement: Within 3 working days of receipt.
- Formal Response: Within 15 working days, where feasible.
- Extensions: In complex cases, delays shall be justified and documented in the Grievance Log.

Record-Keeping and Reporting

A Grievance Log will be maintained by the PIU, recording:

- Date and method of submission.
- Nature of the complaint.
- Responsible party assigned for resolution.
- Actions taken and outcomes.
- Feedback from the complainant (if provided).

Grievance trends will be analysed and reported regularly by the PIU, consolidated at the national level, and submitted to the OECS Regional PIU, communicating aggregated findings to the World Bank.

Support for Vulnerable Groups

In order to provide support for vulnerable groups, the GM shall ensure that:

- Verbal submissions will be accommodated where literacy or accessibility is a barrier.
- Translation and interpretation services shall be provided when necessary.
- Sensitive complaints will be handled confidentially, ensuring cultural sensitivity and non-discrimination.

Visibility and Awareness

The GM will be publicised widely through:

- Posters and noticeboards in visible areas within the MNIB facility.
- Flyers distributed prior to construction works.
- Online resources and accessible formats for persons with disabilities.

7. ESMP Implementation Schedule and Cost Estimates

7.1. Implementation Scheduling

The ESMP is intended to serve as a dynamic management tool supporting risk prevention, environmental compliance, and stakeholder engagement throughout the project lifecycle; therefore, its timing shall remain fully aligned with the overall execution schedule of the Caribbean Efficient and Green-Energy Buildings (CEGEB) Project.

Implementation of the ESMP shall begin prior to the mobilisation of works, starting with the inclusion of environmental and social obligations in tender documents and continuing through the recruitment of contractors and the finalisation of executive project designs. Key milestones include:

- Incorporation of ESMP provisions into bidding documents and General Conditions of Contract (GCC).
- Pre-construction planning, including preparation of Management Strategies and Implementation Plans (MSIPs) by the contractor, subject to review and approval by the Supervision Consultant in coordination with the PIU and MNIB management representatives.
- Execution of site works, during which all environmental, health and safety, and stakeholder engagement measures, must be actively implemented and monitored.
- Ongoing reporting and grievance management.
- Post-construction clean-up, dismantling of temporary facilities, and restoration of affected areas.

To ensure proper scheduling, the PIU, in coordination with the Supervision & Commissioning Consultant and contractors, shall integrate all ESMP milestones into the master project implementation schedule. This alignment ensures that environmental, health and safety, and stakeholder engagement measures are initiated at the correct stages and tracked against the CEGEB implementation timeline.

7.2. Implementation Costs

The table below outlines the relevant cost categories, representing anticipated expenditures directly associated with environmental and social management measures, to be integrated into the overall project budget. Specific amounts for each cost category shall be determined during procurement planning, based on contractor bids, detailed implementation plans, and the confirmed scope of works.

ESMP Implementation Costs	
Cost Category	**Description**
Waste Management	Containers for on-site waste segregation. Equipment for safe handling of hazardous waste. Contracted service for transport and disposal of bulky or hazardous waste. Waste management authority fees for specific bulky or hazardous waste.
Worker Health & Safety	Personal Protective Equipment (PPE) for each task. First aid kits and emergency response supplies. Hiring of H&S Technician.
MNIB Facility User Health & Safety	Safety signage in common areas. Temporary barriers to isolate work zones. Portable ventilation or filtration aids. Air quality monitoring and laboratory testing. Noise monitoring equipment. Mold removal and treatment measures (if required)-
MNIB Operations	Temporary acoustic panels. Dust suppression barriers or sheeting. Informational signage and floor markings.
Weather-Related Risks	Stormwater drain protection (e.g., covers, filters). Waterproof storage for materials and wastes. Storm readiness and response supplies.
Stakeholder Communication & Grievance Mechanism	Noticeboards, printed schedules, and visual materials. Social media content, WhatsApp, and digital communication. Dedicated staff for public outreach and grievance handling. Complaint boxes, forms, and tracking system (physical or digital).
Environmental & Social Supervision	Hiring of Environmental and Social Specialist(s) for monitoring, reporting, and stakeholder engagement.

Table 7.1. Anticipated ESMP Implementation Cost Categories.