

GEF-8 PROJECT IDENTIFICATION FORM (PIF)

TABLE OF CONTENTS

GENERAL PROJECT INFORMATION	3
Project Summary	4
Indicative Project Overview	4
PROJECT COMPONENTS	5
PROJECT OUTLINE	8
A. PROJECT RATIONALE.....	8
B. PROJECT DESCRIPTION.....	16
Project description.....	16
Coordination and Cooperation with Ongoing Initiatives and Project.....	27
Core Indicators.....	28
Key Risks	29
C. ALIGNMENT WITH GEF-8 PROGRAMMING STRATEGIES AND COUNTRY/REGIONAL PRIORITIES	32
D. POLICY REQUIREMENTS.....	34
Gender Equality and Women’s Empowerment:	34
Stakeholder Engagement	35
Private Sector.....	37
Environmental and Social Safeguard (ESS) Risks	37
E. OTHER REQUIREMENTS.....	37
Knowledge management.....	37
ANNEX A: FINANCING TABLES	38
GEF Financing Table	38
Project Preparation Grant (PPG)	38
Sources of Funds for Country Star Allocation	38
Indicative Focal Area Elements	39
Indicative Co-financing	39
ANNEX B: ENDORSEMENTS	39
GEF Agency(ies) Certification	39
Record of Endorsement of GEF Operational Focal Point (s) on Behalf of the Government(s):.....	40
ANNEX C: PROJECT LOCATION	40
ANNEX D: ENVIRONMENTAL AND SOCIAL SAFEGUARDS SCREEN AND RATING	42
ANNEX E: RIO MARKERS.....	42
ANNEX F: TAXONOMY WORKSHEET	42

General Project Information

Project Title

Global Program on Renewable Energy Systems in SIDS – National Project in Barbados: Establishment of an Integrated Knowledge and Technology Support Platform to Promote Innovation in Micro-, Small- and Medium-sized Enterprises

Region	GEF Project ID
Latin America and the Caribbean	12230
Country(ies)	Type of Project
Barbados	MSP
GEF Agency(ies):	GEF Agency ID
UNIDO	250416
Executing Partner	Executing Partner Type
The University of the West Indies, Cave Hill Campus	Others
GEF Focal Area (s)	Submission Date
Climate Change	12/17/2025

Project Sector (CCM Only)

Technology Transfer/Innovative Low-Carbon Technologies

Taxonomy

Climate Change, Focal Areas, Climate Change Mitigation, Climate Change Adaptation, Private sector, Climate resilience, Technology Transfer, Energy Efficiency, Renewable Energy, Nationally Determined Contribution, United Nations Framework Convention on Climate Change, Paris Agreement, Emissions, Chemicals and Waste, Eco-Efficiency, Best Available Technology / Best Environmental Practices, Industrial Waste, Waste Management, Financing, Sustainable Development Goals, Influencing models, Deploy innovative financial instruments, Strengthen institutional capacity and decision-making, Convene multi-stakeholder alliances, Transform policy and regulatory environments, Financial intermediaries and market facilitators, Private Sector, Stakeholders, SMEs, Individuals/Entrepreneurs, Capital providers, Academia, Civil Society, Beneficiaries, Information Dissemination, Type of Engagement, Consultation, Participation, Partnership, Strategic Communications, Communications, Behavior change, Education, Awareness Raising, Public Campaigns, Sex-disaggregated indicators, Gender Mainstreaming, Gender Equality, Women groups, Gender-sensitive indicators, Participation and leadership, Gender results areas, Capacity Development, Innovation, Capacity, Knowledge and Research, Enabling Activities, Knowledge Exchange, South-South, Conference, Exhibit, Twinning, Field Visit, Peer-to-Peer, Targeted Research, Adaptive management, Learning, Theory of change, Knowledge Generation, Seminar, Course, Workshop, Master Classes, Professional Development, Training

Type of Trust Fund	Project Duration (Months)
GET	60
GEF Project Grant: (a)	GEF Project Non-Grant: (b)
1,770,478.00	0.00
Agency Fee(s) Grant: (c)	Agency Fee(s) Non-Grant (d)
168,195.00	0.00

Total GEF Financing: (a+b+c+d)	Total Co-financing
1,938,673.00	6,543,900.00
PPG Amount: (e)	PPG Agency Fee(s): (f)
50,000.00	4,750.00
PPG total amount: (e+f)	Total GEF Resources: (a+b+c+d+e+f)
54,750.00	1,993,423.00

Project Tags

CBIT: No NGI: No SGP: No Innovation: No Competitive Window: No

Project Summary

Provide a brief summary description of the project, including: (i) what is the problem and issues to be addressed? (ii) what are the project objectives, and if the project is intended to be transformative, how will this be achieved? (iii), how will this be achieved (approach to deliver on objectives), and (iv) what are the GEBs and/or adaptation benefits, and other key expected results. The purpose of the summary is to provide a short, coherent summary for readers. The explanation and justification of the project should be in section B “project description”. (max. 250 words, approximately 1/2 page)

Barbados, as a Small Island Developing State (SIDS), faces severe structural challenges from high energy costs and near-total dependence on imported fossil fuels, which account for over 74% of national CO₂ emissions. This reliance, combined with unsustainable production and consumption patterns, generates significant environmental externalities - including air pollution, solid waste accumulation, effluent discharge, and land and marine habitat degradation.

These pressures accelerate the decline of critical ecosystems such as coral reefs, seagrass beds, and wetlands, weakening natural coastal defenses and increasing exposure to climate hazards. Rising temperatures, stronger hurricanes, sea-level rise, saline intrusion, freshwater scarcity, and sargassum seaweed invasions further threaten key sectors such as tourism, fisheries, agri-food systems, and the blue economy.

MSMEs, which drive the Barbadian economy, remain constrained by limited access to finance, skills, and clean technologies, keeping them locked into fossil-fuel-based and resource-intensive practices that reinforce these environmental stresses. To address these systemic challenges, the project aims to accelerate Barbados' transition to a climate-resilient, low-carbon, and environmentally sustainable economy by enabling MSMEs to adopt and supply renewable energy, energy efficiency, circular economy, and other cleantech solutions across key island value chains.

The project is anchored in a cleantech support and cluster platform hosted by the UWI SIDS-SIDS Green and Blue Economy Hub, strengthening entrepreneurship, innovation, and MSME uptake of sustainable solutions. It will facilitate SIDS-SIDS knowledge transfer through the UNIDO-led Global Network of Regional Sustainable Energy Centres (GN-SEC) and the UWI Hub. Implemented under the GEF-UNIDO Global Program on Climate Resilient Renewable Energy Systems (G-RES), the project follows a four-pillar strategy: policy strengthening, innovative blended finance, enhanced skills and technical infrastructure, and targeted SIDS cooperation. The project investment is expected to result in direct and indirect mitigation of over 240,830 tonnes of carbon equivalent (tCO_e) under sub-core indicator 6.2 over the next two decades. This is mainly achieved through the adoption of solar energy and energy efficiency solutions by MSMEs.

Indicative Project Overview

Project Objective

To support micro-, small-, and medium-sized enterprises (MSMEs) in Barbados to adopt and supply climate-resilient green, clean energy and resource-efficient (cleantech) products and services, thereby reducing global and local environmental externalities (e.g., GHG emissions and pollution), fossil fuel spending, and climate vulnerability of key productive sectors (e.g., tourism, energy, water, blue economy, agri-food).

Project Components

1. Policy, regulatory framework and institutional coordination

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
264,986.00	400,000.00

Outcome:

1.1 Enabling environment for MSMEs to adopt and supply cleantech products and services in key island value chains

Output:

1.1.1 Gender- and youth-inclusive Barbados Green Business Stakeholder Forum

1.1.2 Technology roadmap for climate-resilient cleantech priority solutions in key island value chains

1.1.3 Gender- and youth-responsive policy and implementation plan promoting MSME cleantech adoption and supply

1.1.4 Fiscal and non-fiscal incentive proposal to promote adoption and supply of climate-resilient cleantech solutions

2. Technical support and financing for cleantech adoption and innovation

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
618,088.00	4,500,000.00

Outcome:

2.1 Enhanced technical and financial support for MSMEs to adopt and supply of climate-resilient cleantech solutions

Output:

2.1.1 Cleantech transfer and cluster platform at UWI supporting MSMEs, university start-ups and scale-ups based on achievements under the first BLOOM phase

2.1.2 Cleantech finance landscape assessment, considering innovative financing, climate resilience, gender and youth aspects

2.1.3 Innovative blended finance mechanisms for MSME cleantech adoption and innovation

2.1.4 Investment and business plans of MSMEs on cleantech adoption and innovation

3. Quality infrastructure and green skills development

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
300,000.00	500,000.00

Outcome:

3.1 Enhanced cleantech quality infrastructure, qualification and certification for MSME

Output:

3.1.1 Voluntary Green Business Recognition Labelling Programme (VGBRLP) for MSMEs

3.1.2 Proposal for the integration of cleantech certifications into the Caribbean and National Vocational Qualification framework

3.1.3 Cleantech training for MSMEs based on existing curricular and tools, including from UNIDO

3.1.4 Applied R&D initiatives for students and graduates within the UWI cleantech cluster

4. SIDS-SIDS Knowledge Exchange and Awareness

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
350,000.00	350,000.00

Outcome:

4.1 MSMEs benefit from SIDS-SIDS knowledge exchange and awareness raising on cleantech adoption and entrepreneurship

Output:

4.1.1 Gender- and youth- sensitive cleantech awareness events and webinars

4.1.2 Green Business Recognition Award, considering the importance of gender and youth

4.1.3 Shared results, deliverables and lessons learned within the G-RES program through the UNIDO-led GN-SEC platform (e.g. CCREEE, PCREEE, ECREEE) and the UWI SIDS-SIDS Hub

4.1.4 Case studies shared via the UWI SIDS-SIDS Hub and GN-SEC

4.1.5 Cleantech study-tours and conference participation on regional and international level

M&E

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
76,452.00	199,000.00

Outcome:

5.1: Effective and adaptive implementation and evidence-based learning

Output:

5.1.1: M&E reports (e.g. PIRs, data tracking framework)

5.1.2 Terminal evaluation report

5.1.3 Sharing of M&E data and analytics with the G-RES program

Component Balances

Project Components	GEF Project Financing (\$)	Co-financing (\$)
1. Policy, regulatory framework and institutional coordination	264,986.00	400,000.00
2. Technical support and financing for cleantech adoption and innovation	618,088.00	4,500,000.00
3. Quality infrastructure and green skills development	300,000.00	500,000.00
4. SIDS-SIDS Knowledge Exchange and Awareness	350,000.00	350,000.00
M&E	76,452.00	199,000.00
Subtotal	1,609,526.00	5,949,000.00
Project Management Cost	160,952.00	594,900.00
Total Project Cost (\$)	1,770,478.00	6,543,900.00

Please provide justification

PROJECT OUTLINE

A. PROJECT RATIONALE

Briefly describe the current situation: the global environmental problems and/or climate vulnerabilities that the project will address, the key elements of the system, and underlying drivers of environmental change in the project context, such as population growth, economic development, climate change, sociocultural and political factors, including conflicts, or technological changes. Describe the objective of the project, and the justification for it. (Approximately 3-5 pages) see guidance here

1. The Current Situation: Global Context, Vulnerabilities, and Drivers

The project's intervention in Barbados is set against a backdrop of intensifying global and local environmental and climate challenges, reflecting the interconnected nature of planetary and island systems. The approach taken - which targets the Micro-, Small-, and Medium-Sized Enterprise (MSME) sector as both adopters and providers of green, clean energy and resource efficient (cleantech) solutions - places the private sector in the forefront of addressing global environmental obligations and local resilience needs.

1.1 Global Context and Environmental Imperative

By addressing local challenges in Barbados, this Global Environment Facility (GEF) project contributes directly to the mitigation of global environmental and climate challenges. The Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR6) confirms that climate change is widespread, rapid, and intensifying. The report underscores that human activities, primarily through the combustion of fossil fuels and unsustainable land-use change, have caused atmospheric concentrations of carbon dioxide (CO₂), methane, and nitrous oxide to reach levels unprecedented in at least 800,000 years, with CO₂ increasing by roughly 40% since pre-industrial times.

Without immediate, deep, and sustained mitigation efforts, global greenhouse gas (GHG) emissions are projected to continue rising over the next several decades, pushing the world toward warming levels that will trigger severe and irreversible climate impacts. The Sixth Assessment Report stresses that limiting warming to the crucial 1.5°C threshold requires immediate, deep, and systemic emission reductions across all sectors of the global economy, necessitating a fundamental transformation of energy, industrial, and consumption systems.

Climate change is already causing pervasive and escalating impacts across ecosystems and human systems. Globally, extreme weather events - such as hurricanes, heatwaves, droughts, and heavy rainfall - have increased in frequency and intensity. Sea-level rise and coastal erosion threaten low-lying islands, such as Barbados, while ocean warming and acidification degrade coral reefs and marine ecosystems. These marine environments, which millions depend upon for food security and livelihoods, are rapidly losing function. Freshwater resources are becoming more variable and scarce, and climate-induced disruptions undermine economic stability, social resilience, and ecosystem health across the tropics.

These global trends interact with long-standing environmental pressures, including unsustainable production and consumption patterns, transboundary pollution, rapid biodiversity loss, and the degradation of water and land resources. The combined effects are particularly acute in developing countries and Small Island Developing States (SIDS), which contribute the least to global emissions but face disproportionate climate risks and have limited financial and institutional capacity to respond. In this context, the Global Environment

Facility aims to support transformative investments that address global environmental challenges by targeting key systems, enabling conditions, and underlying drivers of change.

1.2 Local Context: Barbados's Acute Vulnerabilities and Environmental Degradation

Barbados, as a Small Island Developing State in the Caribbean, faces multiple interlinked local and global environmental and climate-related challenges that threaten its ecosystems, economy, and long-term resilience. While the island is a minor contributor to climate change, its economic activity relies on fossil fuel use and unsustainable business practices, which are the root cause of local greenhouse gas emissions and accelerate the degradation of land and marine ecosystems. In 2020, the island emitted approximately 3.66 million tonnes CO₂-equivalent, with CO₂ representing over 90% of emissions, predominantly from fossil-fuel-based electricity generation (74%) and road transport (14%).

As a low-lying island nation with a high concentration of population and critical infrastructure along the coast, Barbados is exceptionally vulnerable to various climate hazards. Specifically, vulnerability to sea-level rise, storm surges, and coastal erosion is critical, with erosion rates in vulnerable areas accelerating and directly impacting tourism infrastructure and coastal protective barriers. Furthermore, hydro-meteorological extremes, particularly Category 4 and 5 hurricanes, have become more frequent and intense, damaging energy infrastructure, undermining productive sectors (tourism and agriculture), and increasing the costs of disaster response and climate adaptation. Finally, increased temperatures and shifting rainfall patterns threaten freshwater supplies, which are already scarce and subject to saline intrusion in coastal aquifers due to sea-level rise, severely impacting water security.

Marine and terrestrial ecosystems are under severe stress, leading to a decline in their capacity to provide essential ecosystem services, including coastal protection and food security. In the marine environment, coral reefs, seagrass beds, and coastal wetlands are experiencing acute stress; ocean warming and acidification are accelerating coral bleaching events and reef mortality, degrading the natural buffers essential for coastal protection and reducing the productivity of fisheries. The island is also increasingly affected by chronic sargassum seaweed invasions, which damage coastal tourism operations, fisheries, and nearshore ecology. Concerning land ecosystems, pressures include soil degradation, particularly in agricultural areas, habitat fragmentation from urbanization, and pollution from untreated wastewater, industrial processes, waste mismanagement, and agricultural runoff. This pollution directly impacts the health of coastal waters, creating a detrimental feedback loop for the marine environment.

1.3 Underlying Drivers of Environmental Change and Systemic Constraints

Barbados' environmental challenges are driven by interlinked economic, social, political, technological, and climatic factors that reinforce each other and exacerbate vulnerabilities:

1. **Economic drivers** include the island's reliance on imported fossil fuels and materials, and exposure to global market fluctuations, which shifts focus on local resources and circularity.
2. **Demographic drivers** relate to population growth and increasing tourism capacity, which amplify pressure on energy, water, and waste management systems, as well as on coastal ecosystems.
3. **Technological drivers** include limited availability, affordability and adoption of energy-efficient, renewable, resource-efficient, and circular economy technologies (cleantech) suitable for MSMEs, constraining both innovation and scale-up of sustainable practices.
4. **Justice and inclusion drivers** reflect the limited ability of local entrepreneurs, particularly start-ups and small enterprises, to participate in clean technology manufacturing and service value chains, which restricts the creation of green jobs and the retention of economic benefits domestically.
5. **Sociocultural and institutional drivers** include low awareness of clean technologies, fragmented policy frameworks, and gaps in technical and managerial capacity that further limit the uptake of sustainable production practices.

6. **Political and governance drivers** involve inconsistent regulations, weak inter-ministerial coordination, and insufficient government support, which together hinder the national transition towards climate-resilient development.

1.4 System Context: The MSME Sector, Cleantech Potential, and Market Failure

The MSME sector is the central system element and the key lever through which the project seeks to enact change. Crucially, the project aims to support MSMEs in their dual role as both adopters and providers (suppliers) of cleantech solutions. MSMEs form the backbone of the Barbadian economy, representing more than 98% of all formal enterprises, contributing over 64% of national value added, and providing more than 60% of private-sector employment. MSMEs are active in key, high-impact sectors identified by the National Policy Framework for the Development of MSMEs (2025), including tourism, agriculture and food systems, clean energy, and the blue economy. Due to their ubiquity, aggregated resource consumption and carbon-intensity, MSMEs are critical to both the environmental challenge and the solution.

For example, the tourism MSMEs, such as small hotels, restaurants, and ancillary service providers, are significant consumers of grid electricity and fresh water, contributing substantially to overall national emissions and water scarcity challenges due to inefficient legacy equipment. Agricultural MSMEs, or small farms, often contribute to land degradation through unsustainable practices and generate localized water pollution from fertilizer and pesticide runoff. Finally, transport MSMEs, including small fleet operators and logistics companies, rely almost entirely on imported liquid fuels, representing a major portion of the transport sector's emissions.

The National MSME policy (2025) encourages the adoption of cleaner business models and cleantech entrepreneurship as means to improve competitiveness, efficiency, and compliance with international environmental, social and governance (ESG) trade standards. However, so far, the progress remains limited and the cleantech eco-system remains nascent. The sector is fragmented, dominated by start-ups or micro-enterprises, with limited collaboration between firms or with academia. According to the Barbados Clean Tech Industry Report developed by the BLOOM Cleantech Cluster, which was established by the Government with GEF-UNIDO support, the local market comprises over 60 firms in renewable energy, energy efficiency, electric mobility and resource-efficient services. Renewable energy solutions, particularly solar thermal and photovoltaic (PV) systems, dominate residential and commercial markets, while energy efficiency services for lighting, HVAC systems, and building retrofits are emerging. A growing number of MSMEs are exploring circular economy solutions, including waste-to-energy, recycling, and bio-based materials, yet uptake remains limited.

Despite the clear economic and environmental case for transition, MSMEs operate within a system characterized by entrenched barriers that prevent them from adopting low-carbon and resource-efficient practices, and which equally constrain the ability of local entrepreneurs to supply quality cleantech solutions. These barriers include:

- **Financial barriers:** Access to finance for cleantech remains insufficient. For adopters conventional finance rarely targets climate-smart investments, and local banks perceive small-scale retrofits (e.g., solar, efficiency) as high-risk. For providers there is a severe lack of early-stage private venture capital, seed funding, and equity instruments needed to commercialize innovations, scale operations, or meet the capital requirements for large contracts.
- **Technological and skills barriers:** Many enterprises are locked into outdated, resource-inefficient technologies and business models. For adopters, this results in high operating costs. For cleantech providers, there is a pronounced shortage of technical, managerial and R&D capacities, constraining their ability to innovate and limiting access to necessary infrastructure (e.g., prototyping, testing, and

certification facilities) required to develop, implement, and maintain advanced cleantech solutions like energy storage, e-mobility, or smart circular economy systems.

- **Ecosystem and market fragmentation:** The domestic cleantech ecosystem is fragmented, dominated by start-ups or micro-enterprises, with limited collaboration between firms or with academia. This acts as a profound obstacle for MSMEs *seeking to become cleantech suppliers and entrepreneurs* by limiting market access, making it difficult to find investors, secure supply chain inputs, and scale technologies for both local and regional markets. Without coordinated support, the market lacks the necessary cohesion and linkages for cleantech innovation to thrive. Through the creation of the BLOOM cleantech cluster by UNIDO with GEF support, some of these barriers were already addressed.

While some support exists for MSMEs transitioning to green and resource-efficient production methods, it remains fragmented and insufficient. Regional and international initiatives, such as IDB-supported programs for clean energy and climate resilience, have provided technical assistance and financing, but these programs have not achieved scalable adoption across the sector. Prior GEF- and other funded projects, including the BLOOM Cleantech Cluster (established with GEF-UNIDO support), the Partnership for Action on Green Economy (PAGE) supported Wildey Green Business Support Pilot Project, the Acceleration Lab for Barbados and the Eastern Caribbean, have demonstrated the potential for cleantech adoption and entrepreneurship.

However, these initiatives also highlighted persistent barriers, including delays in financing, limited access to prototyping and testing facilities, difficulties in scaling start-ups, and insufficient policy and regulatory frameworks to support clean technology adoption. The UNIDO-implemented BLOOM project, in particular, revealed that cleantech start-ups and scale-ups face unique challenges in accessing market linkages, investors, and technical infrastructure, underscoring the need for targeted support to foster cleantech entrepreneurship alongside MSME adoption of sustainable practices. After project closure, changing priorities led to the refocusing of BLOOM on larger companies, leaving many smaller MSMEs without sufficient assistance, highlighting a critical gap that the current project aims to address.

2. Project Objective

The overall objective of the project is to support MSMEs and entrepreneurs in Barbados to adopt and supply climate-resilient, low-carbon, and resource-efficient (cleantech) products and services. By doing so, the project aims to reduce global and local environmental externalities - including greenhouse gas (GHG) emissions, pollution, and fossil fuel dependency - while enhancing the climate resilience of key productive sectors such as tourism, energy, water, blue economy, and agri-food. The project addresses primarily climate mitigation but climate resilience and adaptation is an important prerequisite and co-benefit. Particularly in SIDS, which are prone to extreme weather events, successful mitigation depends on the use of climate-resilient (proven) clean technologies and solutions.

Specifically, the project aims to:

- **Strengthen policy and regulatory frameworks** to create an enabling environment for both the adoption and provision of climate-resilient cleantech solutions;
- **Enhance MSME and entrepreneurial capacity** through targeted technical assistance, training, quality infrastructure, mentorship, incubation, and applied R&D initiatives;
- **Facilitate access to climate-smart finance** in Barbados, including grants, concessional loans, and blended finance mechanisms tailored to the needs of low-carbon and circular economy MSMEs and cleantech start-ups;

- **Institutionalize regional knowledge transfer and networking** through platforms such as GN-SEC and the SIDS-SIDS Knowledge Transfer Hub, supporting replication and scaling across SIDS;
- **Promote the inclusion of women and youth** in cleantech entrepreneurship and innovation, ensuring equitable participation and benefits in the emerging clean technology sector;

This objective will be achieved by targeting the interlocking financial, technical, and institutional barriers that currently prevent MSMEs from adopting and scaling cleantech solutions, linking economic resilience directly with environmental sustainability and national development goals.

3. Baseline Project Scenario

In the absence of GEF project and targeted 'greening' support, MSMEs will continue operating in carbon-intensive and resource-inefficient ways, remaining exposed to climate and economic shocks. Fragmented policies, limited access to finance, and insufficient technical knowledge will constrain their capacity to transition toward climate-resilient cleantech business models and technologies. Environmental degradation is expected to intensify, GHG emissions will continue, and opportunities for regional knowledge transfer and replication will largely be missed.

This is also true for the underdeveloped cleantech sector, which is dominated by start-ups and micro-enterprises with constrained capacity to innovate or scale. Previous interventions, including the BLOOM Cleantech Cluster, the PAGE-supported Wildey Green Business Support Pilot Project, and the Acceleration Lab for Barbados and the Eastern Caribbean, revealed that cleantech entrepreneurs struggle with limited access to prototyping, testing facilities, and early-stage venture capital. Collaboration across firms and with academia is limited, slowing the uptake of innovations. BLOOM, in particular, underscored the unique challenges faced by cleantech start-ups and scale-ups in accessing investors, concessional finance, technical infrastructure, and market linkages.

Existing support frameworks and financial mechanisms are insufficient to bridge these gaps. National and IDB supported funding instruments, such as the Barbados Trust Fund Limited, Fund Access, Enterprise Growth Fund, and the Credit Guarantee Scheme target MSMEs but have in most cases no particular focus on cleantech solutions or entrepreneurship. All these initiatives were created to assist companies at various stages of their financing journey with loans starting from \$500 USD and increasing to \$500,000 USD. The new injection of 50 million USD into the pre-existing Credit Guarantee Scheme, managed by the Central Bank of Barbados, for MSMEs has added conditions aimed at attracting 'underserved segments, including women-owned or led businesses, exporters, and firms investing in renewable energy, energy efficiency, and climate resilience solutions'. Discussions on creating links to the GEF project were initiated and will be taken further during the PPG phase.

4. Alternative Transformational Project Scenario

The alternative transformative scenario envisioned with this project positions both MSMEs and entrepreneurs -including start-ups and scale-ups - as active agents of clean technology adoption and provision. MSMEs will implement climate-resilient cleantech practices, enhancing the environmental performance, competitiveness, and climate adaptation of key island value chains such as agrifood, blue economy, tourism, and manufacturing. Simultaneously, entrepreneurs and start-ups will become providers of innovative climate-resilient solutions, developing products and services for both local and regional markets.

Targeted technical assistance, policy support, and access to climate-smart finance will enable these enterprises to invest in renewable energy, energy efficiency, and circular economy technologies. Strengthened coordination across ministries, the establishment of improved quality standards and regulatory frameworks, and linkages to regional and inter-regional knowledge hubs - such as the SIDS-SIDS Knowledge Transfer

Hub at UWI, the Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE), and the Global Network of Regional Sustainable Energy Centres (GN-SEC) - will institutionalize knowledge transfer, replicate best practices, and ensure the durability of project outcomes. Capacity-building initiatives, including training, incubation, mentorship, and applied R&D, will simultaneously strengthen the supply of cleantech solutions and their adoption by MSMEs. Inclusive measures for women and youth will further ensure equitable participation and benefits across the sector.

5. Justification for and value proposition of the project

Value added and incremental cost coverage: The project adds significant value by enabling MSMEs to adopt and supply cleantech solutions - an outcome that the baseline cannot deliver due to persistent financial, technical, and institutional barriers. GEF resources provide the critical incremental support required to overcome these barriers and finance the incremental costs that are not covered by existing national support schemes or available international financing, thereby unlocking the transition toward climate-resilient, low-carbon MSME operations. This targeted GEF investment yields measurable global environmental benefits through expanded MSME-level deployment of renewable energy, energy efficiency, and circular economy technologies.

The project adopts an integrated MSME cleantech ecosystem approach - combining policy and incentive reforms, investment-readiness and a blended-finance facility, quality infrastructure (standards/labelling and NVQ/CVQ alignment), skills and applied R&D, and SIDS-SIDS knowledge exchange - anchored at UWI for durability and sustainability beyond project closure. Narrower project interventions (e.g., stand-alone TA, a small financing pilot, or policy-only support) were rejected because they do not remove the mutually reinforcing barriers (policy, finance, capability, and market pull) that currently block MSME adoption and therefore cannot deliver scaled uptake of RE/EE and circular solutions across priority value chains. This integrated, institution-anchored design is necessary to convert MSME interest into bankable adoption and sustained market growth.

Resilience to future changes in the drivers: Resilience is built in through: (i) anchoring the platform at UWI to ensure continuity and national ownership beyond the project cycle; (ii) an adaptive blended-finance design that can adjust risk-sharing, eligibility, and windows (including a targeted window for women- and youth-led firms) as demand evolves; (iii) modular technology roadmaps, standards, and curricula that can be updated with market and regulatory changes; (iv) a multi-stakeholder forum to coordinate across ministries, regulators, finance, and the private sector; and (v) continuous SIDS-SIDS learning via the UWI Hub and GN-SEC/CCREEE to reflect emerging good practice and accelerate course corrections.

Innovation versus replication: The project introduces several innovations that go beyond previous initiatives in Barbados. First, the future anchoring the BLOOM cleantech platform at UWI institutionalises functions that were previously time-bound, ensuring a durable home for testing, certification, skills development, applied R&D, and cluster services. This will ensure continued close partnership with young students and graduates—an element that proved essential to the success of the first BLOOM phase. Second, the project will strengthen a gender-responsive blended-finance mechanism for MSME cleantech adoption and innovation, pairing bankability support with de-risking instruments implemented through national lenders. Such a mechanism does not exist in the moment and was identified as a major short-coming during the first BLOOM phase. Third, the project develops MSME-focused sectoral technology roadmaps and targeted incentive proposals to drive market pull. Fourth, it strengthens quality infrastructure through the introduction of a Voluntary Green Business Recognition Labelling Programme and the alignment of cleantech-related qualifications with NVQ/CVQ frameworks.

Complementarity: IDB programs continue to prioritise macro-level policy reforms and large-scale infrastructure, whereas this project directly targets the MSME adoption gap through targeted technical assistance, finance de-risking, and strengthened standards, making it fully complementary to the IDB's scope.

The earlier BLOOM project (GEF–UNIDO) successfully created a start-up cluster but lacked permanence and a dedicated finance window. Moreover, due to institutional changes, the initial host of BLOOM (BIDC) will in future focus more on larger companies, joint ventures, and industrial upgrading. Therefore, this project institutionalises the more MSME-oriented BLOOM platform at UWI, introduces blended-finance instruments, and expands the focus toward broad-based MSME adoption and supply of cleantech solutions. PAGE/Willey programmes piloted audits and training for selected firms; this project scales those initial efforts by adding sectoral roadmaps, incentive proposals, finance mechanisms, and certification systems. The UN Accelerator Lab identified several ecosystem constraints; this project operationalises concrete solutions by strengthening testing services, standards, applied R&D, and cluster-based support. The UN Accelerator Lab is in the process to be closed and therefore the GEF project offers continuity for the results through the platform at UWI. While the national Credit Guarantee Scheme provides a horizontal risk-sharing instrument, this project prepares bankable MSME pipelines, aligns appraisal practices with cleantech criteria, and enables underserved MSMEs—including women- and youth-led enterprises—to access guarantees more effectively.

Scaling and replication pathway: This is driven by market pull (policy incentives and recognition/labeling), market capability (standards/certification reducing performance risk; skills and applied R&D), and de-risked finance that can expand with Barbados Trust Fund Ltd., Fund Access, EGFL, and the Central Bank’s Credit Guarantee Scheme, plus replication via the UWI SIDS–SIDS Hub and GN-SEC/CCREEE. Together, these levers move MSMEs from isolated pilots to systematic adoption and supply of RE/EE and circular technologies across tourism, agri-food, blue economy, and manufacturing. Moreover, the G-RES platform will ensure replication of the approach within the Caribbean and other SIDS regions.

Qualitative assessment: The project is designed to function as an integrated ecosystem linking policy/incentives, investment-readiness and blended finance, quality infrastructure (standards, labelling, NVQ/CVQ), skills and applied R&D, and SIDS–SIDS knowledge flows within a permanent national platform at UWI. Institutional anchoring at UWI, together with partnerships with BCCI, BCC/SJPI, and finance institutions, ensures continuity beyond the project and reduces fragmentation observed in prior initiatives.

Innovation and scale up: The project intervention introduces new elements in Barbados blended finance tailored to cleantech MSMEs, MSME-focused roadmaps and incentive proposals, and a recognition/labelling program tied to standards and qualifications while institutionalising a long-term home at UWI and embedding replication via the UWI Hub and GN-SEC/CCREEE. Scaling is enabled by market pull (incentives/recognition), market capability (skills and certification reducing technology/performance risk), and finance expansion with national lenders and the Credit Guarantee Scheme.

Policy coherence: The work program directly supports Barbados’ NDC, National Energy Policy 2019–2030, and the MSME Policy Framework (2025) by delivering roadmaps, incentive proposals, and quality infrastructure that make MSME adoption investable and verifiable; it also aligns with C-SERMS and ABAS regionally. The Barbados Green Business Stakeholder Forum provides a standing mechanism for cross-ministerial and public–private coordination, improving policy coherence and reducing transaction costs for MSMEs entering RE/EE and circular markets.

Value proposition: By simultaneously addressing finance, technology, capacity, and policy barriers and by institutionalising MSME support at UWI, the project delivers global environmental benefits (direct and indirect GHG reductions), structural change in the MSME sector (adoption and local provision of cleantech), and inclusive growth (gender- and youth-responsive finance and capability pathways). The approach is designed to endure amid evolving environmental and economic conditions, ensuring lasting national and global benefits and positioning Barbados as a regional leader in climate-resilient, low-carbon development.

4. Stakeholder Engagement

The project adopts a multi-stakeholder, co-creation model designed to ensure ownership, complementarity, and long-term sustainability. To achieve these objectives, the project engages a broad range of stakeholders across governmental, regional, private, civil society, and academic sectors. This partnership architecture ensures vertical integration (from policy to practice) and horizontal collaboration (from national to regional), thereby maximizing impact and replication potential. The project also prioritizes gender equality and youth inclusion, with 50% participation targets in training and financing programs, gender-responsive finance and capacity-building criteria, and youth innovation challenges led by local foundations. Knowledge management is anchored in the SIDS-SIDS Hub and GN-SEC network, ensuring that lessons learned are captured, disseminated, and scaled across the region. Barbados will serve as a demonstration site for SIDS-wide replication, contributing to a resilient, low-carbon, and inclusive future for island economies.

5. Part of the Global Program on Climate Resilient Renewable Energy Systems (G-RES)

The national project is part of the GEF and bilateral donor (e.g., Austria) funded Global Program on Climate-Resilient Renewable Energy Systems (G-RES), which is a multi-country program focused on accelerating a sustainable, climate-resilient energy transition across SIDS. The core objective of the overall program is to promote resilient renewable energy (RE) systems that reduce GHG emissions and dependence on fossil fuels, strengthen energy security and deliver productivity gains and climate adaptation co-benefits in key island value chains (water, agri-food, tourism, blue economy). The G-RES is underpinned by the principle that mitigation investments in SIDS are highly vulnerable and require adaptation financing (SCCF/LDCF) to be secure and sustainable. The program places a strong emphasis on empowering energy operators and MSMEs as the primary drivers of this transition.

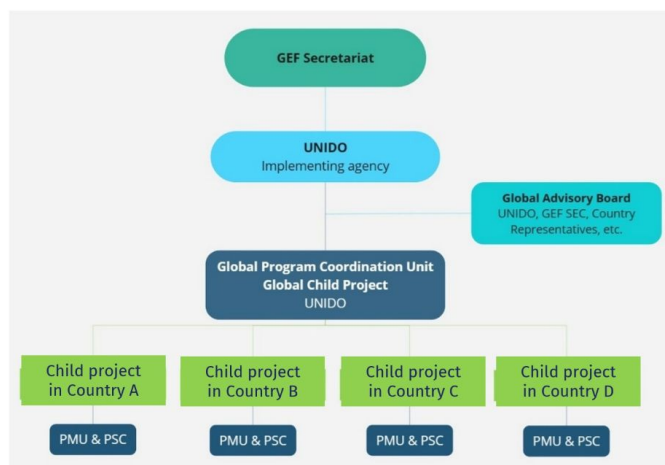
The G-RES is structured as a framework comprising this global-regional project, which provides an umbrella for the national GEF-funded projects implemented in parallel with allocations from STAR, SCCF, or LDCF (in some cases). The global-regional project aims to accelerate national progress through regional and SIDS-SIDS cooperation, leveraging shared knowledge, harmonized standards, and blended financing to reduce barriers that prevent private sector, particularly MSMEs, to adopt or become suppliers of climate-resilient renewable energy and energy efficiency (R&EE) solutions. Due to the exposure of SIDS, the use of climate-proven technologies and methodologies (i.e., those features representing the incremental cost of adaptation) are a prerequisite for the sustainability of GEF CMM and mitigation investments. The SCCF component of G-RES (and this Saint Lucia project) specifically finances this resilience premium, ensuring that the overall program's goal is climate-secure. G-RES contributes directly to the implementation of major multilateral commitments, including the Paris Agreement and the Antigua and Barbuda Agenda for SIDS (ABAS).

Figure 1: Global Program on Climate Resilient Renewable Energy Systems for SIDS

Global Program on Climate Resilient Renewable Energy Systems for SIDS

Global-regional component: provides a common umbrella and joint tools, builds coherence across policies and “child” projects, facilitates SIDS-SIDS knowledge transfer and replication (funded by GEF and donors - e.g. Austria)

National child projects: national implementation funded through GEF STAR, LDCF, SCCF, GCF and co-financing



National child projects to be executed by national entities in cooperation with regional partners



As GEF Agency, UNIDO coordinates the global-regional component and provides backstopping



Centres covering SIDS support the implementation of regional and SIDS-SIDS activities and partly act as co-executing partners

Other partners: SIDS DOCK, SIDS-SIDS Technology Transfer Hub at UWI

Figure 2: Objectives and scope of intervention of the G-RES Program for SIDS



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION
Progress by innovation

Overall Objective



Promote climate-resilient renewable energy systems in SIDS that strengthen energy security, reduce GHG emissions and dependence on fossil fuels, and deliver productivity and climate adaptation co-benefits in key island value chains, including water, agri-food, tourism, and blue economy

Climate-proven renewable energy and efficiency solutions

Renewable integration and decentralisation, grid flexibilization and enforcement (hardening, disaster-resistant storage, heat resistant and water efficient generation), RE for productive uses, energy efficient solutions (e.g. MEPS, district cooling)

Resilient intelligent energy systems

Disaster-proven smart grid, storage and mobility systems, digital and AI applications for disaster, peak load and output projections (e.g. wind, solar),

Nature-based solutions

Heat protection, agrivoltaics and aquaponics, organic waste to energy (incl. sargassum), renewable ocean energy, restoring mangroves and wetlands for energy infrastructure protection

Low-carbon and resilient transportation

Integrated electric mobility and renewable power systems, low-carbon and climate-resilient shipping and ports, alternative transport technologies and fuels, incl. green hydrogen

B. PROJECT DESCRIPTION

Project description

This section asks for a theory of change as part of a joined-up description of the project as a whole. The project description is expected to cover the key elements of good project design in an integrated way. It is also expected to meet the GEF's policy requirements on gender, stakeholders, private sector, and knowledge management and learning (see section D). This section

should be a narrative that reads like a joined-up story and not independent elements that answer the guiding questions contained in the PIF guidance document. (Approximately 3-5 pages) see guidance here

1. Overall Objective and Rationale

The overall objective of this project is to support Micro, Small, and Medium-Sized Enterprises (MSMEs) in Barbados to adopt and supply climate-resilient green, clean energy, and resource-efficient (cleantech) products and services. This transformation will directly contribute to reducing greenhouse gas (GHG) emissions, lowering local pollution, decreasing fossil fuel dependence, and strengthening the climate vulnerability of key productive sectors such as tourism, energy, water, the blue economy, and agri-food.

As mentioned, Barbados faces structural challenges characterized by high energy costs, dependence on imported resources, and high vulnerability to climate change impacts. This project directly addresses the systemic need to decouple private sector activity from global and local emissions and expensive fossil fuel use. It aims to increase the climate adaptive capacity of key sectors and strengthen MSME capacity to adopt and supply cleantech solutions, overcoming critical barriers in skills, finance, and fragmented policies.

2. The Theory of Change (ToC)

The Theory of Change asserts that sustainable MSME transformation can only be realized by an integrated approach that simultaneously addresses four critical and interconnected barriers:

1. **Policy and Regulatory Incentives:** Limited or conflicting policies hinder cleantech adoption.
2. **Climate-Smart Finance:** Prohibitive upfront costs and limited access to tailored green finance.
3. **Technical Knowledge:** Insufficient technical knowledge on low-carbon and circular practices.
4. **Human Capital:** Gaps in human capital to implement and maintain clean technologies.

The project has adopted an integrated approach where interventions across policy, finance, capacity building, and knowledge management reinforce each other. This holistic approach is essential to produce immediate, intermediate, and long-term outcomes that are resilient to future environmental, socio-economic, and policy shifts. The ToC envisions a cascade of causal pathways, where interventions in each component generate outputs that produce immediate outcomes, which in turn create systemic change, leading to enduring global environmental benefits (GEBs) and local adaptation benefits.

Causal Pathways Summary:

- Immediate Outcomes: Strengthened enabling environment for MSMEs (1.1), increased technical and financial capacity for cleantech adoption (2.1), enhanced workforce skills and innovation capacity (3.1), and improved knowledge exchange and awareness (4.1). These are the short-term, direct results of project activities.
- Intermediate Outcomes: Broad adoption and provision of climate-resilient cleantech solutions by MSMEs, inclusive participation of women and youth, market recognition for sustainable practices (via the VGBRLP), and institutionalization of technical and financial support structures for MSMEs (via the UWI Platform), as well as for SIDS-SIDS cooperation (via GN-SEC). This represents the critical market and institutional shifts necessary for long-term impact.
- Long-Term Impact: Barbados MSMEs drive a resilient, low-carbon, and circular economy, generating measurable GEBs through reduced GHG emissions, decreased pollution, enhanced resource

efficiency, and strengthened climate resilience of key productive sectors. This is the ultimate goal, contributing to national climate targets (NDC).

Assumptions and Risks

Assumptions underpinning the ToC include the continued engagement of stakeholders, policy stability or alignment with project objectives, and MSME willingness to adopt cleantech when barriers are addressed.

Key Risks include potential policy conflicts, macroeconomic shocks (e.g., global recessions impacting tourism), limited uptake of financial instruments, and unforeseen severe climate impacts (e.g., hurricanes); these are mitigated through adaptive management, monitoring, and feedback loops embedded in Component 5.

3. Project Components, Interventions, and Activities

The project is structured around five interconnected components, designed to create a comprehensive cleantech ecosystem. The project's implementation pathway is defined by the following outcomes and outputs under each component:

Component 1: Policy, Regulatory Framework, and Institutional Coordination (Enabling Environment)

This component strengthens the institutional and policy foundations required for sustained cleantech market growth. Outcome 1.1 aims to establish an enabling environment that supports MSMEs in adopting and supplying climate-resilient cleantech products and services in key island value chains.

Currently, cleantech and circular economy sectors in Barbados face constraints arising from fragmented policies, outdated legislation, and limited inter-institutional coordination. Under this outcome, the project will develop an integrated and coherent policy environment that supports investment, innovation, and sustainability across green industries. Stronger coordination among ministries, regulators, financial institutions, and private stakeholders will create a predictable enabling environment that encourages MSME participation. Where priority actions stall, the dialogue platform will elevate issues to a ministerial roundtable and pilot a time-bound regulatory sandbox to fast-track compliant cleantech demonstrations.

The outcome will be delivered through four outputs. Output 1.1.1 establishes a gender- and youth-inclusive Barbados Green Business Stakeholder Forum to guide participatory policy development and ensure diverse perspectives shape the regulatory framework, targeting 50% women and 30% youth participation. Output 1.1.2 prepares a technology roadmap identifying climate-resilient cleantech priorities in key island value chains to guide strategic public and private investments. Output 1.1.3 develops a gender- and youth-responsive policy and implementation plan that translates strategic intent into actionable mandates. Output 1.1.4 prepares a fiscal and non-fiscal incentive proposal to stimulate adoption and supply of climate-resilient cleantech solutions, thereby creating strong market pull. Together, Outputs 1.1.1–1.1.4 deliver a combined “push-pull” mechanism of regulatory consistency and targeted incentives that fosters durable behavioural change.

Component 2: Technical Support and Financing for Cleantech Adoption and Innovation

Outcome 2.1: Enhanced technical and financial support enables MSMEs to adopt and supply climate-resilient cleantech solutions.

This component directly tackles the technological, financial, and institutional barriers that prevent MSMEs from adopting and supplying climate-resilient cleantech solutions. Its aim, captured under Outcome 2.1, is to establish enhanced technical and financial support systems that allow MSMEs to move from interest and intent to actual investment, implementation, and scaling. While MSMEs represent the backbone of Barbados'

productive sectors, they continue to face constraints in accessing appropriate technologies, technical services, and affordable climate finance. Commercial lenders remain cautious due to limited collateral, high perceived technology and performance risks, and the small transaction size typical of MSME investments.

To address these constraints, the component combines technology transfer, investment-readiness support, and a dedicated blended-finance mechanism that reduces risk for both MSMEs and partner financial institutions. Consistent with GEF guidance, parts of this component—primarily the capacity-building and analytical work—constitute technical assistance, while the financial instruments and demonstration pilots constitute investment-type activities.

The component begins with Output 2.1.1, which establishes a Cleantech Transfer and Cluster Platform at the University of the West Indies. This platform institutionalises the most effective functions piloted under the first BLOOM phase and offers MSMEs, start-ups, and scale-ups access to technical expertise, incubation and acceleration support, technology assessments, applied R&D linkages, prototyping services, and coordination across the cleantech cluster. By anchoring this platform at a national institution, the project ensures continuity, local ownership, and sustained service delivery beyond the project cycle.

Output 2.1.2 strengthens the financial ecosystem by delivering a comprehensive cleantech finance landscape assessment. This analysis identifies structural financing gaps, lender risk perceptions, pricing and collateral norms, and gender- and youth-specific barriers. It also considers climate resilience criteria and maps the readiness of local financial institutions to expand into cleantech lending. The assessment directly informs the design and operational parameters of the blended-finance mechanism developed under Output 2.1.3.

The heart of Component 2 is Output 2.1.3, which strengthens innovative blended-finance mechanisms for MSME cleantech adoption and innovation. Under this output, the project will facilitate a Clean and Circular Tech Finance Facility, capitalised by a GEF grant and complemented by counterpart financing from a national financial institution such as the Barbados Trust Fund Ltd. The Facility will blend grant-based incentives with commercial or concessional capital to reduce the risks associated with MSME adoption of RE, EE, and circular technologies. Instruments under consideration include matching grants for early-adoption or project-preparation costs, concessional loans or co-lending arrangements, partial credit guarantees, and first-loss tranches; the precise instrument mix, governance arrangements, eligibility rules, social and environmental safeguards, and gender and youth inclusion mechanisms will be developed during the PPG phase and fully presented at CEO Endorsement. A core function of the Facility is to ensure financial additionality by supporting MSMEs that cannot access baseline financing due to collateral constraints, perceived technology risks, or innovation-stage business models.

MSME eligibility and selection under the Facility will follow a transparent competitive process. Approximately 30 MSMEs will be selected based on criteria that include legal registration, activity within one of the target sectors, completion of a technology assessment, and a demonstrated commitment to adopting a cleantech, energy-efficiency, or circular solution. Women- and youth-led enterprises will receive preferential scoring and tailored investment-readiness support. Ensuring inclusion is central to the Facility's design: if fewer than 15 MSMEs reach investment-ready status by mid-term, the Facility will adapt its risk-sharing terms, simplify appraisal procedures, modify grace period and collateral requirements, and introduce a dedicated window serving women- and youth-led firms.

Output 2.1.4 operationalises the Facility and demonstrates the viability of MSME cleantech investments at firm level. At least 50 MSMEs will receive technical assistance to prepare investment-ready business plans meeting lenders' appraisal criteria. From this group, approximately 30 MSMEs will receive financing for pilot demonstrations. These demonstrations will focus on hybridisation of energy systems, such as the deployment of captive solar photovoltaic systems combined with storage and energy-efficiency upgrades for on-site operations and transport, as well as other climate-resilient and circular-economy solutions aligned with the Clean and Circular Tech Finance Facility. The project anticipates that, through the national finance partner,

this model can achieve a threefold replication in the medium term. The governance structure and operational manual for the Facility will be designed during the PPG phase and submitted in full at CEO Endorsement. Expected contributions from this component to the GEF Core Indicators include reductions in greenhouse gas emissions and an increased number of enterprises adopting environmentally sound technologies; quantified targets will be finalised at CEO Endorsement in line with the refined financial instrument mix and expected deal pipeline.

Overall, Component 2 serves as the project's investment engine. It converts the enabling environment created under Component 1 into real MSME projects, provides the technical and financial tools necessary for market entry, and builds the institutional capacity required for a sustainable cleantech finance ecosystem in Barbados.

Component 3: Quality Infrastructure and Green Skills Development

Outcome 3.1 – Enhanced cleantech quality infrastructure, qualification, and certification systems for MSMEs

Component 3 strengthens the national quality infrastructure (NQI) and human-capital foundation required for MSMEs to adopt, implement, and supply climate-resilient cleantech solutions with credibility and consistency. Barbados' emerging cleantech and circular economy sectors continue to face systemic technical constraints, including limited access to certified service providers, insufficiently standardised training pathways, and gaps in testing, verification, and applied research services. These constraints create uncertainty for both technology adopters and financial institutions, elevate perceived performance risk, and restrict the competitiveness of local enterprises within regional and international markets.

To address these barriers, Output 3.1.1 establishes a Voluntary Green Business Recognition Labelling Programme (VGBRLP) for MSMEs. This initiative provides a credible, third-party recognition framework that signals environmental performance, improves market trust, and allows early-stage adopters to differentiate themselves in domestic and regional markets. The label also strengthens enabling conditions for the Clean and Circular Tech Finance Facility under Component 2, since recognition of good environmental practice reduces perceived investment risk for financial institutions.

Building on this, Output 3.1.2 prepares a proposal for integrating cleantech-related certifications into the Caribbean and National Vocational Qualification (NVQ/CVQ) frameworks. This integration ensures that Barbados' technical workforce is trained to consistent standards aligned with regional expectations, professionalising the sector, strengthening technical competency, and creating clear career pathways. By embedding cleantech skills in formal qualification systems, the project supports long-term sectoral development and ensures that MSMEs can reliably access trained technicians and service providers.

Output 3.1.3 focuses on cleantech training for MSMEs, drawing on existing UNIDO tools and curricula. The training will target both adopters and suppliers, addressing skills related to renewable energy, energy efficiency, resource management, maintenance, diagnostics, circular business models, and operational optimisation. Strengthening these capabilities will help reduce technology performance failures, expand the domestic supply chain for cleantech services, and improve the bankability of MSME projects supported under Component 2.

Finally, Output 3.1.4 fosters applied R&D initiatives within the UWI cleantech cluster, ensuring that students and graduates participate in problem-solving for MSMEs and contribute to a continuous pipeline of locally relevant innovation. Through these initiatives, UWI will serve as a hub for prototype testing, technology adaptation for island conditions, and collaborative research between academia and enterprises. This also reinforces the MSME–university linkages established under Component 2, enabling knowledge feedback loops and making MSMEs active partners in innovation.

Taken together, Component 3 establishes the technical backbone required for a resilient cleantech market. It reinforces Components 1 and 2 by reducing performance risk, improving capability, and ensuring that trained professionals and certified services are available to support MSME cleantech adoption and supply. By embedding skills and certification into national institutions and qualification frameworks, the component also enhances long-term sustainability and positions Barbados to scale cleantech solutions across SIDS.

Component 4: SIDS-SIDS Knowledge Exchange and Awareness

This component establishes the necessary framework for replication, scaling, and institutional learning, extending the project's impact beyond Barbados' borders. The desired Outcome 4.1 is that MSMEs benefit from SIDS-SIDS knowledge exchange and awareness raising on cleantech adoption and entrepreneurship. Public and private awareness of cleantech opportunities remains low, and Barbados' limited domestic market requires regional and international connectivity to achieve scale. The 2018 Barbados Sustainable Energy Industry Market Assessment highlighted several measures to stimulate consumer and business demand for clean technologies. As a result, this outcome builds awareness through behaviour change and marketing activities, strengthens market linkages, and facilitates SIDS-SIDS knowledge sharing through the existing SIDS Knowledge Hub (GEF10992) to facilitate meaningful peer-to-peer learning and replication based on components 1,2 and 3.

Output 4.1.1 delivers Gender- and youth- sensitive cleantech awareness events and webinars to ensure wide reach and inclusiveness across all demographics. Output 4.1.2 convenes the Green Business Recognition Award, considering the importance of gender and youth, to celebrate and incentivise sustainable practices publicly, creating positive role models. Output 4.1.3 ensures Shared results, deliverables and lessons learned within the G-RES program through the UNIDO-led GN-SEC platform (e.g. CCREEE, PCREEE, ECREEE) and the UWI SIDS-SIDS Hub. Output 4.1.4 solidifies knowledge sharing by ensuring Case studies are shared via the UWI SIDS-SIDS Hub and GN-SEC, providing practical evidence for replication. Finally, Output 4.1.5 facilitates Cleantech study-tours and conference participation on regional and international level, ensuring knowledge continuity and GEB amplification across SIDS.

Component 5: Project Monitoring and Evaluation

This component ensures accountability, transparency, and adaptive management throughout the project lifecycle. The central Outcome 5.1 is Effective and adaptive implementation and evidence-based learning. This is achieved through three key outputs: Output 5.1.1 establishes M&E reports (e.g. PIRs, data tracking framework), providing quantitative and qualitative data on progress against indicators. Output 5.1.2 provides the Terminal evaluation report to independently assess the overall project success and impact, identifying key lessons learned. Finally, Output 5.1.3 ensures the Sharing of M&E data and analytics with the G-RES program, embedding the project's results within the broader GEF-UNIDO framework for global learning. This component underpins adaptive management, integrating gender and youth monitoring, and ensuring accountability for GEBs and co-benefits.

Figure 3: Theory of Change

PROBLEM STATEMENT / RATIONALE

The project addresses the need to decouple private sector activity from global and local emissions and expensive fossil fuel use. It aims to increase the climate adaptive capacity of key island sectors (e.g., tourism, energy, water, blue economy, agri-food), and strengthen MSME capacity to adopt and supply clean energy and resource efficient (cleantech) solutions, overcoming manifold barriers in skills, finance, and fragmented policies.

Intervention is designed to achieve...

1. IMPACT (Ultimate Goal)

Contribute to a competitive, low-carbon and climate-resilient economy, where MSMEs drive green economic growth, protect natural capital, and enhance national well-being.

Leads to...

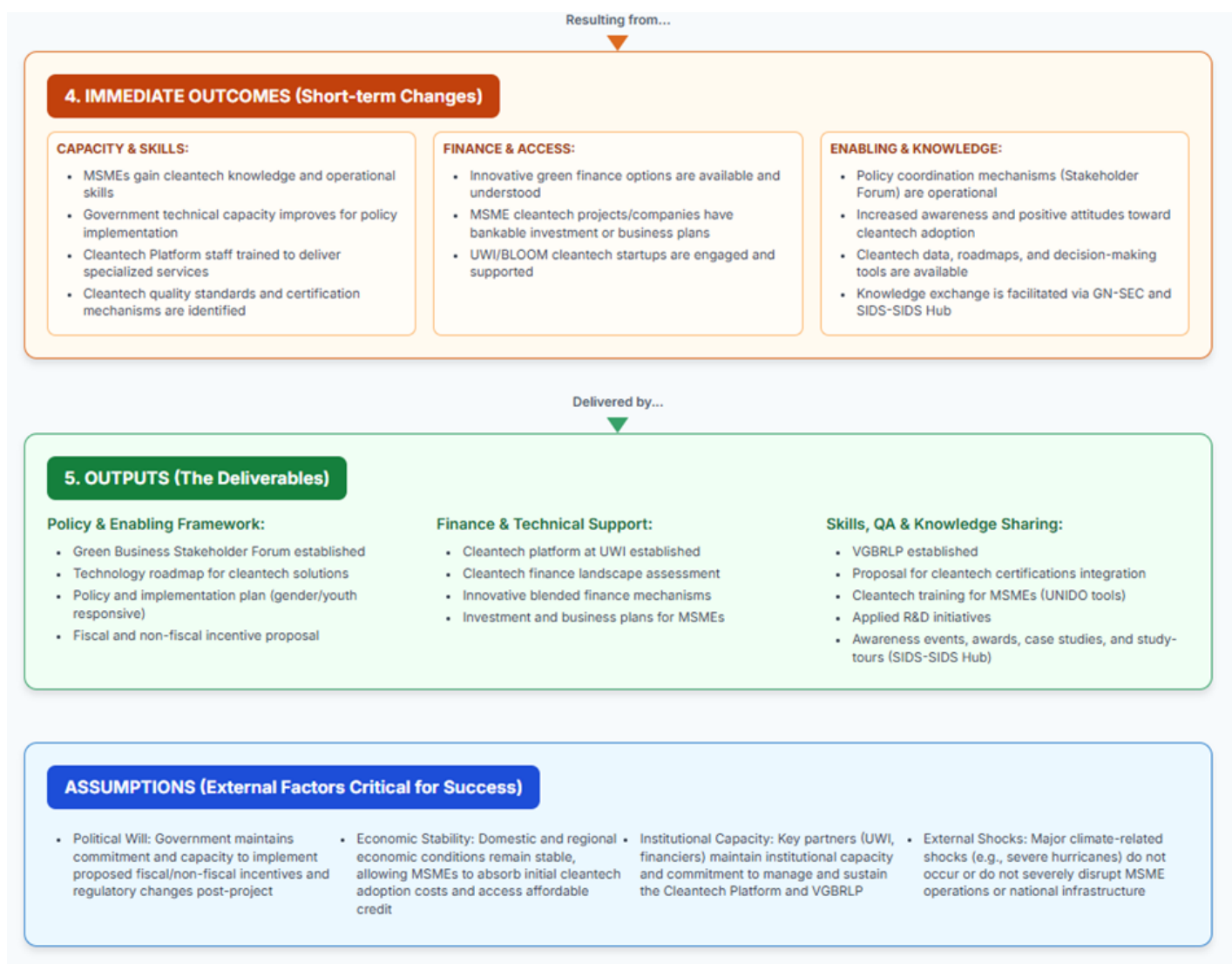
2. LONG-TERM OUTCOMES (National Transformation)

- Reduced GHG emissions and environmental externalities in key island sectors
- Enhanced climate adaptive capacity of key island sectors
- Stronger enabling environment for green innovation (new jobs, competitive MSMEs)
- Lower national dependence on imported fossil fuels and raw materials (energy security)

Achieved through...

3. MEDIUM-TERM OUTCOMES (System-Level Changes)

- MSMEs increase cleantech adoption and supply, leading to higher productivity and competitiveness
- Financial institutions scale up green lending and offer tailored, de-risked financial products
- Policies and regulations are implemented, resulting in an enforced, clear, and stable operating environment
- Innovation ecosystem becomes functional/sustainable, connecting R&D, finance, and enterprise support
- Public and private sector actors collaborate effectively, driving coordinated national green transition strategies



4. Global Environmental Benefits (GEBs) and Additionality

The project delivers tangible GEBs primarily by reducing GHG emissions over 240,830 tCO₂e (direct and indirect) through directly and direct support towards piloting the deployment of and mobilizing investment in of the clean energy impact scopes of decentralized solar energy systems and energy efficiency deployment, besides other cleantech solutions amongst MSMEs sector respectively), reducing local pollution, and unsustainable resource use (Climate Change Mitigation/International Waters), while significantly increasing climate resilience in key productive sectors (Climate Change Adaptation).

Additionality is ensured because, without GEF support, MSMEs would continue to face the chronic financial, technical, and regulatory barriers that stifle cleantech uptake. The project's integrated approach - coordinating policy reform, financial innovation, skills development, and knowledge exchange - provides a critical, multi-faceted solution that would not occur under existing fragmented initiatives alone.

Private Sector Engagement

The project's structure places the private sector - specifically MSMEs, start-ups and scale-ups - at the center of the intervention, recognizing their dual role as both the primary adopters of cleantech and the necessary local providers of these solutions. The engagement strategy is comprehensive, starting with Component 1 by ensuring their representation in the Gender- and Youth-inclusive Barbados Green Business Stakeholder

Forum (1.1.1) to inform policies and incentives (1.1.4) that affect them. Crucially, Component 2 provides direct technical and financial capacity, supporting MSME cleantech adoption and innovation through the UWI cleantech platform (2.1.1) and by co-developing innovative blended finance mechanisms (2.1.3) with financial partners like the Barbados Trust Fund and the Central Bank's Credit Guarantee Scheme. Furthermore, Component 3 directly involves the private sector in quality infrastructure, such as the establishment of the Voluntary Green Business Recognition Labelling Programme (VGBRLP 3.1.1) with the Barbados Chamber of Commerce and Industry (BCCI), ensuring market pull and recognition for sustainable practices. This continuous, targeted engagement ensures that the project interventions are market-driven and scalable, moving them beyond donor dependency.

Gender Mainstreaming

The project is explicitly designed to be gender- and youth-responsive, ensuring equitable participation in and benefits from the emerging cleantech economy. The commitment to inclusion is embedded across all components, starting with Component 1, which mandates the establishment of a Gender- and Youth-inclusive Barbados Green Business Stakeholder Forum (1.1.1) and the development of a gender- and youth-responsive policy (1.1.3). This ensures that policy development addresses specific barriers faced by women and youth entrepreneurs. In Components 2 and 3, inclusion is operationalized by integrating gender and youth considerations into the cleantech finance landscape assessment (2.1.2) and by delivering specialized training (3.1.3) and R&D initiatives (3.1.4) to address skill gaps in these specific groups. Furthermore, Component 4 promotes visibility and recognition through gender- and youth-sensitive awareness events (4.1.1) and the Green Business Recognition Award (4.1.2). The project adheres to strict participation targets, aiming for a minimum of 50% participation of women and youth in key training and financing programs, with Component 5 ensuring the M&E framework systematically tracks differential impacts and benefits based on gender and age.

Knowledge Management and Learning

Component 4 is dedicated entirely to Knowledge Management and Scaling. The systematic dissemination of case studies and lessons learned (4.1.4, 4.1.3) through the UWI SIDS-SIDS Hub and the GN-SEC platform ensures that local knowledge is codified and shared regionally and globally, maximising replication potential and global impact.

Stakeholder Roles

The project has the following indicative implementation and execution structure. It will be completed based on the results of the PPG phase and consultations with the Government.

Figure 2: Implementation and execution structure of the GEF project

Funding Partner: The Global Environment Facility (GEF)

Implementing Agency: UNIDO

Project Execution:

Project Steering Committee

Chair: MoENBGBE, Other members: UNIDO, MoEB, CCREEE, IADB, BCCI, ILO, PAGE (UNEP), CYEN

Non-voting observers: UWI (Executing Partners)

Reporting ↑ *Supervision* ↓

Project Management Unit (PMU)

Hosted by UWI (SIDS-SIDS Hub)

Lead Executing Partner:
UWI Cave Hill Campus

Other Potential Partners:
MSMEs, CCREE, PCREEE, BCCI

Direct Beneficiaries: MSMEs, entrepreneurs, start-ups and scale-ups and associations

Final Beneficiaries: Consumers

Engagement is continuous and participatory. The project adopts a multi-stakeholder, co-creation model designed to ensure ownership, complementarity, and long-term sustainability. To achieve these objectives, the project engages a broad range of stakeholders across governmental, regional, private, civil society, and academic sectors. This partnership architecture ensures vertical integration (from policy to practice) and horizontal collaboration (from national to regional), thereby maximising impact and replication potential. The project will be implemented by UNIDO Sustainable Energy and Just Energy Transition Unit (JET) in close coordination with the UNIDO-Barbados SIDS Hub for Sustainable Development.

Stakeholder Type	Specific Stakeholder/Entity	Level of Engagement & Primary Interest	Specific Contribution to Project Success	Key Component/Output Linkage
I. Governance & Policy	Ministry of Environment and National Beautification, Green and Blue Economy	High: Policy Oversight. Interest in environmental compliance and climate-resilient economy.	Policy Implementation: Ensures environmental compliance and provides policy oversight for all project activities.	Component 1 (Policy, regulatory framework).
	Ministry of Energy and Business	High: Strategic Alignment. Interest in aligning the project with national energy and MSME strategies.	Strategic Guidance: Directs the technology roadmap (1.1.2) and incentive proposals (1.1.4) to maximize energy security.	Component 1 (Policy, regulatory framework).
	Environmental Protection Department (EPD)	Consulted/Informed. Interest in monitoring and ensuring	Technical Vetting: Monitors chemicals, waste,	Component 3 (Quality infrastructure).

II. Execution & Technical		cleantech adherence to compliance standards.	and ensures compliance with resource-efficiency standards.	
	UWI Cave Hill Campus (SIDS-SIDS Hub)	Lead Executing Partner. High: Direct Management & R&D. Hosts the Hub and leads research, training, and knowledge management.	Operationalizes Platform (2.1.1): Manages the Cleantech cluster, delivers technical support (3.1.3), and leads Applied R&D (3.1.4).	Component 2 (Technical support), 3 (Skills development).
III. Financial & Investment	UNIDO	Implementing Agency (GEF). High: Technical Oversight. Ensures project alignment with Global-RES and SIDS-SIDS cooperation.	Knowledge Transfer: Facilitates SIDS-SIDS cooperation via the GN-SEC platform (4.1.3) and provides proprietary cleantech training tools.	Component 4 (Knowledge Exchange), Component 3 (Training).
	Barbados Trust Fund Ltd.	Co-financing Partner & High Investment Role. Interest in blended finance mechanisms	Financing Mechanism: Implements the Innovative blended finance mechanisms (2.1.3) and provides direct financial partnership.	Component 2 (Financing).
	Fund Access, EGFL, Credit Guarantee Scheme	Consulted/Co-delivery. Interest in de-risking financial products and scaling up green lending.	Green Lending: Uses the finance landscape assessment (2.1.2) to offer innovative green finance options.	Component 2 (Financing).
IV. Private Sector & MSMEs	IADB (Inter-American Development Bank)	Leverage/Co-financing. Interest in maximizing regional program impact.	Resource Mobilization: Ensures project activities are leveraged with existing programs (e.g., Energy Smart Fund II).	Project Co-financing.
	Technology Providers and MSMEs	Primary Beneficiaries/Partners. Interest in cleantech adoption, business growth, and competitiveness.	Adoption & Supply: Directly adopt/supply cleantech, develop bankable business plans (2.1.4), and provide innovation feedback.	Component 2 (Cleantech adoption).
	Barbados Chamber of Commerce and Industry (BCCI)	Key Executing Support. Interest in advocating for the private sector and implementing the recognition program.	Institutional Home: Serves as the institutional base for the Voluntary Green Business Recognition Labelling Programme (VGBRLP) (3.1.1).	Component 3 (Quality infrastructure).
	Small Business Association (SBA) / Export Barbados (BIDC)	Consulted/Advocacy. Interest in market linkages, policy advocacy, and MSME needs.	Market Linkage: Supports MSME export/market linkages and ensures smaller enterprises are adequately engaged.	Component 1 (Policy), 2 (Cleantech transfer).
V. Skills & Knowledge	Barbados Community College (BCC)	High: Training Delivery. Interest in integrating cleantech into vocational curricula.	Curriculum Integration: Delivers NVQ and CVQ training programs and contributes to the cleantech certification integration proposal (3.1.2).	Component 3 (Green skills development).
	Caribbean Youth Environment Network, Ashley Lashley Foundation, Project Discovery Barbados	High: Community/Youth Engagement. Interest in driving youth participation and community awareness.	Outreach: Drives youth- and gender-sensitive awareness events, awards (4.1.2), and webinars.	Component 4 (Knowledge Exchange & Awareness).
	CARICOM Secretariat / CCREEE / ILO / UNEP	Regional Coordination & Support. Interest in scaling up lessons learned regionally.	Harmonization & Replication: Promote policy harmonization and share results for regional replication across the Caribbean.	Component 4 (SIDS-SIDS Knowledge Exchange).

UNIDO Legal context

The Government of Barbados agrees to apply to the present project, mutatis mutandis, the provisions of

the Standard Basic Assistance Agreement between the United Nations Development Programme and the Government, signed and entered into force on 21 October 1974.

Coordination and Cooperation with Ongoing Initiatives and Project.

Does the GEF Agency expect to play an execution role on this project?

No

If so, please describe that role here. Also, please add a short explanation to describe cooperation with ongoing initiatives and projects, including potential for co-location and/or sharing of expertise/staffing

As part of the G-RES umbrella programme, the Barbados project benefits from shared methodologies, regional knowledge exchange and harmonised approaches to climate-resilient renewable energy deployment across SIDS. So far five SIDS are part of the program, including Barbados, St. Kitts and Nevis, Saint Lucia, Palau and Papua New Guinea. The programme also provides a platform for coordinated policy support, joint technology assessments, and standardised approaches to MSME engagement, ensuring that national progress contributes systematically to regional SIDS-SIDS cooperation.

Through this alignment, the project directly supports implementation of the Paris Agreement, the Antigua and Barbuda Agenda for SIDS (ABAS), and relevant UNEA resolutions on circular economy and pollution reduction. It also complements ongoing and previous clean technology and innovation programmes through initiatives in the area of financing, institutional capacity, and long-term MSME support structures as follows:

a) BLOOM Cleantech Cluster (GEF-UNIDO, 2018–2023): The BLOOM initiative established a foundation for cleantech entrepreneurship, prototyping, and cluster networking. This project expands on BLOOM's results but explicitly fills the remaining ecosystem gaps identified at project closure, particularly: (i) the lack of a permanent institutional home for cleantech support (UWI will now assume this function), (ii) insufficient MSME-level adoption of cleantech solutions, and (iii) limited access to investment-ready finance. BLOOM lessons directly inform the design of the UWI cleantech platform and the investment-readiness support under Component 2. BIDC, who acted as host of the BLOOM cluster, will focus more on bigger companies, joint ventures and industrial upgrading.

b) PAGE Barbados – Wildey Green Business Initiative: It piloted green business support models, environmental audits and methodologies (e.g., green diagnostics, audit tools, training curricula) for MSMEs, which will complement the project's efforts through supporting access to finance, sector-specific technology roadmaps, investment support, and regional SIDS replication. PAGE partners will also continue to provide methodologies and advisory support, avoiding duplication of effort.

c) IDB Clean Energy and Resilience Programmes: Several IDB initiatives target renewable energy and climate resilience, but primarily focus on large-scale investments and policy support. Coordination ensures complementarity by positioning this project as the MSME-focused, innovation-driven counterpart to IDB's macro-level programs. This includes sharing data, aligning financial mechanisms, and identifying co-financing opportunities, particularly for MSMEs needing follow-on capital after project-supported technical assistance.

d) The UN Accelerator Lab: Identified barriers but did not provide long-term support systems, which will be addressed through operationalising long-term solutions, including applied R&D and innovation support.

e) The Credit Guarantee Scheme (Central Bank of Barbados): This initiative supports MSMEs but lacks cleantech criteria and does not provide investment-readiness assistance, a gap the project will fill with technical assistance to MSMEs and linking them directly to the scheme.

Moreover, this complementarity ensures that the project adds incremental value by filling missing functions and connecting previously isolated initiatives into a cohesive ecosystem.

Regional Coordination and SIDS-SIDS Cooperation

a) CCREEE and CARICOM: The project coordinates with CCREEE on regional harmonisation of cleantech standards, qualification frameworks, and knowledge products. Through CCREEE, the project also links to CARICOM Energy Policy implementation, C-SERMS targets, and regional capacity-building initiatives. The project's quality infrastructure activities and training modules will be aligned with regional frameworks, enabling replication across multiple SIDS.

b) GN-SEC - G-RES Nexus: As part of this nexus, the project will contribute to cross-country knowledge sharing, technology assessments, and policy harmonisation across the GN-SEC network. Regional outputs (e.g., case studies, evaluation results, standards proposals) will be disseminated through GN-SEC to ensure scale-up and South-South learning. The GN-SEC platform and program is facilitated and managed by UNIDO.

c) SIDS-SIDS Green and Blue Economy Hub: The project leverages the SIDS-SIDS Green and Blue Economy Hub (GEF10992 and ongoing), enhancing knowledge transfer, regional cooperation, and the sharing of best practices across SIDS. This collaboration aims to promote policy harmonisation, ensuring that successful methodologies and results can be replicated across the Caribbean, amplifying the impact of the project.

Academic, Technical, and Civil Society Collaboration

a) UWI and Technical Institutions (BCC, SJPP): The UWI SIDS-SIDS Hub serves as the executing partner and institutional home for the cleantech platform and innovation ecosystem. Through active collaboration with vocational schools and research centres, the project ensures curriculum alignment, applied R&D integration, and the long-term sustainability of training and certification systems.

Core Indicators

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO₂e (direct)	16993	0	0	0
Expected metric tons of CO₂e (indirect)	2238369	0	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO₂e (direct)				
Expected metric tons of CO₂e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO₂e (direct)	16,993			

Expected metric tons of CO ₂ e (indirect)	2,238,369			
Anticipated start year of accounting	2026			
Duration of accounting	20			

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)	940,896			

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)
Solar Photovoltaic	8.88			

Explain the methodological approach and underlying logic to justify target levels for Core and Sub-Indicators (max. 250 words, approximately 1/2 page)

Direct and indirect GHG emissions will be achieved twofold, firstly by helping MSMEs in key value chains to adopt cleantech products and services and secondly by providing support to start-ups and scale-ups for the full commercialization of cleantech innovations. Since the supported MSMEs are not identified at this stage and will be selected through a competitive call for proposals, it is not possible to calculate the direct GHG emission reductions at this point. Moreover, in line with the experiences of the GEF support Global Cleantech Innovation Programme (GCIP) and the first BLOOM cluster phase in Barbados, it is complex to project the potential future GHG emission reductions of cleantech suppliers as this highly depends on the sales. In this context, GCIP and BLOOM have used an approximation. Through greening up the SMEs value chains, the project investment is expected to result in the direct and indirect mitigation of over 240,830 tCO₂e in the next two decades, through some clean energy impact scopes, besides other cleantech solutions. More scopes are to be identified with a comprehensive methodology developed during the PPG phase.

Key Risks

	Rating	Explanation of risk and mitigation measures
CONTEXT		
Climate	Moderate	Assessment: Hurricanes, supply chain disruptions, or economic downturns could affect MSME operations, project timelines and may harm implemented renewable energy solutions (e.g. roof-tops). Mitigation Measures: Integrate climate resilience and disaster preparedness modules into MSME training. Maintain flexible implementation timelines

Environmental and Social	Low	Assessment: (1) MSMEs may struggle to achieve measurable performance improvements or may improperly handle renewable energy technologies or chemicals associated with green innovations, causing environmental or occupational hazards. (2) Women and youth led MSMEs may face barriers such as limited access to finance, networks, and technical training. (3) Additional vulnerable groups—including small scale farmers, fishers, informal sector workers, and low income micro entrepreneurs—may experience disproportionate barriers to participating in or benefiting from project activities and may be more exposed to environmental, occupational, or economic risks if not adequately considered in project design, consultation processes, and safeguard screening. Mitigation Measures: (1) Environmental and social aspects will be part of the business plans and feasibility studies. Collaborate with EPD to ensure compliance with national environmental regulations and Basel, Stockholm, and Minamata Conventions. Promote use of Personal Protective Equipment (PPE) and safe waste disposal protocols. Facilitate cleantech qualification and certification. (2) Develop a Gender and Social Inclusion Strategy and Action Plan with gender and age disaggregated indicators. Partner with women’s business associations and youth organisations, as well as with financial and technical partners, to develop targeted financial mechanisms and trainings for women and youth-led MSMEs. Conduct a dedicated mentoring programme for women to establish networks. Conduct inclusion training for implementing partners. Ensure 50% women participation in training and 30% youth representation. 3) Targeted engagement and access strategies will be implemented for small scale farmers, fishers, informal sector workers, and low income micro entrepreneurs. This includes tailoring outreach through cooperatives, producer groups, community associations, and local intermediaries; simplifying application and participation requirements where feasible; and prioritizing support services that reduce participation barriers for these groups. Participation, benefits, and risks will be tracked through disaggregated indicators, and adaptive measures will be applied as needed during implementation to ensure equitable
Political and Governance	Moderate	Assessment: Policy shifts or institutional restructuring could deprioritize the green economy or MSME agenda. A similar shift has happened in Export Barbados (BIDC) in the case of the BLOOM cluster, which is now directed towards bigger companies and joint ventures. Mitigation Measures: Align project outputs with the National Energy Policy 2030 and Barbados’ NDC 2025. Maintain government representation representing energy, environment and small business on the PSC. Secure public statements from lead ministries. Support institutionalization of outputs through Draft Cabinet approved guidelines to ensure continuity across political cycles.
INNOVATION		
Institutional and Policy	Moderate	Assessment: Project benefits may not continue post GEF funding if institutional ownership or financial mechanisms are weak. Mitigation Measures: Integrate the VGBRLP into BCCI’s membership services. Secure

		private sector sponsorships. Institutionalize the knowledge platform within national frameworks. Promote collaboration among UWI, CCREEE, MENB, and GN SEC to ensure programmatic continuity. Establish a revolving green finance mechanism through Trust Fund Limited. Leave the ownership for the cleantech MSME support and cluster platform from the beginning with UWI.
Technological	Moderate	Assessment: MSMEs and local institutions may lack technical expertise in renewable energy, water efficiency, and circular economy practices. Risks also include technology obsolescence and mismatch with evolving standards. Mitigation Measures: Conduct capacity building workshops through BCC, UWI, and UNIDO. Develop user-friendly toolkits and on site mentoring. Establish a Technology Support Mechanism at UWI for technology assessments. Require climate fit, impact, and efficiency evidence for all technologies. Monitor performance across MSME sectors. Integrate existing GN-SEC and ILO PAGE training modules re cleantech and green business. Plan for technology upgrades, retraining, and retrofitting. Ensure cleantech qualification and certification;
Financial and Business Model	Moderate	Assessment: Limited commitment from the national stakeholders could delay endorsement and co-financing. MSMEs (especially women and youth-led) may lack access to affordable green finance due to limited credit history or collateral. Mitigation Measures: Engage the GEF Operational Focal Point early to secure endorsement. Obtain written co financing commitments. Diversify funding sources (banks, CSR, climate funds, impact investors). Promote gender responsive financial inclusion indicators (e.g., % of women led MSMEs accessing green credit).
EXECUTION		
Capacity	Moderate	Assessment: (1) Multiple partners (UWI, CCREEE, BCCI, EPD, BCC, SJPP, BNSI, Trust Fund Limited, ALF, MEB, UNIDO) may experience coordination delays due to overlapping mandates, competing institutional priorities, and limited project management capacity. This could be particularly the case with UWI and the SIDS-SIDS Hub, which depends in the moment entirely on climate funding. (2) Weak M&E systems could limit the ability to track progress and support adaptive management Mitigation Measures: (1) Establish a Project Steering Committee (PSC) with clear TORs, biannual meetings, and a shared digital workspace for coordination. Use the proven Wildey Green Business Initiative (WGBI) governance model. Assign a Project Coordinator to manage inter agency communication. Include gender responsive participation targets (50% women representation) in PSC membership. Conduct inclusion and gender sensitivity training for all implementing partners; conduct a HACT assessment of UWI in the beginning; (2) Assign M&E focal points at key partners, integrate digital dashboards, and ensure a quarterly M&E feedback loop to the PSC for adaptive management
Fiduciary	Low	Assessment: Inaccurate or inconsistent self reported MSME data could undermine credibility of the VGBRLP and distort performance tracking. Mitigation measures: Introduce third party verification for Silver and Gold

		levels. Support audits and use digital data tracking tools managed by UWI. Develop a data governance protocol ensuring transparency, validation, and secure storage. Include gender disaggregated reporting. Conduct a HACT assessment of UWI at the beginning;
Stakeholder	Low	Assessment: (1) MSMEs may show low participation due to limited awareness of the economic benefits of sustainability, perceived high costs of green technologies, and lack of access to affordable finance. (2) Limited visibility or inconsistent messaging could reduce stakeholder buy-in and public trust Mitigation Measures: (1) Conduct early and continuous gender-responsive stakeholder engagement through BCCI, Trust Fund Limited, and UWI. Use success stories from the WGBI and GN-SEC to demonstrate tangible benefits. Offer tiered entry under the VGBRLP, provide technical assistance, and ensure outreach materials are gender inclusive. Monitor participation disaggregated by gender, age, and sector. (2) Implement a structured Communication Strategy (BCCI Expo, Greening Business Week) with gender-inclusive materials
Other		
Overall Risk Rating	Low	Taking into consideration of all the identified risks and mitigation measures into account, the project's overall risk rating remains Low. This because the several contextual and institutional risks that exist such as climate-related disruptions, limited MSME capacity, and potential shifts in national priorities are well understood and manageable due to: (i) The strong alignment with national strategies (NDC, National Energy Policy, MSME Policy), (ii) The involvement of experienced institutions including UWI, CCREEE, the Ministry of Environment, and the Ministry of Energy and Business, (iii) The project's integration within the G-RES programme and GN-SEC framework, providing additional technical and operational support, (iv) The risk-responsive design of the blended finance mechanism, which allows adaptation of risk-sharing terms, eligibility criteria, and investment-readiness support during implementation, and (v) robust governance arrangements including a multi-stakeholder Project Steering Committee, dedicated M&E focal points, and quarterly adaptive-management reviews. Furthermore, the environmental and social risks are also considered low at this stage, as the project focuses on technical assistance, institutional strengthening, and MSME capacity building, with clear screening procedures in line with UNIDO and GEF policies. With these mitigation measures in place, the likelihood of risks significantly affecting project outcomes is limited, and the project is well-positioned for successful implementation.

C. ALIGNMENT WITH GEF-8 PROGRAMMING STRATEGIES AND COUNTRY/REGIONAL PRIORITIES

Describe how the proposed interventions are aligned with GEF- 8 programming strategies and country and regional priorities, including how these country strategies and plans relate to the multilateral environmental agreements.

Confirm if any country policies that might contradict with intended outcomes of the project have been identified, and how the project will address this.

For projects aiming to generate biodiversity benefits (regardless of what the source of the resources is - i.e., BD, CC or LD), please identify which of the 23 targets of the Kunming-Montreal Global Biodiversity Framework the project contributes to and explain how. (max. 500 words, approximately 1 page)

Alignment with GEF-8 Programming strategies and country/regional priorities:

The proposed project is fully aligned with the GEF-8 Climate Change Mitigation (CCM) Strategy, specifically Objective 1.1 (Accelerate energy efficiency and renewable energy transitions) and Objective 1.2 (Foster innovation and entrepreneurship for low-carbon technologies). By supporting MSME adoption and supply of renewable energy, energy efficiency, circular economy, and resource-efficient cleantech solutions, the project directly contributes to reducing energy-related GHG emissions and enabling the structural transformation required to meet national and regional decarbonization goals.

Under CCM Objective 1.1, the project strengthens the enabling environment for climate-resilient renewable energy and energy-efficient technologies, promotes market uptake through targeted fiscal and non-fiscal incentives, and addresses long-standing technical, financial, and institutional barriers that constrain MSME-level adoption. Through its blended finance mechanism and investment-readiness support, the project directly expands access to renewable energy and efficiency solutions for MSMEs.

Under CCM Objective 1.2, the project advances innovation and entrepreneurship by supporting cleantech start-ups and scale-ups, building R&D capacity at UWI, and strengthening national and regional innovation ecosystems through the SIDS-SIDS Hub and GN-SEC. This includes applied research, prototyping support, cleantech testing and certification, and strengthening skills and vocational certification systems.

Significant climate change mitigation benefits

The project is expected to accelerate the adoption of renewable energy, energy and resource efficient solutions, hence reducing energy consumption and fossil fuel imports in high-impact MSME sectors (tourism, agri-food, blue economy, manufacturing). This will also enable the emergence of a domestic cleantech supply sector capable of delivering low-carbon solutions across national value chains. Furthermore, the establishment of quality infrastructure and certification systems that improve technology performance and also strengthening market recognition (e.g., Voluntary Green Business Recognition Labelling Programme) that incentivises emission-reducing practices.

Upon execution, the above interventions contribute to both direct GHG reductions (through MSME-level technology adoption) and indirect reductions (through innovation, entrepreneurship, replication, and enabling frameworks), supporting an estimated **240,830 tCO₂e** in direct and indirect mitigation potential. This is envisaged to be achieved through piloting and creating an enabling environment for the cleantech interventions in the clean energy impact scopes, besides other cleantech solutions in SME operations to be identified at the PPG phase.

Alignment with the Special Climate Change Fund (SCCF) Strategy

The project also supports key elements of the SCCF Strategy, particularly through its focus on: **a)** Enhancing the climate resilience of MSME operations exposed to high climate variability, **b)** Supporting deployment of climate-resilient renewable energy and resource-efficient technologies, **c)** Scaling climate-smart solutions suitable for SIDS, where resilience is a prerequisite for sustainable mitigation investments, **d)** Strengthening institutional and technical capacity for climate-resilient development and **e)** Supporting vulnerable groups (women, youth, small firms) in accessing climate-resilient technologies and finance.

Alignment with National Priorities:

At the national level, the project is a cornerstone for realising Barbados's vision to become the 'world's first 100% sustainable island state,' a commitment enshrined in the 2022 Declaration of Mission. It operationalises this high-level vision by integrating a suite of interlocking policies. The project's focus on clean energy directly supports the National Energy Policy (2019–2030) and its 100% renewable energy goal, while also building private-sector resilience as mandated by the Climate Change Policy (2012). Furthermore, the project's circular economy interventions are deeply embedded in the nation's economic and spatial planning. They advance the Blue Economy Roadmap by promoting sustainable value chains in vital sectors like tourism and fisheries, and support the Physical Development Plan (2023) by fostering green industrial clusters. This entire effort is built upon the foundational Sustainable Development Policy (2004), ensuring a holistic and integrated approach.

Alignment with Regional and Global Frameworks:

This national focus is amplified by a strong alignment with regional and global priorities. The project recognizes that Barbados's challenges are shared across SIDS. It is therefore fully consistent with the entire continuum of SIDS development frameworks, from the foundational Barbados Programme of Action (BPoA, 1994) and Mauritius Strategy (2005) to the priorities of the SAMOA Pathway (2014) and the forward-looking Antigua and Barbuda Agenda for SIDS (ABAS, 2024).

Regionally, through the involvement of CCREEE, it strengthens CARICOM integration by directly supporting the CARICOM Energy Policy (C-SERMS) and the COTED agenda, utilising partners like CCREEE to link national action to regional strategy. Globally, the project's design delivers broad impacts across the Agenda 2030, contributing to SDGs 6, 7, 8, 9, 12, 13, 14, and 17. It also operationalises key UNEA Resolutions, notably UNEA-5/14 (ending plastic pollution), and aligns with the LAC Forum of Ministers' decisions on circular economy. Finally, the project ensures programmatic synergy by advancing UNIDO's ISID Mandate on green industry and practically building upon the outputs of the PAGE programme and importantly, linked to GN-SEC.

Contribution to Kunming-Montreal Global Biodiversity Framework (GBF)

While focused on climate change mitigation, the project's success in reducing pollution generates significant biodiversity co-benefits. By mitigating land- and sea-based pollution from key economic sectors, the project contributes directly to the GBF, specifically advancing:

- Target 7: Reducing pollution risks and the negative impacts of pollution from all sources, including plastic pollution, to levels that are not harmful to biodiversity.
- Target 15: Supporting private sector (MSME) capacity to assess, disclose, and reduce their risks, dependencies, and impacts on biodiversity.

D. POLICY REQUIREMENTS

Gender Equality and Women's Empowerment:

We confirm that gender dimensions relevant to the project have been addressed as per GEF Policy and are clearly articulated in the Project Description (Section B).

Yes

Stakeholder Engagement

We confirm that key stakeholders were consulted during PIF development as required per GEF policy, their relevant roles to project outcomes and plan to develop a Stakeholder Engagement Plan before CEO endorsement has been clearly articulated in the Project Description (Section B).

Yes

Were the following stakeholders consulted during project identification phase:

Indigenous Peoples and Local Communities:

Civil Society Organizations: Yes

Private Sector: Yes

Provide a brief summary and list of names and dates of consultations

The consultation took place between October and November 2025 and was conducted by UWI, ECA/JET and the UNIDO SIDS Hub. The stakeholder consultations will be taken forward during the PPG phase. The consulted institutions include the following:

Governmental Partners:

- Ministry of Environment and National Beautification, Green and Blue Economy
- Ministry of Energy and Business
- Environmental Protection Department (EPD)

Financial Partners:

- Barbados Trust Fund Ltd
- FundAccess
- Enterprise Growth Fund (EGFL)
- Credit Guarantee Scheme managed by the Central Bank of Barbados
- IADB

International and Regional Partners:

- UNIDO
- CCREEE
- CARICOM Secretariat
- ILO
- UNEP

Private Sector and Civil Society:

- Barbados Chamber of Commerce and Industry (BCCI)
- Small Business Association (SBA) of Barbados
- Export Barbados (BIDC)

- Caribbean Youth Environment Network
- Technology providers and MSMEs

Technology providers and MSMEs from sectors including tourism, agri-food, blue economy, and manufacturing

- Ashley Lashley Foundation
- Project Discovery Barbados

Academia:

- UWI Cave Hill Campus (Lead Executing Partner)
- Barbados Community College (BCC)
- Samuel Jackman Prescod Institute of Technology (SJPI)

Summary of Consultation Findings

The consultations confirmed strong national demand for targeted MSME support in cleantech adoption and entrepreneurship. Key findings include:

- Financing barriers remain the most significant constraint for MSMEs; financial institutions welcomed a blended finance mechanism linked to investment-readiness support.
- Technical capacity gaps were highlighted by MSMEs, private sector associations, and training institutions, particularly for installation, maintenance, certification, and business planning for cleantech solutions.
- Government stakeholders emphasised the need for policy coherence, sector-specific technology roadmaps, and coordination across ministries.
- Financial institutions stressed the need for de-risking mechanisms, gender-responsive eligibility criteria, and simplified application processes.
- Civil society and youth organisations emphasised the importance of inclusive outreach, ensuring that women, youth-led enterprises, and underserved communities can access training, finance, and business development services.
- Stakeholders validated the importance of institutionalising cleantech support at UWI, leveraging its academic capacity and existing SIDS-SIDS Hub.
- Stakeholders endorsed the project's role in filling gaps left by BLOOM and PAGE, particularly long-term continuity, access to finance, and quality infrastructure.

Engagement Plan for MSMEs, Civil Society, Women, Youth, and Marginalised Groups

During the PPG and implementation phases, the project will undertake:

- A structured, inclusive stakeholder engagement plan with dedicated consultations for MSMEs, women-led enterprises, youth entrepreneurs, and micro-enterprises in vulnerable communities.

- Participatory policy dialogues through the gender- and youth-inclusive Barbados Green Business Stakeholder Forum.
- Targeted outreach campaigns implemented with civil society partners (e.g., CYEN, Ashley Lashley Foundation) to reach poor and marginalised groups.
- Gender-responsive and youth-responsive calls for proposals for MSME support and finance windows.
- Regular feedback loops through the VGBRLP and UWI platform to ensure continuous consultation throughout implementation.
- Monitoring of participation with sex- and age-disaggregated indicators.

This approach ensures meaningful inclusion of diverse stakeholders and provides traceability and transparency in line with GEF policy.

(Please upload to the portal documents tab any stakeholder engagement plan or assessments that have been done during the PIF development phase.)

Private Sector

Will there be private sector engagement in the project?

Yes

And if so, has its role been described and justified in the section B project description?

Yes

Environmental and Social Safeguard (ESS) Risks

We confirm that we have provided indicative information regarding Environmental and Social risks associated with the proposed project or program and any measures to address such risks and impacts (this information should be presented in Annex D).

Yes

Overall Project/Program Risk Classification

PIF	CEO Endorsement/Approval	MTR	TE
Low			

E. OTHER REQUIREMENTS

Knowledge management

We confirm that an approach to Knowledge Management and Learning has been clearly described in the Project Description (Section B)

Yes

ANNEX A: FINANCING TABLES

GEF Financing Table

Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non-Grant	GEF Project Grant(\$)	Agency Fee(\$)	Total GEF Financing (\$)
UNIDO	GET	Barbados	Climate Change	CC STAR Allocation: CCM-1-2	Grant	1,770,478.00	168,195.00	1,938,673.00
Total GEF Resources (\$)						1,770,478.00	168,195.00	1,938,673.00

Project Preparation Grant (PPG)

Is Project Preparation Grant requested?

true

PPG Amount (\$)

50000

PPG Agency Fee (\$)

4750

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non-Grant	PPG(\$)	Agency Fee(\$)	Total PPG Funding(\$)
UNIDO	GET	Barbados	Climate Change	CC STAR Allocation: CCM-1-2	Grant	50,000.00	4,750.00	54,750.00
Total PPG Amount (\$)						50,000.00	4,750.00	54,750.00

Please provide justification

Sources of Funds for Country Star Allocation

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Sources of Funds	Total(\$)
UNIDO	GET	Barbados	Climate Change	CC STAR Allocation	900,000.00
UNIDO	GET	Barbados	Biodiversity	BD STAR Allocation	697,000.00

UNIDO	GET	Barbados	Land Degradation	LD STAR Allocation	396,423.00
Total GEF Resources					1,993,423.00

Indicative Focal Area Elements

Programming Directions	Trust Fund	GEF Project Financing(\$)	Co-financing(\$)
CCM-1-2	GET	1,770,478.00	6543900
Total Project Cost		1,770,478.00	6,543,900.00

Indicative Co-financing

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Recipient Country Government	Government of Barbados	Public Investment	Investment mobilized	1494900
Private Sector	MSMEs (equity, raised loan financing)	Equity	Investment mobilized	1333333
Others	Local support schemes: Barbados Trust Fund Ltd, FundAccess, Enterprise Growth Fund (EGFL)	Loans	Investment mobilized	2666667
GEF Agency	UNIDO	Grant	Investment mobilized	49000
Others	IADB/CDB	Loans	Investment mobilized	1000000
Total Co-financing				6,543,900.00

Describe how any "Investment Mobilized" was identified

The indicated figures are based on initial discussions with the indicated partners. These will be confirmed during the PPG phase and documented through endorsement letters.

ANNEX B: ENDORSEMENTS

GEF Agency(ies) Certification

GEF Agency Type	Name	Date	Project Contact Person	Phone	Email
GEF Agency Coordinator	UNIDO	12/1/2025	Ganna Onysko	+431260263647	G.ONYSKO@unido.org
Project Coordinator	UNIDO	12/1/2025	Martin Lugmayr	+431260263595	m.lugmayr@unido.org

Record of Endorsement of GEF Operational Focal Point (s) on Behalf of the Government(s):

Name	Position	Ministry	Date (MM/DD/YYYY)
David Leacock	Permanent Secretary	Ministry of Environment and National Beautification, Green and Blue Economy	3/23/2026

ANNEX C: PROJECT LOCATION

Please provide geo-referenced information and map where the project interventions will take place

The Projects intervention area in principle covers the whole mainland of Barbados which is situated within a rectangle with coordinates (13.33 N, -59.66W; 13.04N, 59.42W). Barbados is located in the Caribbean in the Western Hemisphere, North of the Equator.



ANNEX D: ENVIRONMENTAL AND SOCIAL SAFEGUARDS SCREEN AND RATING

(PIF level) Attach agency safeguard screen form including rating of risk types and overall risk rating.

Title

Clearance of title by GEF OFP

ESS Sheet

ANNEX E: RIO MARKERS

Climate Change Mitigation	Climate Change Adaptation	Biodiversity	Land Degradation
Principal Objective 2	Significant Objective 1	No Contribution 0	No Contribution 0

ANNEX F: TAXONOMY WORKSHEET

Level 1	Level 2	Level 3	Level 4
Influencing Models	Transform Policy and Regulatory Environments	Policy and regulatory support for cleantech market creation for MSMEs.	Proposal for fiscal and non-fiscal incentives and integration of cleantech in national MSME policy.
Influencing Models	Deploy Innovative Financial Instruments	Establish innovative and blended finance mechanisms for MSME cleantech adoption.	Mobilizing private capital and leveraging the Barbados Trust Fund Ltd. for green financing.
Influencing Models	Strengthen Institutional Capacity	Enhance cleantech quality infrastructure and green skills for MSMEs and service providers.	Development of certification programs and integration of cleantech skills into the national vocational system.
Influencing Models	Convene Multi-Stakeholder Alliances	Establish an integrated knowledge and technology transfer platform (Cleantech Cluster).	Facilitate a gender- and youth-inclusive Barbados Green Business Stakeholder Forum led by UWI.
Stakeholders	Private Sector	Micro-, Small-, and Medium-Sized Enterprises (MSMEs).	Direct beneficiaries for technology adoption in key sectors (tourism, agri-food, blue economy).
Stakeholders	Academia / Executing Partner	University of the West Indies (UWI) Cave Hill Campus.	Host the SIDS-SIDS Green and Blue Economy Knowledge Transfer Hub and Cleantech Cluster.

Stakeholders	Financial Intermediaries	Barbados Trust Fund Ltd. and other domestic financial institutions.	Deploy the innovative financing mechanism to de-risk and fund cleantech investments.
Stakeholders	Civil Society & Community	Women, youth groups, and non-governmental organizations.	Inclusive participation in capacity building and policy dialogue (e.g., Green Business Recognition Award).
Capacity, Knowledge & Research	Knowledge Generation & Data Systems	Applied Research and Development (R&D) and data collection for evidence-based decision-making.	R&D initiatives within the UWI Cleantech Cluster focused on localized cleantech solutions.
Capacity, Knowledge & Research	Knowledge Dissemination & Innovation	South-South Knowledge Exchange and replication of successful models.	Sharing results and lessons through the UNIDO-led Global Network of Regional Sustainable Energy Centres (GN-SEC) and the SIDS-SIDS Hub.
Capacity, Knowledge & Research	Capacity Building & Training	Green skills training for MSMEs and technical staff.	Cleantech-specific training to enhance technical, business, and entrepreneurial capabilities.
Gender Equality	Gender-Responsive Design	Mainstreaming gender and youth considerations across all project components.	Implementation of a Gender Action Plan and use of sex-disaggregated indicators in M&E.
Gender Equality	Women's Economic Empowerment	Promote women and youth in cleantech entrepreneurship and employment.	Inclusive access to finance, training, and leadership opportunities within the new cleantech market.
Focal Area / Theme	Climate Change Mitigation (CCM)	Renewable Energy, Energy Efficiency, and Circular Economy.	Expected to achieve 240,000 metric tons of CO2 reductions (direct and indirect).
Focal Area / Theme	Climate Change Adaptation (CCA)	Climate Resilience of MSME operations and supply chains.	Promoting the adoption of climate-resilient cleantech products and services.
Focal Area / Theme	Chemicals and Waste (CW)	Resource Efficiency and Waste Management.	Adoption of Best Available Techniques (BAT) and Best Environmental Practices (BEP) for Circular Economy.