

GEF-8 PROJECT IDENTIFICATION FORM (PIF)

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General Project Information

Project Title

Global Program on Climate-Resilient Renewable Energy Systems in SIDS – National Project in Antigua and Barbuda

Region

Latin America and the Caribbean

GEF Project ID

12357

Country(ies)

Antigua and Barbuda

Type of Project

MSP

GEF Agency(ies):

UNIDO

GEF Agency ID

260219

Executing Partner

Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE)

Executing Partner Type

Others

GEF Focal Area (s)

Climate Change

Submission Date

5/26/2026

Project Sector (CCM Only)

Climate Change Adaptation Sector

Taxonomy

Stakeholders, Partnership, Type of Engagement, Consultation, Participation, Information Dissemination, Private Sector, Capital providers, Financial intermediaries and market facilitators, Individuals/Entrepreneurs, Non-Grant Pilot, SMEs, Civil Society, Non-Governmental Organization, Academia, Communications, Strategic Communications, Awareness Raising, Behavior change, Beneficiaries, Focal Areas, Climate Change Mitigation, Climate Change, United Nations Framework Convention on Climate Change, Climate Change Adaptation, Transform policy and regulatory environments, Influencing models, Strengthen institutional capacity and decision-making, Deploy innovative financial instruments, Demonstrate innovative approaches, Gender Equality, Gender Mainstreaming, Women groups, Gender-sensitive indicators, Sex-disaggregated indicators, Knowledge Generation and Exchange, Gender results areas, Capacity Development, Participation and leadership, Knowledge Generation, Capacity, Knowledge and Research, Workshop, Professional Development, Training, Adaptive management, Learning, Innovation, Enabling Activities, Peer-to-Peer, Knowledge Exchange, South-South, Twinning, North-South, Conference

Type of Trust Fund

SCCF

Project Duration (Months)

60

GEF Project Grant: (a)

2,639,726.00

GEF Project Non-Grant: (b)

0.00

Agency Fee(s) Grant: (c)

250,774.00

Agency Fee(s) Non-Grant (d)

0.00

Total GEF Financing: (a+b+c+d)

2,890,500.00

Total Co-financing

4,200,315.00

PPG Amount: (e)	PPG Agency Fee(s): (f)
100,000.00	9,500.00
PPG total amount: (e+f)	Total GEF Resources: (a+b+c+d+e+f)
109,500.00	3,000,000.00
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)

This project aims to strengthen the climate adaptive capacities of Antigua and Barbuda’s electricity system by overcoming financial, technical, and market barriers to the integration of climate-adaptive and resilient solutions into solar photovoltaic (PV) and battery storage systems capable of withstanding both immediate and slow-onset impacts of climate change. The country faces increasing risks from hurricanes, droughts, and energy supply disruptions, as well as slow-onset climate impacts such as rising temperatures, sea-level rise, and increasing water scarcity. These challenges are compounded by high dependence on imported fossil fuels and limited access to affordable adaptation finance, particularly for climate-vulnerable and essential MSMEs, community businesses operating across key value chains such as tourism, agriculture, fisheries, and the blue economy, as well as households.

The project introduces an integrated approach combining a Partial Credit Guarantee Facility, pooled procurement mechanisms, and strengthened technical standards and capacity development. This enables credit unions to provide affordable, no-collateral loans for climate-resilient solar PV-plus-storage systems, alongside structural upgrades such as hurricane-resilient roofing and safe rooms.

The project’s primary strategic focus is to secure the operational continuity of essential community-based MSMEs—the backbones of local food security, essential commerce, and vital community services—by ensuring their energy independence from vulnerable centralized grids. Secondary support is strategically provided to highly climate-vulnerable households to enhance community-wide resilience and stability.

The intervention directly supports the GEF SCCF Core Indicators by: reaching approximately 3,000 direct beneficiaries (Indicator 1); enhancing resilience across 10 ha of land and 5 ha of coastal areas (Indicators 2a and 2b); establishing five policy and institutional frameworks (Indicator 3); building the capacity of 200 individuals (Indicator 4); and engaging 100 private sector enterprises (MSMEs) (Indicator 5).

By mobilizing domestic liquidity and reducing investment risks, the project enables deployment of resilient renewable energy systems and improves the continuity of essential services during climate shocks. It also delivers mitigation co-benefits by facilitating distributed renewable energy capacity, resulting in estimated emissions reductions of 133,000 tCO₂e over 20 years, comprising approximately 10,200 tCO₂e from installations directly supported by the guarantee facility and 122,800 tCO₂e from additional market uptake facilitated through the guarantee and procurement mechanisms.

Aligned with national strategies and the SCCF mandate, the project establishes a scalable model for integrated adaptation finance and will be replicated across SIDS through the Global Programme on Climate-Resilient Renewable Energy Systems (G-RES) and the regional centres of the Global Network of Regional Sustainable Energy Centres (GN-SEC).

Indicative Project Overview

Project Objective

The project objective is to strengthen the adaptive capacity of the electricity system of Antigua and Barbuda by addressing financial, technical and market barriers to the integration of climate-adaptive and resilient solutions into solar photovoltaic (PV) and battery storage systems capable of withstanding both immediate and slow-onset climate impacts, including hurricanes, heatwaves, droughts, and sea-level rise.

Project Components

Enabling policy, legal, and technical framework

Component Type	Trust Fund
Technical Assistance	SCCF-A
GEF Project Financing (\$)	Co-financing (\$)
300,000.00	400,000.00

Outcome:

1.1 Enhanced policies, regulations and technical standards to enable no-collateral, salary-deduction-backed adaptation lending of credit unions for climate-resilient renewable energy installations

Output:

1.1 Legal framework, guarantee agreements and dispute resolution mechanism to unlock credit-union lending for installations

1.2 Harmonized technical quality standards for hurricane-proven roof-top mounting structures and solar PV and storage system installations

1.3 Potential arrangement with the insurance industry to provide enhanced coverage for climate-proven solar PV and battery installations under the proposed Partial Guarantee Facility Scheme and beyond

Component 2: Partial Credit Guarantee Facility

Component Type	Trust Fund
Investment	SCCF-A
GEF Project Financing (\$)	Co-financing (\$)
1,794,310.00	3,000,000.00

Outcome:

2.1 Unlocked affordable and sustainable lending of credit unions to climate-resilient renewable energy installations through a Partial Credit Guarantee Facility coupled with bulk procurement

Output:

- 2.1 Business plan, policies and regulations of the Partial Credit Guarantee Facility (governance, eligibility, environmental and social safeguards, technical quality standards, operational procedures)
- 2.2 Selected trust holder for the Partial Credit Guarantee Facility by public competitive competition in line with established qualification criteria and international fiduciary standards
- 2.3 Capitalized Partial Credit Guarantee Facility for climate-resilient renewable energy systems
- 2.4 Signed participation agreements with credit unions
- 2.5 Formalized salary-deduction agreement with the Government of Antigua and Barbuda, building on the existing salary-advance mechanism.
- 2.6 Bulk procurement of eligible equipment (solar PV + storage, hurricane-rated roofing materials, safe-room kits)
- 2.7 First round of benefiting climate-resilient renewable energy installations

Component 3: Capacity building, training, and private-sector engagement

Component Type	Trust Fund
Technical Assistance	SCCF-A
GEF Project Financing (\$)	Co-financing (\$)
300,000.00	420,000.00

Outcome:

Outcome 3: Enhanced capacities of credit unions, insurance companies and certified suppliers of quality climate-resilient renewable energy systems

Output:

- 3.1 Institutional training for participating credit unions on climate-resilient renewable energy financing and modalities of the Partial Guarantee Facility
- 3.2 Training and on-boarding for the selected trust holder of the Partial Guarantee Facility
- 3.3 Training of national hardware stores participating in the bulk procurement distribution and technical support
- 3.4 Certified vocational training curriculum on climate-proven renewable energy systems for national suppliers and installers
- 3.5 Train-the-trainer programme for participating national suppliers and installers
- 3.6 SIDS–SIDS knowledge exchange and global-regional replication of the guarantee scheme, bulk procurement and quality assurance scheme

M&E

Component Type	Trust Fund
Technical Assistance	SCCF-A
GEF Project Financing (\$)	Co-financing (\$)
119,715.00	180,300.00

Outcome:

4.1 Effective and adaptive implementation and evidence-based learning

Output:

4.1.1: M&E reports (e.g. PIRs, data tracking framework, incl. gender action plan reporting)

4.1.2 Mid-term and Terminal evaluation report

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

Component Balances

Project Components	GEF Project Financing (\$)	Co-financing (\$)
Enabling policy, legal, and technical framework	300,000.00	400,000.00
Component 2: Partial Credit Guarantee Facility	1,794,310.00	3,000,000.00
Component 3: Capacity building, training, and private-sector engagement	300,000.00	420,000.00
M&E	119,715.00	180,300.00
Subtotal	2,514,025.00	4,000,300.00
Project Management Cost	125,701.00	200,015.00
Total Project Cost (\$)	2,639,726.00	4,200,315.00

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

1.1. Global Context and Environmental Imperative

The Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR6) confirms that climate change is widespread, rapid, and intensifying. Human activities - primarily the combustion of fossil fuels and unsustainable land - use change - have driven atmospheric concentrations of greenhouse gases to unprecedented levels, accelerating global warming and generating severe, irreversible impacts across vulnerable ecosystems and human systems. While global systemic stabilization demands deep mitigation transformations across energy and industrial sectors, the immediate imperative for highly exposed regions centers on structural climate change adaptation, vulnerability reduction, and the rapid transfer of resilient technologies.

For Small Island Developing States (SIDS), climate change is not a distant threat but an active, cascading crisis that tests the structural soft limits of national adaptation. Across the Atlantic, Indian Ocean, and South China Sea (AIS), Pacific, and Caribbean regions, extreme weather events - including Category 4 and 5 tropical cyclones, prolonged droughts, marine heatwaves, and intense precipitation anomalies - have dramatically increased in frequency and destructive capacity. Compounded by accelerating sea - level rise and acute coastal erosion, these climate pressures directly degrade critical infrastructure, destabilize local water security, and impose catastrophic fiscal strains on small island economies.

These acute climate impacts interact with long - standing environmental stresses, including rapid biodiversity loss and the continuous degradation of fragile land and marine ecosystems. This complex scenario presents a classic structural market failure: while SIDS contribute the absolute least to cumulative global greenhouse gas emissions, they remain on the frontlines of climate vulnerability, facing disproportionate systemic risks. This environmental exposure is compounded by a profound financial bottleneck, as local actors remain heavily burdened by constrained domestic capital markets, high commercial collateral requirements, and limited institutional capacity to mobilize private investment.

Consequently, these structural barriers severely restrict the ability of national entities to implement their Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs). In this context, the GEF utilizes the Special Climate Change Fund (SCCF) to catalyze transformative, systemic investments that address these fundamental drivers of vulnerability, unlocking innovative financing and scaling up proven and climate-resilient technologies.

1.2 Local Context: Acute Vulnerabilities of Antigua and Barbuda

General Climate Vulnerability Context

Antigua and Barbuda is a highly climate-vulnerable Small Island Developing State (SIDS) whose sustainable development trajectory is increasingly constrained by compounding climate hazards, including intensifying tropical hurricanes, catastrophic storm surges, prolonged droughts and accelerating sea-level rise. These climate shocks disrupt critical public infrastructure, undermine household stability, strain essential services, and weaken community-level economic continuity.

Located in the Leeward Islands of the West Indies, the twin-island state faces both acute and slow-onset climate risks. Its economy, infrastructure and social systems are highly exposed to extreme weather events, including Category 5 hurricanes and coastal flooding, as well as long-term stressors such as water

scarcity and sea-level rise. The severity of these risks was demonstrated during the 2017 hurricane season, when Hurricane Irma caused widespread devastation in Barbuda, destroying an estimated 95 per cent of all physical structures, severing maritime supply routes, and leaving the island without electricity for several weeks.

In parallel, water scarcity represents a critical and persistent climate challenge. Characterized by a relatively arid tropical maritime climate, Antigua and Barbuda is among the driest countries in the Eastern Caribbean. Between 2000 and 2020, the country experienced 14 drought episodes, significantly reducing groundwater recharge and affecting agricultural productivity.

These interconnected vulnerabilities are comprehensively addressed in the Antigua and Barbuda National Adaptation Plan (NAP, 2024), developed by the Department of Environment within the Ministry of Health, Wellness, Social Transformation and the Environment. The NAP sets out a strategic framework to strengthen national adaptive capacity, enhance structural resilience, and reduce climate vulnerability across essential infrastructure and public services. The NAP identifies priority risks, including extreme wind events, water scarcity and prolonged utility disruptions, and calls for the systematic climate-proofing of critical infrastructure such as civil defense systems, emergency response networks and healthcare facilities.

It also highlights the central role of the Sustainable Island Resource Framework (SIRF) Fund, which was established with SCCF support and the country's primary financial mechanism for channelling international climate finance. Importantly, the NAP emphasizes the need to mobilize domestic financial systems, including credit unions, to expand access to adaptation finance. By linking international climate funds with local financial intermediaries, it aims to establish accessible, low-collateral financing mechanisms that support the uptake of decentralized, climate-resilient technologies, including renewable energy ones.

Energy Sector Vulnerabilities

The energy sector baseline in Antigua and Barbuda significantly amplifies the country's systemic climate vulnerability. The national power system remains overwhelmingly dependent on imported petroleum products, exposing the economy to international price volatility and constraining the penetration of renewable energy solutions. Total installed generation capacity is approximately 137 MW, of which only about 10.23 MW is derived from solar photovoltaic sources, compared to an average peak demand of around 60 MW. This fossil fuel dependence translates into some of the highest electricity tariffs globally, averaging approximately USD 0.37/kWh for residential consumers and USD 0.39/kWh for commercial users, while fuel imports impose a substantial macroeconomic burden, accounting for an estimated 13.7 percent of GDP.

As a fossil fuel-importing island state, Antigua and Barbuda is structurally vulnerable to disruptions in maritime energy supply chains during extreme weather events and external shocks. This vulnerability is being demonstrated once again by the current international energy crisis, driven by geopolitical tensions and conflict, which has contributed to supply chain disruptions and volatility in global fuel prices. The risks were also clearly demonstrated during the 2017 hurricane season, when Hurricane Irma devastated Barbuda, severing maritime supply routes and leaving the island without electricity and fuel access for several weeks due to port destruction and hazardous sea conditions. More broadly, regional storm systems frequently disrupt shipping and delay fuel deliveries, placing additional pressure on already

limited fuel reserves and the thermal generation assets operated by the Antigua Public Utilities Authority (APUA).

Even when centralized storage infrastructure remains intact, terrestrial fuel distribution systems are highly vulnerable in post-disaster contexts. While a substantial and very expensive standby diesel generation sub-sector has emerged, estimated at between 36.5 MW and 56 MW, these distributed systems depend on reliable fuel transport. In the aftermath of extreme weather events, road blockages, debris and flooding often prevent the delivery of diesel from coastal depots to decentralized generators. This failure frequently disrupts essential services, including emergency shelters, healthcare operations and communication systems, at critical times. Therefore, diesel-based backup systems do not provide a sustainable adaptation solution. Instead, they reinforce an energy system that is operationally fragile, financially volatile and highly exposed to climate risks.

The National Adaptation Plan (NAP, 2025) of Antigua and Barbuda outlines key measures to strengthen the resilience of the energy sector, including the promotion of distributed renewable energy systems to enhance the reliability of electricity supply for critical infrastructure, the strengthening of building codes and technical standards to withstand extreme climatic conditions such as Category 5 hurricanes, and the mobilization of sustainable financing mechanisms through the Sustainable Island Resource Framework (SIRF) Fund.

The overall objective of the NAP is to enhance adaptive capacity, strengthen resilience, and reduce vulnerability to climate change across critical sectors. Consistent with the NAP's emphasis on the energy–water–food nexus, strengthening resilient energy systems is also critical for sustaining productive sectors such as tourism, agriculture and fisheries, as well as micro-, small- and medium-sized enterprises (MSMEs), all of which depend on reliable energy for water supply, cooling, processing and service delivery.

These priorities are closely aligned with the country's Nationally Determined Contribution (NDC) and the renewable energy roadmap developed in collaboration with the International Renewable Energy Agency (IRENA), which target a significant increase in renewable energy penetration, including ambitions to reach up to 86 percent renewable electricity generation by 2030, reduce dependence on imported fossil fuels, and support a low-carbon, climate-resilient development pathway.

1.3. Underlying Systemic Barriers and Root Causes

Antigua and Barbuda, like other SIDS, faces a complex dual transition. First, it must shift toward decentralized renewable energy systems, which are characterized by higher upfront capital costs despite significantly lower lifecycle costs. Second, it must ensure that all investments incorporate climate-proven technologies and installation practices, which introduce additional costs due to a “resilience premium.” In SIDS contexts, climate mitigation, adaptation and energy security are deeply interconnected, making this dual transition both necessary and inherently challenging.

Without transitioning to renewable energy generation and storage systems, effective climate adaptation is not feasible, as the resilience of key island value chains depends fundamentally on reliable and affordable energy services. At the same time, continued reliance on fossil fuel imports diverts scarce foreign exchange away from adaptation investments and productive economic uses. Conversely, investments in **renewable energy that do not incorporate climate-resilient design and installation**

standards risk becoming stranded assets in the face of increasingly severe climate impacts. Addressing this dual challenge requires overcoming a set of interlinked systemic barriers that currently prevent capital and technology from being effectively deployed for adaptation purposes.

A major **challenge for local MSMEs, community businesses and private households is access to affordable finance** to cover the higher upfront costs and “resilience premium” of climate-proven renewable energy investment. A constraint is not the absolute scarcity of domestic capital, but the inability of existing financial resources to reach adaptation borrowers under prevailing market conditions. While financial institutions in the Eastern Caribbean hold significant liquidity, this capital is not effectively deployed for climate investments due to risk perceptions and the absence of appropriate financial instruments. The challenge is therefore one of risk allocation, product design and institutional delivery. In addition, the “climate resilience premium” is further reinforced by **limited insurance coverage for climate-related risks affecting renewable energy installations**, which discourages investment in resilient systems.

The **central challenge addressed by the project is the persistent financing gap faced by highly climate-vulnerable MSMEs and community businesses in key value chains, as well as private households dependent on the business continuity of these entities**. The continuity of critical services depends on reliable electricity and structurally safe conditions precisely during and after extreme weather events, when centralized systems are most vulnerable. Essential community businesses play a key role in maintaining economic and social continuity in the aftermath of disasters, yet often lack the financial means to invest in resilience.

The cost of climate-resilient solar photovoltaic systems combined with climate-proven battery storage exceeds USD 7,000 per kW, while available commercial financing is typically short-tenor and relatively expensive, rendering such investments unaffordable for many vulnerable MSMEs and households. A challenge are also the small quantities usually ordered. **At the same time, credit unions and banks, while liquid, are unable to scale non-collateralized lending without risk-sharing mechanisms**, as perceived credit risks remain high. Structural resilience investments, such as hurricane-rated roofing and safe rooms, face even greater financing constraints despite being essential for adaptation. Furthermore, tailored financial products that align with the income structures of private employees and civil servants and leverage salary-deduction mechanisms are not yet available.

In addition to financial constraints, **important non-financial barriers hinder the uptake of climate-resilient renewable energy solutions**. In particular, Antigua and Barbuda faces **gaps in quality infrastructure**, including the absence of comprehensive technical standards, certification systems and a sufficiently trained installer base. As highlighted in the IRENA Renewables Readiness Assessment, the lack of standardized codes and certified service providers increases the vulnerability of installations to extreme weather events. Without robust technical specifications, including climate-resilient design and installation protocols for solar PV and battery systems, energy infrastructure remains exposed to failure under Category 5 hurricane conditions. Strengthening technical standards, certification systems and enforcement mechanisms for products, services and training is therefore critical to ensure the durability and effectiveness of adaptation investments.

These barriers explain the need for an integrated intervention. A standalone technology deployment approach would not address affordability and risk constraints, while a purely subsidy-based model would have limited reach and sustainability. Likewise, policy-only interventions would not generate immediate adaptation benefits. The proposed project addresses these limitations by combining regulatory and

institutional support with innovative risk-sharing finance, pooled procurement, capacity development and mechanisms to ensure long-term financial sustainability.

These barriers explain why the project, which will establish a Partial Risk Guarantee Facility, has been selected in preference to narrower alternatives. A standalone technology deployment project would not solve the affordability and risk barriers preventing uptake. A **traditional subsidy model would likely reach fewer beneficiaries and would be difficult to sustain once grant resources** were exhausted. A purely policy-oriented intervention would not deliver immediate adaptation benefits to essential MSMEs, community businesses and households. Households are highly dependent on business-continuity of private sector service during climate events. The proposed project addresses the problem in an integrated way by combining legal and institutional reform, risk-sharing finance, bulk procurement, capacity building, and institutional sustainability.

As acknowledged by major studies (e.g., IRENA, IEA, WB), **the required universal transition towards climate-resilient renewable energy solutions cannot be funded solely through public equity or grants.** The majority of the investment needs to come from the private sector. Therefore, it is important to use scarce public funding (including that from the GEF) for crowding in private sector investments. In this context, **the use of partial guarantees to de-risk is much more effective than the use of direct grants and concessional loans.** Furthermore, in case the guarantee is not called upon, the capital can be re-invested for other projects. Therefore, this GEF project implemented by UNIDO adds a critical and highly catalytic element to the financial landscape in Antigua and Barbuda.

Therefore, during the project design phase, **several alternative financial mechanisms were evaluated to address the identified adaptation financing gap.** The selection of a Partial Credit Guarantee (PCG) Facility was determined to be the most structurally sound approach for Antigua and Barbuda's context, based on the following comparative assessment:

- **Direct Capital Subsidies and Grants:** While direct subsidies can rapidly stimulate initial technology uptake, they are inherently finite and highly distorting if deployed as a permanent market fixture. The PCG complements nicely the UNDP-implemented GEF project (GEF ID 11474), that strategically utilizes concessional financing and direct public procurement (targeting an initial pilot of roughly 1.2 MW of solar PV and battery systems) to activate the nascent market. However, relying solely on public subsidies to scale the broader market frequently induces 'boom-and-bust' cycles that collapse once international public finance is exhausted. Subsidies do not build the long-term underwriting capacity of domestic financial institutions. Therefore, this GEF-9 intervention deliberately builds upon the UNDP's foundational pilot procurement, seamlessly transitioning the market from grant-dependency toward a financially self-sustaining ecosystem capable of mobilizing the 6.5 MW required for broader MSME and household resilience. The linkages will be further determined during the PPG phase. The UNDP project has not commenced and the CEO Endorsement Document does not explain the financial instrument in-detail.
- **Publicly Administered Revolving Concessional Loans:** Prior interventions in the region have successfully utilized revolving funds to prime early-stage adaptation markets. However, as a long-term scaling mechanism, public revolving funds are constrained by the absolute size of their initial capitalization envelope and place heavy administrative burdens on environmental ministries that are not structurally designed to operate as commercial lending institutions. Furthermore, this instrument fails to crowd in the substantial private and cooperative liquidity already present in the domestic market.

- **Standard Commercial Green Credit Lines:** Traditional commercial credit lines provided by commercial banks remain structurally inaccessible to the target demographic. They enforce prohibitive collateral requirements (often exceeding 100% of the loan value in the Eastern Caribbean) and high interest rates due to the perceived risk of climate-proven technologies. This mechanism inherently excludes vulnerable MSMEs, community businesses, women-headed households, that lack formal property titles, inadvertently reinforcing systemic inequalities.
- **The Selected Approach (Partial Credit Guarantee Facility):** In contrast, the PCG Facility acts as a precision market-correcting instrument. By using GEF-9 resources to absorb first-loss risk, the facility directly mitigates the risk-aversion of domestic credit unions. This enables the total removal of stringent collateral requirements, substituting them with secure salary-deduction mechanisms. Consequently, the PCG unlocks and leverages existing, idle domestic cooperative liquidity at a high mobilization ratio, ensuring equitable access to adaptation finance while transferring underwriting capabilities to local institutions for permanent market transformation.

2. Project Objective

The project objective is to strengthen the adaptive capacity of the electricity system of Antigua and Barbuda by addressing systemic financial, technical, and market barriers to the integration of climate-adaptive and climate-resilient solutions for solar photovoltaic (PV) and battery storage systems capable of withstanding both immediate and slow-onset climate impacts, including hurricanes, heatwaves, droughts, and sea-level rise.

This will be achieved by creating a partial credit guarantee facility enabling affordable and sustainable credit-union lending, a pooled regional procurement mechanism, and improved quality infrastructure for climate-proven renewable energy products, installation services, and vocational training. Apart from direct positive adaptation benefits on the level of the electricity system, the project will also drive other important co-benefits, including the reduction of fossil fuel dependence and GHG emissions, increased energy security, as well as productivity and adaptation gains for key island value chains, such as tourism, agriculture, and the blue economy.

The project responds directly to the implementation of the National Adaptation Plan (NAP), the Nationally Determined Contribution (NDC), the Sustainable Energy Action Plan and the Renewable Energy Act (2015), as well as the national renewable energy roadmap (2021) developed with IRENA. The project will benefit from the SIDS-SIDS knowledge exchange under the G-RES programme and will contribute with replicable models for application in other SIDS (e.g. guarantee facility, credit-union lending, pooled procurement and quality infrastructure).

3. Baseline Project Scenario

Under the business-as-usual scenario, Antigua and Barbuda remains exposed to a self-reinforcing cycle of climate vulnerability, institutional constraints, and dependence on imported fossil fuels. In the absence of targeted SCCF support, critical infrastructure, including civil defense systems, municipal services, and essential community businesses, will continue to rely on a highly centralized electricity system based on imported diesel generation. This system is inherently vulnerable to disruption during extreme weather events, particularly hurricanes and flooding. Petroleum imports continue to impose a significant burden on the national economy.

In addition to centralized generation, a fragmented network of decentralized diesel backup systems provides limited resilience but remains dependent on fuel availability and transport logistics. These backup systems provide only partial resilience. In post-disaster conditions, road blockages, debris, and flooding frequently disrupt fuel distribution, preventing the delivery of diesel to decentralized generators. As a result, essential services, including emergency response, healthcare operations, and communication systems, are often compromised at critical times.

In the absence of the proposed intervention, the energy system will remain increasingly exposed to both acute shocks and slow-onset climate impacts. Rising temperatures will continue to drive higher electricity demand for cooling across households, tourism facilities, and public services, placing additional strain on an already fragile and fossil-fuel-dependent power system. Prolonged droughts will further reduce water availability and increase reliance on energy-intensive desalination processes, reinforcing the energy–water nexus and raising operational and fiscal costs. At the same time, sea-level rise and coastal erosion will progressively increase risks to critical energy infrastructure, including generation assets and fuel import facilities located in coastal zones. Without investment in resilient and decentralized renewable energy systems, these cumulative pressures will exacerbate system instability, increase energy costs, and heighten the vulnerability of essential services and productive sectors to both gradual and extreme climate impacts.

Within the financial sector, the baseline is characterized by structural barriers that prevent the mobilization of available capital for adaptation investments. While financial institutions in the Eastern Caribbean maintain significant liquidity, this capital is not effectively deployed for climate-resilient investments due to risk perceptions and the absence of appropriate financial instruments. Renewable energy systems and structural resilience measures are typically classified as high-risk investments, resulting in restrictive lending practices. Commercial loans are generally offered at interest rates of approximately 5-7% with short repayment periods, making them unsuitable for financing capital-intensive adaptation measures.

As a result, essential MSMEs, community businesses and private households are largely unable to access financing for climate-adaptive and resilient solutions for renewable energy production and storage, transmission, distribution. The high upfront costs of resilient solar photovoltaic systems combined with climate-prove battery storage, often exceeding USD 7,000 per kW, further limit affordability. In addition, the absence of tailored financial products, such as salary-deduction-based lending, increases transaction costs and constrains the ability of financial intermediaries to reach target beneficiaries at scale.

At the same time, the technical and market environment remains fragmented and insufficient to ensure the long-term resilience of energy investments. Existing building codes and technical standards are not fully aligned with the requirements of climate-resilient renewable energy systems. In the absence of coordinated procurement mechanisms, renewable energy equipment continues to be sourced through small-scale, individual purchases, limiting economies of scale and contributing to persistently high technology costs. This fragmented market structure also leads to inconsistent equipment quality, lack of interoperability between system components, and increased risks of sub-optimal system performance and failure. Furthermore, the limited availability of certified installers, standardized design protocols, and quality assurance systems increases the likelihood of substandard installations that may not withstand extreme weather events.

Without targeted intervention, these financial, technical, and institutional barriers will persist, constraining the deployment of climate-resilient energy solutions and increasing the vulnerability of

essential services and productive sectors to both sudden and slow-onset climate impacts. In particular, micro-, small- and medium-sized enterprises (MSMEs) operating across key island value chains, including tourism, agriculture, fisheries, and the blue economy, will remain highly exposed, as they depend on reliable and affordable energy for core functions such as water supply, cooling, processing, and service delivery.

4. Alternative Transformational Project Scenario

The alternative scenario represents a transition from a fragile, fossil-fuel-dependent energy system to a resilient, decentralized, and financially accessible model for climate adaptation in Antigua and Barbuda. With SCCF support, the project addresses the systemic financial, technical, and institutional barriers identified under the baseline scenario, enabling domestic capital, technology, and implementation capacity to function coherently in support of climate resilience objectives.

To meet GEF/STAP adaptation standards and ensure full alignment with SCCF Window A (SIDS) priorities, the intervention is grounded in regional climate hazard profiles that distinguish between immediate shocks and chronic stressors on the energy system. This framework ensures that renewable energy investments are not only low-carbon but explicitly 'climate-proofed' to deliver durable adaptation benefits.

Table 1: Climate Hazard Profile and Adaptation Implications (Antigua and Barbuda & Caribbean Context)

SIDS Region / Country	Immediate, Acute Hazards (Shocks)	Long-term, Slow-onset Hazards (Stressors)	Implications for Energy Systems & SCCF Adaptation Benefits
Antigua and Barbuda (Caribbean Context)	Increasing frequency and intensity of tropical cyclones (including Category 4 and 5 storms), extreme rainfall events, coastal flooding and landslides.	Sea-level rise (projected up to ~0.8 m), rising temperatures (approx. +2.5°C), and increasing frequency and duration of droughts.	Implications: Damage to generation, transmission and distribution infrastructure, flooding of coastal energy assets, and disruption of centralized electricity supply. Adaptation benefits: Deployment of decentralized, hurricane-resilient solar PV and battery systems reduces system vulnerability, ensures continuity of critical services, and supports key value chains (tourism, agriculture) through reliable energy supply, including for cooling and water services.

Table 2: Stakeholder Vulnerability Assessment

Stakeholder Category	Vulnerability to Immediate Shocks	Vulnerability to Slow-onset and Long-term Stressors	SCCF Alignment: Adaptation & Livelihood Co-benefits
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Utilities & Regulators (e.g. APUA)	Grid damage, substation flooding, and disruption of electricity generation and fuel supply chains during extreme weather events.	Increasing demand from heat stress, water scarcity affecting desalination, and financial pressure from dependence on imported fossil fuels.	Resilient energy systems: Improved system reliability and reduced dependence on fragile fuel supply chains through decentralized renewable energy solutions.
Domestic Financial Institutions & Credit Unions	Increased credit risk and loan defaults following damage to borrower assets during disasters.	Declining collateral values (e.g. coastal assets) and reduced lending capacity due to repeated economic shocks.	De-risked adaptation finance: Guarantee mechanisms reduce lending risks and enable scaling of climate-resilient investments.
Tourism, Agriculture & Community MSMEs	Disruption of energy supply, damage to facilities, and loss of cooling, storage, and processing capacity.	Rising operational costs due to increased energy and water demand, reducing profitability and investment capacity.	Productive sector resilience: Reliable energy supply improves business continuity, protects livelihoods, and strengthens the energy-water-food nexus.
Renewable Suppliers & Installers	Disruptions in service delivery capacity following disasters.	Reduced equipment lifespan due to extreme climate exposure and lack of standardized installation practices.	Green jobs and skills development: Strengthened technical capacity and quality standards support a resilient local clean energy supply chain.

In contrast to the baseline, where resilient renewable energy investments remain high-cost, high-risk, and fragmented, the project establishes an integrated system in which solar photovoltaic (PV) and battery storage systems, that incorporate climate-adaptive and resilient solutions, become technically reliable, financially viable, and scalable across vulnerable MSMEs, community businesses and vulnerable households. This is achieved by transforming how risks are managed, how technologies are procured and installed, and how local markets operate.

At the financial system level, the project shifts access to adaptation finance from conventional collateral-based lending toward risk-mitigated, inclusive financing models. Through the establishment of a Partial Credit Guarantee Facility, domestic liquidity held by credit unions can be mobilized for climate-resilient investments at scale. By reducing perceived credit risk and enabling longer-tenor, lower-cost lending, the project allows essential vulnerable MSMEs and community businesses in key value chains, as well as households, to access financing for resilient energy systems that would otherwise remain unaffordable. The integration of salary-deduction mechanisms further enhances repayment performance and reduces transaction costs, creating a sustainable and scalable financing model.

At the market level, the project addresses fragmentation and high technology costs through the aggregation of demand and the introduction of pooled procurement mechanisms. By coordinating bulk procurement of solar PV systems, battery storage, and climate-resilient construction materials, the

project reduces equipment costs, improves supply chain efficiency, and ensures consistency in product quality. This will benefit from the envisaged establishment of regional pooled procurement mechanisms at the Caribbean Community (CARICOM) and Pacific Community (SPC) level through CCREEE and PCREEE, with support from IRENA, and will also be supported through the global-regional component of the G-RES programme in the Caribbean and the Pacific. This approach further enhances interoperability across system components and reduces the risks associated with individually sourced, non-standardized equipment.

At the technical level, the project establishes a robust quality infrastructure system to ensure the durability and performance of climate-resilient energy investments. Harmonized technical standards, certification systems, and vocational training programmes are introduced to ensure that all systems are designed, installed, and maintained to withstand extreme climatic conditions, including Category 5 hurricanes. This transforms the current fragmented installation market into a standardized and quality-assured ecosystem, reducing failure risks and enabling insurance coverage for renewable energy assets.

At the energy system level, the project enables a progressive shift from centralized diesel-based generation toward decentralized, resilient energy solutions. By supporting the deployment of climate-adaptive and resilient solutions in distributed solar PV and battery storage systems, the project enhances the ability of critical infrastructure, businesses, and households to maintain electricity supply during disruptions. This significantly improves the continuity of essential services, including healthcare, emergency response, and communication systems, during and after extreme weather events.

These systemic changes **generate direct and indirect resilience benefits** across the broader economy. MSMEs operating in key value chains, including tourism, agriculture, fisheries, and the blue economy, gain access to reliable and affordable energy, improving productivity, reducing operating costs, and strengthening their capacity to withstand and recover from climate shocks. The project also delivers important co-benefits, including reduced dependence on fossil fuel imports, lower greenhouse gas emissions, and enhanced national energy security.

The **transformation is delivered through a set of mutually reinforcing innovations**, including the establishment of a Partial Credit Guarantee Facility, the introduction of pooled procurement mechanisms, the strengthening of policy and technical standards, and targeted capacity building for financial institutions and private sector actors. Together, these measures address the root causes of the baseline market failure by aligning financial systems, technology deployment, and institutional capacity.

As a result, the project **establishes a scalable and replicable model** for climate-resilient energy system transformation in SIDS, contributing to the objectives of the National Adaptation Plan (NAP), the Nationally Determined Contribution (NDC), and global climate commitments under the Paris Agreement.

5. Justification for and Value Proposition of the Project

The proposed project delivers a strong value proposition by directly addressing the structural barriers that currently constrain climate adaptation in Antigua and Barbuda. Building on the baseline and alternative scenario analysis, the intervention responds to a systemic market failure in which available domestic capital, proven technologies, and national policy priorities remain insufficiently aligned to enable large-scale deployment of climate-resilient renewable energy systems. By integrating risk-sharing financial mechanisms, pooled procurement approaches, and strengthened technical and institutional frameworks, the project creates an enabling environment in which adaptation investments become both

economically viable and operationally sustainable. This approach ensures that international grant resources are used in a catalytic manner to unlock private-sector participation rather than substitute for it.

The proposed intervention directly operationalizes the mandate of the Special Climate Change Fund (SCCF), specifically under Funding Window A for adaptation, by delivering targeted adaptation benefits in a highly climate-vulnerable SIDS. By strengthening the resilience of essential public services, including healthcare and emergency response functions, the project enhances operational continuity during and after extreme climate events. In parallel, by securing reliable and affordable energy access for micro-, small- and medium-sized enterprises (MSMEs) across key value chains, the intervention supports livelihoods and reduces vulnerability to post-disaster economic disruptions. The project aligns with SCCF Funding Window A by directly addressing urgent adaptation needs through the reduction of climate vulnerability in critical infrastructure, essential services, and key economic sectors, while strengthening national capacity to withstand both acute and slow-onset climate impacts.

While the primary focus is on adaptation and vulnerability reduction, the transition toward decentralized renewable energy systems also generates important mitigation co-benefits. By reducing reliance on diesel-based generation and fossil-fuel supply chains, the project contributes to lower greenhouse gas emissions and reduces the macroeconomic burden associated with petroleum imports. This integrated approach aligns with the GEF-8 Programming Directions for SIDS and contributes to the achievement of Sustainable Development Goals (SDGs) 7, 9, and 13, in line with the Paris Agreement.

5.1. Incremental Cost Reasoning and Value Added

In the business-as-usual scenario, renewable energy adaptation investments in Antigua and Barbuda are constrained by a combination of high upfront costs, perceived risks, and institutional limitations. The country faces a dual transition: moving from fossil-fuel-based energy systems toward decentralized renewable energy, while simultaneously ensuring that these systems are climate-resilient and capable of withstanding increasingly severe climate impacts. This introduces additional costs associated with climate-resilient design (the “resilience premium”) and increases the complexity of investment decisions.

In this context, the incremental cost addressed by the SCCF intervention under Funding Window A is not the full cost of renewable energy deployment, but the additional financial, technical, and risk-related barriers associated with making these systems climate-resilient, financially accessible, and scalable under SIDS conditions. Without targeted intervention, these incremental costs prevent climate vulnerable MSMEs, essential community businesses, as well as households from accessing adaptation solutions, while domestic financial institutions remain unable to deploy available liquidity due to risk constraints.

Although private capital exists within the cooperative banking sector, it remains largely inaccessible for adaptation investments due to high perceived credit risks, strict collateral requirements, and the absence of appropriate financial instruments. Limited procurement volumes further contribute to high technology costs, while the absence of coordinated market mechanisms reinforces fragmentation and inefficiency. The value added of the SCCF grant under Funding Window A lies in its catalytic, risk-sharing function, specifically designed to reduce climate vulnerability and enhance resilience.

By capitalizing a Partial Credit Guarantee Facility (PCG Facility) and supporting pooled procurement mechanisms, the project reduces the incremental costs associated with climate-resilient energy systems. Rather than financing investments directly through subsidies, the project improves the risk profile of adaptation lending and enables local financial institutions to mobilize private capital at scale. This

approach addresses affordability constraints while maintaining market integrity and avoiding long-term subsidy dependence. It is fully aligned with international best practice, which emphasizes that the energy transition requires an enabling environment to crowd in private investment, with public grant financing playing a catalytic and limited role.

By enabling the deployment of resilient energy systems and integrating adaptation benefits across key sectors, including water, agri-food, tourism, and the blue economy, the intervention converts limited grant resources into a sustained and scalable financing mechanism for structural climate adaptation, fully aligned with the objectives of SCCF Funding Window A.

5.2 Innovation

The project introduces an integrated set of financial, market, and technical innovations tailored to the constraints of SIDS contexts.

- **Financial innovation:** The project establishes a low-risk and scalable lending mechanism by combining a Partial Credit Guarantee Facility with salary-deduction-based repayment systems. This significantly reduces default risk and transaction costs, enabling credit unions to provide longer-tenor, non-collateralized loans aligned with the income structures of private employees, civil servants and other target groups.
- **Market innovation:** The project addresses high technology costs and market fragmentation by introducing pooled procurement mechanisms at the regional level. By aggregating demand, it achieves economies of scale, reduces equipment costs, improves supply chain efficiency, and enhances standardization and interoperability of renewable energy systems.
- **Regulatory and technical innovation:** The project integrates climate resilience into the design of energy investments through the establishment of harmonized technical standards and certification systems. By linking these standards to financing eligibility criteria, the project ensures that only high-quality and climate-resilient systems are deployed, reducing long-term risks and supporting the development of insurance solutions.

5.3 Potential for Scaling Up & Replication

The proposed financing mechanism is designed for scalability, replication, and long-term application. At the national level, the Partial Credit Guarantee Facility (PCG Facility) can progressively onboard additional credit unions and financial institutions, expanding access to adaptation finance across vulnerable MSMEs, community businesses, as well as households. By building on existing institutional infrastructures such as credit unions and salary-deduction mechanisms, the model minimizes complexity and enables efficient scaling within the national financial ecosystem.

The integration of pooled procurement mechanisms further supports scalability by reducing technology costs, improving supply chain efficiency, and ensuring consistent quality and interoperability. These benefits are particularly important for MSMEs, which face significant barriers in accessing affordable and reliable climate-resilient energy solutions. At the regional and global levels, the project serves as a demonstration model under the Global Programme on Energy for Climate Resilience (G-RES) and the Global Network of Regional Sustainable Energy Centres (GN-SEC), facilitated by UNIDO. The barriers addressed in Antigua and Barbuda—high upfront investment costs, limited access to finance, and

fragmented procurement systems—are common across SIDS, particularly affecting MSMEs in key sectors such as tourism, agriculture, fisheries, and the blue economy.

A core element of the replication strategy is the pooled procurement model, which builds on international efforts, including those led by the International Renewable Energy Agency (IRENA), to aggregate demand and reduce technology costs in SIDS. This approach benefits from established collaboration between IRENA and regional institutions such as the Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE), and is designed for replication in Pacific SIDS through partnerships with PCREEE. Supported by the global-regional component of the G-RES programme, it enables coordinated procurement across regions, generating economies of scale and strengthening market integration.

By documenting financial, technical, and institutional approaches, the project establishes a practical and transferable model combining risk-sharing finance, salary-deduction-based lending, pooled procurement, and quality infrastructure. Replication will be facilitated through G-RES and regional centres, enabling countries in the Caribbean and Pacific to adopt the model with reduced design costs and risks, while supporting MSME participation, local supply chains, and green job creation. Through this multi-level approach, the project creates a scalable pathway for climate-resilient energy systems in SIDS, demonstrating how targeted public finance can mobilize private investment and support inclusive, resilient economic development.

5.4 Sustainability

The project is engineered for financial, institutional, and technical sustainability after SCCF project closure to ensure it serves as a bankable, replicable blueprint for the Caribbean and broader SIDS:

- **Financial Sustainability:** The guarantee-based model enables continuous recycling of capital. As loans are repaid, the facility can support new lending cycles, ensuring that adaptation finance remains available beyond the initial project period. By leveraging existing 'lazy liquidity' within credit unions through a de-risked PCG framework, the facility creates a permanent, circular investment cycle. The salary-deduction mechanism ensures high repayment security, protecting the facility's capital base against defaults and ensuring it remains solvent for future lending rounds.
- **Institutional Sustainability:** The project includes a clear transition pathway toward national ownership. Upon project completion, residual financial resources will be transferred to the Sustainable Island Resource Framework (SIRF) Fund, embedding the mechanism within national systems and strengthening long-term institutional capacity for climate finance. The execution role of CCREEE will ensure replication beyond GEF project closure within the GN-SEC network, providing a regional governance home for the technical standards and procurement frameworks developed.
- **Technical Sustainability:** The establishment of robust technical standards, certification systems, and local training programmes ensures that installed systems are durable and properly maintained. This strengthens domestic technical capacity, reduces the risk of asset failure, and supports the development of a resilient local clean energy market. By creating a certified cadre of local installers and service providers, the project ensures that the required maintenance infrastructure exists locally to keep adaptation assets operational for their entire design life.

6. Stakeholder Engagement

First stakeholder consultations were conducted with the most important players of the electricity system and the adaptation sector. The successful implementation of the project requires a coordinated, multi-stakeholder approach that aligns public institutions, financial intermediaries, private sector actors, and international partners. The stakeholder engagement strategy is designed to ensure inclusive participation, institutional ownership, and effective delivery of climate-resilient energy solutions across Antigua and Barbuda.

During the Project Preparation Grant (PPG) phase, targeted consultations will be conducted with key stakeholders to refine the design of the financial mechanism, procurement model, and technical standards. Particular attention will be given to ensuring that financing products are accessible and responsive to the needs of climate vulnerable MSMEs, community businesses and private households, including civil servants. These groups are critical drivers of local economic activity yet often face disproportionate barriers to accessing finance and climate-resilient renewable energy technologies. The consultation process will therefore integrate gender-responsive and youth-inclusive considerations into financial product design, capacity-building activities, and project outreach.

At the national level, the Department of Environment (DOE) will provide overall coordination and ensure alignment with national climate policies, including the National Adaptation Plan (NAP) and Nationally Determined Contribution (NDC). The Antigua Public Utilities Authority (APUA) will play a key role in overseeing technical standards, grid integration, and safety compliance for distributed renewable energy systems. Credit unions will serve as primary financial intermediaries, responsible for assessing borrowers, managing loan portfolios, and disbursing financing under the Partial Credit Guarantee Facility (PCG Facility). The Government payroll authority will facilitate the salary-deduction-based repayment mechanism, reducing transaction costs and improving repayment performance. Domestic financial institutions will also be engaged to progressively expand the reach and sustainability of the model, including through the development of targeted lending products for women and youth entrepreneurs.

The private sector plays a central role in implementation. Local installers, suppliers, and hardware retailers will be engaged in the delivery of climate-resilient solar photovoltaic (PV) and battery storage systems. Targeted training and certification programmes will be designed to promote equal access for women and youth, supporting skills development and entry into the clean energy workforce. MSMEs will benefit both as end users of resilient energy systems and as participants in the emerging clean energy value chain, including supply, installation, and maintenance services.

The consultation process will be closely aligned with the stakeholder engagement activities under the new UNDP-implemented GEF project “Creation of a sustainable market mechanism for climate-resilient distributed renewable energy systems in Antigua and Barbuda” (GEF ID: 11474), which is entering implementation in 2026. The proposed project is designed as a complementary and scaling intervention, building on the market activation and concessional financing mechanisms established under GEF ID 11474 by introducing a Partial Credit Guarantee Facility that enables broader and sustained access to finance. Synergies will be developed during the PPG phase through coordinated consultations, shared stakeholder platforms, and alignment of beneficiary targeting, ensuring complementary outreach and avoiding duplication of efforts.

In particular, while GEF ID 11474 supports initial uptake through grants and concessional lending, the guarantee facility will expand this foundation by mobilizing domestic credit union liquidity and enabling market-based lending at scale, thereby extending access to climate-resilient energy solutions beyond the project's initial beneficiary base. This coordinated approach will be particularly important for engaging vulnerable essential MSMEs, community businesses and households and for integrating gender-responsive and youth-inclusive considerations into financial product design, capacity-building activities, and long-term market development.

At the regional and global level, the project will leverage partnerships under the Global Programme on Energy for Climate Resilience (G-RES), coordinated by UNIDO, to support knowledge exchange, capacity building, and replication. Regional centres such as the Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE) and the Pacific Centre for Renewable Energy and Energy Efficiency (PCREEE) will facilitate pooled procurement, technical harmonization, and SIDS-SIDS cooperation. Collaboration with international partners, including the International Renewable Energy Agency (IRENA), will further strengthen procurement strategies, market development, and inclusive participation across regions.

The Sustainable Island Resource Framework (SIRF) Fund will play a key role in ensuring long-term sustainability and national ownership. It will support fund management during implementation and serve as the institutional anchor for the guarantee mechanism beyond the project lifecycle. Through this structured and inclusive engagement approach, the project ensures that all relevant stakeholders—including women, youth, and MSMEs—are effectively mobilized, capacities are strengthened, and equitable access to adaptation benefits is achieved. This contributes not only to effective project implementation but also to long-term resilience, inclusive economic development, and the creation of sustainable livelihood opportunities.

7. Part of the Global Program on Climate Resilient Renewable Energy Systems (GRES)

The national project in Antigua and Barbuda 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 increase the adaptive capacities of SIDS energy systems, 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 (GEF ID:12229) 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 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



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



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 core objective of the project is to strengthen the adaptive capacity of the electricity system of Antigua and Barbuda by addressing systemic financial, technical, and market barriers to the integration of climate-adaptive and climate-resilient solutions for solar photovoltaic (PV) and battery storage systems capable of withstanding both immediate and slow-onset climate impacts. Through the establishment of an integrated financing and delivery mechanism, the project enables climate vulnerable MSMEs and community businesses in key value chains, as well as private households, to invest in climate-adaptive and resilient solutions for renewable energy production, storage, transmission and distribution. This will help to maintain operational continuity during and after climate shocks.

The rationale for the project is grounded in the recognition that climate vulnerability in SIDS is closely linked to fragile, fossil fuel-dependent energy systems and limited access to affordable adaptation finance. Antigua and Barbuda faces a complex dual transition. It must shift away from a highly vulnerable, fossil-fuel-dependent centralized electricity system toward decentralized renewable energy, while simultaneously ensuring that all new investments incorporate a "resilience premium"—the additional technology and structural features required to withstand Category 5 hurricanes, extreme heat, and other climate stressors.

Currently, vulnerable MSMEs, essential community businesses and private households remain highly exposed to electricity disruption, structural damage, and high energy costs. Despite the presence of significant liquidity within the cooperative banking sector, the financial system does not provide an accessible mechanism through which these actors can invest in adaptation. This is primarily due to risk-averse lending practices, strict collateral requirements, and the absence of tailored financial products suited to climate-resilient investments. As a result, a structural gap persists between available financing capacity, proven technologies, and the needs of vulnerable end users.

The project builds directly on earlier SCCF-financed interventions, which supported the establishment of the Sustainable Island Resource Framework (SIRF) Fund as a national adaptation finance institution and piloted concessional lending for climate resilience. The present intervention represents a strategic evolution of this experience, shifting from a directly capitalized revolving-fund approach toward a leveraged, guarantee-based financing mechanism. By using SCCF resources to de-risk private lending and mobilize domestic capital, the project significantly increases the scale and sustainability of adaptation investments, demonstrating a clear progression from pilot experience to systemic transformation. SCCF funding will be only used for climate-adaptive and resilient solutions for renewable energy production, storage, transmission and distribution.

The project also strengthens policy coherence by translating national climate and energy priorities into an operational and scalable financing and delivery mechanism. Antigua and Barbuda has identified climate resilience, energy system transformation, and the protection of essential services as strategic priorities under its National Adaptation Plan (NAP) and Nationally Determined Contribution (NDC). However, the absence of an effective financial intermediation mechanism has limited the translation of these priorities into concrete investments at the household and community levels. The project addresses

this implementation gap by aligning public-sector repayment infrastructure, credit-union lending channels, pooled procurement systems, and technical standards within a single integrated framework.

Furthermore, the project is embedded within the UNIDO-led Global Programme on Climate-Resilient Renewable Energy Systems (G-RES), serving as a national child project that bridges national implementation with regional and global support structures. It leverages CCREEE's pooled procurement mechanism, as well as broader international efforts on demand aggregation and market development, to enhance cost efficiency, quality assurance, and replicability. In doing so, the project fills a critical gap not addressed by either existing national financing arrangements or emerging regional procurement initiatives alone.

Overall, the project is justified as a robust and scalable adaptation solution because it addresses the root causes of climate vulnerability, builds on established national institutional capacity, and creates a financially sustainable mechanism capable of delivering long-term resilience benefits beyond the duration of the SCCF grant. It therefore represents both a national adaptation investment and a replicable model for structuring climate-resilient financing systems across Small Island Developing States.

The following **table summarizes the climate hazards addressed by the project and the corresponding climate-resilience technologies that constitute the 'resilience premium.'** - to be further studies and expanded during the PPG phase:

Table 3: Supported Climate-Adaptive and Resilience Technologies

Climate Hazard	Resilience Technology / Intervention	Resilience Premium (Incremental Cost)
Category 5 Hurricanes	Hurricane-rated rooftop mounting systems & wind-hardened solar arrays	Costs for high-wind load engineering, reinforced mounting materials, and advanced structural certification.
Storm Surges / Flooding	Elevated battery storage housing & climate-control hardening	Costs for physical elevation of components, flood-resistant enclosures, and industrial-grade climate control.
Energy Grid Instability	Microgrid controllers with grid-forming inverters (multi-mode)	Costs for advanced multi-mode inverters for autonomous islanding, synchronization hardware, and intelligent microgrid management software.
Extreme Heat / Drought	High-efficiency thermal-hardened PV modules & cooling systems	Costs for specialized panels and active heat management systems to maintain performance in extreme ambient temperatures.
Post-Disaster Isolation	Modular 'Safe-Room' energy hub kits	Costs for structural hardening, secure electrical isolation, and high-capacity battery storage buffers.

2. The Theory of Change (ToC) Causal Pathways

2.1 Systemic Problem Statement

The central adaptation barrier in Antigua and Barbuda is a structural mismatch between available financial liquidity and urgent climate adaptation needs. Essential MSMEs, community businesses and private households remain highly exposed to climate shocks and slow-onset stressors. While local financial cooperatives hold substantial capital, this liquidity remains largely untapped for adaptation. Restrictive lending practices, collateral requirements, limited financial instruments, and a high “resilience premium” for technologies prevent capital from flowing to priority investments. As a result, the country remains locked in a fragile, fossil-fuel-dependent energy system that undermines disaster response capacity and long-term climate resilience.

2.2 Impact and Ultimate Goal

The ultimate goal of the intervention is to establish an inclusive, financially sustainable, and climate-resilient energy ecosystem in Antigua and Barbuda. By reducing dependence on vulnerable fossil-fuel supply chains, the project will ensure operational continuity of essential services and first responders during extreme climate events, while strengthening a professionalized domestic clean energy sector capable of maintaining adaptation assets over time.

This matrix delineates how the project’s specific interventions translate into direct benefits for MSMEs, essential community businesses, and key economic sectors—which serve as the backbone of local food security, tourism-linked livelihoods, commerce, and vital services—as well as households that rely on the continuity of these essential services during and after climate-induced disruptions.

Table 4: Climate Adaptation Benefits for key beneficiaries

Stakeholder Category	Climate Vulnerability (Immediate vs. Slow-Onset)	Project-Specific Adaptation Intervention	Direct Benefit for Essential Service Continuity	Linkage to Household Resilience
Agriculture: Food Suppliers & Processors	Immediate: Post-harvest loss from power failure. Slow-Onset: Water scarcity affecting productivity and yield.	High-capacity energy hubs with grid-forming inverters and drought-resilient water-pumping integration.	Secures the energy-water-food nexus, preventing systemic value chain collapse in local food markets and agricultural enterprises.	Stabilizes household food security and income stability by preventing the collapse of essential local food supply chains.
Tourism: Hospitality & Blue Economy MSMEs	Immediate: Operational shutdown and inventory loss (e.g., cold-chain) from outages. Slow-Onset: High energy costs for cooling/desalination.	Decentralized wind-hardened solar PV-plus-storage systems (Category 5 rated).	Protects cold-chain integrity and service reliability, ensuring tourism-linked MSMEs remain functional despite	Preserves household livelihoods and wage stability for tourism employees who depend on the uninterrupted operation of these

			centralized grid failure.	community businesses.
MSMEs: Fisheries	Immediate: Rapid spoilage from lack of cold storage post-storm. Slow-Onset: Thermal stress on coastal ecosystems.	Decentralized wind-hardened solar PV-plus-storage systems (Category 5 rated).	Protects cold-chain integrity, ensuring the viability of fisheries and blue-economy micro-enterprises during and after climate shocks.	Secures household income for fishers and local suppliers, ensuring economic survival post-disaster through viable cold-chain storage.
Essential Social Services (e.g., day-care, clinics)	Immediate: Loss of climate-control/power during storms. Slow-Onset: Increased demand for cooling due to extreme heat.	'Safe-Room' energy hub kits with integrated cooling and climate-proof mounting.	Ensures the care economy and primary health services remain functional for the community at the most critical post-disaster juncture.	Provides vital support services (daycare, health) enabling household breadwinners to return to work, thereby ensuring overall household stability.
Vulnerable Households (incl. Civil Servants)	Immediate: Total blackout during hurricane impact. Slow-Onset: Rising energy costs and thermal discomfort.	No-collateral, salary-deduction-backed adaptation lending mechanism.	Empowers households to autonomously invest in decentralized energy security, decoupling them from centralized grid fragility.	Directly enhances household independence, reducing energy burden and ensuring basic service continuity at the domestic level. Households benefit from the business continuity of MSMEs and community businesses.
First-Responder Services	Immediate: Operational failure during emergency response. Slow-Onset: Diesel dependency volatility.	Autonomous, islanding-capable microgrid controllers and battery buffers.	Guarantees energy security for police, fire, and EMS, ensuring critical disaster response capabilities are not	Ensures the safety and security of all households by maintaining critical emergency services that protect life and

			interrupted by grid-wide outages.	property post-disaster.
Local Supply & Installation Sector (MSME Suppliers)	Immediate: Supply chain disruption post-storm. Slow-Onset: Market fragmentation.	Vocational training and certified 'climate-proven' installer curriculum.	Professionalizes the domestic green-economy ecosystem, ensuring long-term maintenance and viability of adaptation assets for community businesses.	Fosters new, high-value green employment opportunities, directly increasing household income and economic mobility within the community.

2.3 Causal Progression of Interventions and Outcomes

Project Outputs: Foundations for Market Activation

The progression begins with targeted technical assistance and capital deployment across Components 1–3:

- Output 1 (Frameworks): Legal guarantee structures, harmonized climate-resilient standards, insurance partnerships, and lifecycle protocols established
- Output 2 (Finance): Partial Credit Guarantee Facility capitalized, salary-deduction mechanism institutionalized, and bulk procurement implemented
- Output 3 (Capacity): Credit unions, suppliers, and installers trained and certified

Immediate Outcomes: Risk Reduction and Market Activation

The delivery of these outputs triggers immediate behavioural and structural shifts:

- Financial de-risking: The capitalized PCG Facility absorbs retail credit risk, enabling credit unions to offer no-collateral adaptation loans.
- Affordability and cost compression: Pooled procurement reduces equipment costs by approximately 30%, significantly improving affordability of resilient energy systems.
- Workforce alignment: Local suppliers and installers are certified, ensuring compliance with climate-resilient technical standards.

Medium-Term Outcomes: Systemic Resilience Across Sectors

As uncollateralized lending scales, the project strengthens resilience across key sectors:

- Operational continuity: First responders and critical facilities gain reliable solar PV and storage backup, reducing dependence on vulnerable fuel supply chains and centralized grids.

- Value chain stabilization: MSMEs maintain operations during disruptions, strengthening the energy-water-food nexus.
- Market development: Domestic suppliers and installers expand operations, creating jobs and supporting a resilient clean energy market.

Long-Term Outcomes: Recyclable Climate Finance and National Governance

Before project conclusion, market gains transition into durable institutional outcomes:

- Capital recycling: High repayment rates under the salary-deduction mechanism enable continuous recycling of adaptation finance.
- National ownership: Financial mechanisms and residual capital are transferred to national institutions (SIRF), ensuring long-term control and governance.
- Global-regional replication: Standardized tools and frameworks enable replication through G-RES within CARICOM and other SIDS regions through the GN-SEC centres.

Explicit Assumptions

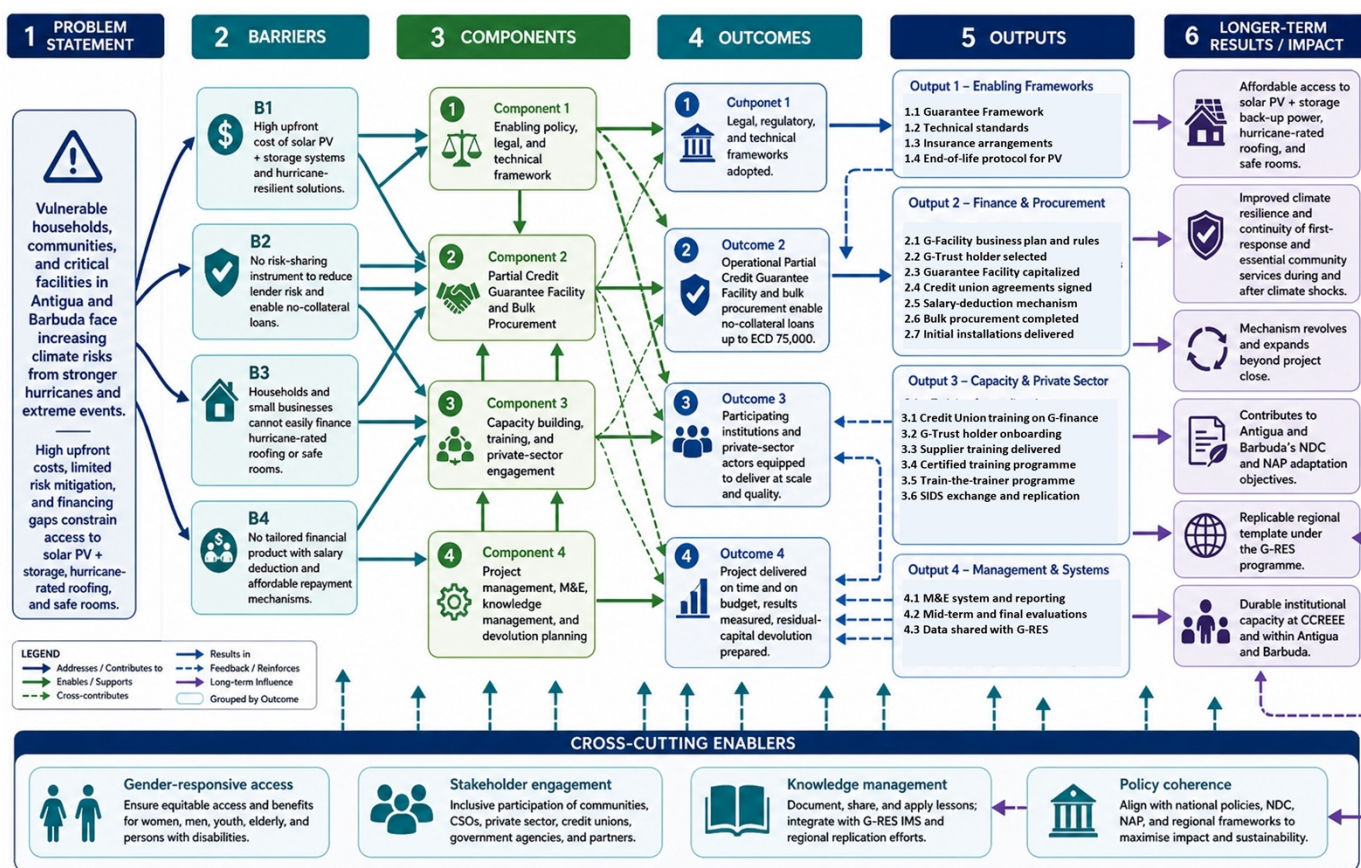
The project's causal progression rests on several systemic assumptions, which will be validated during the Project Preparation Grant (PPG) phase to ensure a defensible empirical foundation:

- Financial Intermediation: It is assumed that credit unions will shift toward adaptation-focused, no-collateral lending when supported by a PCG Facility. This is grounded in preliminary dialogues with the FSRC and cooperative associations, which confirm excess liquidity and demand for resilience products. PPG validation will include securing signed Letters of Intent (LOIs) and conducting formal credit-appetite surveys to confirm risk-tolerance thresholds.
- Institutional Delivery: It is assumed that existing salary-deduction infrastructure can manage automated loan repayments. This is based on the success of prior salary-advance mechanisms. The PPG phase will involve a fiduciary due diligence assessment to confirm this infrastructure can integrate the new loan repayment flows without requiring further structural upgrades.
- Procurement Efficiency: It is assumed that regional demand aggregation and bulk procurement will eliminate the 'resilience premium.' The projected 30% cost reduction is supported by regional procurement experience within Caribbean and Pacific SIDS, where historical analysis by IRENA and CCREEE confirms that fragmented logistics drive the majority of cost premiums. During the PPG phase, the feasibility will be further studied.
- Technical Standards Adoption: It is assumed that national authorities will enforce harmonized technical resilience standards. This aligns with national sustainable energy policy; During the PPG phase letters of intent will be collected from relevant institutions - potentially also a MOU will be signed.
- Private Sector Engagement: It is assumed that a robust local supply chain can scale to meet demand. The PPG phase will include a market-capacity gap analysis to map existing certified installers against projected demand, defining the scope for vocational training (Output 3.1.4) to ensure the workforce is sufficiently skilled.

By the conclusion of the PPG period, these validation pathways will yield concrete LOIs, a robust economic

model, formal MOUs, and a verified market audit, providing the objective evidence necessary to confirm the project's high probability of delivering sustainable adaptation impacts.

Figure 3: Theory of Change



This Theory of Change shows how the project addresses key barriers through integrated components and enablers to achieve measurable outcomes, produce tangible outputs, and deliver lasting results for Antigua and Barbuda and the wider region.

3. Project Components, Interventions, and Activities

The project consists of four mutually reinforcing components, designed to intervene simultaneously across the enabling environment, financial architecture, procurement system, and implementation capacity. These components are deliberately integrated: Component 1 establishes the rules and standards, Component 2 activates financing and delivery, Component 3 ensures that institutions and markets can perform effectively, and Component 4 provides oversight and ensures long-term sustainability. Together, they create a complete system capable of unlocking and sustaining adaptation investments.

Component 1: Enabling Policy, Legal, and Technical Framework (Outcome 1.1) This component establishes the regulatory and institutional foundation required for the Partial Guarantee Fund to function effectively. It addresses key structural barriers by providing legal certainty, technical guidance, and risk-sharing clarity for all actors involved. Specifically, the component facilitates legal guarantee agreements and dispute-resolution mechanisms (Output 1.1.1), ensuring that participating financial institutions can operate within a clear and enforceable framework. It defines and formalizes national Category 5 technical quality standards for resilient renewable energy systems (Output 1.1.2), ensuring that all financed investments meet robust climate-proofing requirements. In addition, it secures insurance partnerships

(Output 1.1.3) to further reduce risk exposure and enhance the bankability of investments. Together, these interventions create a predictable and secure enabling environment that builds confidence among lenders, suppliers, regulators, and beneficiaries, and underpins the long-term viability of the adaptation finance mechanism.

Component 2: Partial Credit Guarantee Facility and Bulk Procurement (Outcome 2.1) This component translates the enabling framework into a functioning financial and delivery system. It activates both the supply of finance and the affordability of adaptation investments. Through the capitalization of the Partial Credit Guarantee Facility (Outputs 2.1.1–2.1.5), the project reduces credit risk for participating financial institutions. This allows credit unions to offer adaptation loans without traditional collateral, directly addressing one of the main barriers to access for essential climate vulnerable MSMEs, community businesses and private households. At the same time, the component leverages the CCREEE Pooled Procurement Mechanism (Output 2.1.6) to aggregate demand and reduce the cost of eligible technologies. By improving price efficiency and standardizing equipment quality, this approach ensures that financed solutions are both affordable and technically reliable. These combined interventions culminate in the first tranche of climate-resilient installations (Output 2.1.7), demonstrating the viability of the model and initiating market uptake. Eligible investment packages include solar PV-plus-battery storage systems, hurricane-rated roofing upgrades, and safe-room kits. Financing is targeted primarily at securing the operational continuity of essential community-based MSMEs—the backbones of local food security, essential commerce, and vital community services—by ensuring their energy independence from vulnerable centralized grids. Secondary support is strategically provided to highly climate-vulnerable households, including civil servants, to enhance community-wide resilience and stability.

Component 3: Capacity Building, Training, and Private Sector Engagement (Outcome 3.1) This component ensures that the financial and technical systems established under Components 1 and 2 can perform effectively in practice. It strengthens institutional capabilities and develops the human capital required for sustained implementation. Participating credit unions are trained in adaptation-finance origination, product management, and compliance (Output 3.1.1), enabling them to confidently deploy the new lending instruments. The guarantee trust holder is similarly capacitated to manage facility operations (Output 3.1.2), ensuring sound financial governance. On the supply side, the component strengthens the domestic market by training hardware stores, suppliers, and installation firms (Output 3.1.3), thereby ensuring that procurement, distribution, and installation processes are reliable and efficient. It further institutionalizes capacity through certified vocational training and train-the-trainer programmes (Outputs 3.1.4–3.1.5), creating a sustained pipeline of skilled professionals. Finally, the component promotes knowledge exchange and replication through SIDS-SIDS platforms (Output 3.1.6), enabling lessons learned to be shared regionally and strengthening the scalability of the model. Together, these activities ensure that both financial intermediaries and private-sector actors are equipped to deliver high-quality adaptation solutions at scale.

Component 4: Project Management, Monitoring and Evaluation, Knowledge Management, and Devolution Planning (Outcome 4.1) This component provides the coordination, oversight, and forward-looking planning necessary to ensure effective implementation and long-term sustainability. It anchors the project operationally while preparing for post-project continuity. It establishes a structured project management framework to coordinate stakeholders and ensure timely delivery of activities. Monitoring and evaluation systems are implemented in alignment with GEF-8 results frameworks (Outputs 4.1.1–4.1.2), enabling performance tracking, learning, and adaptive management throughout implementation. In addition, the component ensures systematic knowledge capture and dissemination, supporting transparency and continuous improvement. Crucially, it plans the strategic devolution of residual capital

and operational frameworks to the national SIRF Fund (Output 4.1.3). This ensures that, beyond the project's lifetime, the financial mechanism remains operational under national ownership and continues to support adaptation investments. Through this approach, Component 4 ensures not only effective delivery but also the long-term institutionalization and sustainability of the intervention.

4. Transformational Impact and Global Benefits

The project has been selected because it offers a systemic and scalable solution whose benefits are more likely to endure under changing climate and economic conditions than narrower, project-based interventions. Its transformational impact is driven by a strategic combination of three mutually reinforcing innovations, which together significantly increase the adaptation impact achievable with limited SCCF resources. **SCCF funding will be only used for climate-adaptive and resilient solutions for renewable energy production, storage, transmission and distribution.**

Innovation 1: Partial Credit Guarantee Facility

SCCF resources will capitalize a Partial Credit Guarantee Facility designed to unlock domestic liquidity for adaptation investments. The facility builds on existing regional experience, including the World Bank–ECCB guarantee model already operating in Antigua and Barbuda, with the Eastern Caribbean Partial Credit Guarantee Corporation (ECPCGC) as a potential partner during the PPG phase. By guaranteeing a portion of participating credit unions' loan portfolios, the facility reduces credit risk and enables the issuance of no-collateral adaptation loans using existing balance sheets. This approach leverages significant local capital that is currently not directed toward climate resilience. Because repayment is secured through a salary-deduction mechanism, default rates are expected to be very low. As a result, guarantee payouts remain minimal, allowing a high mobilization ratio of adaptation financing for each SCCF dollar invested.

Innovation 2: Bulk Procurement through the CCREEE Pooled Procurement Mechanism

The Guarantee Facility will procure solar PV-plus-storage systems, hurricane-rated roofing materials, and safe-room kits through CCREEE's regional pooled procurement mechanism currently under development. This effort aligns with and leverages the ongoing work of IRENA, which has signed a memorandum of understanding with CCREEE to support regional energy transitions and plans a similar bulk procurement initiative in the Pacific region through collaboration with the SPC and PCREEE. The platform aggregates demand across participating countries to achieve economies of scale. This initiative is directly supported by the G-RES global-regional component, which provides technical backstopping and knowledge management to ensure the successful replication and scale-up of this procurement model. Bulk procurement is expected to significantly reduce unit costs, increasing the volume and quality of adaptation investments that can be financed within the ECD 75,000 loan ceiling. By lowering and stabilizing technology costs, the project addresses the persistent "resilience premium" that currently limits uptake of climate-resilient renewable energy solutions. This mechanism also ensures standardized quality across all procured equipment, reinforcing technical reliability and long-term system performance.

Innovation 3: Salary-Deduction Repayment through Government Mechanism

Loans are originated by credit unions (initially the Police Credit Union and the Teachers Credit Union), with repayments made through the Government's existing salary-deduction system. This mechanism is institutionally embedded, highly reliable, and administratively efficient. It significantly reduces repayment risk and provides a secure foundation for scaling no-collateral lending. Importantly, this model is replicable across other credit unions and public-sector systems in CCREEE member states, providing a standardized delivery approach for adaptation finance in small island contexts.

Sustainability and Scaling Up

Financial sustainability is embedded in the design through the combination of guarantee-backed lending and secure repayment mechanisms, enabling continuous recycling of adaptation finance over time. Institutional sustainability is ensured through the planned transfer of residual capital and operational arrangements to the SIRF Fund, anchoring the financing mechanism within national governance structures. Technical sustainability is reinforced through the adoption of harmonized standards, quality assurance systems, and end-of-life management protocols. Once validated in Antigua and Barbuda, this integrated model—combining legal frameworks, risk-sharing instruments, pooled procurement, and capacity building—can be replicated across CCREEE member states. It provides a modular, scalable prototype for adaptation finance in SIDS, with potential application across both Caribbean and Pacific regions - to be supported by G-RES.

5. Global Environmental Benefits (GEBs) and Additionality

The project generates significant adaptation benefits that would not accrue in the absence of GEF SCCF financing. These benefits would not be realized without SCCF support, which enables the establishment of the guarantee mechanism, cost-reducing procurement systems, and expanded access to finance for climate-vulnerable businesses and households. The project's direct GEBs include improved continuity of first-response capability, enhanced physical resilience of MSMEs, community businesses and households, and more reliable functioning of essential community services during and after climate shocks. By addressing resilience through an integrated package of interventions - including decentralized energy systems, structural upgrades, and financial innovation - the project delivers system-wide adaptation benefits that extend beyond individual technologies or sectors.

5.1 SCCF Core Indicators

To measure and track the project's adaptation impact, the intervention aligns with the GEF-8 Special Climate Change Fund (SCCF) Core Indicators. These indicators capture both direct improvements in resilience among vulnerable populations and broader systemic changes across financial, institutional, and market systems in Antigua and Barbuda. The targets reflect an integrated approach to adaptation, combining beneficiary-level impacts, institutional strengthening, and private-sector engagement.

- Core Indicator 1: Direct Beneficiaries: Total target of 3,000 individuals (1,500 male, 1,500 female; including 750 youth) are benefiting directly from the project activities in some form (e.g. guarantee facility, installations, trainings, standards). These beneficiaries are from climate vulnerable community businesses, MSMEs or private households.
- Core Indicator 2a: Land Managed for Climate Resilience: Total target of 10.0 ha, focusing on the deployment of climate-resilient renewable infrastructure (rooftop solar systems and structurally resilient buildings) across community and MSME business areas to enhance local adaptive capacity.
- Core Indicator 2b: Coastal and Marine Area Managed: Total target of 5.0 ha through the targeted installation of climate-resilient solutions in renewable energy and infrastructure solutions in coastal zones, reducing risk exposure of vulnerable MSMEs, community businesses and private households.
- Core Indicator 3: Policies, Plans, Frameworks, or Institutions Established: Total target of 5 frameworks, comprising the Partial Credit Guarantee Facility governance framework, Category 5 climate-resilient technical quality standards, insurance partnership arrangements and the salary-deduction repayment framework.

- Core Indicator 4: People Trained or with Awareness Raised: Total target of 200 individuals (100 male, 100 female; including 60 youth) trained, focusing on credit union staff, installation firms, suppliers, and public-sector stakeholders in climate-resilient energy systems and adaptation finance.
- Core Indicator 5: Private Sector Enterprises Engaged: Total target of 100 MSMEs and community businesses (50 male-led, 50 female-led; including 30 youth-led) are benefitting from climate-resilient renewable energy systems (estimated 100 systems with 5 kwp capacity). Moreover, this engages also service providers, suppliers, and installation firms to systematically strengthen resilient value chains.

5.2 Climate Mitigation Co-benefits

In addition to its core adaptation objectives, the project delivers substantial climate mitigation co-benefits. By facilitating the transition from decentralized diesel backup generation to climate-resilient solar PV-plus-storage systems, the project contributes to the decarbonization of the energy sector. Based on projected deployment, the intervention is expected to result in total emissions reductions of approximately 133,035 tCO₂e over a 20-year operational lifetime. This estimate is based on an emission factor of 649 gCO₂/kWh, reflecting the diesel-dominated electricity mix in Antigua and Barbuda:

- Direct mitigation: Approximately 10,233 tCO₂e avoided through project-supported pilot installations (500 kW installed capacity).
- Indirect mitigation: Approximately 122,801 tCO₂e avoided through wider market uptake enabled by the guarantee facility and procurement mechanism (6,000 kW mobilized capacity).

These mitigation co-benefits reinforce national climate targets and demonstrate how adaptation-focused investments in decentralized energy systems can simultaneously contribute to greenhouse gas emissions reductions.

6. Private Sector

The project's stakeholder structure is a core element of its intervention logic. Private-sector participation is central to the design, ensuring that benefits extend beyond asset installation to include improved financial intermediation, workforce development, and community-level economic resilience. Credit unions play a key role as financial intermediaries, enabling access to adaptation finance for vulnerable MSMEs, community businesses and households. At the same time, local community enterprises are integrated into the financing and delivery model as both beneficiaries and service providers. The project also actively strengthens the domestic clean energy supply chain through targeted training and vocational support for suppliers, installers, and service providers. Through this approach, the project not only supports immediate adaptation outcomes but also fosters a more resilient, inclusive, and market-driven private-sector ecosystem.

7. Gender Equality and Women's Empowerment

The project is gender-responsive by design and strictly aligned with the GEF Gender Policy and national gender equality commitments. It adopts an inclusive approach that recognizes women and youth not only as vulnerable groups, but as active agents of change in building climate resilience and advancing the just

energy transition. To ensure that the financial instruments are structurally gender- and youth-responsive and actively dismantle barriers to capital access, the project implements targeted design features within the Partial Credit Guarantee (PCG) Facility:

- Women and youth in Antigua and Barbuda, as in many SIDS, disproportionately lack formal land or property titles required by commercial banks. By leveraging a no-collateral, salary-deduction repayment mechanism through credit unions (many of which possess strong female membership bases), the PCG Facility inherently democratizes access. This allows female women-headed households to secure adaptation financing—including access to safe-room kits and climate-resilient renewable energy systems—based on income stability rather than asset ownership.
- During the PPG phase, the facility's operational guidelines will formalize targeted incentives to encourage lending to women. This includes exploring differentiated underwriting terms—such as a higher guarantee coverage ratio (e.g., 80% vs. 70%) or reduced guarantee fees—to strengthen the participation of women-led and youth-led enterprises in the clean energy value chain.
- The eligibility criteria for MSME resilience lending deliberately prioritize care-economy services, such as day-care centres and eldercare facilities. These sectors are predominantly female-owned, serve critical social functions during post-disaster recovery, and are highly vulnerable to energy disruptions.
- Recognizing that access to finance requires financial literacy and technical understanding, Component 3 integrates tailored advisory services to assist women entrepreneurs in navigating the loan application process and selecting appropriate, climate-proven technologies.
- Furthermore, the intervention promotes equitable participation in both financial and technical systems by ensuring access to vocational training programmes for women and youth to enter the clean energy workforce.

The project incorporates a structured approach to gender-responsive monitoring and evaluation. Sex- and age-disaggregated data will be systematically collected across all activities, including training, financing uptake, and enterprise engagement. This enables precise tracking of women's and youth participation in capacity building, their access to the de-risked finance, and their integration into local market development.

In line with UNIDO and GEF safeguards, the project applies a Do-No-Harm approach to ensure that interventions do not reinforce existing inequalities or exclusion. Project design and implementation will be continuously assessed to ensure inclusivity in access to resources, participation in decision-making, and the equitable distribution of benefits. Through these measures, the project contributes significantly to strengthening gender equality, economic empowerment, and inclusive climate resilience in Antigua and Barbuda.

8. Knowledge Management and Learning

Knowledge generation and dissemination are integral, strategic components of this project, designed to transcend localized impacts and drive systemic change across SIDS. The intervention will systematically capture, analyze, and codify lessons learned from the pioneering integration of guarantee-based finance, regional pooled procurement, and salary-deduction-backed lending mechanisms. To ensure high-quality knowledge generation, the project will produce a suite of targeted knowledge products, including operational guidelines, policy briefs, and rigorous case studies detailing the financial structuring and

technical performance of climate-proven energy systems. These resources will be tailored to meet the specific needs of diverse stakeholders, ranging from national policymakers and regional development banks to local credit unions and private-sector installers.

These insights will be actively documented and disseminated through the overarching G-RES Information Management System, ensuring seamless knowledge integration at the global programmatic level. Furthermore, the project will leverage CCREEE's established regional platforms and the broader GN-SEC to facilitate robust South-South and triangular cooperation. This will include peer-to-peer learning exchanges, regional capacity-building workshops, and joint technical advisory sessions.

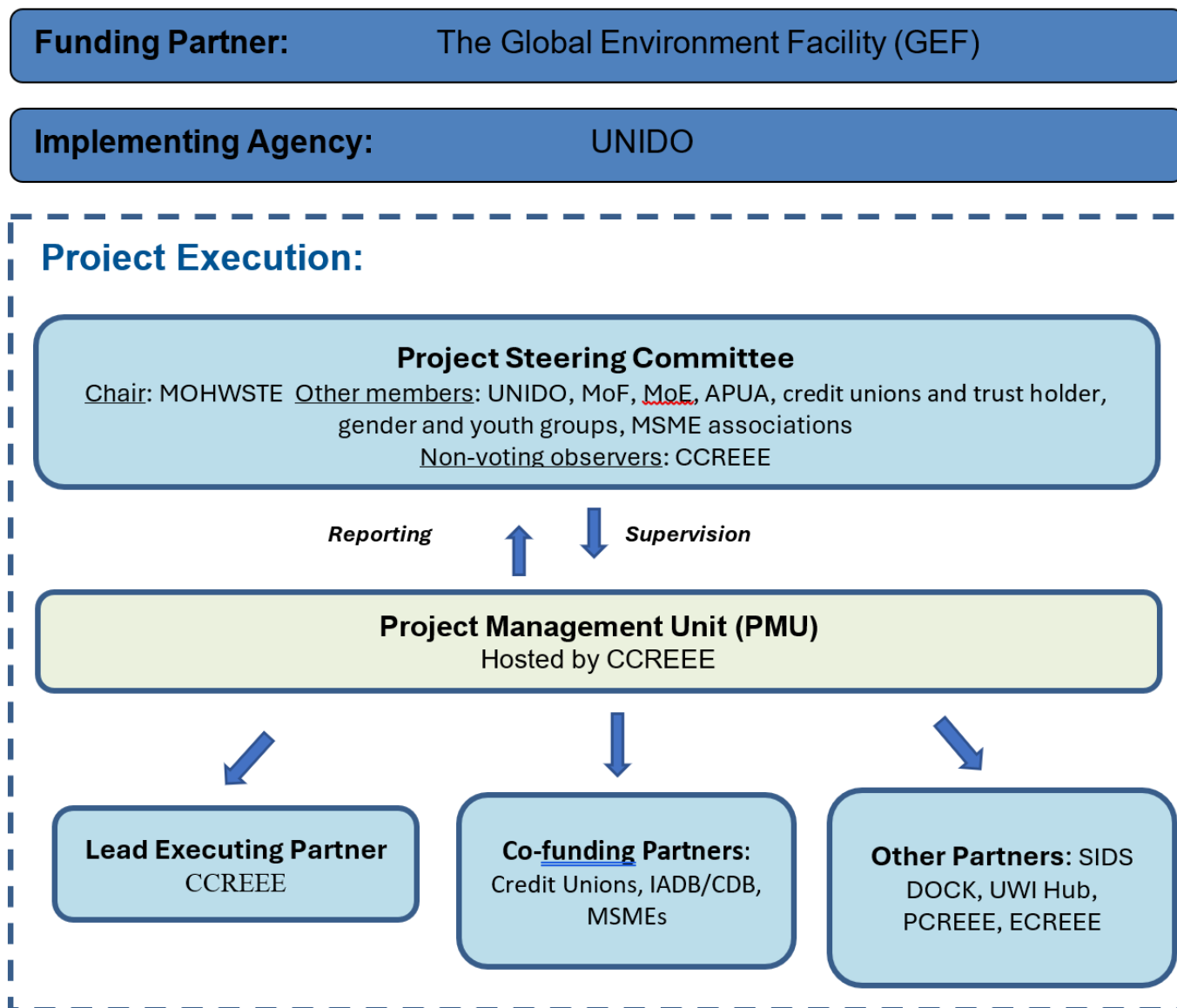
By promoting structured learning and dynamic knowledge exchange, the project directly addresses the information asymmetries and perceived risks that currently hinder climate finance in vulnerable regions. It contributes to the development of highly scalable and replicable models for adaptation finance, ensuring that the operational blueprints validated in Antigua and Barbuda directly inform regional and global knowledge systems. Ultimately, this comprehensive knowledge management approach enhances the long-term impact, bankability, and rapid replicability of integrated climate resilience solutions across the Caribbean, the Pacific, and other SIDS contexts. Strong cooperation with PCREEE will be facilitated, including on the pooled procurement platform.

9. Stakeholder coordination and implementation structure

The project adopts a multi-stakeholder, co-creation model designed to ensure ownership, complementarity, and long-term sustainability. The project engages a broad range of stakeholders across governmental, regional, private, civil society, and academic sectors to ensure vertical integration (from policy to practice) and horizontal collaboration (from national to regional), thereby maximizing impact and replication potential.

UNIDO, through the Sustainable and Just Energy Transition Unit (ECA/JET) and in coordination with the UNIDO-Barbados SIDS Hub in Bridgetown, serves as the GEF Implementing Agency. UNIDO provides high-level technical oversight, safeguards compliance, and facilitates global SIDS-SIDS cooperation and knowledge transfer through the Global Network of Regional Sustainable Energy Centres (GN-SEC). The Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE) serves as the main executing agency, hosting the Project Management Unit (PMU) and ensuring the coordinated execution of activities in close alignment with national climate strategies.

Figure 4: Implementation and execution structure of the GEF project



The institutional structure and stakeholder roles are detailed in the table below. This structure remains indicative and will be further refined during the PPG phase in consultation with national counterparts.

Table 5: Roles of Stakeholders

Stakeholder Type	Entity	Level of Engagement & Primary Interest	Specific Contribution to Project Success	Component/Output Linkage
I. Governance & Policy	Ministry of Health, Wellness, Social Transformation and the Environment (Department of	Highest: GEF Focal Point & PSC Chair. Strategic governance and alignment with national climate policy and	GEF Governance & Oversight: Chairs the PSC, ensures compliance with GEF standards, and provides strategic anchoring within the national Sustainable	Component 1 (Policy), Overall Governance

	Environment / SIRF Fund)	adaptation targets.	Island Resource Framework (SIRF) Fund.	
I. Governance & Policy	Ministry of Finance	High: Sectoral alignment. Primary interest in financial stability, payroll infrastructure security, and de-risking mechanisms.	Financial Structuring: Operationalizes and secures the salary- deduction mechanism, ensuring stable loan repayment and long- term project sustainability.	Component 1 (Policy), Component 2 (Financing)
II. Execution & Technical	Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE)	Lead Executing Entity. High: Direct management and technical execution of regional interventions.	Operational Leadership: Manages the PMU, coordinates regional bulk procurement, harmonizes technical standards, and oversees regional partnership deployment.	Components 1, 2, 3, 4
II. Execution & Technical	Antigua Public Utilities Authority (APUA) / Ministry of Energy	High: Critical technical partner. Focus on grid stability, RE integration, and national electrical standards compliance.	Technical Oversight: Provides data for baseline studies, supports the development of climate-resilient technical standards, and ensures safe grid integration.	Component 1 (Standards), Component 2 (Technical Support)
III. Financial & Investment	Credit Unions (e.g., Police, Teachers)	High: Financial intermediary role. Interest in de-risking retail lending and expanding adaptation portfolios.	Credit Deployment: Extends no- collateral, salary- deduction-backed adaptation loans to vulnerable MSMEs, community businesses and households.	Component 2 (Financing)
III. Financial & Investment	Guarantee Administrator (e.g., ECPCGC)	High: Financial management. Interest in credit risk reduction and facility sustainability.	Financial Governance: Hosts and manages the Partial Credit Guarantee Facility, assessing risk frameworks and handling payouts to	Component 2 (Financing), Component 3 (Training)

			protect intermediary capital.	
IV. Private Sector & MSMEs	Local Installers, Suppliers, & MSMEs	High: Market activation. Interest in cleantech adoption, resilient value chains, and professional certification.	Resilient Value Chains: Supplies and installs climate-proven technology; local MSMEs access financing to protect core economic functions.	Component 2 (Cleantech adoption), Component 3 (Skills)
V. Skills & Knowledge	UNIDO (ECA/JET & SIDS Hub)	Implementing Agency. High: Oversight and global knowledge transfer.	Global Technical Support: Facilitates SIDS-SIDS cooperation (GN-SEC), transfers technical tools, and ensures alignment with global G-RES program.	Component 4 (Knowledge Exchange), Component 3 (Training)
V. Skills & Knowledge	National Training Agencies / Vocational Centres	High: Skills development. Focus on green construction and RE/EE technical capacity.	Curriculum Integration: Delivers certified vocational training for green skills, building essential local capacity to install and maintain resilient technologies.	Component 3 (Skills development)
V. Skills & Knowledge	SIDS DOCK / SIDS-SIDS Transfer Hub	High: Strategic regional alignment, coordination & support. Interest in scaling up lessons learned and policy harmonization.	Strategic Guidance & Replication: Provides high-level political support, advocacy for SIDS energy security, and facilitates SIDS-SIDS knowledge exchange platforms for regional replication.	Component 1 (Policy), Component 4 (SIDS-SIDS Knowledge Exchange)
V. Skills & Knowledge	GN-SEC / Regional Bodies (e.g., PCREEE), coordinated by UNIDO	High: Regional alignment. Interest in policy harmonization and replication of resilience models.	Strategic Replication: Facilitates inter-regional dissemination of technical blueprints and adaptation finance frameworks	Component 4 (SIDS-SIDS Exchange)

			to other SIDS regions.	
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UNIDO Legal context

The Government of Antigua and Barbuda 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 26 August 1983.

Coordination and Cooperation with Ongoing Initiatives and Project.

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

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

The execution structure of the project will be finalised during the PPG phase.

Alignment and synergy-building with other initiatives, programmes and projects

This project functions as a strategic multiplier within Antigua and Barbuda's climate and development portfolio, bridging the gap between national energy-transition and climate adaptation goals, addressing particularly the needs of key island value chains within the energy-water-food nexus. It is designed to complement and enhance the impact of active GEF, GCF, and bilateral/multilateral initiatives by operationalizing climate resilience at the community level, addressing gaps in decentralized systems, mobilizing domestic capital, and strengthening adaptive capacity across highly vulnerable sectors.

GEF-Funded Alignment

- **Alignment with GEF Project 11474 (2025–2030):** The proposed project is closely aligned with and builds upon the GEF project "Creation of a sustainable market mechanism for climate-resilient distributed renewable energy systems in Antigua and Barbuda" (GEF ID: 11474), implemented by UNDP, which is currently entering implementation following CEO endorsement in 2025. That project focuses on establishing a concessional financing mechanism and enabling the deployment of climate-resilient solar PV-plus-storage systems across residential, public, and community infrastructure, including for vulnerable populations and emergency shelters. The present intervention represents a strategic evolution of this approach by introducing a market-based, risk-sharing financial architecture. While GEF ID 11474 relies primarily on concessional financing and grant-based mechanisms to stimulate initial market uptake, the proposed project complements this approach and establishes a Partial Credit Guarantee Facility to mobilize domestic capital and enable scalable, non-collateralized lending through credit unions. The projected adaptation benefits and GEBs (e.g. GHG emissions) of the SCCF funded project will be strictly additional to the ones projected in the UNDP-led projects. The focus of the UNIDO-led project is particularly on climate-adaptation and not mitigation. Moreover, the UNIDO project focuses more on MSMEs and private sector. This opens up opportunities for a high-impact programme. Synergies between the two projects will be actively developed during the Project Preparation Grant (PPG) phase, particularly in relation to:

- alignment of financial mechanisms and eligibility criteria
- Pooled procurement mechanism
- coordination of target beneficiary groups (including vulnerable MSMEs, community businesses and households)
- harmonization of technical standards and procurement approaches
- sharing of lessons learned from the market activation phase of GEF ID 11474

Table 6: Complementarity between UNDP and UNIDO-led projects (One UN approach)

Project Dimension	GEF ID 11474 (UNDP) – <i>Market Activation and public sector focus</i>	GEF ID 12357 (UNIDO) – <i>Market Transformation and private sector focus</i>
Strategic Role	Market initiation through grant-subsidized public procurement and revolving concessional finance.	Market transformation and scaling through targeted de-risking (PCGs) specifically designed to crowd in private sector investment and unlock domestic cooperative liquidity.
Primary Incremental Cost Focus	Focuses on the incremental costs for climate change mitigation, emphasizing greenhouse gas (GHG) emission reductions through renewable energy pilot deployment.	Focuses on the incremental costs for climate change adaptation, financing the 'resilience premium' required to ensure infrastructure survivability and operational continuity during extreme weather events.
Primary Financial Instrument	Direct public subsidies, grants, and concessional loans.	Partial Credit Guarantee (PCG) Facility leveraging domestic credit union liquidity.
Collateral Approach	Relies on public balance sheets and subsidized public capital.	Uncollateralized lending secured structurally via public and private salary-deduction mechanisms.
Target Beneficiaries	Highly vulnerable populations, emergency shelters, and direct public infrastructure.	Highly climate vulnerable and essential community MSMEs in key value chains and highly vulnerable households, including civil servants.
Procurement Target	Pilot procurement targeting approximately 1.2 MW (1,200 kW) of solar PV and battery systems.	Aggregated regional pooled procurement targeting approx. 6.5 MW to achieve economies of scale.
Implementation Actor	Direct infrastructure delivery by the Department of Environment (DoE).	Financial intermediation through local credit unions; regional procurement via CCREEE.

Through this coordinated 'One-UN' approach, the proposed project will complement and amplify the impact of GEF ID 11474 by transitioning from grant-supported deployment toward a sustainable, market-driven financing model, thereby enabling long-term scaling of climate-resilient distributed renewable energy systems in Antigua and Barbuda.

- **G-RES Global Program (GEF ID: 12229) (2025–2030):** The GEF project in Antigua and Barbuda is part of the G-RES program, which comprises a global-regional component and a growing portfolio of national projects. The global-regional project (GEF ID: 12229) will accelerate national progress by strengthening coordination, ensuring policy coherence, facilitating SIDS-SIDS cooperation, and sharing best practices in climate risk assessments, energy policy development, and integrated resource and resilience planning—including gender-responsive and socially inclusive approaches. For example, the global-regional component will contribute to the pooled procurement mechanism in

CARICOM and SPC through CCREEE and PCREEE, which are part of the UNIDO-coordinated GN-SEC programme.

- **GEF-8 Blue and Green Islands Integrated Program (BGI IP) (GEF ID: 11252) (2025–2031):** Following its regional inception in late 2025, the BGI-IP is active in Antigua and Barbuda’s coastal and island provinces. The project operationalizes BGI IP’s nature-positive goals by installing climate-hardened cold storage for the sustainable fisheries the program promotes, protecting them from power outages that otherwise cause immediate post-harvest loss. Although the integrated programme is not focused on energy, many interesting cross-links can be made. Access to climate-resilient renewable energy systems is a very important prerequisite for successful biodiversity and productive use activities envisaged by the IP (e.g. tourism, agriculture, blue economy).
- **Antigua and Barbuda Sustainable Low-Emission Island Mobility Project (GEF ID: 10392) (Closing 2026):** Implemented by UNEP, this project has established the foundational regulatory and technical frameworks for the transition to electric mobility. As this initiative nears completion, the proposed project will complement its legacy by ensuring that critical electric vehicle (EV) charging infrastructure—particularly for first-responders and essential public services—can be powered by decentralized, climate-resilient renewable energy microgrids, thereby securing emergency mobility and operational continuity during severe meteorological events and prolonged grid failures. A link to the e-mobility deliverable will be created by the national G-RES project. The Partial Risk Guarantee Facility may focus also on resilient PV powered decentralised charging infrastructure.
- **Building Climate Resilience through Innovative Financing Mechanisms (GEF ID: 5523 / SCCF) (Closed, 2016–2023):** This completed SCCF intervention was instrumental in capitalizing the early adaptation windows of the Sustainable Island Resource Framework (SIRF) Fund. Drawing on institutional insights and outcomes from its Terminal Evaluation, the current project builds upon this foundation by evolving from direct, revolving concessional lending to a highly leveraged guarantee model, maximizing the impact of international public finance by crowding in domestic cooperative banking liquidity.

GCF-Funded Alignment

- **GCF FP133 (Resilience to hurricanes in the building sector in Antigua and Barbuda) (2021–2027):** Implemented by the Department of Environment, this project focuses on mainstreaming climate resilience into the building sector by strengthening and enforcing climate-resilient building codes, improving regulatory and zoning frameworks, and financing structural retrofits for vulnerable households and public buildings. According to its 2023 Annual Performance Report, FP133 has advanced into active implementation, with general structural repairs and climate-proofing upgrades commencing on critical priority infrastructure, including essential health clinics and first-responder headquarters. Furthermore, the project is establishing baseline parameters for renewable energy integration across these public facilities. The proposed GEF intervention serves as a highly strategic complement to FP133 by integrating the essential *energy-resilience* dimension into these structural upgrades. Specifically, the GEF project will ensure that all solar PV-plus-storage systems installed under its mandate strictly comply with the enhanced building codes developed under FP133, incorporating hurricane-rated mounting systems, advanced electrical safety standards, and requisite structural integrity measures. This synergistic approach effectively extends the adaptation baseline from merely providing 'safe structures' to delivering 'fully functional resilient buildings' capable of maintaining independent energy supply during and after extreme meteorological events.

Furthermore, the proposed project amplifies FP133's impact by enabling scalable, household-level financing for these resilience investments via credit unions, ensuring that buildings upgraded for structural integrity are simultaneously energy-secure and operationally continuous during climate-induced disasters.

- **GCF FP061 (Integrated physical adaptation and community resilience through an enhanced direct access pilot) (2019–2027):** This EDA project provides grants and revolving loans for community adaptation across three Eastern Caribbean SIDS, including Antigua and Barbuda. The proposed project complements FP061 by moving beyond pilot revolving funds to activate domestic commercial and cooperative liquidity through de-risking, thereby expanding the total volume of adaptation finance available to MSMEs and civil servants beyond the limitations of international grant cycles.

Bilateral and Multilateral Energy & Climate Projects

- **World Bank / Eastern Caribbean Partial Credit Guarantee Corporation (ECPCGC):** Established with World Bank support, the ECPCGC operates across the Eastern Caribbean Currency Union (ECCU), including Antigua and Barbuda, to mitigate severe collateral constraints for MSMEs. The proposed project's Partial Credit Guarantee Facility will actively explore partnering directly with the ECPCGC (as a potential trust holder) or closely mirroring its robust underwriting and financial governance standards. This alignment ensures that GEF capital leverages established, WB-vetted institutional infrastructure to successfully de-risk credit union lending for climate-resilient energy.
- **Caribbean Development Bank (CDB) / Sustainable Energy for the Eastern Caribbean (SEEC) & Microfinance Lines of Credit:** The CDB routinely provides wholesale liquidity via lines of credit to national development banks and financial cooperatives (including credit unions) across the OECS. However, these national institutions frequently face structural challenges in deploying this capital for adaptation, primarily due to the stringent commercial collateral requirements imposed on end-borrowers. By absorbing the first-loss risk, the GEF-funded Partial Credit Guarantee Facility acts as a critical institutional catalyst, unlocking this existing CDB liquidity and facilitating a genuine, market-driven scale-up of climate-resilient community infrastructure.
- **Inter-American Development Bank (IADB) / Compete Caribbean Partnership Facility (CCPF):** Co-financed by the IADB, the Compete Caribbean program focuses on enhancing the productivity, innovation, and systemic climate resilience of MSME value chains across the region. The proposed GEF intervention aligns seamlessly with this mandate by securing the local energy-water-food nexus. Specifically, the GEF project provides the necessary 'resilience hardware' (decentralized solar PV-plus-storage) that empowers these IDB-supported MSME clusters to maintain absolute operational continuity and competitiveness during and after severe meteorological events.
- **CARICOM and CCREEE Regional Initiatives (Ongoing, 2013–2030):** By embedding national activities within the CCREEE pooled procurement mechanism, the project operationalizes the Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS) at the national level. The project demonstrates that cooperative, domestic-led utility financing models are operationally viable, directly supporting regional targets for climate-resilient energy transitions and reducing supply-chain bottlenecks through regional demand aggregation.
- **IRENA SIDS Lighthouses Initiative (LHI) (Ongoing, 2014–2030):** The project aligns with the LHI framework by providing a scalable, bankable blueprint for energy-sector adaptation that can be

codified and shared across the global SIDS network. Specifically, it strategically aligns with IRENA's ongoing initiatives on pooled procurement mechanisms for renewable energy technologies in the Caribbean and the Pacific. By bridging these regional procurement structures with the G-RES program, the project advances the broader agenda of decarbonizing essential value chains while simultaneously building physical resilience against extreme meteorological events and unlocking economies of scale for climate-vulnerable SIDS.

Core Indicators

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

META INFORMATION – SCCF

LDCF false	SCCF-B (Window B) on technology transfer false	SCCF-A (Window-A) on climate Change adaptation true
Is this project LDCF SCCF challenge program? false		
This Project involves at least one small island developing State(SIDS). true		
This Project involves at least one fragile and conflict affected state. false		
This Project will provide direct adaptation benefits to the private sector. true		
This Project is explicitly related to the formulation and/or implementation of national adaptation plans (NAPs). false		
This project will collaborate with activities begin supported by other adaptation funds. If yes, please select below		
Green Climate Fund true	Adaptation Fund false	Pilot Program for Climate Resilience (PPCR) false
This Project has an urban focus. false		
This project will directly engage local communities in project design and implementation false		
This project will support South-South knowledge exchange true		
This Project covers the following sector(s)[the total should be 100%]: *		
Agriculture	0.00%	
Nature-based management	0.00%	
Climate information services	10.00%	
Coastal zone management	0.00%	
Water resources management	0.00%	
Disaster risk management	10.00%	

Other infrastructure	40.00%
Tourism	10.00%
Health	10.00%
Other (Please specify comments)	
Renewable energy infrastructure	20.00%
Total	100.00%

This Project targets the following Climate change Exacerbated/introduced challenges:*

Sea level rise true	Change in mean temperature true	Increased climatic variability true	Natural hazards true
Land degradation false	Coastal and/or Coral reef degradation false	Groundwater quality/quantity false	

CORE INDICATORS – SCCF

	Total	Male	Female	% for Women
CORE INDICATOR 1 Total number of direct beneficiaries	3,000	1,500.00	1,500.00	50.00%
CORE INDICATOR 2 (a) Area of land managed for climate resilience (ha) (b) Coastal and marine area managed for climate resilience (ha)	10.00 5.00			
CORE INDICATOR 3 Number of policies/plans/ frameworks/institutions for to strengthen climate adaptation	5.00			
CORE INDICATOR 4 Number of people trained or with awareness raised	200	100.00	100.00	50.00%
CORE INDICATOR 5 Number of private sector enterprises engaged in climate change adaptation and resilience	100.00			

Key Risks

	Rating	Explanation of risk and mitigation measures
CONTEXT		
Climate	Moderate	Antigua and Barbuda is highly exposed to hurricanes, storm surges, flooding, extreme rainfall, drought, and heat, as well as slow-onset risks such as sea-level rise and rising temperatures.

		Climate resilience is embedded in the project design through hurricane-rated roofing, harmonized technical standards, and decentralized renewable energy systems. Climate-risk screening and insurance requirements will be integrated into lending decisions. Implementation will be coordinated with relevant national disaster management authorities to ensure preparedness and operational continuity. Residual risk is Moderate.
Environmental and Social	Moderate	Potential risks include localized impacts from installation works, occupational health and safety concerns, and end-of-life battery management. In addition, there is a risk that the Partial Credit Guarantee Facility could inadvertently support investments that do not fully meet environmental and social standards if appropriate safeguards are not applied. Therefore the project was classified as Category B. These risks will be mitigated through robust environmental and social screening procedures integrated directly into the policies, eligibility criteria, and business plan of the Partial Credit Guarantee Facility. All financed investments will be subject to defined environmental and social requirements, including compliance with technical standards and safeguards prior to approval. Site-specific management measures and an end-of-life protocol will be implemented in coordination with national authorities. A Stakeholder Engagement Plan (SEP), Gender Action Plan, and grievance redress mechanism will further ensure inclusive participation, transparency, and effective risk management. Residual risk is Low. An ESMF will be developed during the PPG phase.
Political and Governance	Low	The project is fully aligned with national frameworks and anchored in established institutional structures. Risks related to policy shifts are mitigated through clearly defined institutional roles, formal cooperation agreements, and a structured transition of responsibilities to the SIRF Fund. Residual risk is Low.

INNOVATION

Institutional and Policy	Moderate	Implementation depends on timely establishment of legal and regulatory frameworks for the Partial Credit Guarantee Facility. Risks are mitigated through early initiation during the PPG phase, benchmarking against established #models, and sustained stakeholder engagement. Residual risk is Moderate.
Technological	Low	The project relies on proven technologies but faces very limited risks related to procurement quality, installation standards, and supply chain constraints typical of small island markets with high import dependency. These risks will be mitigated through CCREEE's pooled procurement mechanism, harmonized technical standards, installer training and certification, and quality assurance procedures. Residual risk is Low.
Financial and Business Model	Moderate	The project depends on effective operationalization of the Partial Credit Guarantee Facility and uptake by credit unions. These risks are mitigated through salary-deduction repayment mechanisms that significantly reduce default risk, and by leveraging existing domestic liquidity rather than relying on subsidies. Residual risk is Moderate.

EXECUTION

Capacity	Moderate	Implementation capacity is supported by CCREEE's regional mandate and the Department of Environment's experience in climate finance. Risks related to institutional coordination and staff turnover will be mitigated through structured capacity-building, clear governance arrangements, and knowledge management systems under Component 3. Residual risk is Moderate.
Fiduciary	Moderate	Fiduciary risks are mitigated through transparent selection of the guarantee facility trust holder, application of international fiduciary standards, and robust financial management and reporting arrangements. Residual risk is Moderate.
Stakeholder	Low	The project requires active engagement from credit unions, MSMEs, and supply-chain actors. Risks include uneven participation and competing priorities. These will be mitigated through a comprehensive Stakeholder Engagement Plan (SEP), inclusive consultation processes, and regular dialogue platforms to ensure transparency and sustained ownership. Residual risk is Low.
Other		
Overall Risk Rating	Moderate	The overall risk level of the project is assessed as Moderate, reflecting a balanced risk profile in which all identified risks are manageable and effectively mitigated through the project's design and implementation arrangements. While Antigua and Barbuda is highly exposed to climate-related hazards, including extreme weather events and slow-onset climate impacts, the project directly addresses these vulnerabilities by promoting climate-resilient infrastructure and decentralized energy solutions. The use of a Partial Credit Guarantee Facility introduces some complexity, particularly in relation to financial intermediation, institutional coordination, and potential variability in subproject implementation. However, these risks are mitigated through robust governance arrangements, clearly defined roles and responsibilities, and the integration of environmental and social safeguards into the facility's policies, eligibility criteria, and operational procedures. Technical and market-related risks, including supply chain constraints and quality assurance in installation, are addressed through pooled procurement mechanisms, standardized technical requirements, and targeted capacity building. Stakeholder and implementation risks are further reduced through structured engagement processes, strong institutional ownership, and capacity strengthening across participating entities. Importantly, no high or substantial risks have been identified. Environmental and social risks are limited, site-specific, and manageable through established safeguards frameworks, including the preparation of an Environmental and Social Management Framework (ESMF) during the PPG phase. Overall, the Moderate risk rating reflects the presence of systemic and operational risks typical of innovative financial mechanisms, while recognizing that these are adequately mitigated and do not threaten the achievement of project objectives.

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)

The proposed project is fully aligned with the GEF-8 Programming Directions under the Special Climate Change Fund (SCCF), Window A (Adaptation) and responds directly to the climate resilience needs of Antigua and Barbuda as a highly vulnerable Small Island Developing State (SIDS). It addresses both acute climate shocks (hurricanes, flooding, extreme rainfall) and slow-onset stressors (sea-level rise, temperature increase, water scarcity), as identified in the National Adaptation Plan (NAP).

Alignment with SCCF Window A (Adaptation)

The project directly contributes to SCCF objectives by reducing climate vulnerability, strengthening adaptive capacity, and enhancing the resilience of MSMEs and community businesses in critical value chains such as tourism, agriculture, fisheries, and the blue economy, as well as private households. It operationalizes SCCF priorities through measurable contributions to the SCCF Core Indicators:

- Core Indicator 1: Direct Beneficiaries: Total target of 3,000 individuals (1,500 male, 1,500 female; including 750 youth) are directly benefiting from the project activities in some form (e.g. guarantee facility, installations, trainings, standards). These beneficiaries are from essential climate-vulnerable community businesses, MSMEs and households.
- Core Indicator 2a: Land Managed for Climate Resilience: Total target of 10.0 ha, focusing on the deployment of climate-resilient renewable infrastructure (rooftop solar systems and structurally resilient buildings) across community and MSME business areas to enhance local adaptive capacity.
 - Core Indicator 2b: Coastal and Marine Area Managed: Total target of 5.0 ha through the targeted installation of climate-resilient renewable energy and infrastructure solutions in coastal zones, reducing risk exposure of vulnerable and essential MSMEs, community businesses and MSMEs in key value chains.
 - Core Indicator 3: Policies, Plans, Frameworks, or Institutions Established: Total target of 5 frameworks, comprising the Partial Credit Guarantee Facility governance framework, Category 5 climate-resilient technical quality standards, insurance partnership arrangements and the salary-deduction repayment framework.
 - Core Indicator 4: People Trained or with Awareness Raised: Total target of 200 individuals (100 male, 100 female; including 60 youth) trained, focusing on credit union staff, installation firms, suppliers, and public-sector stakeholders in climate-resilient energy systems and adaptation finance.
 - Core Indicator 5: Private Sector Enterprises Engaged: Total target of 100 MSMEs and community businesses (50 male-led, 50 female-led; including 30 youth-led) are benefitting from climate-resilient renewable energy systems (estimated 100 systems with 5 kwp capacity). Moreover, this engages also service providers, suppliers, and installation firms to systematically strengthen resilient value chains.
 - The project further aligns with SCCF priorities by promoting climate-resilient infrastructure, innovative financial mechanisms, and strengthened institutional and technical capacities, particularly through the integration of guarantee-based financing, pooled procurement, and quality infrastructure systems.

Alignment with Climate Change Mitigation (GEF CCM Co-benefits)

While focused on adaptation, the project generates significant mitigation co-benefits aligned with the GEF-8 Climate Change Mitigation (CCM) focal area, contributing to Core Indicator 6. Specifically, the intervention supports:

- Indicator 6.2 (GHG emissions mitigated): Estimated emissions reductions of approximately 133,000 tCO₂e over a 20-year period
- Indicator 6.4 (Installed renewable energy capacity): Deployment of approximately 6.5 MW of distributed renewable energy capacity

These outcomes result from resilience-oriented investments facilitated through the Partial Credit Guarantee Facility, combining installations directly supported by the facility and additional market uptake enabled through de-risking and pooled procurement mechanisms. The mitigation co-benefits are fully consistent with national priorities under the Nationally Determined Contribution (NDC) and contribute to reducing fossil fuel dependence, improving energy security, and lowering emissions intensity.

Regional and Global Alignment

The project is strategically aligned with the Antigua and Barbuda National Energy Policy and the Updated Nationally Determined Contribution (NDC), where adaptation for key sectors is a core priority. Critically, its interventions directly address the structural barriers identified in the National Adaptation Plan (NAP) by embedding climate-resilience and low-carbon practices into the country's most vulnerable economic sectors. The project's circular economy and resource efficiency focus supports the long-term Blue/Green Economy strategy, promoting sustainable value chains and integrated planning.

This project is fully consistent with the continuum of SIDS development frameworks, including the Antigua and Barbuda Agenda for SIDS (ABAS). The project aligns with key CARICOM decisions and frameworks, including:

- COTED (Council for Trade and Economic Development) – Environment and Energy.
- CARICOM Energy Policy and C-SERMS (Caribbean Sustainable Energy Roadmap and Strategy).

At the global level, the project is embedded within the Global Programme on Climate-Resilient Renewable Energy Systems (G-RES) and contributes to the objectives of the Global Network of Regional Sustainable Energy Centres (GN-SEC). Through these platforms, the project supports SIDS-SIDS cooperation, knowledge exchange, and the replication of scalable models for adaptation finance and resilient energy systems across the Caribbean and other SIDS regions.

By supporting MSMEs in adopting clean energy technologies and circular practices, the project contributes directly to these regional targets. It also strengthens regional integration by linking national experience to other CARICOM member states through the CCREEE and GN-SEC platforms. By combining financial innovation, technology deployment, and institutional strengthening, the project delivers a transformational, scalable, and replicable adaptation model fully aligned with GEF-8 programming strategies and SCCF priorities, while generating measurable mitigation co-benefits.

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: No

Civil Society Organizations: Yes

Private Sector: Yes

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

Extensive stakeholder consultations were conducted between February and May 2026 to ensure the project's design reflects national priorities and builds upon existing institutional arrangements. These consultations were led by the UNIDO Sustainable and Just Energy Transition Unit (ECA/JET), the UNIDO-Barbados SIDS Hub, and the Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE). The consultation process intentionally integrated civil society organizations (CSOs) and specialized entities to ensure a gender-responsive and youth-inclusive approach. These consultations will be intensified during the PPG phase guided by a stakeholder consultation plan and a gender action plan.

Date	Stakeholder / Entity	Primary Purpose	Key Outcomes
Feb–May 2026	Ministry of Health, Wellness, Social Transformation & Environment / GEF Focal Point (undertaken by UNIDO/CCREEE)	Project needs and design alignment with SIRF Fund	Anchor project within SIRF Fund
Feb–May 2026	Participating Credit Unions (undertaken by CCREEE)	Loan product design	Agreement on no-collateral lending
Feb–May 2026	Antigua Public Utilities Authority (APUA) / Ministry of Energy (undertaken by CCREEE/UNIDO)	Grid integration and standards	Harmonized technical standard support

Feb– May 2026	Technical Schools & UWI (undertaken by CCREEE/UNIDO)	Vocational training framework development	Framework for certified green skills training
Feb– May 2026	Local MSMEs / Private Sector Associations (undertaken by CCREEE/UNIDO)	Market and supply-chain needs	Interest in resilient value chains
Feb– May 2026	UWI SIDS-SIDS Hub (CSO) & SIDS DOCK & other GN-SEC centres such as PCREEE (undertaken by UNIDO)	SIDS-SIDS cooperation and knowledge transfer	Alignment on regional replication and cooperation strategy
Feb– May 2026	Regional and International Bodies (CARICOM/COTED) and IRENA (undertaken by CCREEE), UNDP country office, IRENA	Discussion of pooled procurement mechanism; guarantee facility and synergies to the UNDP funded project;	Commitment to pooled procurement
May 2026	SIDS DOCK Island Women Open Network (IWON) (undertaken by UNIDO)	Gender and youth integration in energy resilience	Commitment to gender-responsive programming and dedicated youth tracks

Deepened Consultations during the PPG Phase: Recognizing that inclusive project design is iterative, the Project Preparation Grant (PPG) phase will prioritize a series of deepened, targeted consultations. These engagements will specifically move beyond high-level strategy to ensure that (i) gender-responsive mechanisms are fully operationalized within credit union loan products; (ii) youth-led green entrepreneurship initiatives are practically mapped and integrated; (iii) local CSO representatives, particularly those representing vulnerable community segments, have defined roles in oversight and monitoring; and (iv) the technical/vocational training curricula are formally co-developed with local technical schools and the University of the West Indies (UWI) to align with national labor market needs. This ensures that the voices of those most affected by climate vulnerability directly shape the implementation framework.

(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
Medium/Moderate			
Medium/Moderate			

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	SCCF-A	Antigua and Barbuda	Climate Change	SCCF-A Country allocation	Grant	2,639,726.00	250,774.00	2,890,500.00
Total GEF Resources (\$)						2,639,726.00	250,774.00	2,890,500.00

Project Preparation Grant (PPG)

Is Project Preparation Grant requested?

true

PPG Amount (\$)

100000

PPG Agency Fee (\$)

9500

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non- Grant	PPG(\$)	Agency Fee(\$)	Total PPG Funding(\$)
UNIDO	SCCF-A	Antigua and Barbuda	Climate Change	SCCF-A Country allocation	Grant	100,000.00	9,500.00	109,500.00
Total PPG Amount (\$)						100,000.00	9,500.00	109,500.00

Please provide justification

Sources of Funds for Country Star Allocation

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Sources of Funds	Total(\$)
Total GEF Resources					0.00

Indicative Focal Area Elements

Programming Directions	Trust Fund	GEF Project Financing(\$)	Co-financing(\$)
CCA-2-1	SCCF-A	2,639,726.00	4200315
Total Project Cost		2,639,726.00	4,200,315.00

Indicative Co-financing

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Recipient Country Government	GoAB	Grant	Investment mobilized	500000
Recipient Country Government	Utility	In-kind	Recurrent expenditures	500000
Others	Credit Unions / Regional banks (IADB, CDB)	Loans	Investment mobilized	2000000
Beneficiaries	MSMEs, civil service households, community businesses	Grant	Investment mobilized	1000000
Donor Agency	Austrian Development Agency (ADA)	Grant	Investment mobilized	120015

GEF Agency	UNIDO	Grant	Investment mobilized	80300
Total Co-financing				4,200,315.00

Describe how any "Investment Mobilized" was identified

The investments were identified during stakeholder consultations. The contributions of the credit unions, banks and beneficiaries are estimated on the basis of one hundred 5 kwp solar PV systems with battery storage at the reduced average costs of USD 6.000 per system. The Guarantee Risk Facility is not directly subsidizing the systems but de-risks lending of the credit unions. The contribution of ADA is from the co-funding provided to the global-regional G-RES component to support the pooled procurement mechanism in the Caribbean and Pacific, as well as the establishment of commonly shared quality infrastructure (e.g. standards).

ANNEX B: ENDORSEMENTS

GEF Agency(ies) Certification

GEF Agency Type	Name	Date	Project Contact Person	Phone	Email
GEF Agency Coordinator	UNIDO	5/25/2026	Ganna Onysko	31260263647	G.ONYSKO@unido.org
GEF Agency Coordinator	UNIDO	5/25/2026	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)
Diann Black-Layne	Director	Ministry of Health and the Environment, Department of Environment	3/18/2026

ANNEX C: PROJECT LOCATION

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

Geo Name ID	Location Name	Latitude	Longitude
Antigua and Barbuda	Antigua and Barbuda	17.0608° N	61.7964° W

ANTIGUA AND BARBUDA



Barbuda

Codrington

Caribbean Sea

Antigua

Saint John's

Willikies

Bolands

English Harbour
Town

Redonda Is.

5 km



Map Sources: UNGIS, ESRI.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Map created in March 2024.



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

ESS Form

GHG emission reduction sheet

ANNEX E: RIO MARKERS

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

ANNEX F: TAXONOMY WORKSHEET

GEF-8 Focal Area	Theme / System	Intervention Type	Specific Activity	Primary Objective	Co-benefit
SCCF (Adaptation)	Energy Systems Resilience	Investment / Infrastructure	Deployment of distributed solar PV-plus-storage systems	Ensure continuity of electricity supply during climate shocks	GHG mitigation
SCCF (Adaptation)	Climate-resilient Infrastructure	Investment / Structural Measures	Hurricane-rated roofing and safe-room installations	Strengthen resilience of buildings to extreme weather	—
SCCF (Adaptation)	Energy-Water Nexus	Integrated Systems	Energy supply for water, cooling, and essential services	Maintain critical services under climate stress	GHG mitigation
SCCF (Adaptation)	Financial Systems	Financial Intermediary / Guarantee Mechanism	Establishment of Partial Credit Guarantee Facility	Improve access to adaptation finance	Private capital mobilization
SCCF (Adaptation)	Financial Systems	Policy / Institutional	Development of guarantee policies, eligibility criteria, safeguards	Enable scaling of adaptation lending	—

SCCF (Adaptation)	Private Sector / MSMEs	Market Development	Financing of MSMEs in tourism, agriculture, fisheries, blue economy	Strengthen resilience of key value chains and livelihoods	Economic resilience
SCCF (Adaptation)	Governance	Policy and Regulation	Technical standards, certification, and quality assurance systems	Ensure climate-resilient design and installation	—
SCCF (Adaptation)	Capacity Development	Capacity Building	Training of credit unions, installers, and suppliers	Strengthen institutional and technical capacity	Employment / skills
SCCF (Adaptation)	Environmental Management	Safeguards / Lifecycle Management	End-of-life protocols for PV and batteries	Minimize environmental risk and ensure sustainability	—
SCCF (Adaptation)	Knowledge and Replication	Knowledge Management	Learning, documentation, and SIDS-SIDS exchange (G-RES, GN-SEC)	Enable replication and scaling across SIDS	Global benefits
Climate Change Mitigation (CCM)	Renewable Energy	Investment	Reduction of diesel-based generation through solar PV	Reduce emissions intensity and fossil fuel dependence	Adaptation co-benefit
Cross-Cutting	Gender Equality	Social Inclusion	Gender Action Plan, targeting women-led households and MSMEs	Promote gender equality and inclusive resilience	—
Cross-Cutting	Private Sector Engagement	Market Transformation	Engagement of SMEs and supply chain actors	Strengthen resilient private sector ecosystem	Innovation
Cross-Cutting	Capacity & Governance	Institutional Strengthening	Strengthening national systems (SIRF, credit unions)	Ensure sustainability and national ownership	—

