



GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

Naoko Ishii
CEO and Chairperson

July 05, 2016

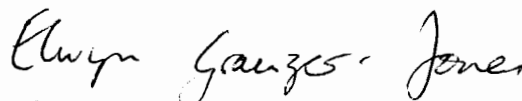
Dear SCCF Council Member:

UNEP as the Implementing Agency for the project entitled: ***Antigua and Barbuda: Building climate Resilience through Innovative Financing Mechanisms for Climate Change Adaptation***, has submitted the attached proposed project document for CEO endorsement prior to final approval of the project document in accordance with UNEP procedures.

The Secretariat has reviewed the project document. It is consistent with the proposal approved by the SCCF Council in November 2013 and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by UNEP satisfactorily details how Council's comments and those of the STAP have been addressed. I am, therefore, endorsing the project document.

We have today posted the proposed project document on the GEF website at www.TheGEF.org. If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,


for Naoko Ishii

Attachment: Project Document
Copy to: Country Operational Focal Point, GEF Agencies, STAP, Trustee



REQUEST FOR CEO ENDORSEMENT

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND:SCCF

For more information about GEF, visit TheGEF.org

PART I: PROJECT INFORMATION

Project Title: Building climate resilience through innovative financing mechanisms for climate change adaptation			
Country(ies):	Antigua and Barbuda	GEF Project ID: ¹	5523
GEF Agency(ies):	UNEP	GEF Agency Project ID:	01185
Other Executing Partner(s):	Ministry of Health and the Environment	Resubmission Date:	May 24, 2016
GEF Focal Area (s):	Climate Change Adaptation	Project Duration (Months)	48 months
Name of Parent Program (if applicable):	N/A	Project Agency Fee (\$):	475,000

A. FOCAL AREA STRATEGY FRAMEWORK²

Focal Area Objectives	Expected FA Outcomes	Trust Fund	Grant Amount (\$)	Cofinancing (\$)
CCA-1	Outcome 1.1	SCCF	4,308,112	10,908,658
CCA-2	Outcome 2.3	SCCF	450,441	1,436,014
CCA-3	Outcome 3.2	SCCF	241,447	555,328
Total project costs			5,000,000	12,900,000

B. PROJECT FRAMEWORK

Project Objective: To build national and sub-national capacity for medium- and long-term adaptation planning, accessing innovative financing mechanisms and implementing cost-effective adaptation interventions focused on ecosystems for communities and sectors vulnerable to climate change in Antigua and Barbuda.

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount (\$)	Confirmed Cofinancing (\$)
1. Mainstreaming of innovative financing for adaptation into medium- and long-term policy and planning.	TA	1. Policies, strategies and plans revised to promote medium- and long-term adaptation to climate change through mainstreaming of cost-effective adaptation interventions focused on ecosystems and innovative financing for adaptation.	<p>1.1. Institutional coordination mechanism established to guide medium- to long-term adaptation planning within the context of the NAP process.</p> <p>1.2. Revised policies and plans – particularly local area development plans – that promote and facilitate medium- and long-term adaptation to climate change.</p> <p>1.3. Technical training delivered on integrating climate change adaptation into local-level planning, including cost-effective adaptation interventions focused on ecosystems and innovative financing mechanisms.</p>	SCCF	342,894	788,656

¹ Project ID number will be assigned by GEFSEC.

² Refer to the [Focal Area Results Framework and LDCF/SCCF Framework](#) when completing Table A.

2. Innovative financing mechanisms for medium- and long-term adaptation.	Inv	2. Access to innovative financing mechanisms to address the negative impacts of climate change in the medium and long term through adaptation interventions is increased.	2.1. Operational guidelines and financial products developed for disbursement and management of outflows from the adaptation window of the SIRF Fund. 2.2. Operational and financial guidelines developed for promoting funding flows into the adaptation window of the SIRF Fund. 2.3. Adaptation interventions demonstrated through piloting small loans disbursed through the adaptation window of the SIRF Fund. 2.4. Strategy developed to upscale and replicate funding adaptation interventions through the adaptation window of the SIRF Fund.	SCCF	1,845,876	4,245,515	
3. Cost-effective pilot interventions for medium- and long-term climate change adaptation in vulnerable communities and sectors.	Inv	3. Adaptive capacity of local communities increased through implementation of pilot adaptation interventions focused on ecosystems in the St. John's watershed, to support them to cope with the effects of climate change in the long term.	3.1. Cost-effective adaptation interventions designed for St. John's, Body Ponds and Christian Valley watersheds and implemented in St. John's watershed. 3.2. Local communities in the project sites trained to implement and sustain adaptation interventions in the medium and long term.	SCCF	2,392,236	6,502,143	
4. National and regional knowledge and awareness of innovative financing mechanisms for long-term climate change adaptation in the Caribbean.	TA	4. Knowledge and awareness on adaptation financing mechanisms and implementation of adaptation interventions in the medium to long term is strengthened.	4.1. National awareness raising activities undertaken on innovative financing mechanisms for medium- and long-term adaptation. 4.2. Regional knowledge sharing on innovative financing for medium- to long-term adaptation is enhanced in the Caribbean through exchange of lessons learned.	SCCF	208,994	880,686	
Subtotal						4,790,000	12,417,000
Project management Cost (PMC)				SCCF		210,000	483,000
Total project costs						5,000,000	12,900,000

C. SOURCES OF CONFIRMED COFINANCING FOR THE PROJECT BY SOURCE AND BY NAME (\$)

Please include letters confirming cofinancing for the project with this form

Sources of Co-financing	Name of Co-financier (source)	Type of Cofinancing	Cofinancing Amount (\$)
Recipient Government	Ministry of Works and Housing	Grant/In-kind	6,800,000
Recipient Government	Ministry of Health and Environment	Grant/In-kind	2,700,000
Recipient Government	National Office of Disaster Services	Grant/In-kind	2,000,000
Other	Organisation of Eastern Caribbean States	In-kind	1,000,000
GEF Agency	UNEP	In-kind	400,000
Total Co-financing			12,900,000

D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY

GEF Agency	Type of Trust Fund	Focal Area	Country Name/ Global	(in \$)		
				Grant Amount (a)	Agency Fee (b)	Total c=a+b
UNEP	SCCF	Climate Change	Antigua and Barbuda	5,000,000	475,000	5,475,000
Total Grant Resources				5,000,000	475,000	5,475,000

F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Grant Amount (\$)	Cofinancing (\$)	Project Total (\$)
International Consultants	145,360	369,214	514,574
National/Local Consultants	185,050	470,027	655,077

G. DOES THE PROJECT INCLUDE A “NON-GRANT” INSTRUMENT?

No. While the grant amount does include loan facilities to be extended to beneficiaries through the SIRF Fund, repayment of these loans will not result in reflows to either GEF or UNEP. Instead, loan repayments will be made back into the adaptation window of the SIRF Fund. This is in accordance with the Operational Policies and Guidance for the use of Non-Grant Instruments (GEF/C.33/12).

The use of non-grant instruments is contingent upon: i) clear description of management of reflows to the agencies; and ii) such instruments being concessional. Under this project, there will be no reflows to either UNEP (as the GEF Agency) or the GEF SCCF (see description of the SIRF Fund’s operation under Section A.5). The loan facilities to be extended through the adaptation window of the SIRF Fund will take the form of short-term and small-scale loans to private individuals/households that qualify according to the selection criteria to be established by the project through a revolving fund (consistent with paragraph 21(e) of GEF/C.33/12). This modality is appropriate given the weak financial sector in Antigua and Barbuda that constrains the availability of financing for adaptation interventions to vulnerable households. In such instances, reflows to the GEF SCCF are not required³.

The small-scale loan facilities to be provided through the SIRF Fund are regarded as concessional, given that the GEF funds will remain in Antigua and Barbuda at the end of the project. Loan repayments will be made back into the SIRF Fund. The recovery of these loans will be made in strict adherence to the operational and financial guidelines to be developed under Component 2 of the project. This will ensure the sustainability and viability of the adaptation window of the SIRF Fund beyond project implementation, as funds will then be available for further extension of loan facilities.

Local financial institutions such as credit unions are not able to provide small-scale loans at interest rates that are affordable for vulnerable households. This is because such households present a risk owing to poor credit ratings and their general inability to provide adequate collateral for loans. Through this project, GEF funds will be used via the SIRF Fund to offer “soft” loans with low interest rates to households for implementation of

³ As stipulated in Table 1 of GEF/C.33/12.

adaptation interventions. The use of GEF funds will thus catalyse the provision of loan facilities to households that would in other circumstances not be able to access them.

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF

No significant changes in alignment with the project design of the original PIF have been made. The following section summarises the most significant changes in terms of the project's outcomes/outputs and co-financing activities.

While the wording of the project components and outcomes have been slightly altered to make them more specific, they remain based on the same underlying principles as the outcomes presented in the PIF. The rewording of project outcomes is detailed in the table below. In particular, the wording was altered to reflect the particular focus on medium- and long-term adaptation planning across all components.

Outcome as written in the PIF	Outcome written in the PD/CEO endorsement
1. Technical capacity of local and national institutions to mainstream adaptation into policy and planning through innovative financing are strengthened.	1. Policies, strategies and plans revised to promote medium- and long-term adaptation to climate change through mainstreaming of cost-effective adaptation interventions focused on ecosystems and innovative financing for adaptation.
2. Access to innovative financing mechanisms to address the negative impacts of climate change through adaptation interventions is increased.	2. Access to innovative financing mechanisms to address the negative impacts of climate change in the medium and long term through adaptation interventions is increased.
3. Vulnerability to climate change is reduced through pilot interventions.	3. Adaptive capacity of local communities increased through implementation of pilot adaptation interventions focused on ecosystems in the St. John's watershed, to support them to cope with the effects of climate change in the long term.
4. Knowledge base for supporting the development of adaptation financing mechanisms and implementation of adaptation interventions is strengthened.	4. Knowledge and awareness on adaptation financing mechanisms and implementation of adaptation interventions in the medium to long term is strengthened.

Revisions to the outputs that were proposed in the original PIF have been made in accordance with specific needs outlined by the Government of Antigua and Barbuda (GoAB) as well as other stakeholders in consultations held during the PPG. These needs relate primarily to the adaptation priorities of the local community members as well as the functioning of the adaptation window of the SIRF Fund. The PPG consultations informed the revision of the project outputs to achieve the desired development outcomes in accordance with the original PIF. In some instances, the outputs have also been renumbered. The following table details the revisions to outputs under Component 1.

Output as written in the PIF	Output written in the PD/CEO endorsement	Justification
New output included.	1.1. Institutional coordination mechanism established to guide medium- to long-term adaptation planning within the context of the NAP process	This output was added to reflect the need for enhanced inter-sectoral coordination of medium- and long-term adaptation planning as part of the NAP process in Antigua and Barbuda.
1.1. Policy briefs and technical guidelines developed for policy makers on adaptation – including cost-effective adaptation interventions focused on ecosystems – funded by innovative financing mechanisms.	1.3. Technical training delivered on integrating climate change adaptation into local-level planning, including cost-effective adaptation interventions focused on ecosystems and innovative financing mechanisms.	It was clear from stakeholder consultations that there is presently little technical knowledge – particularly within key government institutions – relating to climate change adaptation. Consequently, GoAB

		requested a greater focus on technical training to address this capacity constraint. The policy briefs and technical guidelines will still be developed through the project. However, stakeholders felt that these should form part of a broader technical training programme rather than as stand-alone products. (See activities under new Output 1.3).
1.2. Existing policies and plans revised to promote and facilitate adaptation to climate change by using innovative financing mechanisms.	1.2. Revised policies and plans – particularly local area development plans – that promote and facilitate medium- and long-term adaptation to climate change.	This output was reformulated to include greater emphasis on the local area development plans as well as the inclusion of medium- and long-term adaptation priorities within the revised policies/plans.

The following table details the revisions to outputs under Component 2.

Output as written in the PIF	Output written at CEO endorsement	Justification
2.1. A range of potential funding flows into the adaptation window of the SIRF Fund identified.	2.2. Operational and financial guidelines developed for promoting funding flows into the adaptation window of the SIRF Fund.	This output was reformulated to reflect the need to not only identify potential funding flows into the SIRF Fund, but also regulate and promote the flows of such funding.
2.2. Strategy to upscale and replicate adaptation interventions developed, which are funded by the SCCF project.	2.4. Strategy developed to upscale and replicate funding adaptation interventions through the adaptation window of the SIRF Fund.	The wording of this output was clarified into improve specificity.
2.3. Technical capacity of private sector, relevant local and national government institutions and NGOs enhanced to access innovative financing for adaptation from the SIRF Fund.	Removed.	The original output read more like an outcome. Capacity-building activities for <i>inter alia</i> government institutions as well as community members will still take place under Outcome 2. However, the outputs have been reformulated to provide a greater focus on the proper functioning of the adaptation window of the SIRF Fund.
2.4. Pilot small grant proposals for adaptation interventions funded through SIRF	2.3. Adaptation interventions demonstrated through piloting small loans disbursed through the adaptation window of the SIRF Fund.	The wording of this output was clarified into improve specificity.
New output added	2.1. Operational guidelines and financial products developed for disbursement and management of outflows from the adaptation window of the SIRF Fund.	This output was added as there was a need expressed to have clear guidelines dictating the procedures for disbursements from the SIRF Fund as well as repayments from beneficiaries back into the Fund. Such clear guidelines will improve transparency and accountability relating to financial management, thereby ensuring that all stakeholders – including potential contributors to the SIRF Fund as well as beneficiaries – are aware that the resources are being properly

		administered. Consequently, it was requested that the design of financial products and operational guidelines for disbursements be included in the project design.
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The following table details the revisions to outputs under Component 3.

Output as written in the PIF	Output written at CEO endorsement	Justification
3.1. Cost-effective adaptation interventions identified that focus on ecosystems.	Merged with original Output 3.2.	These outputs were merged to provide a more streamlined and integrated approach.
3.2. Cost-effective adaptation interventions implemented in a range of ecosystems.	3.1. Cost-effective adaptation interventions designed for St. John's, Body Ponds and Christian Valley watersheds and implemented in St. John's watershed.	The output was reformulated to indicate the focus on design of adaptation interventions for three watersheds as well as to specify the St. John's watershed as having been prioritized for implementation.
3.3. Local communities in the project sites trained to implement and sustain adaptation interventions.	3.2. Local communities in the project sites trained to implement and sustain adaptation interventions in the medium and long term.	Wording was adjusted slightly to reflect the focus on medium- and long-term adaptation priorities.

The following table details the revisions to outputs under Component 4.

Output as written in the PIF	Output written at CEO endorsement	Justification
4.1. National awareness raising strategy developed, including synthesis and dissemination of lessons learned from project results.	4.1. National awareness raising activities undertaken on innovative financing mechanisms for medium- and long-term adaptation.	This output was reformulated to reflect the need for the implementation of awareness-raising activities, rather than the design of a strategy. The Environment Division currently has a strong strategic approach to awareness raising concerning environmental issues, but expressed the need for this to be extended to include climate change adaptation.
4.2. Regional mechanism developed for knowledge sharing on innovative financing for adaptation interventions in the Caribbean.	4.2. Regional knowledge sharing on innovative financing for medium- to long-term adaptation is enhanced in the Caribbean through exchange of lessons learned.	This output was reformulated to reflect the fact that there are at present mechanisms available for knowledge sharing. It would therefore be redundant to establish another such mechanism. Rather, it was recommended to use existing mechanisms to share knowledge on innovative financing.

The total co-financing available has increased from the indicative total in the PIF of US\$ 6,290,000 to a final amount of US\$ 12,900,000. The original estimate was made based on discussions with relevant potential co-financing initiatives at the time that the PIF was formulated. Further consultation with on-going government and other initiatives allowed for new sources of co-financing to be identified as well as the removal of co-financiers that did not materialise after further discussions. For example, the Strategic Tourism Development Plan (initially identified as a potential source of co-financing) has yet to be ratified by GoAB. It is consequently unable to

provide co-financing as originally expected. In addition, the National Environmental Management Strategy was excluded as a baseline project owing to the uncertainty of its ongoing implementation and budget availability. Confirmed co-financiers for the proposed project are the Ministry of Health and the Environment (US\$ 2,700,000), the Public Works Department (US\$ 6,800,000), the National Office for Disaster Services (US\$ 2,000,000), the Organisation of Eastern Caribbean States (US\$ 1,000,000) and UNEP (US\$ 400,000). The total co-financing for the SCCF project has thus been adjusted to US\$ 12,900,000. The additionality of SCCF resources, as related to the baseline initiatives included in the proposal is clearly explained in the project document submitted along with this CEO Endorsement. Please see Section 2.6 of the document for further details.

A.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NBSAPs, national communications, TNAs, NCSA, NIPs, PRSPs, NPFE, Biennial Update Reports, etc.

There have been no significant changes in alignment with relevant national strategies and plans since the original PIF. A brief description of the main policies, strategies and plans guiding development in Antigua and Barbuda and how they relate to the proposed project is presented below. For more information, please see Sections 2.4 and 3.6 of the Project Document.

Antigua and Barbuda's Country Paper on National Climate Change Issues (2001) emphasises the need for increased capacity for climate change adaptation at a national level. This is addressed in the project through technical training of policy makers, government officials and technicians on the benefits of cost effective adaptation interventions and training of community members on how to implement and sustain adaptation interventions. Moreover, by developing mechanisms to promote funding flows into the adaptation window of the SIRF Fund, the SCCF project will help to direct funding towards adaptation innovations that can address these strategic priorities going forward.

The **Second National Communication to the UNFCCC** asserts the need for projects specifically aimed at climate change risk reduction and adaptation. The SCCF project will assist local communities and sectors to adapt to climate change by piloting: i) adaptation interventions in selected sites; and ii) a soft loan programme for implementation of adaptation interventions for vulnerable households.

The **Policy Framework for Integrated Adaptation Planning and Management in Antigua and Barbuda (2002)** provides basic guidelines for the establishment and implementation of a National Climate Change Adaptation Policy. This policy will be drafted during the SCCF project as a means of strengthening the capacity of local and national institutions to mainstream adaptation into policy and planning. The Policy Framework also advocates the development of economic incentives to encourage investment in public and private sector adaptation measures. The SCCF project supports this strategy through the creation of an adaptation window for the SIRF Fund to finance adaptation interventions at different levels – for example in business, households, and government agencies.

One of the strategic priorities of the **Environmental Management Strategy and Action Plan 2004 – 2009 (EMSAP)** is to design economic tools and incentives to encourage the most efficient and strategic use of limited natural resources in Antigua and Barbuda. The SCCF project is aligned with this priority as it will implement adaptation measures through local area development plans which will guide the appropriate management of freshwater in the McKinnon's Pond, Body Ponds and Christian Valley watersheds.

The **National Economic and Social Transformation (NEST) Plan** highlights the importance of protecting vulnerable communities and sectors within Antigua and Barbuda. In alignment with this, the SCCF project will implement measures to improve the climate resilience of: i) local communities that are vulnerable to the predicted effects of climate change; and ii) vulnerable sectors reliant on ecosystems – such as tourism, health, agriculture and water.

The **National Strategic Biodiversity Action Plan (2014–2020)** emphasises the effects of poor development planning on biodiversity and related ecosystem services. The SCCF project is aligned with this in that it will support the formulation of local area development plans that will regulate infrastructure development and land-

use planning in the three project sites. The local area development plans as well as the “hard” and “soft” measures implemented under Outcome 3 will focus on safeguarding ecosystem services that improve resilience to climate change, e.g. flood risk management.

The **Sustainable Island Resource Management Zoning Plan (2011) (SIRMZP)** is a strategic national spatial development framework that provides a platform for private and public sector development. The SIRMZP is designed to promote the long-term maintenance of ecosystem functions, protection of critical habitats, and the sustainable use of natural resources. The SCCF project builds on the recommendations of the SIRMZP by designing and implementing local area development plans for priority watersheds.

The alignment of the proposed project with the adaptation targets outlined in Antigua and Barbuda’s **Intended Nationally Determined Contribution (INDC)** (submitted in October 2015) are detailed below.

- *By 2030, all buildings are improved and prepared for extreme climate events, including drought, flooding and hurricanes.* The project will support the climate-proofing of households against such events through the provision of small loans for interventions such as guttering and tanks for rainwater harvesting, hurricane shutters and solar panels for emergency power. Moreover, it will establish a sustainable financing mechanism to continue the funding of such interventions beyond project completion.
- *By 2030, all waterways are protected to reduce the risks of flooding and health impacts.* The project will develop climate-resilient local area development plans in three of the country’s twelve watersheds. Furthermore, it will design adaptation interventions that reduce the risks of climate-induced flooding and health impacts through management of waterways. This will demonstrate watershed-level adaptation interventions that may be upscaled and replicated in future. Moreover, the upscaling strategy (Output 3.1) will guide future upscaling and replication of such interventions across the country.
- *By 2020, update the Building Code to meet projected impacts of climate change.* The project will achieve this goal by updating the Building Code to include guidelines for climate-resilient building design that address current and future climate change impacts.

The **United Nations Multi-country Sustainable Development Framework** for English-speaking Caribbean countries is currently under preparation. Consultations to date have led to the identification of four draft strategic priorities. The SCCF project is strongly aligned with the priority for “A sustainable and resilient Caribbean”. In particular, the project aligns with national-level priorities for climate change adaptation and disaster risk management, through the implementation of household- and watershed-level adaptation interventions to reduce the impact of climate-induced hazards such as flooding and hurricanes.

A.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities.

There have been no changes in the eligibility since the original PIF. The GEF Focal Areas that the project will contribute towards have been updated to reflect the new objectives under GEF-6.

The proposed project is consistent with SCCF objectives “**CCA-1:** Reduce the vulnerability of people, livelihoods, physical assets and natural systems to the adverse effects of climate change”, “**CCA-2:** Strengthen institutional and technical capacities for effective climate change adaptation” and “**CCA-3:** Integrate climate change adaptation into relevant policies, plans and associated processes”. Specific contributions to these objectives are described below.

- Outcome 1 will support mainstreaming of climate change adaptation into policies as well as provide technical training to relevant institutions. This is aligned with SCCF Objectives CCA-2, Outcome 2.3: “Institutional and technical capacities and human skills strengthened to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures” and CCA-3, Outcome 3.2: “Policies, plans and associated processes developed and strengthened to identify, prioritize and integrate adaptation strategies and measures”.
- Outcome 2 will support the implementation of household-based adaptation interventions through increased access to funding for adaptation. This is aligned with SCCF Objective CCA-1, Outcome 1.1: “Vulnerability of physical assets and natural systems reduced”.

- Outcome 3 will support the implementation of adaptation interventions in prioritised watersheds that are prone to climate-induced hazards. This is aligned with SCCF Objective CCA-1, Outcome 1.1: “Vulnerability of physical assets and natural systems reduced”.
- Outcome 4 will support awareness-raising and knowledge-sharing both nationally and regionally. This is aligned with SCCF Objective CCA-2, Outcome 2.3: “Institutional and technical capacities and human skills strengthened to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures”.

A.3 The GEF Agency’s comparative advantage.

The proposed SCCF project is consistent with UNEP’s comparative advantage in structuring investments in climate change adaptation around best practices. UNEP has a proven international track record in providing strong technical and scientific assistance for enhancing adaptive capacity. This is in line with UNEP’s core focus on providing technical advice on ecosystem management. The proposed SCCF project builds on UNEP’s expertise in ecosystem management and adaptation technology as demonstrated in their flagship Ecosystem-based Adaptation Programme, which has been commended by the Conference of the Parties to the UNFCCC for its ground-breaking approach to climate change adaptation. UNEP will ensure that scientifically rigorous data and information is generated from the proposed SCCF project through a long-term monitoring programme. This will provide valuable lessons learned for information sharing and dissemination. UNEP’s experience in revising policy will ensure that this information is translated into appropriate policy, strategy and planning documents. The proposed SCCF project is built on UNEP’s experience of implementing 90+ GEF and non-GEF adaptation projects (including *inter alia* LDCF, SCCF, and Adaptation Fund projects) at global, national and local levels. Through the implementation of these projects, UNEP has supported the development of innovative solutions for national governments and local communities to adapt to climate change in a manner that is socially, economically and environmentally sound and sustainable. This work focuses on three themes: i) science and assessments; ii) knowledge and policy support; and iii) building the resilience of ecosystems for adaptation.

UNEP is well positioned to execute environmental work through the implementation of applied scientific research to inform policies and guide project activities. The focus of the proposed SCCF project is to design and implement innovative financing mechanisms for adaptation interventions which support community livelihoods and increase resilience to the impacts of climate change. UNEP has considerable experience in financial mechanisms and financing strategies, particularly associated with climate change and adaptation. This includes *inter alia* developing Small Grant Programmes for the MDG-F Turkey project and a partnership with the Frankfurt School of Finance and Management. The Frankfurt School UNEP Collaborating Centre for Climate & Sustainable Energy Finance⁴ is a strategic alignment, which facilitates the structural change of energy supply around the world. The centre helps to catalyse private sector capital flow towards investments in climate change mitigation and adaptation, amongst other initiatives. The ‘sustainable banking’ approach adopted by UNEP is based on the need to improve decision-making linkages between environmental sustainability and economics. An important component of the centre is helping financiers to consider climate-related and sustainable energy investments. This experience in innovative financing mechanisms is directly applicable to the proposed SCCF project.

UNEP has a presence in the region through the Regional Office for Latin America and the Caribbean (ROLAC) located in Panama City, Panama. The UNEP-ROLAC office’s proven ability to provide strong technical and scientific support in the area of climate change is demonstrated through its implementation of the REGATTA project, which has mitigation and adaptation components. REGATTA supports countries to address climate change through the exchange of knowledge, development of pilot projects, and provision of advisory services in adaptation and mitigation.

UNEP is supporting governments and regional Knowledge Centres with technical assistance for conducting a set of sub-regional and local climate change vulnerability, impact and adaptation analyses (VIAs). The VIA results, which are based on local scientific information, are used to identify relevant and viable adaptation options which are prioritised through participatory workshops. The objective is to support policies and development planning

⁴ Frankfurt School UNEP Collaborating Centre. Projects: <http://fs-unep-centre.org/projects>

processes with the results of the VIA analysis and adaptation options, which are shared with and used by decision makers and local communities. A VIA has recently been completed for Antigua and Barbuda. The results of this VIA were used to inform project design – particularly related to the selection of pilot sites – and will also be used as a baseline for project M&E.

The UNEP-ROLAC office is also leading the way in the region in the area of generating and sharing climate change adaptation knowledge and experiences through an online platform and Communities of Practice website. The Communities of Practice are divided by sub-regions and contain documents, discussion forums and webinars. The project will be building on this approach through the development of a Community of Practice on climate change adaptation in Caribbean SIDS, with a focus on innovative financing for adaptation as well as cost-effective adaptation interventions focussed on ecosystems.

A.4. The baseline project and the problem that it seeks to address:

Inadequate planning and management as well as limited financing for addressing environmental issues have resulted in the degradation of ecosystem functioning, threatening the ecosystem services upon which Antigua and Barbuda's economic activities and vulnerable communities depend. For example, watersheds have been cleared of native forest vegetation. In addition, large areas of productive agricultural land have been lost to urban expansion, while unsustainable agricultural practices have further reduced productivity. Residential and tourism development in the coastal zones is affecting various coastal ecosystems, while invasive alien species and limited management capacity threaten the integrity of protected areas. Consequently, land degradation and loss of ecosystem services have reduced the country's capacity to sustain livelihoods and provide basic needs – such as food security and water resources – to local communities.

Under this scenario, the main problems that the baseline projects seek to address are the vulnerability of communities to floods and associated problems such as loss of livelihoods, damages to economic assets and health risks as a result of inadequate development planning and consequent degradation of ecosystems as summarised below. For more information, please refer to Sections 2.1 and 2.3 of the Project Document.

Infrastructure and planning

Development planning in Antigua has historically been poorly coordinated and controlled. The Sustainable Island Resource Management Zoning Plan (SIRMZP) (2011) designates categories of land and marine resource use with associated activities, guidelines and regulations. However, limited institutional coordination and capacity has resulted in poor enforcement of these regulations. Problems resulting from this limited capacity include: i) buildings constructed too close to waterways that are vulnerable to flooding; ii) siltation and plant overgrowth in watercourses obstructing water flow; and iii) infrastructure such as buildings and roads that are constructed too close to beaches and ecologically sensitive areas that make the infrastructure vulnerable to damage from storm surges.

Financing for infrastructure, addressing environmental degradation and climate change adaptation

Antigua and Barbuda has a small population⁵ and a relatively limited annual tax revenue of USD\$ 570.4 million⁶ and a debt-to-GDP ratio of ~87% (as at 2013)⁷. The high cost of living relative to income levels precludes the option of raising taxes to generate government revenues for planning and implementation of measures for maintaining/upgrading infrastructure, reducing environmental degradation and promoting climate change adaptation. Government spending on infrastructure is burdened by the need for maintenance and repairs after storm damage, particularly after a series of devastating hurricanes that have struck the country since 1995⁸. GoAB is

⁵ ~90 000 in July 2014 (<https://www.cia.gov/library/publications/the-world-factbook/geos/ac.html> Accessed 04 June 2014).

⁶ 2014 Budget Statement, Antigua and Barbuda Minister of Finance, the Economy, Public Administration, and Public Broadcasting and Information.

⁷ Kairi Consultants Ltd. 2005. *Living conditions in Antigua and Barbuda: Poverty in a Services Economy in Transition*.

⁸ Recent losses and damages caused by hurricanes include ~US\$ 350 million, ~US\$ 59.4 million by Hurricane Georges (1998), ~US\$ 51.3 million by Hurricane Lenny (1999), ~US\$ 54 million by Hurricane Omar, ~US\$ 12.6 million by Hurricane Earl (2010) and ~US\$ 40 million by Hurricane Gonzalo (2014).

therefore not in a position to fund large-scale climate change adaptation interventions using government revenue alone. At the household level, financial institutions are generally unwilling to provide funding to low-income households for adaptation. Interventions such as reducing vulnerability of buildings to climate change are too costly for many households to implement without additional financing. However, these households are often considered by financial institutions to be “unbankable” as they are at risk of defaulting on loans. In addition, the high interest rates on loans mean that poor households are often unable to service the loan repayments. There is also limited private sector involvement in environmental initiatives in the country. For example, no formal system to fund environment projects through private sector investments exists. As a result, the potential use of private sector investment for financing and implementing adaptation interventions on a large scale in Antigua and Barbuda is very limited at present.

Water resources

Antigua and Barbuda’s annual rainfall averages 1,000 mm per year. Rainfall is seasonal, with high inter-annual variability. During wetter years, reservoirs and dams overflow, causing water to be lost to the sea. A single storm event – for example during a hurricane – can produce 400 mm of rainfall over a two-day period. As a result of population growth and economic development, water demand has rapidly increased and currently exceeds available ground and surface water supply. Citizens primarily use the islands’ water resources for domestic and agricultural purposes. There are three major water sources, viz.: i) surface water; ii) groundwater; and iii) desalinated water. During wet years, approximately 70% of Antigua’s daily water supply is obtained through the desalination of sea water. This amount increases to nearly 100% during dry years. Consequently, the water supply is largely dependent on electricity, which powers the country’s two desalination plants. Saltwater intrusion into groundwater sources is becoming more prevalent, further compounding the supply problem. To address the water shortages, GoAB has established two additional desalination systems which are located at Crabs Peninsula.

Ecosystems, protected areas and conservation

Ecosystems across Antigua and Barbuda provide diverse services upon which the main economic sectors depend. Additionally, these ecosystems host a number of endangered⁹ and endemic species¹⁰. To protect these species and their habitat, there are seven national parks and wildlife reserves covering ~7% of the islands’ total surface area. One of them – Codrington Lagoon on Barbuda – is listed as a Ramsar Wetland of International Importance. In addition, there are also 22 Marine Protected Areas (MPAs) covering 68 km² of Antigua and Barbuda’s territorial waters. Ecosystem processes and services in Antigua and Barbuda include:

- provisioning e.g. fisheries, fresh water;
- cultural e.g. recreation, tourism;
- regulatory e.g. flood protection, sediment retention, water purification; and
- supporting e.g. primary production, nutrient cycling.

A number of initiatives are being implemented in Antigua and Barbuda to address the baseline problems described above. The SCCF project will build on these baseline projects based on extensive PPG consultations to align the SCCF project with them, as detailed below.

The Environmental Protection and Management Act – passed in 2015 – established the **Sustainable Island Resource Framework Fund (SIRF Fund)** as a mechanism to increase availability of – and improve access to – funding for sustainable natural resource management. Its objectives are to: i) establish an Environmental Information Management and Advisory System that directly addresses cross-sectoral integration, planning, decision making and awareness; ii) develop a Strategic SIRMM Implementation Plan; iii) realign and strengthen policy, legislation and institutional capacity to support the SIRMM Strategy; iv) implement the SIRMM approach in selected target areas; and v) fund remedial environmental actions – including reduce fossil fuel consumption, support protected areas management and promote oil recycling

⁹ The Antigua Racer Snake (*Alsophis antiguae*) was listed as the world’s rarest reptile before conservation efforts increased its numbers. It remains highly endangered.

¹⁰ E.g. the Antigua ground snake (*Alsophis antillensis antiguae*), Dwarf Woodslave (*Sphaerodactylus elegantulus*) and Green Lizard (*Anolis bimaculatus leachi*).

– with little or no central government financial support. The SIRF Fund is to be a self-sustaining, non-profit entity that will be a separate department – independent of the Treasury – within the GoAB system that earns revenue and attracts funding with little or no central government financial support. This will allow the SIRF Fund to minimize expenditure on administration costs as statutory bodies in Antigua and Barbuda typically use the majority of their resources for staff salaries. The SIRF Fund is designed to be able to receive grants from *inter alia* international donors, the private sector and the Government. The SIRF Fund is yet to become operational, as the funding will largely be secured through the operation of a number of GEF initiatives (see Figure 1) to secure inflows. The various windows for the SIRF Fund are intended to – again with support from a number of GEF projects – increase access to financing for climate change adaptation, climate change mitigation, protected areas management, oil recycling and sewage treatment. The proposed SCCF project will develop the adaptation window of the SIRF Fund, including its operational procedures. This will further include identifying the potential funding flows that could contribute towards building resilience of activities funded through the SIRF Fund and the establishment of innovative financing mechanisms to fund adaptation interventions, including cost-effective adaptation interventions focused on ecosystems.

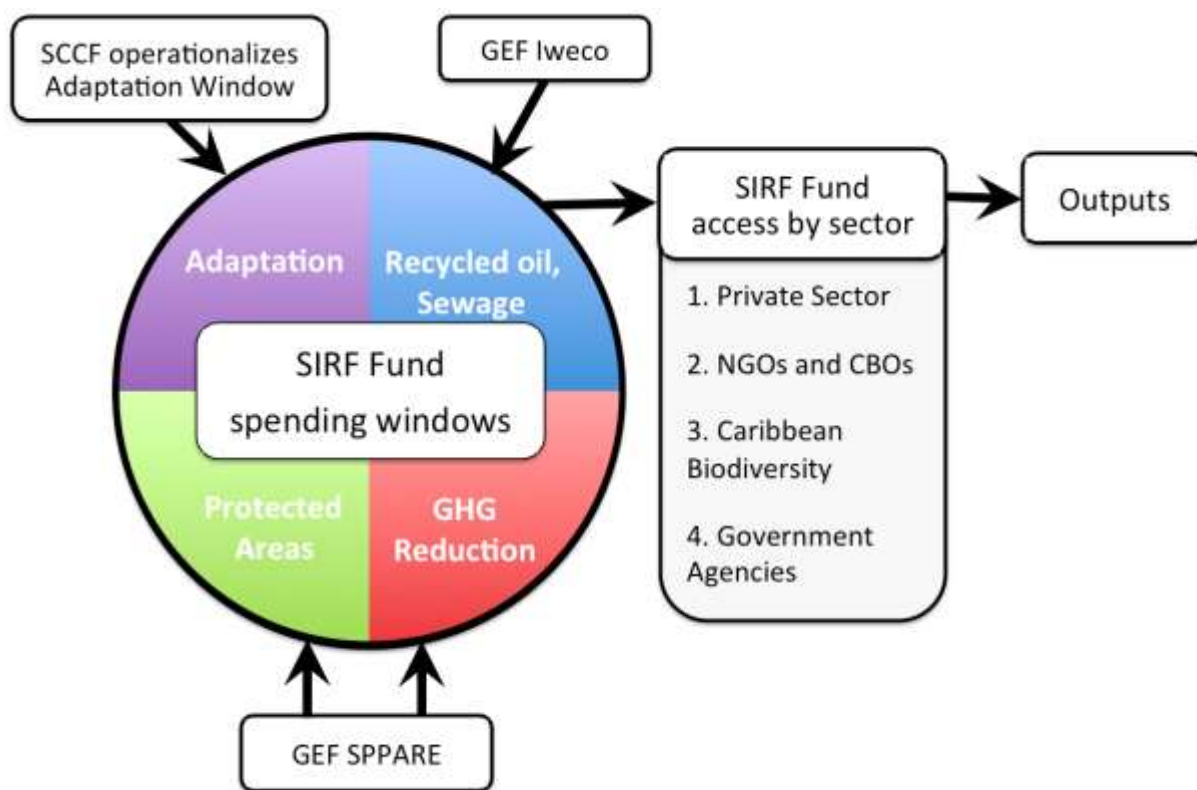


Figure 1. Schematic showing priority areas of the SIRF Fund and associated GEF projects.

The **Ministry of Works and Housing** (2015–2018; US\$ 6.8 million) is undertaking design, implementation and maintenance of drainage works within the project interventions sites (see Component 3). Co-financing is being provided for the project period under the National Budget for on on-the-ground investments into construction of drainage (US\$ 6 million) and planning/management of waterways (US\$ 500,000) in the project sites to reduce flooding. A further US\$ 300,000 of co-financing will be provided by the **Public Works Department** through ongoing activities of the **Survey and GIS Unit** related to planning and design of waterways. These baseline activities are vulnerable to the predicted impacts of climate change, as they largely focus on addressing immediate priorities based on past and current climate trends. The proposed SCCF project will complement these activities by formulating integrated local area development plans as well as designing a suite of adaptation interventions that will reduce the effects of increased severity of flooding as a result of climate change in the three project demonstration areas.

The **Ministry of Health and Environment (MHE)** (2015–2019; US\$ 2.7 million) is mandated for overall management of the environment and health care services in Antigua and Barbuda. Within this ministry, the Environment Division oversees management of all environmental issues. In addition, it is responsible for M&E of environmental activities. The Central Board of Health is responsible for the regulation and management of public health care services. MHE will provide baseline co-financing for the period of project implementation as follows:

- project management and M&E including administrative tasks, procurement and ongoing collection of data in project sites – a total of US\$ 500,000;
- cleaning of waterways in the project’s pilot communities – a total of US\$ 2 million; and
- project staff and technical officers performing activities related to local area development planning, management of waterways, water quality and community engagement – US\$ 200,000.

The SCCF project will build on these initiatives by improving the design and management of waterways in pilot communities to reduce the effects of increased frequency and severity of climate-induced flooding predicted under future climate change scenarios.

The **National Office of Disaster Services (NODS)** (2015–2018; US\$ 2 million) is mandated with overall responsibility for management of climate- and non-climate-related disasters in Antigua and Barbuda. This includes all aspects of preparation for, responding to, recovering from and mitigating against disasters. For the project duration, NODS will contribute co-financing through ongoing activities related to: i) public awareness and training; ii) coordination and collaboration between sectors, agencies and regional/sub-regional partners; iii) promotion of disaster risk management; and iv) sectoral-level policy-making and planning for disaster risk management. The proposed SCCF project will complement these activities by supporting improved decision-making as well as practical action concerning management of climate-related disaster risks. In particular, the project will: i) support policy-making and planning for climate change adaptation at the national, sectoral and local level; ii) implement on-the-ground, concrete interventions for climate change adaptation in project sites; and iii) improve regional, national and local knowledge-sharing and public awareness on climate change impacts and adaptation options.

The **Global Climate Change Alliance (GCCA) Project on Climate Change Adaptation and Sustainable Land Management in the Eastern Caribbean** (2015–2018; US\$ 1 million) has the overall objective to achieve the provisions enshrined in Article 24 of the Revised Treaty of Basseterre, that each Protocol Member State shall implement the St. George’s Declaration of Principles for Environmental Sustainability which seeks to *inter alia* achieve the long-term protection and sustained productivity of the region’s natural resource base and the ecosystem services it provides. Its specific objective is to improve the resilience of the region’s natural resource base to the impacts of climate change through the following two components: 1) Effective and sustainable land management frameworks and practices, and 2) Specific physical adaptation pilot projects in relevant areas or sectors. The Project will co-finance physical interventions in the Cashew Hill area, as outlined in Component 3 of the SCCF project. The activities are aimed at achieving the restoration of functionality and remediation of water-related health issues in Cashew Hill community, including: waterway and drainage reconstruction; flood mitigation; wastewater management; and wetland restoration. The SCCF project will climate-proof the work of this GCCA project by providing a full design for the implementation of climate-resilient development options in the Body Ponds watershed, within which the Cashew Hill community falls. This will include conducting comprehensive hydrological surveys in the Body Ponds watershed and community outreach activities in Cashew Hill, as well as the design of watershed- and community-level adaptation measures. The SCCF project will train local communities in the Cashew Hill community to implement and sustain adaptation interventions, contributing to the long-term climate resilience of the GCCA project interventions.

The **Regional Gateway for Technology Transfer and Climate Change Action in Latin America and the Caribbean (REGATTA)** (2014–2015; US\$ 200,000) has the objectives of: i) strengthening national capacity to address climate change; and ii) promoting knowledge sharing of climate change technologies and experiences for both adaptation and mitigation. The proposed SCCF project will build on the achievements of REGATTA at a regional and sub-regional level, through sharing knowledge and awareness on the benefits of using innovative financing mechanisms to fund climate change adaptation interventions focused on ecosystems. In addition, REGATTA is working with governments and regional Knowledge Centres to conduct climate change vulnerability,

impact, and adaptation (VIA) analyses in each of the four sub-regions of LAC. The national VIA in Antigua and Barbuda included:

- a climate change Vulnerability, Impact and Adaptation analysis in water resources, agriculture and the health sector at the national scale;
- identification of adaptation options for national action; and
- support to policy-making and development planning processes.

The proposed SCCF project will build on this initiative by implementing critical adaptation strategies and generating state-of-the-art information on climate change technology to support integration of climate change into development.

The UNEP-European Commission project **Building capacity for Coastal Ecosystem-based Adaptation in Small Island Developing States** (2014–2016; US\$ 200,000) has the objectives of assisting countries and regions to develop and apply EbA approaches to building the resilience of coastal ecosystems and communities in SIDS. The project includes Grenada as a Caribbean pilot country. The proposed SCCF project will build on this initiative by integrating lessons learned and best practices into the regional knowledge-sharing initiatives under Component 4. Lessons learned from this project will also inform the design of ‘soft’ adaptation interventions under Component 3.

A. 5. Additional cost reasoning: describe the additional activities requested for GEF/SCCF financing and the associated adaptation benefits to be delivered by the project.

The current regional trends in the North Atlantic show an increase in the frequency of hurricanes over the past 20–30 years. This trend is expected to continue as a result of climate change. These projected increases in the frequency and severity of extreme weather events will lead to increased runoff and erosion resulting in the sedimentation and siltation of water bodies, while periods of drought will also make aquifers more susceptible to saltwater intrusion. Consequently, water security is likely to be threatened by climate change.

Increases in temperature and flooding events could also result in a rise in water- and vector-borne diseases. This is evidenced in the outbreak of chikungunya in Antigua and Barbuda in 2014 – chikungunya is increasingly being linked to some of the impacts associated with climate change¹¹. Increased severity of storm events and hurricanes will also result in localised flooding with implications such as risk to lives, losses of livelihoods, damages to economic and other assets, and increased outbreaks of diseases. Furthermore, increases in temperature may result in heat stress-related deaths among vulnerable groups such as the elderly and children.

Climate change is anticipated to affect the agricultural sector by causing *inter alia*: i) increased water demand and reduced water supply as a result of rising temperatures; ii) crop losses owing to increased temperature and prolonged droughts; iii) damage to crops and agriculture infrastructures through climate-related natural hazards; iv) loss of arable land as a result of increased soil erosion from flooding; and v) a loss of livestock and poultry as a result of heat stress¹². Although the agricultural sector does not contribute markedly to the GDP, much of the islands’ population relies on domestic agricultural production. As a result, the effect of climate change on agricultural production is predicted to result in food insecurity within local communities¹³.

At present, vulnerable communities and sectors are unable to adapt to the predicted impacts of climate change described above and in the attached project document. This is because of: i) limited technical capacity – within communities and government institutions – to design, implement and sustain adaptation interventions; and ii) limited resource availability to finance interventions for climate change adaptation. For example:

- *Limited financial resources*. As a Small Island Developing State, Antigua and Barbuda has a small population and limited annual tax revenue. GoAB is therefore not in a position to fund large-scale climate change

¹¹ <http://www.hhrjournal.org/2014/07/01/chikungunya-climate-change-and-human-rights-2/>

¹² <http://www.infoagro.net/programas/Ambiente/pages/marcos/Regi%C3%B3n%20Caribe/Antigua/Nivel%20Nacional/2Marco%20de%20pol%C3%ADtica%20de%20cambio%20clim%C3%A1tico.pdf> Accessed 19 May 2014

¹³ <http://www.infoagro.net/programas/Ambiente/pages/marcos/Regi%C3%B3n%20Caribe/Antigua/Nivel%20Nacional/2Marco%20de%20pol%C3%ADtica%20de%20cambio%20clim%C3%A1tico.pdf> Accessed 22 May 2014.

adaptation interventions using government revenue alone. The limited financial means of local communities (~14% of the population live on less than US\$7 per day) also limits their ability to implement adaptation interventions.

- *Insufficient historical demonstration of cost-effective adaptation interventions.* There is currently insufficient proof of concept for successful adaptation interventions in Antigua and Barbuda. There has been limited demonstration of such adaptation interventions and there are few knowledge platforms that provide information to government institutions and local communities on the effects of – and options for adaptation to – climate change.
- *Limited understanding of the opportunities and benefits of innovative financing for adaptation.* Currently, the awareness of local communities, vulnerable sectors and government agencies about funding opportunities for adaptation interventions is limited. These stakeholders are also unaware of the benefits of adaptation interventions for livelihoods. In particular, there is little information on accessing funding for adaptation from external donors given the limited availability of financial resources for adaptation in Antigua and Barbuda.
- *Few financial institutions willing and capable to support financing for adaptation.* Interventions to reduce vulnerability of buildings to climate change are too costly for many households to implement without additional financing. However, low levels of household income in Antigua and Barbuda make financial institutions hesitant to provide funding for adaptation. In addition, the high interest rates on loans mean that poor households are often unable to service loan repayments.

In response to these problems, the project will build national and sub-national capacity for accessing innovative financing mechanisms and implementing cost-effective adaptation interventions focused on ecosystems for communities and sectors vulnerable to climate change in Antigua and Barbuda. Firstly, institutional and technical capacity to plan, implement, maintain and upscale adaptation interventions will be developed to improve climate resilience in the long term. Secondly, innovative mechanisms to promote funding flows into the SIRF Fund – e.g. through water levies, bilateral investments, protected area fees, debt swaps – and to disburse these funds through the adaptation window will enable the upscaling of adaptation interventions in Antigua and Barbuda. Thirdly, cost-effective adaptation interventions will be piloted in priority watersheds to reduce vulnerability to climate change. Finally, sharing of lessons learned on innovative financing for adaptation will broaden awareness on opportunities for increasing the availability and sustainability of financial mechanisms to support the implementation of adaptation interventions in the medium to long term within the broader Caribbean region.

Component 1: Mainstreaming of innovative financing for adaptation into medium- and long-term policy and planning.

Outcome 1: Policies, strategies and plans revised to promote medium- and long-term adaptation to climate change through mainstreaming of cost-effective adaptation interventions focused on ecosystems and innovative financing for adaptation.

Without SCCF resources

Without the interventions of the SCCF project, there will continue to be insufficient coordination between relevant institutions – particularly between the Environment Division, the Development Control Authority, the Central Board of Health and the Public Works department – to plan for medium- and long-term climate change adaptation in a cross-sectoral manner. While the Global Support Programme for NAPs in non-LDCs will support some elements of institutional capacity building, it is unlikely to provide comprehensive enough support to address all of Antigua and Barbuda's needs for cross-sectoral coordination of adaptation planning. Furthermore, national policies and plans – for example the National Environmental Management Strategy and National Physical Development Plan – will continue to be based on “business-as-usual” scenarios. They will thus continue to be implemented without taking climate change and adaptation into account as quickly or as comprehensively as is necessary to cope with the predicted effects of climate change. In addition, policy- and decision-makers within relevant institutions will continue to have insufficient capacity to include medium- to long-term adaptation considerations within their work programmes and budgeting processes. Consequently, the mainstreaming of climate change into local area development plans would be significantly delayed, and economic sectors and local communities would continue to be vulnerable to the current and predicted effects of climate change.

Adaptation alternative

Component 1 promotes the mainstreaming of innovative financing for medium- to long-term adaptation into medium- and long-term policy and planning to address the negative impacts of climate change. This will provide a platform for catalysing upscaling of adaptation initiatives across Antigua and Barbuda. To achieve this, an amount of US\$ 342,894 will be allocated to: i) establishing an institutional coordination mechanism for medium- to long-term adaptation planning; ii) revision of policies and plans to promote and facilitate adaptation to climate change including using innovative financing mechanisms; and iii) undertaking technical training on integrating climate change adaptation into local-level planning, including cost-effective adaptation interventions focused on ecosystems and innovative financing mechanisms.

The SCCF project will strengthen the enabling environment for medium- to long-term adaptation planning and implementation. An institutional coordination mechanism – with focal points from key government agencies – will be established to guide adaptation planning within the context of the NAP process in the medium and long term. A climate public expenditure and institutional review will be conducted to map financial and institutional constraints that currently limit medium- and long-term adaptation planning and implementation. The SCCF project will also expand the foundation of knowledge on climate change for government technicians – such as engineers, planners and urban designers – and strengthen their technical capacity to plan and implement adaptation interventions, which is presently insufficient for integrating climate change adaptation into local-level planning. Consequently, the SCCF project’s value-added interventions will address various elements for advancing the UNFCCC-mandated NAP process in the country. In addition to the establishment of the institutional coordination mechanism, Component 1 has been designed to provide a platform for catalysing adaptation initiatives and building some initial elements of the NAP process across Antigua and Barbuda by: i) mainstreaming climate change and adaptation into policy and planning (particularly the National Environmental Management Strategy and National Physical Development Plan); ii) formulating local area development plans to be approved by the Physical Planning authority; and iii) building technical capacity to integrate climate change adaptation into local-level planning. Consequently, the SCCF project is contributing to mainstreaming of climate change and adaptation into development planning processes and legal procedures. This will systematically build climate resilience in the activities of key planning and implementation agencies.

The outputs and activities within Component 1 are:

Output 1.1: Institutional coordination mechanism established to guide medium- to long-term adaptation planning within the context of the NAP process.

1.1.1: Identify focal points from key agencies – particularly the Environment Division, Surveys Division, APUA Water Unit, DCA, CBH and Public Works – to coordinate medium- to long-term adaptation planning.

1.1.2: Form an inter-agency climate change advisory committee to promote the mainstreaming of climate change adaptation – with specific reference to gender-sensitive adaptation approaches – into relevant sectoral plans as well as local area development plans.

1.1.3: Formulate a mandate and ToRs for the inter-agency climate change advisory committee defining its tasks and responsibilities in mainstreaming medium- to long-term adaptation to climate change into relevant policies and frameworks.

1.1.4: Conduct a climate public expenditure and institutional review to map financial gaps and other constraints to effective policy implementation, including detailing past expenditure on climate change and barriers to public and private sector financing of adaptation as well as outlining recommendations for future adaptation-related expenditure.

Output 1.2: Revised policies and plans – particularly local area development plans – that promote and facilitate medium- and long-term adaptation to climate change.

1.2.1: Identify entry points for mainstreaming gender-sensitive adaptation to climate change in relevant national policies and frameworks, including opportunities for establishing innovative financing mechanisms. This will focus on policies/frameworks related to development planning, ecosystem management, water resources management, health and agriculture.

1.2.2: Develop local area development plans for key watersheds that will include climate-resilient development options, following the “Ridge-to-Reef” approach. These plans will be map-based and will include hydrological features, setbacks, no-building zones, aquifer recharge zones and flood risk areas.

1.2.3: Formulate a draft National Climate Change Adaptation Plan and Implementation Strategy as well as update the National Environmental Management Strategy to incorporate medium- to long-term considerations for climate change adaptation in alignment with the UNFCCC NAP process. These documents will include gender-specific adaptation considerations and will be based on inter alia the CPACC and VIA initiatives and will include the local area development plans for each of the intervention sites in the SCCF project.

1.2.4: Review and update the Antigua and Barbuda Building Code to include guidelines for climate-resilient building design. This will include identification and costing of building design related to adaptation measures that will inform the disbursement of funding through the SIRF Fund.

Output 1.3: Technical training delivered on integrating climate change adaptation into local-level planning, including cost-effective adaptation interventions focused on ecosystems and innovative financing mechanisms.

1.3.1: Develop policy and information briefs for policy-makers – particularly the Ministry of Finance – on expected climate change effects and adaptation options in Antigua and Barbuda, as well as details of the revisions to policies, strategies and plans developed under Output 1.1, particularly with reference to gender-specific climate change vulnerabilities and adaptation options. These briefs will be based on the local area development plans as well as the National Physical Development Plan and will include IPCC-style infographics, short communications and detailed presentations.

1.3.2: Develop work programmes and advise strategies of relevant agencies on implementation of local-level strategies and plans for climate change adaptation based on the revised policies, strategies and plans. The work programmes/strategies will inform requests to the Ministry of Finance for budget allocations. In addition, they will be formulated to be eligible for submission to the SIRF fund as well as other donors for funding of adaptation interventions.

1.3.3: Conduct training workshops with technicians from relevant institutions to implement strategic work plans developed in 1.2.2. The training will target technicians within the Environment Division, CBH, NSWMA, Surveys, Public Works and DCA to develop their ability to implement local-level strategies and plans that are climate-resilient.

1.3.4: Develop capacity of key personnel in relevant institutions on climate change adaptation through inclusion of continuing education and professional development courses – developed through Outcome 4 of this project and elsewhere – in formal staff training programmes.

Component 2: Innovative financing mechanisms for medium- and long-term adaptation.

Outcome 2: Access to innovative financing mechanisms to address the negative impacts of climate change in the medium and long term through adaptation interventions is increased.

Without SCCF resources

Under the baseline scenario, there will continue to be insufficient financial resources for the implementation of medium- to long-term adaptation measures in Antigua and Barbuda. The flow of international funding into the country will continue to be insufficient to finance needs for climate change adaptation interventions in the medium and long term. Additionally, there will continue to be limited financial resources available within the country's small tax and market base to provide necessary investments in local-level adaptation. Government revenues will continue to remain insufficient to see to future adaptation needs and will instead be largely limited to repair of damages after climate-induced severe weather events. There will also continue to be limited interest from private sector institutions – particularly credit unions and insurance agencies – to finance adaptation interventions, particularly at the household level. The SIRF Fund will become operational for protected areas management, greenhouse gas reduction, oil recycling and sewage management (see Figure 1). However, there will be no establishment of a dedicated adaptation window and there will thus continue to be insufficient access to be sustainable financing specifically for the implementation of measures for medium- to long-term adaptation to climate change. Compounding this problem, there will continue to be little proof of concept available for nationally-appropriate adaptation interventions to inform replication and upscaling strategies. Under this scenario, there will continue to be insufficient funding to support adaptation interventions at the necessary scales to address current and predicted vulnerabilities. Furthermore, GoAB will remain unable to secure the necessary financing through current streams of funding. As a consequence, vulnerable households will continue to be ill-prepared to adapt to the predicted effects of climate change such as increased flooding and storm damage.

Adaptation alternative

Under Component 2, a total of US\$ 1,845,876 will be invested into achieving increased access to innovative financing mechanisms to address the negative impacts of climate change through adaptation interventions in the medium to long term. The innovative financing for small-scale, household-level adaptation interventions is anticipated to flow primarily through the adaptation window of the SIRF Fund (see Figure 2). To achieve this, the project will: i) develop innovative mechanisms for promoting funding flows into the adaptation window of the SIRF Fund such as water levies, debt-for-nature swaps and bilateral investments; ii) develop operational guidelines for disbursement and management of outflows from the adaptation window of the SIRF Fund; iii) demonstrate the operation of the adaptation window through piloting small loans (ranging between ~US\$ 2,100 and US\$ 86,500 per loan) funded through the SIRF Fund; and iv) develop a strategy to upscale and replicate funding adaptation interventions through the adaptation window of the SIRF Fund. Innovative financing mechanisms will be designed in consultation with national and regional financial institutions to overcome barriers to accessing financing. Successful applicants – particularly vulnerable households – will have access to funding for necessary adaptation interventions. These interventions will be selected based on criteria such as: i) potential for addressing identified climate risks (flooding, strong winds, droughts and vector-borne diseases); ii) cost-effectiveness; iii) sustainability; iv) environmental and socio-economic co-benefits; and v) addressing needs of various vulnerable groups (e.g. men, women, youth, elderly, people with disabilities). Such interventions are likely to include inter alia: i) hurricane shutters to prevent storm damage; ii) rainwater tanks for emergency water supply; and iii) solar panels for emergency power. This approach will lead to the adaptation window becoming a conduit for large-scale funding of adaptation interventions in Antigua and Barbuda in the future.

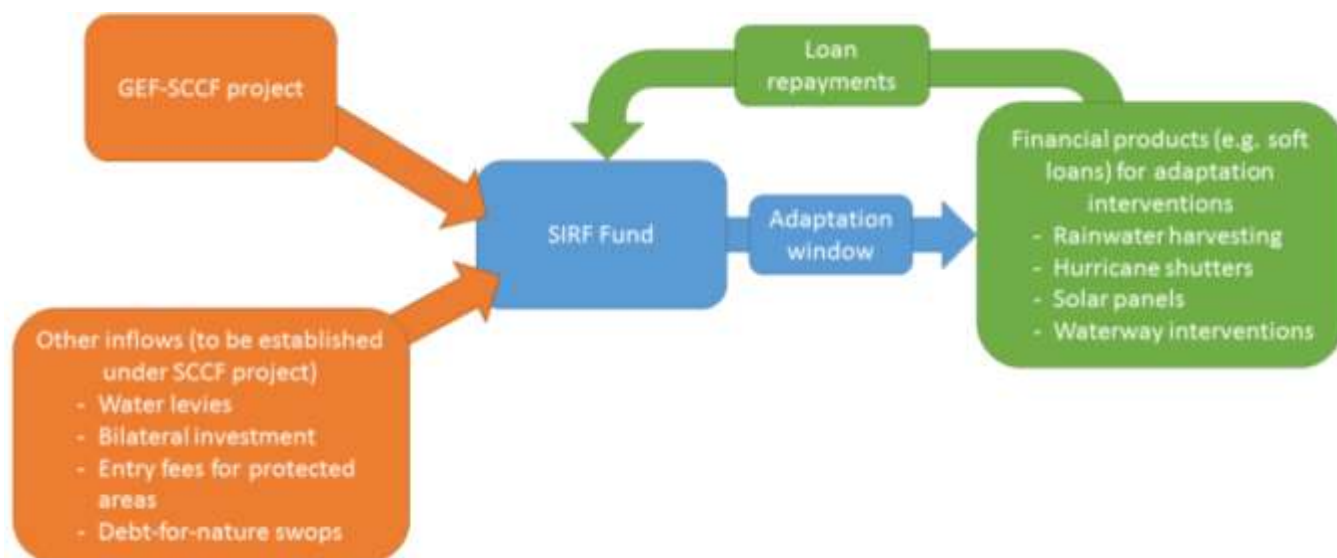


Figure 2. Diagram showing funding flows into the SIRF Fund, outflows through the adaptation window and repayments into the SIRF Fund from loan facilities.

The outputs and activities within Component 2 are:

Output 2.1: Operational guidelines and financial products developed for disbursement and management of outflows from the adaptation window of the SIRF Fund.

2.1.1: Identify the needs of government agencies, NGOs and CBOs as well as the private sector for adaptation funding and identify the main barriers to access available funds.

2.1.2: Consult with national and regional financial institutions – e.g. local banks and credit unions – to encourage the design of financial products that will finance adaptation interventions. These financial products may include low-interest loans to vulnerable households.

2.1.3: Develop a suite of adaptation interventions that are eligible for financing and adhere to revised policies and plans (see Outcome 1). Potential interventions include but are not limited to guttering and tanks for rainwater harvesting, hurricane shutters, solar panels for emergency power, waterway interventions, and other hard and soft engineering investments that improve resilience.

2.1.4: Define criteria for approval of applications for funding of adaptation interventions through innovative financing mechanisms. These criteria will include inter alia income levels of the applicants, the scope of the proposed interventions and the adaptation priorities to be addressed by the application.

2.1.5: Draft operational and financial requirements and procedures – for approval of the SIRF Fund Board – for financing adaptation through the SIRF Fund adaptation window, including arrangements for disbursements, repayments and auditing.

Output 2.2: Operational and financial guidelines developed for promoting funding flows into the adaptation window of the SIRF Fund.

2.2.1: Amend the provisions of the SIRF Fund to establish an adaptation window including the management and operational structure of the window as outlined in Output 2.1.

2.2.2: Identify sources of funding inflows into the adaptation window of the SIRF Fund such as levies, tariffs, donor funds and private sector investment opportunities. This be done in coordination with the GEF SPPARE and IWECO projects, and will inform the five-year business plan and fund-raising strategy for the adaptation window of the SIRF Fund (see Output 2.4).

2.2.3: Review current financing mechanisms and access modalities for adaptation drawing from international and regional lessons learned and best practices.

2.2.4: Develop financial and operational guidelines and manuals for regulating funding flows into the adaptation window of the SIRF Fund (see Figure 2).

Output 2.3: Adaptation interventions demonstrated through piloting small loans disbursed through the adaptation window of the SIRF Fund.

2.3.1: Conduct outreach activities for potential applicants on applying to the SIRF Fund adaptation window for funding adaptation interventions. This will include informing them of eligibility criteria, the suite of adaptation interventions and the financial arrangements.

2.3.2: Disburse a number of small loans for adaptation interventions that qualify for funding based on the operational guidelines. These pilots will be used to test the disbursement and repayment arrangements developed under Output 2.2.

2.3.3: Monitor the implementation of the adaptation interventions and repayments into the SIRF Fund to provide lessons learned and best practices on the use of innovative finance mechanisms for climate change adaptation that can be replicated through the SIRF Fund.

Output 2.4: Strategy developed to upscale and replicate funding adaptation interventions through the adaptation window of the SIRF Fund.

2.4.1: Assess the sustainability and cost-effectiveness of adaptation interventions implemented under Output 2.3 to identify interventions that provide real and sustainable benefits to beneficiaries and are therefore suitable for replication and upscaling.

2.4.2: Develop a detailed five-year business plan and fund-raising strategy for the adaptation window of the SIRF Fund – in coordination with the GEF SPPARE and IWECO projects – to guide the process of sustaining and upscaling the funding of adaptation interventions after project completion.

2.4.3: Develop guidelines and conduct training sessions on accessing financing through the SIRF Fund for community members, private sector entities, government institutions and CBOs/NGOs.

Component 3: Cost-effective pilot interventions for medium- and long-term climate change adaptation in vulnerable communities and sectors.

Outcome 3: Adaptive capacity of local communities increased through implementation of pilot adaptation interventions focused on ecosystems in the St. John's watershed, to support them to cope with the effects of climate change in the long term.

Without SCCF resources

Projected effects of climate change in Antigua and Barbuda include increased intensity of rainfall, storm surges and sea-level rise. Without interventions to address this, local communities and sectors in Antigua and Barbuda will continue to be vulnerable in the medium and long term to climate change impacts such as flooding, storm damage and salt-water intrusion into aquifers. There is at present little proof of concept for cost effective adaptation interventions that would help to build resilience against the project effects of climate change. In particular, there are no studies to inform

implementation of adaptation interventions to support long-term, climate-proof development planning within vulnerable watersheds. Vulnerable communities and sectors therefore remain unable to prioritise long-term adaptation interventions and will continue to implement adaptation measures without adequate knowledge of the necessary design and approaches to ensure cost-effectiveness and sustainability of these measures. Furthermore, there will continue to be limited monitoring of the long-term benefits of adaptation interventions to inform iterative design and implementation of measures to address climate change. There will continue to be limited information on appropriate adaptation options, cost and benefits associated with potential interventions and modalities for their implementation that include both government agencies and local communities. As a result, vulnerable communities and sectors will remain unable to cope with current and future climate change impacts.

Adaptation alternative

To promote the upscaling of adaptation interventions, Component 3 will demonstrate medium- and long-term adaptation interventions in priority watersheds. The SCCF project will support design of cost-effective adaptation interventions – including both “hard” and “soft” measures – and then pilot selected adaptation interventions in the St. John’s watershed. The outcome of the component is to reduce vulnerability to climate change through pilot interventions. To this end, US\$ 2,392,236 will be allocated to: i) implement cost-effective adaptation interventions in vulnerable watersheds; and ii) train local communities in the project sites to implement and monitor adaptation interventions. This will be based on comprehensive bio-physical and socio-economic assessments of medium- and long-term climate vulnerabilities used to identify and prioritise appropriate adaptation interventions. These interventions are likely to include managed aquifer recharge, maintenance of minimum vegetation cover in upper catchments, re-engineering of watercourses, construction of check dams/retention ponds, bio-remediation and clearing of blocked waterways. The interventions – which will undergo UNEP’s Environmental, Social and Economic risk screening process – will be included into local area development plans (see Outcome 1) to ensure that prioritised adaptation options are integrated into development planning at the appropriate scales in the long-term. In addition, an upscaling strategy will capture lessons learned from pilot interventions to inform replication in other watersheds in Antigua and Barbuda. This will facilitate the integration of medium- to long-term adaptation priorities into development planning across the country in vulnerable communities and sectors.

The outputs and activities within Component 3 are:

Output 3.1: Cost-effective adaptation interventions designed for St. John’s, Body Ponds and Christian Valley watersheds and implemented in St. John’s watershed.

3.1.1: Conduct comprehensive hydrological surveys of the pilot watersheds to map hydrological features, flood risk zones and land-use patterns. These surveys will feed into the local area development plan for each site as well as inform the design of “hard” and “soft” adaptation interventions.

3.1.2: Conduct outreach activities in communities within these watersheds to identify priorities for adaptation, including localised vulnerabilities to climate risks.

3.1.3: Design watershed- and community-level measures – including both infrastructural (“hard”) and ecosystem-based (“soft”) – adaptation interventions based on the hydrological surveys as well as the outputs from the EU-CCCC and REGATTA-CARIBSAVE initiatives. These will also feed into the local area development plans developed under Outcome 1.

3.1.4: Implement prioritised adaptation interventions in the St. John’s watershed based on the local area development plans developed under Outcome 1 as well as the findings from this output. These interventions are expected to include managed aquifer recharge, maintenance of minimum vegetation cover in upper catchments, re-engineering of watercourses, construction of check dams/retention ponds, bio-remediation and clearing of blocked waterways.

3.1.5: Develop a strategy for up-scaled implementation and long-term monitoring and evaluation across other watersheds, based on lessons learned from this Output.

Output 3.2: Local communities in the project sites trained to implement and sustain adaptation interventions in the medium and long term.

3.2.1: Develop community-based training programmes on adaptation interventions for watershed management as well as accessing financing for implementing and sustaining such interventions (e.g. through the GEF Small Grants Programme).

3.2.2: Train community facilitators on climate change projections and appropriate adaptation interventions following a “training-of-trainers” approach.

3.2.3: Conduct training workshops with local communities on implementing and monitoring the adaptation interventions undertaken under Output 3.1.

3.2.4: Establish local communication forums – such as community workshops and experience-sharing days – to facilitate learning and dialogue among policy makers, implementers and local community members.

3.2.5: Design and implement a participatory M&E framework – following the Knowledge, Attitudes and Practices methodology – to track the biophysical and social-ecological benefits provided by adaptation interventions implemented under Output 3.1.

Component 4: National and regional knowledge and awareness of innovative financing mechanisms for long-term climate change adaptation in the Caribbean.

Outcome 4: Knowledge and awareness on adaptation financing mechanisms and implementation of adaptation interventions in the medium to long term is strengthened.

Without SCCF resources

While members of the general public are familiar with the term “climate change”, there is little knowledge as to what the implications thereof are. There is also very little information available – both national and regionally – on cost effective ways of adapting to these effects. Moreover, there is little knowledge on how to leverage available financial resources through innovative mechanisms for promoting climate change adaptation in the medium to long term. Local communities will continue to have limited understanding of the long-term effects of climate change as well as appropriate and cost-effective adaptation options to adapt to climate impacts. Moreover, there will continue to be minimal awareness on the availability of innovative mechanisms to provide sustainable financing for the implementation of long-term adaptation interventions. Local communities will thus remain ill-equipped to plan and implement adaptation interventions in the medium to long term.

Without a strong knowledge base concerning climate change challenges specific to SIDS and to the Caribbean and innovate mechanisms for financing adaptation interventions, planning and implementation of adaptation interventions across the region will continue to be inadequate for medium- to long-term adaptation needs. Adaptation interventions specific to the needs of SIDS will only be informed by international best practices in cases where such information is available e.g. through initiatives such as REGATTA and the “Building capacity for Coastal Ecosystem-based Adaptation in Small Island Developing States” that provide relevant tools and training. Where information, tool and training are not available, the design and implementation of such interventions will continue to be based on inadequate understanding of the predicted impacts of climate change. Moreover, these interventions will not be designed to include: i) cost-effectiveness of proposed interventions; and ii) the use of innovative financing mechanisms to fund their implementation. There will thus continue to be limited regional coordination and synergy on the use of innovative financing mechanisms to support medium- to long-term adaptation planning and implementation. Consequently, countries in the Caribbean region will remain unable to access the necessary financing to support long-term implementation strategies for climate change adaptation.

Adaptation alternative

To address this, the SCCF project will strengthen national and regional knowledge concerning the effects of climate change as well as potential options for adaptation interventions. Component 4 has a single outcome, namely to strengthen the knowledge base for supporting the development of adaptation financing mechanisms and implementation of adaptation interventions. To achieve this Outcome, an amount of US\$ 208,994 will be allocated to: i) undertake national awareness raising activities on climate change adaptation and innovative financing mechanisms; and ii) enhance regional knowledge sharing on innovative financing for adaptation in the Caribbean. This will be aligned with the work of the GEF-funded global support programme (GSP) “Assisting non-LDC developing countries with country-driven processes to advance National Adaptation Plans (NAPs)”. The organization of thematic and sub-regional working groups under the GSP will form the backdrop for this regional knowledge-sharing on innovative financing mechanisms for medium- to long-term adaptation. Moreover, the information from this SCCF-funded project would be able to be fed into the knowledge and information systems as well as the communities of practice established under the GSP. Finally, elements of this project – particularly those related to the development of innovate financing mechanisms for medium- and long-term adaptation – could be packaged as case studies and best practices for the GSP’s South-South

and North-South knowledge exchange. Similarly, outputs of the GSP would be used to inform the development of knowledge-sharing products for this SCCF-funded project. In this way, regional knowledge on the sustainable financing of climate change adaptation in the long-term will be enhanced.

The outputs and activities within Component 4 are:

Output 4.1: National awareness raising activities undertaken on innovative financing mechanisms for medium- and long-term adaptation.

4.1.1: Develop exhibits for the Environment Division’s Botanical Gardens that showcase adaptation interventions piloted under this project. These will include small models of watersheds and communities to illustrate the effects of climate change and the benefits of adaptation interventions.

4.1.2: Design knowledge and awareness products – such as short documentaries, radio discussions, infotainment programmes and social media campaigns – on adaptation interventions (based on results from Outcome 3) and innovative financing mechanisms (based on Outcome 2).

4.1.3: Conduct national awareness campaigns that disseminate the knowledge and awareness products to the general public via appropriate media including radio, television, community meetings and social media platforms.

4.1.4: Integrate climate change and adaptation into on-going revisions of secondary school curricula for Geography and Social Studies. This will include development of a teachers’ toolkit on climate change education.

Output 4.2: Regional knowledge sharing on innovative financing for medium- to long-term adaptation is enhanced in the Caribbean through exchange of lessons learned.

4.2.1: Conduct a regional REGATTA-OECS workshop for stakeholders from across the Caribbean to share information and best practices for climate change adaptation in SIDS. The focus of the workshop will be on adaptation interventions focused on ecosystems, as well as innovative financing mechanisms.

4.2.2: Collate lessons learned and best practices from the regional REGATTA-OECS workshop to inform the design of training programmes (Outcome 1), adaptation interventions (Outcomes 2 and 3) and awareness-raising activities (Outcome 4) in this project.

4.2.3: Create professional development modules modelled after the REGATTA Communities of Practice platform on innovative financing mechanisms, adaptation interventions focused on ecosystems and integration of climate change into school curricula within the context of Caribbean SIDS. These will be shared through REGATTA, the OECS and other relevant platforms.

4.2.4: Design and implement regional level awareness-raising activities – particularly amongst OECS members – to share lessons learned and best practices from the regional workshop and project results. This will include briefings to relevant organs¹⁴ on high-level policy-making and planning, articles in relevant publications¹⁵, inputs into relevant workshops/trainings and short segments on OECS TV.

A.6 Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks.

While the wording of the project risks have been altered since the original PIF to make them more specific, they remain based on the same underlying principles. Additional risks and appropriate mitigation measures have been identified since the original PIF. These risks are summarised in the table below.

Description	Potential consequence	Countermeasures	Risk category	Probability & impact (1-5)
Delays in policy revision process.	Inefficiencies in existing policy revision system hampers mainstreaming of climate change into national policies and plans.	<ul style="list-style-type: none"> The Project Steering Committee (PSC) to track and report on progress of policies as they move through the revision process – addressing procedural roadblocks as they arise. 	Organisational	P = 3 I = 2

¹⁴ E.g. OECS organs such as the Authority, Council of Ministers, Assembly and Commission.

¹⁵ E.g. newsletters and press releases of OECS’s units (Environment and Sustainable Development, Social Development).

High turnover of staff members in implementing agencies.	High staff turnover and poor institutional memory result in disruptions or delays in project implementation and coordination.	<ul style="list-style-type: none"> Deputies and alternative representatives within the institutions will be recommended at inception to ensure that sufficient membership continuity is available. As far as possible, deputies and alternative representatives will attend all trainings, workshops and decision-making fora to ensure the greatest possible spread of institutional knowledge. The PSC will make use of established government structures to capitalise on functioning systems. New training modules will be documented and made available within institutions and incorporated into ongoing and future training opportunities (see Output 1.3). New procedures will be incorporated into technical manuals to ensure that institutional memory is not lost. 	Organisational	P = 3 I = 3
Insufficient uptake of small loans from the adaptation window of the SIRF Fund.	Insufficient climate change adaptations interventions implemented by vulnerable households.	<ul style="list-style-type: none"> Workshops and outreach activities on applying to the SIRF adaptation window will be conducted. National awareness raising activities and campaigns will be rolled out to spread awareness of innovative financing mechanisms and adaptation interventions. 	Social	P = 1 I = 4
Improper application of funding from the adaptation window of the SIRF Fund.	Funds used for purposes that are not for climate change adaptation or that do not fall within the Fund's eligibility criteria.	<ul style="list-style-type: none"> Loans will be disbursed on behalf of the households from the SIRF Fund directly to service providers – e.g. building contractors and suppliers – for purchases, installation and modification in strict accordance with the applications that are approved. 	Operational	P = 1 I = 3
Limited capacity of institutions to undertake scientifically rigorous research in order to create local area development plans.	Effectiveness of local area development plans reduced.	<ul style="list-style-type: none"> Government technicians will be trained on technical skills required to develop local area development plans <i>inter alia</i>: i) use of the EIMAS to store information and the use of GIS and other equipment/tools for mapping and planning; ii) management of threats to vulnerable ecosystems such as watershed degradation; iii) climate vulnerability and risk analysis; and iv) community engagement and outreach. 	Institutional	P = 3 I = 4
Disagreement between stakeholders on the allocation of roles in the project.	Project interventions delayed or duplicated because of uncertain role allocation. Effectiveness of project management is reduced.	<ul style="list-style-type: none"> Institutional representatives at the validation meeting will agree upon the roles and responsibilities of each participating stakeholder. The project will also address three key areas that are currently allocated by statute to respective agencies, namely Physical Planning, Infrastructure Development and the Environment. 	Organisational	P = 2 I = 3
Lack of inter-institutional data sharing or collaboration.	Limited transfer of relevant project information amongst role players and end-users resulting in delayed or ineffective implementation of interventions.	<ul style="list-style-type: none"> Representation of a range of stakeholders on the PMC and the TAC will promote collaboration and cooperation between government and other institutions. Support informal knowledge sharing opportunities such as networking events between relevant government departments/units. The local area development plans to be developed are required by law to have 	Organisational	P = 2 I = 3

		<p>consultation and collaboration between institutions after which they will be approved and published by the Parliament.</p> <ul style="list-style-type: none"> The new National Environmental Management Strategy (NEMS) will establish an environmental data system to provide detailed information to a wide range of stakeholders. 		
Limited government support for project activities in pilot intervention sites.	Loss of government support may result in lack of prioritisation of proposed SCCF project activities.	<ul style="list-style-type: none"> Training of government technicians, policy makers and other relevant stakeholders on: i) the effects of climate change on Antigua and Barbuda; and ii) the benefits of adaptation interventions implemented by the project. 	Organisational	P = 2 I = 4
Disagreement over allocation of loans through the SIRF Fund for implementation of adaptation interventions.	Dissatisfaction amongst community members concerning the operation of the adaptation window of the SIRF Fund	<ul style="list-style-type: none"> Intervention sites have been selected based on a review of vulnerabilities through a transparent, logical and equitable site-selection process. This review is publically available and has been included as Appendix 21. 	Social	P = 3 I = 2
Extreme climatic events and climate variability leading to flooding in the project sites.	Current climate and seasonal variability and/or hazard events – particularly localised flooding – result in disruption to implementation of adaptation interventions.	<ul style="list-style-type: none"> Weather forecasting will be taken into consideration when planning climate-sensitive implementation activities. For example, no construction of hard infrastructure or implementation of soft adaptation measures will take place during hurricane season. 	Environmental	P = 3 I = 4
Implemented interventions are not cost effective.	Economic loss occurs and budget allocation to other activities is reduced.	<ul style="list-style-type: none"> Analysis of project interventions undertaken before implementation to establish their cost effectiveness. 	Economic	P = 2 I = 3
Limited commitment/support from local communities.	Lack of commitment/support from local communities may result in failure of demonstration projects.	<ul style="list-style-type: none"> A stakeholder engagement plan will ensure that local communities are sufficiently consulted during planning and implementation. Capacity building and training of local communities will be undertaken to communicate the benefits of adaption interventions and involve them in implementation and monitoring and evaluation. Awareness-raising campaigns will be undertaken to promote adaptation interventions. These campaigns will highlight the importance of SCCF project interventions. 	Social, Environmental	P = 2 I = 4

A.7. Coordination with other relevant GEF financed initiatives.

No significant deviations were made from the PIF. The project has been designed in full alignment with the portfolio of GEF projects that are currently in implementation phase in Antigua and Barbuda and the Caribbean region. The project remains aligned with the following GEF-financed initiatives:

- **Sustainable Pathways – Protected Areas and Renewable Energy** (duration: 2015–2018; budget: US\$ 2,639,726; implementing agency: UNEP).
 - This national project will enhance financing and management of protected areas through: i) identification of potential sources of revenue for protected area management; and ii) development of a business plan for the implementation of the financial plan and associated legislation. Moreover, the SPPARE project will establish the environmental management window of the SIRF Fund. The proposed SCCF project will draw

on the knowledge base of and create synergies with the SPPARE project to develop the adaptation window for the SIRF Fund. For example, knowledge on financing mechanisms for environmental management will be used to inform design of financing mechanisms for adaptation.

- **Integrating Water, Land and Ecosystems in Caribbean Small Island Developing States** (duration: 2014–2019; budget: US\$ 20,448,598; implementing agencies: UNEP and UNDP).
 - This regional project will target land degradation in Antigua and Barbuda through the development of financing mechanisms to promote sustainable land management. These financing mechanisms will form the basis of the environmental management window of the SIRF Fund. The SCCF project activities for setting up the adaptation window will therefore complement those of the IWeco project, and lessons learned over the course of the development of both projects will be shared for mutually beneficial results
- **Sustainable Financing and Management of Eastern Caribbean Marine Ecosystem** (duration: 2011–2016; budget: US\$ 18.87 million; implementing agency: The Nature Conservancy).
 - This regional project will support long-term financing and sustainable management of marine ecosystems in the Eastern Caribbean, including Antigua and Barbuda. The proposed SCCF project will benefit from lessons learned under this initiative on sustainable financing, particularly relating to setting-up and managing a financing mechanism for environmental management
- **Sustainable Energy for the Eastern Caribbean Programme** (Council approved; budget: US\$ 3,013,698; implementing agency: Inter-American Development Bank).
 - This regional project will: i) provide institutional strengthening and technical assistance on legal, regulatory, and institutional frameworks for renewable energy (RE) and energy efficiency (EE); ii) set the regional basis for development of Nationally Appropriate Mitigation Actions; iii) promote investment and financial mechanisms for implementing RE and EE projects; and iv) disseminate results and lessons learned. The proposed SCCF project will generate information on adaptation that will complement the mitigation focus of this project. In addition, lessons learned on design and implementation of financial mechanisms will be shared between the two projects.

The project is also aligned with the GEF-funded Global Support Programme **Assisting non-LDC developing countries with country-driven processes to advance National Adaptation Plans** (duration: 2015–2017; budget: US\$ 4.5 million; implementing agencies: UNEP and UNDP). This Global Support Programme was not yet being formulated when the PIF was formulated and was thus not included in the description of related GEF-financed initiatives. However, the strong complementarities between the projects – particularly relating to strengthening of coordination of planning for climate change adaptation – led to the inclusion of the support programme in the project document.

See Section 2.7 of the UNEP project document for an expanded description of the relationship between the proposed SCCF project and other GEF initiatives.

B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

B.1 Describe how the stakeholders will be engaged in project implementation.

A range of national- and local-level stakeholders – including community members, NGOs and CBOs – were engaged with during the PPG phase to ensure that the proposed project adequately addresses adaptation priorities. Furthermore, local communities will be consulted prior to and during the implementation of the project activities to engage them in decision-making processes for project interventions and will be involved in the implementation of the project. For example, local communities and CBOs will be consulted to inform the design and implementation of adaptation interventions under Component 3 of the project. Community members will also receive training under Components 2 and 3 to build capacity for planning and implementation of adaptation priorities.

There are currently few formally registered NGOs and CSOs in Antigua and Barbuda, particularly related to environmental and climate change issues. The most prominent of these is the Environmental Awareness Group (EAG), a voluntary and not-for-profit NGO. Past and ongoing initiatives undertaken by EAG include the

development of the Body Ponds nature park, the management of Mount Obama protected area and implementation of the Christian Valley Bird Trail project. These initiatives largely focus on environmental awareness, ecotourism and protected areas management. EAG's main activities include:

- raising awareness on sustainable management of natural resources;
- promoting the participation of civil society in decision-making on natural resource management;
- advocating for policy-making on sustainable use and management of natural resources; and
- fundraising to support natural resource management.

Other important stakeholders are CBOs such as church, youth and sports groups. Most of Antigua and Barbuda's GEF Small Grants Programme to date have been provided through such CBOs. These groups are not primarily involved in climate change adaptation, focusing rather on general challenges such as poverty alleviation and capacity development. However, they remain important for identification of community priorities related to climate change adaptation, particularly for disaster risk management.

Stakeholder participation will enable effective implementation of the proposed project. A stakeholder engagement plan to be used during the implementation phase will be developed during the project inception workshop. Mechanisms for stakeholder consultations will include: i) meetings with various government institutions; ii) consultation meetings with community members, NGOs (such as EAG), CSOs (such as church and youth groups) and CBOs (such as the Yorks, Bolans and Cashew Hill Community Groups); iii) consultation meetings with local financing institutions such as credit unions; iv) consultations with the private sector (e.g. hotels and other tourism ventures); and v) public participation forums. The project will provide direct benefits to at least 90 beneficiaries (~30 households) under Component 2 through the implementation of household-level adaptation options financed through the adaptation window of the SIRF Fund. In addition, a further 4,600 beneficiaries (600 direct, 4,000 indirect) will benefit from the watershed- and community-level adaptation interventions to be implemented in the St. John's watershed under Component 3.

Coordination with other GEF initiatives will be achieved through the involvement of the Environment Division. The GEF Operational Focal Point is within the Environment Division and will thus be in a position to inform the PSC and PMU of any developments in national and regional GEF projects that are of relevance to this proposed SCCF project. Moreover, the Environment Division is the Executing Agency responsible for this SCCF project as well as the SPPARE project. Consequently, there will be close coordination between these two initiatives through the joint execution of the GEF SCCF and SPPARE projects.

Stakeholders to be engaged with during project implementation are presented in the table below, along with their roles and responsibilities. Further details of stakeholder participation will be revised and finalised during project inception.

Outcome	Output	Stakeholders	Roles/responsibilities
Outcome 1: Policies, strategies and plans revised to promote medium- and long-term adaptation to climate change through mainstreaming of cost-effective adaptation interventions focused on ecosystems and innovative financing for adaptation.	Output 1.1: Institutional coordination mechanism established to guide medium- to long-term adaptation planning within the context of the NAP process	<ul style="list-style-type: none"> • Environment Division • Public Works • CBH • NODS • Development Control Authority • Surveys Division • APUA 	<ul style="list-style-type: none"> • Serve on the inter-agency climate change advisory committee to promote medium- and long-term adaptation planning. • Develop ToRs for the inter-agency climate change advisory committee. • Participate in the climate public expenditure and institutional review to map financial gaps and other constraints to effective planning and implementation of climate change adaptation in the medium and long term.
	Output 1.2: Revised policies and plans – particularly local area development plans –	<ul style="list-style-type: none"> • Environment Division • Public Works • CBH 	<ul style="list-style-type: none"> • Support the development of a draft National Climate Change Adaptation Plan and Implementation Strategy • Support the development of local area

	that promote and facilitate medium- and long-term adaptation to climate change.	<ul style="list-style-type: none"> • NODS • Development Control Authority • Surveys Division • APUA 	<p>development plans as a legally binding vehicle for integrated watershed management</p> <ul style="list-style-type: none"> • Oversee the review of the Building Code • Integrate medium- and long-term adaptation considerations into sectoral work programmes, strategies and budgets
	Output 1.3: Technical training delivered on integrating climate change adaptation into local-level planning, including cost-effective adaptation interventions focused on ecosystems and innovative financing mechanisms.	<ul style="list-style-type: none"> • Environment Division • Public Works • CBH • NODS • Development Control Authority • Surveys Division • APUA • Ministry of Trade 	<ul style="list-style-type: none"> • Provide input into policy and information briefs, technical guidelines and training needs requirements • Participate in training and capacity building of key staff
Outcome 2: Access to innovative financing mechanisms to address the negative impacts of climate change in the medium and long term through adaptation interventions is increased.	Output 2.1: Operational guidelines and financial products developed for disbursement and management of outflows from the adaptation window of the SIRF Fund.	<ul style="list-style-type: none"> • Environment Division • Ministry of Finance 	<ul style="list-style-type: none"> • Overseeing process and provide technical input into establishment of adaptation window • Provide input into mechanisms for promoting funding flows into the SRF Fund
	Output 2.2: Operational and financial guidelines developed for promoting funding flows into the adaptation window of the SIRF Fund.	<ul style="list-style-type: none"> • Environment Division • Ministry of Finance • Public Works • CBH • NODS • Development Control Authority • Surveys Division • Micro-finance institutions, credit unions, banks • District Disaster Coordinators for project sites • Local communities • NGOs/CSOs/CBOs e.g. EAG, church groups, youth groups, community groups • Private sector (e.g. hotels) 	<ul style="list-style-type: none"> • Provide input into the development of operational guidelines for disbursement of outflows from the SIRF Fund • Develop a list of interventions eligible for receiving funding from the adaptation window • Develop criteria governing the approval of loans under the adaptation window • Provide input into the development of operational guidelines for recovery of loan repayments into the SIRF Fund
	Output 2.3: Adaptation interventions demonstrated through piloting small loans disbursed through the	<ul style="list-style-type: none"> • Environment Division • Ministry of Finance • Public Works • CBH 	<ul style="list-style-type: none"> • Oversee the disbursement and recovery of funds flowing through the adaptation window of the SIRF Fund • Oversee the implementation of household-based adaptation interventions

	adaptation window of the SIRF Fund.	<ul style="list-style-type: none"> • NODS • Development Control Authority • Surveys Division • Micro-finance institutions, credit unions, banks • District Disaster Coordinators for project sites • Local communities • NGOs/CSOs/CBOs e.g. EAG, church groups, youth groups, community groups 	
	Output 2.4: Strategy developed to upscale and replicate funding adaptation interventions through the adaptation window of the SIRF Fund.	<ul style="list-style-type: none"> • Environment Division • Ministry of Finance • Public Works • CBH • Development Control Authority 	<ul style="list-style-type: none"> • Provide input into the development of an upscaling strategy for the adaptation window of the SIRF Fund
Outcome 3: Adaptive capacity of local communities increased through implementation of pilot adaptation interventions focused on ecosystems in the St. John's watershed, to support them to cope with the effects of climate change in the long term.	Output 3.1: Cost-effective adaptation interventions designed for St. John's, Body Ponds and Christian Valley watersheds and implemented in St. John's watershed.	<ul style="list-style-type: none"> • Environment Division • Public Works • CBH • NODS • Development Control Authority • Surveys Division • APUA • District Disaster Coordinators for project sites • Local communities • Yorks, Bolans and Cashew Hill Community Groups • NGOs/CSOs e.g. EAG, church groups, youth groups, community groups • Private sector (e.g. hotels) 	<ul style="list-style-type: none"> • Coordinate the community consultations and hydrological surveys to inform the formulation of local area development plans and design of adaptation interventions • Implementing adaptation interventions based on the local area development plans • Oversee the development of a strategy for upscaling and long-term M&E
	Output 3.2: Local communities in the project sites trained to implement and sustain adaptation interventions in the medium and long term.	<ul style="list-style-type: none"> • Environment Division • Public Works • CBH • NODS • Development Control Authority • District Disaster Coordinators for project sites • Local communities • Yorks, Bolans and 	<ul style="list-style-type: none"> • Oversee the development of community-based training programmes for adaptation interventions • Facilitate training-of trainers • Support training workshops and communication forums • Provide input into the design of a participatory M&E framework

		Cashew Hill Community Groups <ul style="list-style-type: none"> • NGOs/CSOs e.g. EAG, church groups, youth groups, community groups 	
Outcome 4: Knowledge and awareness on adaptation financing mechanisms and implementation of adaptation interventions in the medium to long term is strengthened.	Output 4.1: National awareness raising activities undertaken on innovative financing mechanisms for medium- and long-term adaptation.	<ul style="list-style-type: none"> • Environment Division • Public Works • CBH • NODS • Department of Education • Local communities • NGOs/CSOs e.g. EAG, church groups, youth groups, community groups • Private sector (e.g. hotels) 	<ul style="list-style-type: none"> • Oversee development of training tools on climate change adaptation • Facilitate national awareness campaigns on climate change adaptation • Support the revision of school curricula to include climate change and adaptation
	Output 4.2: Regional knowledge sharing on innovative financing for medium- to long-term adaptation is enhanced in the Caribbean through exchange of lessons learned.	<ul style="list-style-type: none"> • Environment Division • UNEP-REGATTA • OECS 	<ul style="list-style-type: none"> • Facilitate a regional workshop on climate change and adaptation in the Caribbean • Oversee the development and dissemination of professional development modules on climate change through the Communities of Practice

B.2 Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of adaptation benefits.

Inadequate planning and management have resulted in the degradation of ecosystem functioning, threatening the ecosystem services upon which Antigua and Barbuda’s economic activities and vulnerable communities depend. Consequently, land degradation and loss of ecosystem services have reduced the country’s capacity to sustain livelihoods and provide basic needs – such as food security and water resources – to local communities. The predicted effects of climate change as seen in recent increases in the frequency and intensity of extreme weather events – including hurricanes and droughts – is exacerbating the effects of deteriorating ecosystem functioning. Consequently, local communities are suffering from impacts of climate change such as threats to lives, loss of livelihoods and increased incidences of health risks. To address these threats, the SCCF project will promote the implementation of cost-effective adaptation interventions in Antigua and Barbuda by: i) developing innovative financing mechanisms for funding adaptation interventions; ii) demonstrating adaptation interventions focused on ecosystems to reduce vulnerability of local communities; iii) building institutional and technical capacity to identify, implement, maintain and upscale adaptation interventions; and iv) strengthening the national and regional knowledge base for climate change adaptation. The interventions of the proposed SCCF project are also regionally important. By developing innovative financing mechanisms for climate change adaptation the project will demonstrate options for increasing the flow of international funding for adaptation into the Caribbean region. Lessons learned and guidelines produced by the project will be shared through the REGATTA network. Finally, lessons learned from the adaptation interventions piloted by the SCCF project will contribute towards global understanding about ways of adapting to climate change in SIDS.

The development of innovative financing mechanisms for funding adaptation interventions will have multiple social and economic benefits for local communities and sectors. Increased funding will enable the implementation,

maintenance and upscaling of adaptation interventions to benefit vulnerable communities. In particular, the innovative financing mechanisms will increase the funding available to low-income households that are unable to obtain funding through the present suite of financial products. Furthermore, adaptation interventions focused on ecosystems will enhance the climate resilience of development sectors. For example, reduction of flood risk will benefit the tourism sector – through protection of tourist facilities and reduction of losses – as well as the health sector – through reduction in climate-related diseases such as dengue fever and chikungunya.

The benefits produced by the proposed SCCF project are expected to be sustainable after the project implementation period. For example, once the financing mechanisms and relevant procedures have been established, the adaptation window of the SIRF Fund will be able to continue to fund adaptation interventions indefinitely by regulating funding flowing into and out of the SIRF Fund. Furthermore, strengthening national capacity to plan, implement and upscale adaptation interventions will allow such interventions to be replicated in other areas across Antigua and Barbuda. By sharing lessons learned about innovative financing mechanisms and adaptation interventions through the REGATTA network, other SIDS within the Caribbean region will have access to knowledge and information for replicating and upscaling such adaptation interventions.

Men and women are affected differently by climate change. Consequently, it is necessary to create an appropriate strategy for improving the climate resilience of particularly vulnerable women and men in Antigua and Barbuda. Female-headed households, elderly men and women, children and low income households have been identified as vulnerable groups in Antigua and Barbuda. Moreover, there is little mainstreaming of gender concerns in policies related to climate change and the environment. The proposed SCCF project will mainstream gender equity by promoting gender-sensitivity during the implementation of the programme activities. This approach is in line with regional and international obligations as well as Antigua and Barbuda's Strategic Plan of Action for Gender Affairs. Outcome 1 will include an analysis of the gender-related elements of vulnerability to climate-related risks in Antigua and Barbuda. These assessments will inform tailoring of climate-resilient and gender-sensitive investments to be implemented under Outcomes 2 and 3. In Outcome 2, operational guidelines for disbursement and management of outflows from the adaptation window of the SIRF Fund will give priority to female-headed and low-income households. By improving access to funding for adaptation interventions, the project will increase the resilience of the groups most vulnerable to climate-related natural hazards such as floods and hurricanes. These adaptation interventions include *inter alia*: i) increased access to clean, potable water – particularly during disaster events; and ii) reduced flooding of houses. Specific ways in which involvement of women will be facilitated under Outcome 3 include at least 50% women representation at training workshops, demonstration activities and management committees. Trainers will be required to have the skills and experience to plan and facilitate gender-sensitive workshops. In Outcome 4, knowledge generated by the SCCF-financed project will be consolidated into gender-responsive publications, language and messaging. This will enhance sensitivity towards differences among target audiences nationally and across the Caribbean through the REGATTA network. In addition, appropriate access and communication channels to reach men and women equally when disseminating information will be used. Gender disaggregated indicators will be developed and used for monitoring and evaluation of the SCCF project.

B.3. Explain how cost-effectiveness is reflected in the project design.

The adaptation interventions to be implemented through the proposed SCCF project will restore natural ecosystems, enhance existing hard infrastructure and support climate-proof development planning in the project target areas. These interventions are no-regret and low cost with tangible benefits and will reduce the vulnerability of communities living in and around project intervention sites.

Globally, there is an urgent requirement to find tractable, sustainable, flexible and cost-effective interventions for local communities to adapt under conditions of climate change. Recent research shows that EbA is most effective as part of an overall adaptation strategy. Such a strategy would include 'hard' and 'soft' adaptation interventions. The proposed SCCF project will implement 'hard' adaptation interventions such as the construction and rehabilitation of waterways. These interventions will be complemented by 'soft' interventions such as bank stabilisation and ecosystem management in the target project areas. Further 'soft' interventions, such as technical and institutional

capacity building of national and local stakeholders, will enhance the sustainability of the SCCF project. Examples of the benefits of this complementary approach are well documented in international literature.

Under Outcome 2, an assessment will be undertaken to evaluate the sustainability and cost-effectiveness of adaptation interventions funded by innovative financing mechanisms (under Outcome 2) as well as adaptation interventions focused on ecosystems (Outcome 3). Additionally, a detailed business plan will be developed for the adaptation window of the SIRF Fund. This plan will guide the process of sustaining and up-scaling the funding of cost effective adaptation interventions. As such, cost effectiveness of adaptation technologies will be assessed in the context of Antigua and Barbuda and upscaling plans will be drafted accordingly.

The benefits of the adaptation interventions will be enhanced by training communities on the implementation and maintenance of adaptation interventions. The proposed SCCF project includes technical training for community members on adaptation interventions through a learning-by-doing approach. This will enhance community ownership of the project interventions and reduce the overhead for monitoring and maintenance of the activities. Additionally, community involvement will promote the sustainability of the project interventions beyond the lifespan of the project.

Under Component 4, a regional workshop will be conducted with local and international climate change experts to share information and best practices on EbA, non-EbA and innovative financing mechanisms for adaptation, focusing on the Caribbean. Lessons learned, best practices and project results, including the benefits of adaptation interventions and innovative financing mechanisms, will be consolidated in professional development modules for the REGATTA Communities of Practice. These lessons will also be communicated to the public – nationally and regionally – by means of awareness campaigns. Therefore, adaptation interventions will be promoted and upscaled in a cost-effective way.

The SCCF project will build on existing initiatives in Antigua and Barbuda which will reduce the costs for the project. For example, the SIRF fund will be used as a mechanism for increased adaptation funding flows. A dedicated adaptation window will be created for this purpose. Additionally, REGATTA has an online platform to facilitate interaction and knowledge exchange on climate change adaptation technologies and experiences in the Caribbean region. The SCCF project will use these platforms to share lessons learned and best practices from project interventions. By building on current national and regional development programmes and collaborating with ongoing, related initiatives, the project will enhance economies of scale and the cost-effectiveness of the use of SCCF resources.

C. DESCRIBE THE BUDGETED M & E PLAN:

Type of M&E activity	Responsible Parties	Budget US \$(Excluding project team staff time)	Time frame
Inception workshop and report	<ul style="list-style-type: none"> • PM • M&E Specialist • UNEP TM 	Indicative cost: US \$5,000	Within first two months of project start up
Baseline study	<ul style="list-style-type: none"> • PM • M&E Specialist • UNEP TM 	Indicative cost: US \$35,000	
Measurement of means of verification of project results	<ul style="list-style-type: none"> • UNEP TM • PM • TAC 	To be finalised in Inception Phase and Workshop. This includes hiring of specific studies and institutions, and delegate responsibilities to relevant team members.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of means of verification for project progress on output and implementation	<ul style="list-style-type: none"> • UNEP TM • PM 	To be determined as part of the AWP's preparation.	Annually prior to PIR and to the definition of annual work plans
PIR	<ul style="list-style-type: none"> • PM 	None. Financial audit records to be	Annually

	<ul style="list-style-type: none"> • M&E Specialist • UNEP TM • UNEP FMO (Fund Management Officer) 	provided from IMIS for PSC review	
Periodic status/ progress reports	<ul style="list-style-type: none"> • PM • M&E Specialist • UNEP TM 	None	Quarterly
MTR/MTE	<ul style="list-style-type: none"> • UNEP TM/UNEP Evaluation Office 	Indicative cost: US \$35,000	At the mid-point of project implementation.
Final workshop and report	<ul style="list-style-type: none"> • PM 	Indicative cost: US \$5,000	Within last quarter of project implementation
Terminal evaluation	<ul style="list-style-type: none"> • UNEP Evaluation Office 	Indicative cost: US \$35,000	At least three months before the end of project implementation
Project terminal report	<ul style="list-style-type: none"> • PM • M&E Specialist • UNEP FMO • UNEP TM 	None	On completion of the terminal evaluation.
Visits to demonstration sites	<ul style="list-style-type: none"> • UNEP TM • M&E Specialist • PM • PMC and TAC 	For GEF supported projects, paid from IA fees and operational budget	Yearly
TOTAL indicative COST Excluding project team staff time and UNEP staff and travel expenses			Estimated to cost US \$115,000

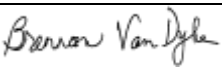
PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the [Operational Focal Point endorsement letter\(s\)](#) with this form. For SGP, use this [OFP endorsement letter](#)).

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for CEO endorsement/approval of project.

Agency Coordinator, Agency Name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Brennan Van Dyke Director, GEF Coordination Office, UNEP		May 24, 2015	Barney Dickson, Head, Climate Change Adaptation Unit, UNEP-	+254-20-762-3545	barney.dickson@unep.org

			DEPI		



UNITED NATIONS ENVIRONMENT PROGRAMME

Programme des Nations Unies pour l'environnement Programa de las Naciones Unidas para el Medio Ambiente

Программа Организации Объединенных Наций по окружающей среде برنامج الأمم المتحدة للبيئة

联合国环境规划署



PROJECT DOCUMENT

SECTION 1: PROJECT IDENTIFICATION

1.1	Project title:	Building climate resilience through innovative financing mechanisms for climate change adaptation	
1.2	Project number:	GFL/ PMS: 5523	
1.3	Project type:	FSP	
1.4	Trust Fund:	SCCF	
1.5	Strategic objectives:		
	GEF strategic long-term objective:	Climate Change Adaptation	
1.6	UNEP priority:	Climate Change Sub-Programme, Expected Accomplishment (A) (adaptation), Output 112	
1.7	Geographical scope:	National	
1.8	Mode of execution:	External	
1.9	Project executing organization:	Environment Division of the Ministry of Health and Environment	
1.10	Duration of project:	48 months Commencing: Technical completion:	
	Validity of legal instrument:	months	
1.11	Cost of project	US\$	%
	Cost to the GEF Trust Fund	5,000,000	28
	Co-financing		
	Cash		
	Ministry of Health and Environment	2,700,000	15
	Public Works	6,800,000	38
	NODS	2,000,000	11
	<i>Sub-total</i>	11,500,000	64
	In-kind		
	OECS	1,000,000	6
	UNEP-REGATTA	200,000	1
	UNEP Coastal EbA	200,000	1
	<i>Sub-total</i>	1,400,000	8
	Total	17,900,000	100

1.12 Project summary

1. Antigua and Barbuda is an island state in the east of the Caribbean Sea. Climate change is expected to result in an increase in the frequency and intensity of extreme weather events, especially hurricanes and droughts. This is likely to result in: i) damage to infrastructure; ii) reduced water availability for agriculture; iii) reduced income from tourism owing to destruction of tourism facilities and attractions; and iv) threats to human health and well-being including loss of life. Apart from direct negative effects relating to the health, agricultural and tourism sectors, the country's economy is strained by costs related to repairing infrastructure and compensating local communities after extreme weather events.

2. Inadequate planning and management have resulted in the degradation of ecosystem functioning, threatening the ecosystem services upon which Antigua and Barbuda's economic economy and vulnerable communities depend. The predicted effects of climate change will further exacerbate current environmental degradation and threaten the sustainability of the country's economy. These climate change effects necessitate the implementation of appropriate adaptation interventions. Current adaptation strategies focus on reducing damage from extreme weather events. However, current financing needs for adaptation are not being met at a local or national scale. The Environmental Protection and Management Act¹ has recently established the Sustainable Island Resource Framework (SIRF) Fund – a Fund that is designed to finance environmental management – and will include an “adaptation window” to finance adaptation interventions. However, there is currently limited capacity to inform the design of this adaptation window and to implement adaptation interventions within the country.

3. The **problem that this project seeks to address** is that vulnerable communities and sectors are threatened by the impacts of an increase in frequency and intensity of extreme weather events caused by climate change. This is because of: i) limited technical capacity – within communities and government institutions – on how to design, implement and sustain adaptation interventions; and ii) limited resource availability to finance interventions for climate change adaptation. On-going adaptation efforts are not adequately protecting vulnerable communities, sectors and ecosystems against predicted climate change impacts. Individual property owners are often forced to self-finance adaptation interventions as there is little government support for climate change adaptation measures. Furthermore, there are limited financing options available for individuals, communities and small businesses to access funds to implement ecosystem maintenance activities for reducing climate-related risks. Moreover, on-going adaptation interventions are generally implemented without appropriate grounding in robust scientific research. For example, rainfall data for Antigua & Barbuda is centrally collected at the Meteorological office, located at the airport on the northeast coast, and the driest part of the island. However, given the island's diverse microclimate, adaptation interventions to address flooding on the west coast of the island require local area rainfall data to ensure that interventions, such as roadside drainage and filtration systems, are designed for maximum intensity rainfall events specific to that location. This failure to adapt to climate change will undermine development efforts made by government, donor organisations, NGOs and the private sector.

4. Innovative financing mechanisms – such as microfinancing, credit unions, financial cooperatives and other inclusive financial systems – have been successful in creating economic growth and reducing poverty for borrowers, while also offering financial and social incentives to lenders². Such innovative financing mechanisms can provide a novel approach to funding cost-effective

¹ This legislation was enacted by the Parliament of Antigua and Barbuda in April 2015.

² Carlton *et al.* 2001. *Microfinance in Uganda*. Lechner, Reiter und Riesenfelder Sozialforschung OEG, Vienna.

adaptation interventions for strengthening climate resilience and securing multiple benefits for vulnerable communities and economic sectors^{3,4}.

5. The **proposed solution to the problem** is to promote the implementation of cost-effective adaptation measures in Antigua and Barbuda by: i) developing innovative financing mechanisms for funding adaptation interventions; ii) demonstrating adaptation interventions focused on ecosystems to reduce vulnerability of local communities; iii) building institutional and technical capacity to identify, implement, maintain and upscale adaptation interventions; and iv) strengthening the national and regional knowledge base for climate change adaptation.

6. **Significant barriers** to achieving the implementation of innovative financing for adaptation include: i) limited financial resources available within a Small Island Developing State (SIDS) owing to a small tax and market base; ii) insufficient historical demonstration to policy makers of the benefits of cost-effective adaptation interventions focused on ecosystems; iii) limited understanding of the benefits of innovative financing for adaptation; and iv) few institutions and donors that are willing and technically capable to support the financing mechanisms.

7. The proposed SCCF project will **overcome the above barriers** by promoting: i) innovative financing mechanisms to generate sustainable funding for adaptation interventions that build climate resilience; ii) demonstration of cost-effective adaptation interventions – focused on ecosystems – that protect community assets; iii) knowledge sharing at a national and regional level on innovative financing mechanisms and cost-effective adaptation approaches; and iv) mainstreaming of climate change adaptation into national and local policies and development planning.

³ Nicholls et al. 2007. Ranking port cities with high exposure and vulnerability to climate extremes—exposure estimates. OECD Environmental Working Paper no. 1. OECD, Paris.

⁴ UNEP, UNDP, IUCN and BMU. 2012. Building Resilience to Climate Change: Making the Case for Ecosystem-based Adaptation.

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ACRONYMS AND ABBREVIATIONS

ABIA	Antigua and Barbuda Investment Authority
APUA	Antigua Public Utilities Authority
CARIB-CAP	Caribbean Microfinance Capacity Building Project
CARICOM	Caribbean Community
CBH	Central Board of Health
CBOs	Community-based organisations
CCC	Climate Change Centre
CCCRA	CARIBSAVE Climate Change Risk Atlas
CDEMA	Caribbean Disaster Emergency Management Agency
CDRRF	Community Disaster Risk Reduction Trust Fund
CERMES	Centre for Resource Management and Environmental Studies
CIMH	Caribbean Institute for Meteorology and Hydrology
CMFA	Caribbean Microfinance Alliance
CPACC	Caribbean Planning for Adaptation to Climate Change project
CTA	Chief Technical Advisor
CTCN	Climate Technology Centre and Network
DCA	Development Control Authority
EAG	Environmental Awareness Group
EE	Energy Efficiency
EIA	Environmental Impact Assessment
EMSAP	Environmental Management Strategy and Action Plan
GEF	Global Environment Facility
GIS	Geographical Information System
GoAB	Government of Antigua and Barbuda
INDC	Intended Nationally Determined Contribution
IWEco	Integrating Water, Land and Ecosystems in Caribbean Small Island Developing States
KAP	Knowledge, Attitudes and Practices
LDCs	Least Developed Countries
M&E	Monitoring and Evaluation
MHE	Ministry of Health and Environment
MPAs	Marine Protected Areas
NAMA	Nationally Appropriate Mitigation Action
NAP	National Adaptation Plan
NEST	National Economic and Social Transformation
NIE	National Implementing Entity
NGOs	Non-governmental organisations
NODS	National Office of Disaster Services
NPFE	National Portfolio Formulation Exercise
PC	Project Coordinator
PIF	Project Identification Form
PPG	Project Preparation Grant
PM	Project Manager
PMU	Project Management Unit
PSC	Project Steering Committee

RE	Renewable Energy
REDD+	Reduced Emissions from Deforestation and Forest Degradation
REGATTA	Regional Gateway for Technology Transfer and Climate Change Action in Latin America and the Caribbean
ROLAC	Regional Office for Latin America and the Caribbean
SCCF	Special Climate Change Fund
SGP	Small Grants Programme
SIDS	Small Island Developing States
SIRF	Sustainable Island Resource Framework
SIRMM	Sustainable Island Resource Management Mechanism
SIRMZP	Sustainable Island Resource Management Zoning Plan
SPPARE	Sustainable Pathways – Protected Areas and Renewable Energy
SLR	Sea-level rise
STDP	Strategic Tourism Development Plan
TAC	Technical Advisory Committee
TM	Task Manager
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VIA	Vulnerability and Impact Assessment

SECTION 2: BACKGROUND AND SITUATION ANALYSIS (BASELINE COURSE OF ACTION)

2.1. Background and context

8. The Government of Antigua and Barbuda (GoAB) seeks funding from the Special Climate Change Fund (SCCF) to implement a Full-Sized Project (hereafter referred to as “the SCCF project”) entitled “Building Climate Resilience through innovative financing mechanisms for climate change adaptation in Antigua and Barbuda”. The objective of the SCCF project is to build national and sub-national capacity for accessing innovative financing mechanisms and implementing cost-effective adaptation interventions focused on ecosystems for communities and sectors vulnerable to climate change in Antigua and Barbuda. The project will: i) increase national capacity to mainstream adaptation using innovative financing into policy and planning; ii) demonstrate the use of innovative financing mechanisms to fund adaptation interventions; iii) increase adaptive capacity and decrease sensitivity of vulnerable communities and sectors using pilot interventions to build climate resilience; and iv) raise awareness of innovative financing mechanisms and climate change adaptation in Antigua and Barbuda as well as in the Caribbean region.

9. The SCCF project will address three priorities identified by Antigua and Barbuda’s Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC), namely: i) incorporating climate change concerns into new development proposals; ii) developing proposals on climate change risk reduction and adaptation; and iii) developing proposals for strengthening institutional and technical capacity for climate change response.

Geographical context

10. Antigua and Barbuda is an island state located in the eastern region of the Caribbean Sea (see Figure 1). Most of the country’s land area consists of two large islands, namely Antigua and Barbuda. Additionally, it comprises a number of smaller inhabited and uninhabited islands. Antigua is located 17° 10’N by 61° 55’W and Barbuda is situated 48 km north at 17° 35’N by 61° 48’W.



Figure 1. Geographical location of Antigua and Barbuda in the Caribbean⁵

⁵<http://www.unep.org/greeneconomy/AdvisoryServices/CaribbeanGreenEconomy/tabid/105702/language/en-US/Default.aspx> Accessed 20 May 2014.

11. Antigua covers a land area of 280 km². The topography of the island is varied, comprising three distinct geological zones: i) a mountainous region of volcanic soils in the south west; ii) central plains of clayey soils stretching to the south east; and iii) limestone hills in the north. The highest point of the island is Mount Obama at 402 m, located in the south-western corner of the island. Barbuda is a flat coral island with an area of 161 km². It is predominantly made of limestone flats.

12. Both Antigua and Barbuda have coral reefs, sea grass beds and mangroves that serve as habitats for flora and fauna. Antigua and Barbuda's coastline is protected by ~25 km² of reefs, which are important to the country's fisheries and tourism sectors.

Political context

13. From 1632–1981, Antigua and Barbuda was colonised by England. In 1981, it became an independent country but remained part of the Commonwealth⁶. Currently, Antigua and Barbuda is a constitutional monarchy with a British-style parliamentary system of government; the head of state is an appointed Governor-General who represents the British monarch. The government consists of three branches: i) legislative; ii) executive; and iii) judicial. Civil society is represented by a number of organisations including service clubs, Non-Governmental Organisations (NGOs) and Community Based Organisations (CBOs). The country's capital St. John's is located on Antigua.

Socio-economic context

14. Antigua and Barbuda's population was estimated at ~91,295 in 2014⁷ and it is anticipated that the population will reach ~115,000 by 2050⁸. In 2012, ~70% of the population was classified as rural, while ~30% was urban⁹. According to the 2012 UN Human Development Index, Antigua and Barbuda have an HDI of 0.760, placing them into the "high" human development category¹⁰. Antigua and Barbuda is considered to be an upper middle-income country by the World Bank; ~14% of the population live on less than US\$7 per day¹¹. This is the second lowest poverty level among English-speaking nations in the Caribbean.

15. Historically, Antigua and Barbuda had an agricultural economy dependent on sugar and rum. However, Antigua and Barbuda's current economy is based on the service sector with tourism contributing approximately 60% to the GDP¹². Consequently, the economy is largely reliant on foreign exchange brought in by visiting tourists. Major tourist attractions include the islands' numerous beaches and areas of high biodiversity. Agriculture contributes ~3% of GDP, mostly through the fisheries subsector¹³.

16. In 2009, Antigua's economy was severely affected by the global economic crisis. From 2009–2011, there was a steep decline in tourism which provides the largest number of employment

⁶ https://www.princeton.edu/~achaney/tmve/wiki100k/docs/History_of_Antigua_and_Barbuda.html Accessed 19 May 2014.

⁷ <https://www.cia.gov/library/publications/the-world-factbook/geos/ac.html> Accessed 04 June 2014.

⁸ United Nations. (2013). World Population Prospects. The 2012 Revision Volume 1: Comprehensive Tables.

⁹ <http://data.worldbank.org/country/antigua-and-barbuda> Accessed 10 June 2014.

¹⁰ <http://hdr.undp.org/sites/default/files/Country-Profiles/ATG.pdf> Accessed 09 June 2014.

¹¹ Poverty Reduction and Human Development in the Caribbean: Addressing the Millennium Development Goals, Caribbean Development

Bank - Special Development Fund (SDF) 7, July 2008.

¹² Global Water Partnership Caribbean. (2013). The Post 2015 Water Thematic Consultation: Antigua and Barbuda.

¹³ Office of the Prime Minister. (2001). Antigua and Barbuda's Initial National Communication on Climate Change.

opportunities within the country's private sector. Antigua and Barbuda's GDP in 2013 was ~US\$1.1 billion with a growth rate of 1.7%¹⁴.

Infrastructure and planning

17. Development planning in Antigua has historically been poorly coordinated and controlled. The Sustainable Island Resource Management Zoning Plan (SIRMZP) (2011) designates categories of land and marine resource use with associated activities, guidelines and regulations¹⁵. However, limited institutional coordination and capacity has resulted in poor enforcement of these regulations. Problems resulting from this limited capacity include: i) buildings constructed too close to waterways that are vulnerable to flooding; ii) siltation and plant overgrowth in watercourses obstructing water flow; and iii) infrastructure such as buildings and roads that are constructed too close to beaches and ecologically sensitive areas that make the infrastructure vulnerable to damage from storm surges. Although the SIRMZP does make mention of climate change, the Antigua and Barbuda Building Code does not currently take the predicted effects of climate change into account within its building regulations.

Education

18. There are a number of public and private education facilities in Antigua and Barbuda at pre-primary, primary and secondary school level. The country's education sector faces various challenges including *inter alia* structural damage to education facilities as a result of hurricane events and low secondary school completion rates¹⁶. The curricula of schools in Antigua and Barbuda is based on a regional approach by all OECS countries. Currently, climate change is not part of the national curriculum. However, the Environment Division has built some awareness on climate change adaptation into its education and public awareness programmes including summer camps, arbour month activities and an environmental cadet programme¹⁷. The Environment Division also serves on the Science Committee in the Ministry of Education and is therefore well positioned to influence reform of the science curriculum.

Agriculture

19. Approximately 31% of the total land area of Antigua and Barbuda (13,810 ha) is considered cultivable. Historically, the agricultural sector contributed considerably to GDP through the large-scale production of sugar and related by-products¹⁸. Intensive sugarcane production in particular has resulted in widespread deforestation, erosion and degradation of watersheds. Over the past decade, the agricultural sector rapidly diversified to produce an array of fruit, vegetables, livestock and cash crops such as sea island cotton. Following the collapse of the sugar industry, the agricultural sector currently contributes less than 4% to the GDP.

20. Within the agricultural sector, livestock production on the island is difficult as a result of periods of drought and the low prices of animals on international markets. Farmers allow livestock to roam freely to graze. Consequently, unmanaged grazing and high stocking densities have led to land slippage and loss of topsoil during heavy rains owing to increased erosion as a result of de-vegetation.

¹⁴ <https://www.cia.gov/library/publications/the-world-factbook/geos/ac.html> Accessed 9 June 2014.

¹⁵ Genivar Trinidad and Tobago. (2011). Sustainable Island Resource Management Zoning Plan for Antigua and Barbuda.

¹⁶ <https://www.cia.gov/library/publications/the-world-factbook/geos/ac.html>

¹⁷ The Environment Division of Antigua and Barbuda (n.d), Education and Public Awareness Programmes

¹⁸ Such as rum and molasses.

21. Fisheries make the highest contribution to the agricultural sector through lobster and fish exports¹⁹. However, economic indicators show that Antigua and Barbuda is experiencing great pressure on its marine resources, particularly on fish and coral reef communities²⁰.

Energy

22. Fossil fuels are the main source of energy in Antigua and Barbuda. The islands do not produce fossil fuels and therefore rely on imports of oil and gas for electricity generation²¹. Antigua and Barbuda's electricity is generated by the Antigua Public Utilities Authority (APUA) at four sites across the islands. APUA depends on a structurally enhanced, hurricane-resistant model of power generation and transmission²². Installed electrical capacity is ~118 MW and the production capacity is ~93 MW.

23. There is considerable scope for the use of solar and wind power in Antigua and Barbuda²³. However, the main barriers to implementing renewable energy are: i) the relatively high costs as well as perceived risks of renewable energy and energy efficient technologies; ii) insufficient access to affordable financing to implement these systems; and iii) low levels of awareness/understanding of the benefits, costs and applications of renewable energy/energy efficient technologies. Extensive resource assessments and action plans are required to provide a framework for future action and development of renewable energy infrastructure²⁴.

Water resources

24. Antigua and Barbuda's annual rainfall averages 1,000 mm per year. Rainfall is seasonal, with high inter-annual variability. During wetter years, reservoirs and dams overflow, causing water to be lost to the sea²⁵. A single storm event – for example during a hurricane – can produce 400 mm of rainfall over a two-day period. As a result of population growth and economic development, water demand has rapidly increased and currently exceeds available ground and surface water supply. Citizens primarily use the islands' water resources for domestic and agricultural purposes. There are three major water sources, *viz.*: i) surface water; ii) groundwater; and iii) desalinated water²⁶. During wet years, approximately 70% of Antigua's daily water supply is obtained through the desalination of sea water. This amount increases to nearly 100% during dry years²⁷. Consequently, the water supply is largely dependent on electricity, which powers the country's two desalination plants. Saltwater intrusion into groundwater sources is becoming more prevalent, further compounding the supply problem. To address the water shortages, GoAB has established two additional desalination systems which are located at Crabs Peninsula.

Ecosystems, protected areas and conservation

¹⁹ United Nations Environment Programme. (2010). National Environmental Summary: Antigua and Barbuda.

²⁰ Carr, L. M., & Heyman, W. D. (2009). Jamaica bound? Marine resources and management at a crossroads in Antigua and Barbuda. *Geographical Journal*, 175(1), 17–38.

²¹ Fuel comprises ~35% of all imports.

²² ECLAC. (2013). An assessment of fiscal and regulatory barriers to deployment of energy efficiency and renewable energy technologies in Antigua and Barbuda.

²³ ECLAC. (2013). An assessment of fiscal and regulatory barriers to deployment of energy efficiency and renewable energy technologies in Antigua and Barbuda.

²⁴ Genivar Trinidad and Tobago, Sustainable Island Resource Management Zoning Plan for Antigua and Barbuda. (2011).

²⁵ Government of Antigua and Barbuda. *Antigua and Barbuda: Environmental Management Strategy and Action Plan 2004 - 2009*.

²⁶ Barbuda is an arid island with no perennial surface streams and few seasonal lake and total reservoir storage capacity is equivalent to approximately one year's water demand. Replenishment on an annual basis is therefore necessary.

²⁷ Global Water Partnership Caribbean. (2013). The Post 2015 Water Thematic Consultation: Antigua and Barbuda.

25. Ecosystems across Antigua and Barbuda provide diverse services upon which the main economic sectors depend. Additionally, these ecosystems host a number of endangered²⁸ and endemic species²⁹. To protect these species and their habitat, there are seven national parks and wildlife reserves covering ~7% of the islands total surface area. One of them – Codrington Lagoon on Barbuda – is listed as a Ramsar Wetland of International Importance. In addition, there are also 22 Marine Protected Areas (MPAs) covering 68 km² of Antigua and Barbuda’s territorial waters. Ecosystem processes and services in Antigua and Barbuda include:

- provisioning e.g. fisheries, fresh water;
- cultural e.g. recreation, tourism;
- regulatory e.g. flood protection, sediment retention, water purification; and
- supporting e.g. primary production, nutrient cycling.

26. Inadequate planning and management have resulted in the degradation of ecosystem functioning, threatening the ecosystem services upon which Antigua and Barbuda’s economic activities and vulnerable communities depend. For example, watersheds have been cleared of native forest vegetation. In addition, large areas of productive agricultural land have been lost to urban expansion, while unsustainable agricultural practices³⁰ have further reduced productivity. Residential and tourism development in the coastal zones is affecting various coastal ecosystems, while invasive alien species and limited management capacity threaten the integrity of protected areas. Consequently, land degradation and loss of ecosystem services have reduced the country’s capacity to sustain livelihoods and provide basic needs – such as food security and water resources – to local communities. The recent increase in the frequency and intensity of extreme weather events – including hurricanes and droughts³¹ – is exacerbating the effects of deteriorating ecosystem functioning³².

General climatic conditions

27. Antigua and Barbuda experiences a tropical maritime climate with uniform humid and warm conditions throughout the year. The country’s annual climate is influenced by: i) migration of the north Atlantic subtropical high pressure system ii) eastward spreading of the tropical Atlantic warm pool; iii) easterly trade winds; and iv) depressions, storms and hurricanes. Antigua and Barbuda’s dry, winter season occurs from January to June while the wet, summer season occurs from July to December³³.

28. The El Niño Southern Oscillation influences the year-to-year variability of Antigua and Barbuda’s climate. During the late wet season an El Niño cycle will result in warmer and drier conditions, while a La Nina episode will result in colder and wetter conditions during the late wet season. Consequently, Antigua and Barbuda are relatively dry compared with other eastern Caribbean island countries. Annual rainfall varies from ~125 cm per year in the south west to ~60 cm per year in the east³⁴. Additionally, Antigua and Barbuda experience severe droughts every five to ten years.

²⁸ The Antigua Racer Snake (*Alsophis antiguae*) was listed as the world’s rarest reptile before conservation efforts increased its numbers. It remains highly endangered.

²⁹ E.g. the Antiguan ground snake (*Alsophis antillensis antiguae*), Dwarf Woodslave (*Sphaerodactylus elegantulus*) and Green Lizard (*Anolis bimaculatus leachi*).

³⁰ E.g. overgrazing, land clearing, uncontrolled fires and over-application of agro-chemicals

³¹ Lewis, A. and Banhan, M. National Circumstances. Antigua and Barbuda’s Second National Communication on Climate Change.

³² Lewis, A. and Banhan, M. National Circumstances. Antigua and Barbuda’s Second National Communication on Climate Change.

³³ <http://www.antiguamet.com/> Accessed 29 April 2014.

³⁴ <http://www.sids2014.org/content/documents/17Antigua%20and%20Barbuda-National%20Report.pdf> Accessed 5 May 2014.

29. Antigua and Barbuda is positioned directly in the Atlantic hurricane belt and consequently experiences annual hurricane and cyclone events from June–November. The heavy rainfall associated with hurricanes and cyclones contributes considerably to the total wet season rainfall in the country. The frequency of hurricanes is also related to ENSO with fewer hurricanes occurring during El Niño events and an increased number of hurricanes associated with La Nina years³⁵.

Observed and predicted climate change

30. Research indicates that in the recent past both minimum and maximum temperatures in Antigua and Barbuda have increased. For example, the mean annual temperature has increased by ~0.6 °C, at ~0.13 °C per decade since 1960³⁶. Global Climate Models project that Antigua and Barbuda's climate will become warmer. Annual temperature increases up to 1.3 °C by 2050 and between 1–3.5 °C by the end of 2100 are anticipated³⁷. In addition, slightly higher temperature increases in the winter months compared with in the summer months are projected.

31. Antigua and Barbuda have also experienced an increase in the frequency and/or intensity of a number of extreme weather events. In the North Atlantic, regional trends in the frequency of tropical cyclones have been identified, with storm frequency increasing sharply over the past 20–30 years.

32. Climate change models (see Table 1) for Antigua and Barbuda project: i) an overall decrease in annual precipitation; ii) an increase in the intensity of hurricanes; iii) acidification of surrounding oceans; iv) sea level rise of up to 0.5 m by 2100; and v) prolonged and intense periods of droughts. There is little consensus on how climate change will affect rainfall patterns. However, it is generally projected that rainfall will decrease in Antigua and Barbuda. Climate change may result in an increased occurrence of wildfires.

Table 1. Climate Projections for Antigua and Barbuda and the Insular Caribbean³⁸

Climate Parameter	Predicted change for the Insular Caribbean ¹	Predicted change for Antigua and Barbuda ²
<i>Air temperature</i>	Increase of 1.8 - 40°C by 2099	1.3°C by the 2050s 1 – 3.5°C by the end of the century
<i>Sea surface temperature</i>	~1.7°C by the end of the century	Up to 2°C by the end of the century
<i>Sea level rise</i>	Rise of 0.18 – 0.59 m by 2099	Rise of 0.24 m by 2050 ¹
<i>Carbon dioxide</i>	Reduction in pH of the oceans by 0.14 – 0.35 units by 2099	An increase in carbon dioxide emissions through 2050
<i>Hurricanes</i>	More intense with larger peak wind speeds and heavier precipitation	More intense with larger peak wind speeds and heavier precipitation (not necessarily increased frequency)
<i>Precipitation</i>	Unclear	Drier (in the mean) by the end of the century

³⁵ McSweeney.C, New, M. and Lizanco, G., 2014. UNDP Climate Change Country Profiles: Antigua and Barbuda. School of Geography and Environment, University of Oxford and Tyndall Centre for Climate Change Research. See: http://www.geog.ox.ac.uk/research/climate/projects/undp-cp/UNDP_reports/Antigua_and_Barbuda/Antigua_and_Barbuda.lowres.report.pdf. Accessed 29 April 2014.

³⁶ McSweeney.C., New, M. and Lizanco, G., 2014. UNDP Climate Change Country Profiles: Antigua and Barbuda. School of Geography and Environment, University of Oxford and Tyndall Centre for Climate Change Research. See:http://www.geog.ox.ac.uk/research/climate/projects/undp-cp/UNDP_reports/Antigua_and_Barbuda/Antigua_and_Barbuda.lowres.report.pdf. Accessed 29 April 2014.

³⁷ <http://unfccc.int/resource/docs/natc/antnc2.pdf> Accessed 30 April 2014.

³⁸ Taken from: UNFCCC (2009). Antigua and Barbuda's Second National Communication on Climate Change.

33. Tropical waves, depressions, storms, flooding and hurricanes are relatively common extreme events in Antigua and Barbuda. It is projected that the country will experience an increase in the frequency and intensity of these events as a result of climate change.

Predicted effects of climate change

34. Climate change will have a negative effect on the main socio-economic sectors of Antigua and Barbuda. The challenges that are likely to be encountered by each sector under anticipated climate change conditions are discussed below.

35. In Antigua and Barbuda, water is a scarce resource. Consequently, the **water sector** is particularly vulnerable to the effects of climate change. Small changes in temperature and precipitation along with the cumulative effects on evapotranspiration and soil moisture will result in reductions in runoff. The projected increases in the frequency of extreme weather events will lead to increased runoff and erosion resulting in the sedimentation and siltation of water bodies. Increased periods of drought will also make aquifers more susceptible to saltwater intrusion into the groundwater supply. Rising sea levels will threaten water availability through saltwater intrusion into groundwater reservoirs. This will have particular implications for Barbuda because the island is dependent on groundwater resources, many of which are located relatively close to the coast. Hurricane events may also have adverse effects on water availability and quality on the islands.

36. Climate change will also have implications for the **health sector**. Increases in temperature may result in heat stress-related deaths among vulnerable groups such as the elderly and children. Increases in temperature and flooding events could result in a rise in water and vector-borne diseases, such as dengue fever. Indeed, Antigua and Barbuda has recently³⁹ experienced an outbreak of chikungunya – a viral disease transmitted to humans by infected mosquitoes. Outbreaks of chikungunya are increasingly being linked to some of the impacts associated with climate change⁴⁰. Additionally, increases in the intensity and/or frequency of hurricanes and other extreme weather events could result in increased physical injuries. Furthermore, damage to transport infrastructure as a result of flooding and hurricanes will result in compromised access to hospitals and emergency services.

37. Climate change is anticipated to affect the **agricultural sector** by causing *inter alia*: i) increased water demand and reduced water supply as a result of rising temperatures; ii) crop losses owing to increased temperature and prolonged droughts; iii) damage to crops and agriculture infrastructures through climate-related natural hazards; iv) loss of arable land as a result of increased soil erosion from flooding; and v) a loss of livestock and poultry as a result of heat stress⁴¹. Although the agricultural sector does not contribute markedly to the GDP, much of the islands' population relies on domestic agricultural production. As a result, the effect of climate change on agricultural production is predicted to result in food insecurity within local communities⁴².

38. In the **environmental sector**, climate change will lead to ecosystem degradation and loss of biodiversity. For example, increased temperatures, droughts and floods may cause animals to migrate

³⁹ In June 2014 there were 15 reported cases of chikungunya in Antigua and Barbuda.

⁴⁰ <http://www.hhrjournal.org/2014/07/01/chikungunya-climate-change-and-human-rights-2/>

⁴¹ <http://www.infoagro.net/programas/Ambiente/pages/marcos/Regi%C3%B3n%20Caribe/Antigua/Nivel%20Nacional/2Marcos%20de%20pol%C3%ADtica%20de%20cambio%20clim%C3%A1tico.pdf> Accessed 19 May 2014

⁴² <http://www.infoagro.net/programas/Ambiente/pages/marcos/Regi%C3%B3n%20Caribe/Antigua/Nivel%20Nacional/2Marcos%20de%20pol%C3%ADtica%20de%20cambio%20clim%C3%A1tico.pdf> Accessed 22 May 2014.

to more climate-resilient environments that are more suitable for habitation. Extreme events associated with climate change will result in damage to the habitats of various species. Additionally, sea level rise is likely to result in the loss of coastal wetlands and contribute to saltwater intrusion.

39. The **fisheries sector** will also be affected by climate change. Sea level rise, sea surface temperature increases and changing ocean currents associated with climate change will result in habitat alteration as well as reduced species abundance and diversity. In addition, the projected increase in the frequency of hurricane storm events may reduce the number of fishing days. It is also anticipated that the impacts of climate change will contribute to overfishing by local communities owing to increased vulnerability of livelihoods and displacement from other sectors⁴³.

40. The effects of climate change will affect the **tourism sector** both directly and indirectly. This sector relies on the aesthetic beauty of Antigua and Barbuda's beaches and areas of rich biodiversity and ecological value. Many of the projected and predicted effects of climate change will reduce the appeal of Antigua as a tourism destination. For example, the natural aesthetics of Antigua and Barbuda are likely to be compromised by climate change that will result in a reduction in fauna and flora and sea level rise. Additionally, important tourism infrastructure – such as hotels, roads, yacht harbours and cruise ship ports – will be damaged by hurricane events and sea-level rise. This will have considerable consequences as the tourism sector accounts for a large percentage of Antigua and Barbuda's GDP and employs a large number of its citizens. Therefore, any negative effects on the sector will result in economic losses to – and increased vulnerability of – local communities and the country as a whole.

41. It is likely that climate change will have implications for the **energy sector** in Antigua and Barbuda. Climate change is expected to directly and indirectly affect: i) energy generation; ii) distribution of energy; iii) traditional, fossil fuel-based energy systems; iv) related infrastructure, such as poles and transmission lines; and v) proposed renewable energy initiatives. Climate change-related disruption to the energy sector will have consequences for other energy-dependant sectors of the economy such as water and agriculture.

42. Climate change will have an impact on Antigua and Barbuda's **transport sector**. For example, extreme events – such as hurricanes and floods – may result in the destruction and loss of transport infrastructure including roads and sea port facilities⁴⁴. As a result, the tourism sector – and consequently the economy – will be adversely affected by a disruption in the national transport systems.

43. Apart from the direct effects that are experienced in the various sectors, the country's economy is strained when restoring infrastructure and compensating local communities after extreme weather events⁴⁵. Between 1989 and 1999, six severe hurricanes – as well as several lesser but still damaging storms – have affected Antigua and Barbuda. In 2008, Hurricane Omar resulted in: i) precipitation of up to 56.4 mm per hour; ii) storm surges causing waves of up to 2.4 m high; iii) agricultural losses of ~US\$ 11 million⁴⁶; and iv) property damage of ~US\$ 25 million⁴⁷. Increases in temperature have also been shown to result in lower economic productivity⁴⁸.

⁴³ <http://unfccc.int/resource/docs/natc/antnc2.pdf> Accessed 22 May 2014.

⁴⁴ CPPAC (2002) Policy framework for integrated (adaptation) planning and management in Antigua and Barbuda.

⁴⁵ It was estimated in 2000 that the cost of rebuilding infrastructure after Hurricane Lenny was \$51.3 million - www.oas.org/cdem_train/document/lennyspo.doc.

⁴⁶ Ho, B. 2008. *Agricultural losses amount to \$11M*. Antigua Sun.

⁴⁷ Antigua Sun. 2008. *Our million dollar roads*.

⁴⁸ Economist. 2014. *The cost of doing nothing*.

2.2. Global significance

44. The SCCF project will promote the implementation of cost-effective adaptation interventions in Antigua and Barbuda by: i) developing innovative financing mechanisms for funding adaptation interventions; ii) demonstrating adaptation interventions focused on ecosystems to reduce vulnerability of local communities; iii) building institutional and technical capacity to identify, implement, maintain and upscale adaptation interventions; and iv) strengthening the national and regional knowledge base for climate change adaptation. The interventions of the proposed SCCF project are also regionally important. By developing innovative financing mechanisms for climate change adaptation the project will demonstrate options for increasing the flow of international funding for adaptation into the Caribbean region. Lessons learned and guidelines produced by the project will be shared through the REGATTA and OECS networks as well as other regional initiatives. Finally, lessons learned from the adaptation interventions piloted by the SCCF project will contribute towards global understanding about ways of adapting to climate change in SIDS.

2.3. Threats, root causes and barrier analysis

45. The baseline context underpinning the problems induced by climate change in Antigua and Barbuda is described in Section 2.1 together with the causes and threats related to climate change. The principal threats that are not related to climate change on both islands are described below.

Non-climate change related threats

Threats to health

46. As a result of inadequate management and planning in Antigua and Barbuda water contamination is represents a threat to human health⁴⁹. This is partly caused by the islands' limited waste disposal facilities and lack of a centralised sewage system. Sewage is primarily disposed of through a decentralised system of septic tanks and pit latrines. As a result of inadequate building regulations many of these facilities are poorly constructed and maintained. This has led to the contamination of rivers, coastal water and groundwater resulting in outbreaks of sewage-related diseases. Furthermore, standing pools of water that result from poor drainage contribute to outbreaks of vector-related diseases.

Threats to fresh water availability

47. Fresh water is a scarce resource in Antigua and Barbuda. A number of factors – primarily linked to poor planning and management – affect the supply and availability of fresh water. These include *inter alia*: i) inadequate protection of watersheds; ii) shallow and exposed reservoirs resulting in high rates of evaporation; iii) salt water intrusion into groundwater⁵⁰; and iv) pollution from agro-chemical run-off and domestic/commercial waste⁵¹. Limited fresh water supply and availability has adverse effects on various sectors of the island's economy. For example, water quantity and quality directly affects crop yields and thus the agricultural sector.

Threats to infrastructure and housing

⁴⁹ Health is defined by the World Health Organisation (WHO) as “a state of complete, physical, mental and social wellbeing, and not merely the absence of disease or infirmity”. <http://www.who.int/about/definition/en/print.html> Accessed 30 May 2013.

⁵⁰ Desalination has been introduced as a solution to this problem, however, the process is expensive.

⁵¹ <http://www.cbd.int/doc/world/ag/ag-nr-04-en.pdf> Accessed 23 June 2014.

48. Poorly coordinated development planning and management have resulted in infrastructure and housing in Antigua and Barbuda being particularly vulnerable to a variety of threats, including *inter alia* flooding and erosion. For example, infrastructure and housing is often built too close to waterways, resulting in an increased risk of flooding during periods of heavy rainfall. Additionally, structures constructed in coastal environments are highly vulnerable to environmental degradation⁵², such as beach erosion. Coastal infrastructure often interferes with the natural functioning of coastal ecosystems and related ecosystem services. For example, salt ponds and mangroves – which are highly productive and help to stabilise coastal environments – have been cleared to build resort and retail developments as well as a golf course in Jolly Harbour. Consequently, the degradation of coastal ecosystems contributes to coastal erosion and storm surge damage.

Threats to natural resources

49. The unsustainable use of natural resources in Antigua and Barbuda is resulting in ecosystem degradation and loss of biodiversity. Additionally, reductions in natural resource availability are likely to have ramifications for certain sectors of the economy and local communities. The main natural resources under threat are described below (see Figure 2 for a schematic of ecosystem functioning in Antigua and Barbuda).

- *Marine life*: Fish reserves around the islands are being depleted as a result of overfishing, destruction of fishing habitats – such as coral reefs – and water pollution. This poses a substantial threat to the fishing industry and consequently to the Antiguan and Barbudian economy as a whole.
- *Land and vegetation*: During the colonial era, watersheds were denuded of native forest and scrubland vegetation for sugar cultivation. Currently, land and vegetation are being degraded as a result of unsustainable agro-pastoral practices including *inter alia*: i) uncontrolled livestock grazing; and ii) uncontrolled fires. These practices are stripping the landscape, reducing land fertility and consequently compromising the potential for the use of land for agriculture. In addition, local communities are depleting forest resources for housing, fish traps and cooking. Uncontrolled ad hoc urban construction has also contributed to land degradation. Additionally, over the past 20 years, mangroves in Antigua and Barbuda have been removed and replaced by infrastructure and tourism facilities such as marinas, hotels and harbours⁵³. The loss of mangroves has compromised the various functions and benefits of mangroves on the islands. For example, many mangroves classified as Important Bird Areas are seeing a decrease in many bird species as a result of habitat loss.
- *Fresh water*: Fresh water is being compromised as a result of pollution and contamination of solid and liquid waste. Other water resources problems include poor allocation and inadequate supply of fresh water to stakeholders and conflicts among water users⁵⁴.

⁵² Baldwin, J (2000), Tourism development, wetland degradation and beach erosion in Antigua, West Indies. Tourism Geographies.

⁵³ FAO. (2005). Global Forest Resources Assessment 2005. Thematic study in Mangroves: Antigua and Barbuda. Country Profile. Draft, June 2005.

⁵⁴ <http://www.fao.org/docrep/004/y1717e/y1717e07.htm>

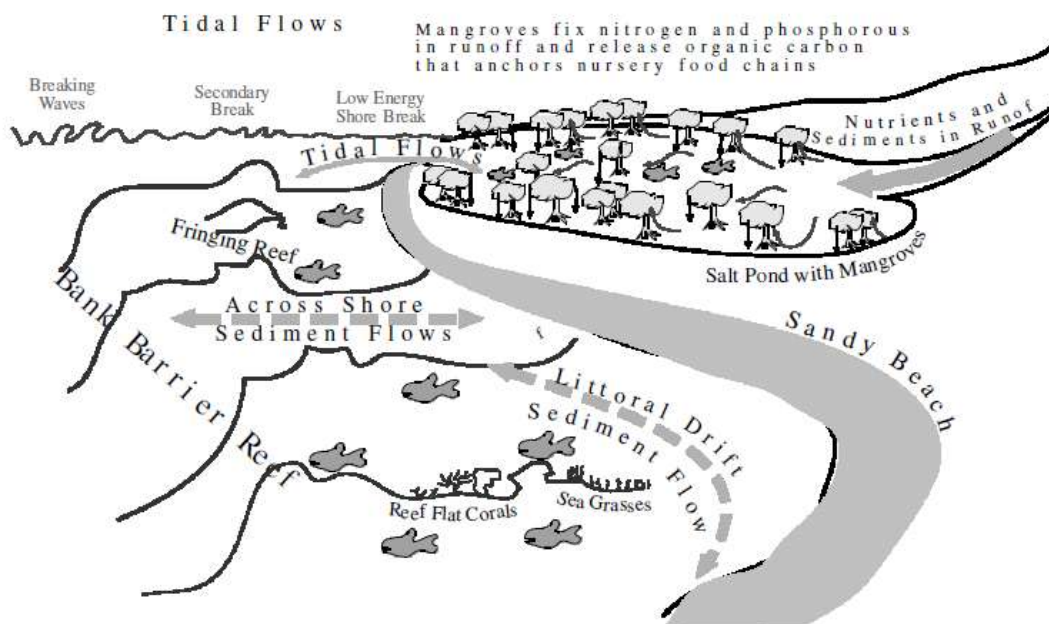


Figure 2. Undisturbed Antiguan coastal ecosystems with biotic and physical flows⁵⁵.

Preferred Solution

50. The **problem that this project seeks to address** is that vulnerable communities and sectors are threatened by the impacts of an increase in frequency and intensity of extreme weather events caused by climate change. This is because of: i) limited technical capacity – within communities and government institutions – on how to design, implement and sustain adaptation interventions; and ii) limited resource availability to finance climate change adaptation interventions.

51. The **proposed solution to the problem** is to promote the implementation of cost-effective adaptation measures in Antigua and Barbuda by: i) developing innovative financing mechanisms for funding adaptation interventions; ii) demonstrating adaptation interventions focused on ecosystems to reduce vulnerability of local communities; iii) building institutional and technical capacity to identify, implement, maintain and upscale adaptation interventions; and iv) strengthening the national and regional knowledge base for climate change adaptation.

Barriers to implementation of preferred solutions

52. The achievement of the full suite of preferred responses may not be feasible given the barriers to their implementation in Antigua and Barbuda. However, by addressing the barriers to implementing these responses, SCCF project will contribute to the achievement of the preferred solution.

Limited financial resources available within a Small Island Developing State small tax and market base.

⁵⁵ Baldwin, J (2000), Tourism development, wetland degradation and beach erosion in Antigua, West Indies. Tourism Geographies.

53. Antigua and Barbuda has a small population⁵⁶ and a relatively limited annual tax revenue of USD\$ 570.4 million⁵⁷. GoAB is therefore not in a position to fund large scale climate change adaptation interventions using government revenue alone.

Insufficient historical demonstration to policy makers and technicians of the benefits of cost-effective adaptation interventions focused on ecosystems.

54. There is currently insufficient proof of concept for successful adaptation interventions implemented in various ecosystems in Antigua and Barbuda. Pilot adaptation interventions – including associated long-term research and peer-reviewed publications – should form the foundation of national decision-making related to climate change adaptation. However, lessons learned from pilot interventions are not currently available in Antigua and Barbuda as there has been limited demonstration of such adaptation interventions. Furthermore, there are limited national knowledge platforms that provide information to government institutions and local communities on the effects of – and options for adaptation to – climate change. In the absence of comprehensive record keeping, national ‘knowledge platforms’ exist on a real-time basis where *ad hoc* inter-departmental meetings are held to exchange knowledge, address problems and learn from past experiences.

Limited understanding of the opportunities and benefits of innovative financing for adaptation.

55. Currently, the awareness of vulnerable local communities, sectors and government agencies about funding opportunities for adaptation interventions is limited. These stakeholders are also unaware of the benefits of adaptation interventions for livelihoods. In particular, there is little information on accessing funding for adaptation from external donors given the limited availability of financial resources for adaptation in Antigua and Barbuda.

Few financial institutions that are willing and capable to support financing for adaptation

56. Given the low levels of household income in Antigua and Barbuda, financial institutions are generally unwilling to provide funding to low-income households for adaptation. Interventions such as reducing vulnerability of buildings to climate change are too costly for many households to implement without additional financing. However, these households are often considered by financial institutions to be “unbankable” as they are at risk of defaulting on loans. In addition, the high interest rates on loans mean that poor households are often unable to service the loan repayments. Consequently, such households are unable to implement the requisite adaptation interventions and remain vulnerable to climate change.

Overcoming barriers to implementation of preferred solutions

57. The SCCF project will contribute toward overcoming identified barriers by implementing the interventions described below.

Building government capacity for climate change adaptation in Antigua and Barbuda.

Under Outcome 1, the capacity of government officials and technicians on policy- and decision-making for climate change adaptation will be built. National coordination of climate change adaptation activities will be strengthened through establishment of an inter-agency climate change advisory

⁵⁶ ~90 000 in July 2014 (<https://www.cia.gov/library/publications/the-world-factbook/geos/ac.html> Accessed 04 June 2014).

⁵⁷ 2014 Budget Statement, Antigua and Barbuda Minister of Finance, the Economy, Public Administration, and Public Broadcasting and Information.

committee. Furthermore, national policies and plans will be revised to strengthen the institutional framework for national implementation of climate change adaptation interventions on the national and local level. Building on these revisions, policy-makers and government technicians will receive training on the implementation of the revised policies and plans for climate change adaptation.

Increasing financial resources available for climate change adaptation in Antigua and Barbuda.

58. Under Outcome 2, an adaptation window of the SIRF fund will be established. As part of this process, potential inflows of international, national and private sector funding will be identified. Additionally, the SCCF project will partner with local financial institutions to design financial products – such as small loans – for distributing funding for adaptation interventions. Beneficiaries of these financial products will include climate vulnerable local communities, businesses and government agencies. Consequently the SCCF project will overcome the barrier of the limited financial resources available within Antigua and Barbuda’s small tax and market base by establishing a mechanism for accessing previously untapped funding flows for climate change adaptation. Processes will be put in place so as to ensure that this funding can be accessed by climate-vulnerable stakeholders to implement adaptation interventions.

Demonstrating the benefits of cost-effective adaptation interventions.

59. Under Outcome 2, small loans for adaptation innovations will be piloted through the adaptation window. Lessons learned during this process will be documented and disseminated to government technicians and policy makers within the broader Caribbean region. Professional development modules – including recommendations and lessons learned from the project – will be distributed through *inter alia* the REGATTA Communities of Practice and the OECS regional platform. Regional level awareness-raising activities will also be undertaken to share lessons learned and best practices from the regional workshop and project results.

60. Under Outcome 3, cost-effective adaptation interventions focused on ecosystems will be demonstrated in vulnerable watersheds. This will be achieved through design of “hard” and “soft” adaptation interventions in the watersheds of the three project sites (based on local area development plans formulated under Outcome 1). The adaptation interventions will be implemented in the most vulnerable watershed as a demonstration of local options for climate change adaptation. Furthermore, communities will be trained to implement and maintain the identified interventions. A participatory monitoring and evaluation (M&E) plan will be designed and implemented to capture information on the benefits of adaptation interventions focused on ecosystems.

Improving awareness of the opportunities and benefits of innovative financing for adaptation.

61. Local communities, technicians and policy makers will be trained on the benefits of innovative financing for adaptation – with a focus on accessing innovative financing through the adaptation window of the SIRF Fund. Additionally, a national public awareness campaign will be conducted. This campaign will provide information on adaptation interventions and various aspects of innovative financing mechanisms. Lessons learned and best practices relating to innovative financing mechanisms will be disseminated through the national awareness campaign. Understanding of the benefits of innovative financing for adaptation will be further enhanced through mechanisms that allow for knowledge sharing around adaptation interventions and innovative financing mechanisms piloted in the SCCF project with the broader Caribbean region.

Increased engagement with relevant sectors and financial sector stakeholders.

62. The SCCF project will enhance the capacity of technical personnel in relevant government institutions⁵⁸ to implement adaptation interventions, including through accessing funding from innovative financing mechanisms. The SCCF project will engage with *inter alia* the water, health and infrastructure sectors on the benefits of cost effective adaptation interventions on ecosystems and innovative financing mechanisms. In addition, strong operational guidelines will be established to reassure private investors that money will be properly managed.

2.4 Institutional, sectoral and policy context

63. Antigua and Barbuda has ratified the following International Conventions:

- UN Framework Convention on Climate Change (1994)
- UN Convention on Biological Diversity (1993)
- United Nations Convention to combat Desertification (1997)
- Cartagena Convention on Marine Pollution Prevention (2010)
- Protocol Concerning Special Protected Areas and Wildlife (2000)
- United Nations Convention on the Law of the Sea (1982)
- Protocol Concerning Pollution from Land-Based Sources and Activities (1999)
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1993)
- Kyoto Protocol to the United Nations Convention on Climate Change (1995)
- Montreal Protocol on substances that deplete the Ozone Layer (2000)
- Convention concerning the Protection of World Cultural and Natural Heritage (1991)

Institutional Context

64. The government agencies with primary responsibilities related to climate change, natural resource management, disaster management and development at a national level are described below.

65. The **Ministry of Health and the Environment** is responsible for the financing, regulation, management and delivery of all public health care services in Antigua^{59,60}, as well as environmental conservation measures. These mandates are fulfilled by *inter alia* the agencies described below, who will be responsible parties and key stakeholders in the implementation of the SCCF project.

- The **Environment Division** is the national coordinating agency for all international environmental treaties⁶¹, including the UNFCCC⁶². The Environment Protection and Management Act (enacted in April 2015) will expand the mandate of the Environment Division to include management of watersheds and protected areas. The Environment Division will be the main government partner for implementation of the proposed SCCF project. In particular, it will: i) coordinate and provide technical input into capacity building for improved planning for medium- to long-term adaptation planning (Component 1); ii) support the establishment of the adaptation window of the SIRF Fund (Component 2); iii) oversee the formulation of local area development plans (Component 1); iv) oversee the design and implementation of adaptation interventions in the pilot sites (Component 3); and v) manage the national and regional awareness-raising/knowledge-sharing initiatives (Component 4).

⁵⁸ Particularly in the Environment Division, DCA and the Central Board of Health.

⁵⁹ The Barbuda Council manages health services in Barbuda.

⁶⁰ Health Systems 20/20 and SHOPS. (2012). Antigua and Barbuda Health Systems and Private Sector Assessment 2011.

⁶¹ <http://agricultureantiguabarbuda.com/departments/environment-division/> Accessed 12 May 2014.

⁶² Under the UNFCCC programme, Antigua and Barbuda's National Communication on Climate Change classifies the country as one of the smallest and most vulnerable states in the world. It stresses the impact the sea level rise will have on this low lying country.

- The **Central Board of Health (CBH)** and the National Solid Waste Management Authority (NSWMA) oversee the management of public health issues such as food safety, sanitation and some public health education campaigns. The adaptation window of the SIRF fund will provide support for adaptation interventions such as climate-proofing of waterways to reduce the risks associated with flooding and water-borne diseases (see Component 3). Consequently, CBH and NSWMA will be major beneficiaries of the SCCF project.

66. The **Ministry of Agriculture, Lands, Fisheries and Barbuda Affairs** is responsible for agriculture, food security initiatives, efficient land use management and sustainable development of natural resources. The agencies described below will be key stakeholders in the implementation of the SCCF project.

- The **Development Control Authority (DCA)** is the main agency responsible for the planning of land use and development in Antigua & Barbuda, guided by the **National Physical Development Plan**⁶³. This plan lays out a clear policy for land resource development in Antigua and Barbuda, including proposing the retention of much of the upper watersheds and their forest cover as conservation areas. DCA approves all applications for development and ensures that Environmental Impact Assessments precede all development projects that are likely to have negative effects on the environment. DCA will be one of the primary beneficiaries of the proposed SCCF project, particularly relating to: i) mainstreaming of adaptation into development planning (Component 1); ii) an updated Building Code to improve resilience of new developments to climate hazards (Component 1); iii) technical training for implementation of local-level strategies/plans for adaptation (Component 1); iv) development and the approval into law of local area development plans (Component 1); v) technical training on adaptation interventions (Components 1 and 3); and vi) regional knowledge-sharing on adaptation (Component 4).
- The **Surveys Division** is responsible for maintaining an inventory of the nation's terrestrial resources. This inventory includes detailed topographic maps to monitor land use changes and inform development planning. The Surveys Division will be an important partner in gathering the necessary data to support the formulation and implementation of local area development plans (Components 1 and 3).

67. The **Ministry of Works and Housing** is mandated to oversee construction of public infrastructure such as roads and is also responsible for regulation of housing.

- The **Public Works Department** will be an important partner for the proposed SCCF project, as this department will assist with supervising appropriate adaptation interventions as part of the local area development plans (Component 3), such as for roads, bridges and culverts that minimise flood risk.
- The **Housing Department** will provide technical input into the revision of the Building Code (Component 1) and the development of household-level adaptation interventions eligible for funding through the adaptation window of the SIRF Fund (Component 2).

68. The **Ministry of Public Utilities, Civil Aviation and Transport** is responsible for *inter alia* management of public utilities such as potable water.

- The **Antigua Public Utilities Authority (APUA)** is a tripartite government statutory agency set up under the Public Utilities Act (1973) to deliver telecommunications, electricity and water services to the population. This includes the management of the wells and desalination plants that provide the majority of the country's drinking water. APUA will be important in the design of the local area development plans (Component 1) as well as the selection of possible adaptation interventions

⁶³ Government of Antigua and Barbuda (2004). Antigua and Barbuda: Environmental Management Strategy and Action Plan 2004 - 2009.

(Component 3). In particular, the technical input of APUA will be critical in the selection of measures for managed aquifer recharge to increase the sustainability of the water supply while also reducing flood risk.

69. The **Ministry of Tourism, Economic Development, Investment and Energy** oversees management of tourism and investment in Antigua and Barbuda.

- Within the Ministry, the **Tourism Authority** is a statutory body charged with making policy and establishing policy guidelines within the tourism industry in Antigua and Barbuda. The Authority is responsible for the overall marketing & promotion of the country⁶⁴. The country depends on tourism-related foreign exchange earnings for more than 60% of its GDP⁶⁵. Climate change and sea-level rise will affect the tourism sector directly and indirectly through: i) the loss of beaches to erosion and inundation; ii) salinisation of freshwater aquifers; iii) increasing stress on coastal ecosystems; iv) damage to infrastructure from more frequent tropical storms; and v) an overall loss of amenities⁶⁶. The Tourism Authority will provide technical input into the suite of adaptation interventions – suitable for tourism ventures – that will be eligible for funding through the SIRF Fund (Component 2).

70. The **Ministry of Finance** has been mandated to promote local and foreign investment through *inter alia* supporting sustainable enterprises. This ministry is therefore well placed to inform suite of adaptation options suitable for small businesses as well as providing input into financial products and operational procedures for the adaptation window of the SIRF Fund (Component 2).

71. The **Ministry of Social Transformation and Public Sector Development** is responsible for matters related to community development as well human resource management within GoAB.

- The **National Office of Disaster Services**⁶⁷ (NODS) is authorised by the Disaster Management Act to designate areas vulnerable to hazards and to prepare special area precautionary plans. In addition, NODS operates a National Disaster Committee in which technicians from various other agencies involved in land use and land use management are represented⁶⁸. Other elements of the NODS plan of action and work programme include: i) sectoral disaster planning; and ii) the preparation of vulnerability and risk maps. Consequently, NODS is well placed to provide technical input into: i) policy- and decision-making related to climate change adaptation (Component 1); ii) revisions to the Building Code (Component 1); iii) appropriate climate-related hazards and adaptation responses at the household level (Component 2); and iv) identification of hazard/risk areas to support formulation of local area development plans (Component 1).
- The **Department of Community Development** will contribute towards the design of financial products that increase access to funding for adaptation for vulnerable households, as well as defining criteria for approval of applications (Component 2).
- The **Training Division** is responsible for ensuring ongoing training and professional development of government personnel. Consequently, the Division will be a key partner in the provision of technical training on integrating climate change adaptation into planning processes (Component 1).

Cross-sectoral strategies, policies and programmes

⁶⁴ <http://www.antiguanice.com/v2/client.php?id=775> Accessed 12 May 2014.

⁶⁵ Global Water Partnership Caribbean. (2013). The Post 2015 Water Thematic Consultation: Antigua and Barbuda.

⁶⁶ UNFCCC. (2001). Antigua and Barbuda's Initial National Communication on Climate Change.

⁶⁷ <http://nods.gov.ag/> Accessed 10 June 2014.

⁶⁸ The Environment Division, & The Ministry of Tourism and Environment. (2000). Antigua and Barbuda National Report on the Implementation of the Convention to Combat Desertification.

72. Cross-sectoral strategies, policies and programmes that relate to climate change, natural resource management, disaster management and development include:

73. The **Sustainable Island Resource Management Zoning Plan (SIRMZP)** for Antigua and Barbuda aligns with the **Sustainable Island Resource Management Plan**. The SIRMZP designates different categories of land and marine resource use with associated activities, guidelines, and regulations. Additionally, current building codes do not take climate change into account. However, in line with planning principles outlined in the SIRMZP revisions have been recommended, including: i) building structures an appropriate distance from beaches and coastlines; and ii) a minimum ground floor elevation of 3 m.

74. The **National Economic and Social Transformation (NEST) Plan** is Antigua and Barbuda's strategic response to global economic and financial developments. The objective of NEST Plan is to stabilise the Antiguan and Barbadian economy and secure the financial sector to progress toward being a viable and socially secure island state. Congruently, the NEST plan provides a variety of plans and policies aimed at addressing the fiscal and financial health of the economy and enhancing the resilience of vulnerable citizens. Examples of these plans and policies include, *inter alia*: i) Fiscal Consolidation Programme; ii) Economic Action Plan; and iii) Social Transformation Programme⁶⁹.

75. The **Policy Framework for Integrated Adaptation Planning and Management in Antigua and Barbuda (2002)** provides basic guidelines for the establishment and implementation of a national climate change adaptation policy. However, this has not been officially ratified by GoAB and is currently out of date.

76. The UNEP-funded **National Capacity Self-Assessment Project** assessed the capacity requirements and constraints facing national efforts to improve environmental conservation and sustainable development programmes. It allowed for analysis of the institutional capacity framework initiated under global environmental management obligations such as the UNFCCC. The report includes an analysis of systemic, institutional and sectoral requirements related to climate change adaptation. It also highlights the scientific and technical linkages and synergies that exist between the various conventions and their associated national instruments.

77. The **Antigua and Barbuda National Strategic Biodiversity Action Plan (2014–2025)** provides an integrated approach to addressing the issue of biodiversity loss in Antigua and Barbuda. Strategic goals outlined in the document include: i) addressing the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society; ii) reducing the direct pressures on biodiversity and promoting sustainable use; iii) improving the status of biodiversity by safeguarding ecosystems, species and genetic diversity; iv) enhancing the benefits to all from biodiversity and ecosystem services; and v) enhancing implementation through participatory planning, knowledge management and capacity building.

78. For further details on these strategies, policies and programmes – and how they are aligned with the proposed SCCF project – see Section 3.6.

Sectoral Policies, Strategies and Plans

79. The **Environmental Management Strategy and Action Plan 2004 – 2009 (EMSAP)** outlines existing and emerging global challenges and proposes an integrated approach for

⁶⁹ Secretariat of Political Affairs (SPA) & Department of Effective Public Management (DEPM). (2013). Guide of Strategies and Mechanisms for Effective Public Management (GEMGPE).

sustainability in the form of 18 principles. The document highlights the country's vulnerability to climate change. However, currently no strategies for improving resilience and capitalising on adaptation-related funding opportunities are considered. In addition, the EMSAP does not adequately consider future climate change threats and their impact on Antigua and Barbuda.

80. The **Strategic Tourism Development Plan (STDP)** aims to catalyse foreign investment through economic, environmental and social initiatives. The STDP will maximise results for investors while preserving the natural beauty of the islands. The development of the plan will include extensive participation with multiple stakeholders. As tourism is the Antigua and Barbuda's biggest foreign currency earner, it is of importance to the country's economy. Tourism is an effective way of demonstrating the value of ecosystem goods and services⁷⁰. Consequently incorporating cost-effective adaptation interventions focused on ecosystems into the STDP will maximise the investment potential of tourism projects.

Legislative Framework

81. The following laws pertain to climate change, natural resource management, disaster management and development:

82. The **Environmental Protection and Management Act** was passed in April 2015 and established the SIRF Fund as a mechanism to increase availability of – and improve access to – funding for sustainable natural resource management. It will do this by: i) catalysing the flow of public⁷¹ and private⁷² finances into the SIRF Fund; and ii) disbursing funds for environmental management⁷³. This includes the adaptation window that will be established and piloted through the proposed SCCF project.

83. The **Development Control Act** (1977, amended in 2000) informs land development and the design and construction of structures. The Act is implemented through the Development Control Authority and administered through a set of more detailed **Land Development and Control Regulations** (1996). The **Physical Planning Act** (2003) controls the development of land; the protection of the natural environment; and building regulations. This Act informed the development of a **National Physical Development Plan**, and includes provisions for development plans for “any specified part of Antigua and Barbuda” (Section 10), termed here as local area development plans.

84. The **Physical Planning Act** (2003) requires certain projects, prior to authorisation, to undertake an Environmental Impact Assessment (EIA). Additionally, this act will set policies and plans which will consider items such as: i) pollution; ii) safeguarding of water supplies water catchment areas and mineral resources; and iii) erosion, land slides and flooding⁷⁴.

85. The **Public Health Act** (1957, amended in 1992) regulates all matters concerning public health in Antigua and Barbuda. The Act is implemented through the Central Board of Health. Additionally the **Health Policy for Antigua and Barbuda** (1997) states government commitment to the universal provision of health services as a right to all residents and citizens.

⁷⁰ Tourism: investing in energy and resource efficiency. See: http://www.unep.org/resourceefficiency/Portals/24147/scp/business/tourism/greeneconomy_tourism.pdf. Accessed 29 July 2013.

⁷¹ E.g. donor funding, government budgets, debt-for-nature swaps.

⁷² E.g. water levies, fees for access to protected areas, investment funds.

⁷³ E.g. protect areas management, biodiversity conservation.

⁷⁴ UNFCCC. (2009). Antigua and Barbuda's Second National Communication on Climate Change.

86. **National Solid Waste Management Act** (1995, amended in 2005) controls the effective storage, collection, transport, treatment and handling of all solid waste generated within Antigua and Barbuda. The Act is implemented through National Solid Waste Management Authority.

87. Water resources management is vested in the **Public Utility Act** (1973, amended 2004) with APUA as the implementing authority. The APUA will with the approval of the Minister: i) declare that any watercourse shall be subject to the provisions of this Act; and ii) where the drainage or water from any area flows or is conveyed to a watercourse or waterworks and declare that area or any part of that area to be a watershed.

88. The **Natural Disaster Management Act** (2002) controls the effective response to and recovery from emergencies and disasters in Antigua and Barbuda. The Act is linked to the Disaster Management Plan and the Natural Hazard Mitigation Policy and Plan.

89. The **Forestry Act** (Cap.178, 1989) gives the Minister of Agriculture authority to declare suitable land as either: i) “Forest Estate/s”; or ii) “Forestry Reserve/s”. The former refers to land that can be used for reforestation while the latter refers to land that is suitable for the conservation of forests.

2.5 Stakeholder mapping and analysis

90. The activities of the SCCF project have been developed through extensive consultation with national and multilateral stakeholders. Additionally, the activities have been designed to address the main adaptation requirements as identified by these stakeholders. Consultations with stakeholders included: i) the inception workshop, held in April 2014; ii) the validation workshop held in August 2014; and iii) multiple meetings with individual stakeholders, which took place between April and August 2014. The purpose of the stakeholder consultations was to identify: i) appropriate interventions and intervention sites based on the vulnerabilities and requirements of local communities; ii) ongoing projects relevant to the activities of the project; and iii) national and local government authorities relevant to the activities of the project. As a result, the SCCF project is aligned with national priorities and will be feasible in the local context. It will also leverage existing regional communication networks⁷⁵ to disseminate lessons learned from the project.

91. Key government stakeholders include:

- the Ministry of Health and the Environment – Environment Division, Central Board of Health, National Solid Waste Management Authority;
- the Ministry of Agriculture, Lands, Fisheries and Barbuda Affairs – Development Control Authority, Surveys Division;
- the Ministry of Works and Housing – Public Works;
- the Ministry of Public Utilities, Civil Aviation and Transport – Antigua Public Utilities Authority;
- the Ministry of Social Transformation and Human Resource Development – National Office of Disaster Services; and
- the Ministry of Tourism, Economic Development, Investment and Energy – Antigua and Barbuda Investment Authority.

92. In relation to on-the-ground adaptation interventions (Components 2 and 3), local stakeholders were consulted during the PPG phase and will be involved throughout the project implementation phase. Their participation in prioritisation and implementation of adaptation interventions will

⁷⁵ Especially the REGATTA platform.

promote ownership of and support for project activities during the implementation phase and also increase the sustainability of these activities after project completion.

93. There are currently few formally registered NGOs and CSOs in Antigua and Barbuda, particularly related to environmental and climate change issues. The most prominent of these is the Environmental Awareness Group (EAG), a voluntary and not-for-profit NGO. Past and ongoing initiatives undertaken by EAG include the development of the Body Ponds nature park, the management of Mount Obama protected area and implementation of the Christian Valley Bird Trail project. These initiatives largely focus on environmental awareness, ecotourism and protected areas management. EAG's main activities include:

- raising awareness on sustainable management of natural resources;
- promoting the participation of civil society in decision-making on natural resource management;
- advocating for policy-making on sustainable use and management of natural resources; and
- fundraising to support natural resource management.

94. Other important stakeholders are CBOs such as church, youth and sports groups. Most of Antigua and Barbuda's GEF Small Grants Programme to date have been provided through such CBOs. These groups are not primarily involved in climate change adaptation, focusing rather on general challenges such as poverty alleviation and capacity development. However, they remain important for identification of community priorities related to climate change adaptation, particularly for disaster risk management.

2.6 Baseline analysis and gaps

Baseline situation

95. *Institutional capacity.* There is a need to develop institutional capacity for planning and implementing interventions for climate change adaptation in Antigua and Barbuda, especially in relation to development planning⁷⁶. A number of government agencies within different ministries currently share responsibility for various aspects of development planning, though exact responsibilities are poorly defined in legislation⁷⁷. This fragmentation of responsibilities within government has created inefficiencies related to the provision of essential services. For example, APUA has legal rights over all water resources but is not legally obligated to maintain and protect water resources or their associated watershed. Consequently, there is need for a more coordinated and cross-sectoral approach to climate change adaptation to rectify the fragmentation of agency responsibility. While some support on this will be provided through the GEF project "Assisting non-LDC developing countries with country-driven processes to advance National Adaptation Plans", further strengthening of cross-sectoral planning is needed to ensure adequate coordination of adaptation priorities to comprehensively address the country's vulnerabilities. In addition, limited human capital is a challenge common to many island states. There are few government staff that are working on climate change adaptation, and those that are, are under pressure to deliver on large portfolios of projects for which they have oversight responsibilities. Limited staffing has resulted in projects that fall short of mainstreaming climate adaptation into policies and practice.

96. *Technical capacity.* Technical staff within government agencies and relevant institutions currently do not have sufficient capacity to identify, implement, maintain and upscale adaptation interventions. Limitations in capacity are primarily a consequence of limited knowledge and

⁷⁶ In this document, "development planning" will be used to refer to various aspects of land-use planning such as sub-division of property, approval of land-use plans or building plans, re-zoning of property and environmental impact assessments.

⁷⁷ UNDP (n.d.). UNDP Project Document: Sustainable Island Resource Management Mechanism.

awareness of skills and technologies related to climate change adaptation. These include *inter alia*: i) using GIS and global positioning technology for mapping and development planning; and ii) conducting climate vulnerability and risk analyses. Without such knowledge, decision-making and implementation of interventions for adaptation will be hampered. Limited technical capacity will consequently threaten the resilience of local communities and sectors to climate change in the long-term.

97. *Information availability.* Information currently available on climate change vulnerabilities specific to SIDS and the Caribbean lacks the detail required to inform applied adaptation planning and implementation in Antigua and Barbuda. The UNFCCC “Report on Vulnerability and Adaptation to Climate Change in Small Island Developing States” provides strategic regional recommendations. However, additional detail is required in order to select appropriate methods and tools to prepare for adaptation at a local and national level. For example, many houses have low foundations and floors that leave them susceptible to the severe flooding expected under climate change projections. Additionally, a large proportion of houses lack hurricane shutters leaving them vulnerable to damage from strong winds during hurricanes and other storm events. Guidelines on how to retrofit existing structures to cope with increased extreme weather events under climate change are not publically available. A further information gap exists nationally with regards to financing for climate change adaptation. Guidelines currently available through the REGATTA network focus on financing adaptation in mainland Latin America. These guidelines are generally in Spanish and focus on different priorities when compared to Antigua and Barbuda’s context as a SIDS. The Caribbean Community Climate Change Centre provides some information on climate risks and vulnerabilities for the region in general and for Antigua and Barbuda in particular. However, this information is generally not available in a user-friendly format that supports planning and decision-making across a range of sectors. In addition, there is little information on selection and implementation of concrete interventions for climate change adaptation. There is thus a need for guidelines on climate change adaptation that are tailored for SIDS that would empower Antigua and Barbuda – as well as other Caribbean states – to gain greater access to international funding for climate change adaptation.

98. *Community awareness.* There is limited awareness within communities about the existence, predictions and causes of climate change. In particular, there is little understanding of the linkages between increased flooding and climate change. Local communities have very limited awareness on practices that would increase their resilience to climate change. Enhancing national public awareness of the predicted effects of climate change and the benefits of adaptation interventions will support the national upscaling of project activities and increase human capacity to plan and implement adaptation interventions at a local level. This will increase the resilience of local communities to the predicted effects of climate change.

99. *Fiscal policies and financial instruments.* Climate change adaptation is not specifically referenced in fiscal policies in Antigua and Barbuda such as the NEST. Given that climate change is predicted to have a major impact on the agriculture, tourism and health sectors in Antigua and Barbuda, it is important that fiscal and regulatory policies align with environmental concerns⁷⁸. High-level policies need to encourage public and private sector investment in climate change adaptation technologies such as large-scale ecosystem management and restoration or retrofitting of community assets. Furthermore, there are currently no financial instruments in Antigua and Barbuda that prioritise the funding of adaptation-related interventions. To promote the use of new national finance mechanisms, it is necessary to show that such mechanisms are cost effective and that they increase local communities’ resilience to climate change. Such proof of concept relies on demonstration of working examples of innovative finance mechanisms and cost effective adaptation interventions as

⁷⁸ CARIBSAVE. (2012). Climate Change Risk Profile for Antigua and Barbuda.

well as the benefits of such approaches. In Antigua and Barbuda, there is currently no research underway on the effects of innovative finance mechanisms and cost effective adaptation interventions on local communities' resilience to climate change.

100. *Private sector involvement.* There is limited private sector involvement in environmental initiatives in the country. For example, no formal system to fund environment projects through private sector investments exists. As a result, the potential use of private sector investment for financing and implementing adaptation interventions on a large scale in Antigua and Barbuda is very limited at present. Sectors that are particularly reliant on ecosystems and therefore vulnerable to the effects of climate change include tourism, health, agriculture and infrastructure development. Consequently, these sectors in particular are well placed to engage in advocacy to promote the mainstreaming of climate change adaptation into relevant policies and frameworks in Antigua and Barbuda.

101. *Development planning.* Development planning in Antigua and Barbuda has historically been poorly coordinated⁷⁹ because of: i) fragmented land-use and development control mechanisms; and ii) limited institutional capacity to manage processes for development planning. Climate change has yet to be mainstreamed into development policy in Antigua and Barbuda; neither of the Acts that control development planning⁸⁰ make specific mention of climate change. The SIRMZP was drafted to better coordinate spatial development nationally. This plan contains detailed maps illustrating the distribution of environmental risk and vulnerability across Antigua. In addition, the SIRMZP proposes two planning principles in response to climate change, namely: i) setting developments back from beaches and coastlines and ii) setting minimum ground floor elevation. However, these principles have yet to be translated into detailed guidelines nor have they been integrated formally into the Antigua and Barbuda Building Code to inform climate-smart building planning and practices.

102. *Infrastructure.* Antigua and Barbuda's private and public infrastructure is currently ill adapted to cope with the predicted effects of climate change. There is a need to develop more robust water collection, storage and distribution systems that can withstand the increased intensity of extreme weather events predicted under climate change⁸¹. In particular, the country's sewage system is under pressure. Septic tanks – supplemented with pit latrines – are the chief means of managing domestic wastewater. Major hotels mostly operate private sewage treatment facilities, though a high proportion of these facilities are in disrepair⁸². In many areas, poor design and construction of decentralised sewage infrastructure have resulted in contamination of ground and surface water. This is expected to occur more frequently as extreme weather events result in damage to sewage treatment facilities. Furthermore, sea-level rise (SLR) poses a significant threat to coastal infrastructure in Antigua and Barbuda⁸³. Climate change is projected to lead to SLR of 1 m or more in the 21st century, leading to degradation of coastal areas⁸⁴. In Antigua, the majority of infrastructure and settlements – including government, health, commercial and transportation facilities – are located on or near the coast. The majority of tourism infrastructure – including hotels, marinas and ports – is located on the coast and thus is particularly vulnerable to the effects of projected SLR.

103. *Water.* Antigua and Barbuda is challenged by *inter alia*: i) water resource scarcity; ii) high seasonal and inter-annual rainfall variability; iii) high exposure of watersheds to degradation and pollution; iv) inadequate reservoir design and catchment management; v) high risk and vulnerability to

⁷⁹ Genivar Trinidad and Tobago, Sustainable Island Resource Management Zoning Plan for Antigua and Barbuda. (2011).

⁸⁰ The Physical Planning Act and the Development Control Act

⁸¹ Global Water Partnership Caribbean. (2013). The Post 2015 Water Thematic Consultation: Antigua and Barbuda.

⁸² Genivar Trinidad and Tobago, Sustainable Island Resource Management Zoning Plan for Antigua and Barbuda. (2011)

⁸³ CARIBSAVE. (2012). Climate Change Risk Profile for Antigua and Barbuda.

⁸⁴ The World Bank Development Research Group. (2012). Sea-Level Rise and Coastal Wetlands: Impacts and Costs.

floods and droughts; and vi) poorly coordinated sharing of water between sectors⁸⁵. As the country is reliant on expensive desalination for 75% of their freshwater needs, the cost of water is subsidised by the APUA⁸⁶. Any revenue generated through water tariffs is used for operations and maintenance rather than integrated watershed management. Consequently, Antigua and Barbuda is likely to continue to suffer from water shortages as water becomes more scarce owing to ongoing degradation of watersheds. Strategies for water resource and drought management have yet to be adopted. There is thus a need to develop strategies that detail climate-resilient approaches to managing water resources across Antigua and Barbuda.

104. *Agriculture*. The agricultural sector has been constrained by *inter alia*: i) high labour costs; ii) the small size of local market; iii) lack of marketing structures and infrastructure; iv) competition from imported foodstuffs; v) inadequate water supplies for irrigation; vi) a succession of severe droughts and destructive hurricanes; and vii) limited land tenure rights⁸⁷. The intensification of extreme weather events and sea level rise associated with climate change on the national water distribution system is likely to have a disruptive effect on this constrained economic sector. In particular, there is limited freshwater provision to meet agricultural needs in Antigua and Barbuda. This condition is likely to worsen as climate change is predicted to cause more frequent and prolonged droughts.

105. *State of ecosystems*. Antigua and Barbuda has the most extensive mangrove wetlands in the Eastern Caribbean. The intensity of development in coastal areas has led to degradation of coastal and marine biodiversity. Shoreline modifications, inadequate setbacks on beaches and the installation of beach stabilisation structures – especially around some of the larger hotels – have further contributed to beach erosion. Such ecosystem degradation reduces the resilience of coastal areas to climate change impacts such as SLR and storm surges. In addition, terrestrial ecosystems are at risk from *inter alia* uncontrolled development planning, invasion of alien species, destructive wildfires and high grazing pressure. These factors are resulting in widespread degradation of watersheds with a concomitant loss in ecosystem services, particularly in relation to water provision and flood alleviation. This exacerbates the vulnerability of local communities to climate change impacts such as droughts and floods.

106. *Health*. Antigua and Barbuda has a well-functioning health care system that is not dependant on external aid for its sustainable functioning⁸⁸. However, increased instances of chronic non-communicable diseases⁸⁹ have resulted in the health system becoming overburdened. Providing further strain to the health care system is country's middle-income rating which has resulted in the islands being gradually ineligible for donor funding⁹⁰. Increased instances of disease and illness associated with climate change is likely to place additional stress on the health sector. For example, the recent outbreak of chikungunya is partially ascribed to the standing water that was widespread in flooded urban areas after rainfall events.

107. A tabular analysis of the baseline for each project component is presented in Table 3 in Section 3.7 of this project document.

Baseline projects

⁸⁵ UNFCC (2009). Antigua and Barbuda's Second National Communication on Climate Change.

⁸⁶ In poorer areas in Antigua and Barbuda residents have access to free supplies of potable water through public standpipes.

⁸⁷ CARIBSAVE. (2012). Climate Change Risk Profile for Antigua and Barbuda.

⁸⁸ With the exception of healthcare for HIV/AIDS.

⁸⁹ I.e. cancer, depression, asthma, diabetes.

⁹⁰ Sulzbach, S., Chankova, S., Tarantino, L., Feeley, R., Ingerson, K., Narcisse, C., and Wilson, A. (2012). Antigua and Barbuda Health Systems and Private sector Assessment 2011.

108. The Environmental Protection and Management Act legislates the **Sustainable Island Resource Framework Fund (SIRF Fund)**. The SIRF Fund is designed to be a self-sustaining, non-profit entity that earns revenue and attracts funding to address a range of environmental concerns. It was initially founded to fund protected areas under the Sustainable Island Resource Management Mechanism (SIRMM) and was later expanded to achieve all the recommendations of SIRMM. These are to: i) establish an Environmental Information Management and Advisory System that directly addresses cross-sectoral integration, planning, decision making and awareness; ii) develop a Strategic SIRMM Implementation Plan; iii) realign and strengthen policy, legislation and institutional capacity to support the SIRMM Strategy; iv) implement the SIRMM approach in selected target areas; and v) fund remedial environmental actions – including reduce fossil fuel consumption, support protected areas management and promote oil recycling – with little or no central government financial support.

109. The proposed SCCF project will develop the adaptation window of the SIRF Fund, including its operational procedures (Figures 3 and 4). This will further include identifying the potential funding flows that could contribute to financing adaptation in the future and the establishment of innovative financing mechanisms to fund adaptation interventions, including cost-effective adaptation interventions focused on ecosystems.

110. The SIRF Fund will address the problems of poverty and general environmental management. The GEF projects (implemented by UNEP) supporting the SIRF Fund are explained in greater detail in Section 2.7. However, the projects being used to establish the main windows (see Figure 3) of the SIRF Fund are:

- *Sustainable Pathways – Protected Areas and Renewable Energy* (SPPARE project, PMIS 5370) will establish the “general environmental management” window of the SIRF Fund with a dual focus on management of protected areas and reduction of greenhouse gases.
- *Integrating Water, Land and Ecosystems in Caribbean Small Island Developing States* (IWeco) will establish the “oil recycling and sewage treatment” window of the SIRF Fund.
- The proposed SCCF project will establish the “climate change adaptation” window.

111. These GEF projects are therefore contributing towards different windows under one single fund – the SIRF Fund. An additional GEF project, Sustainable Financing and Management of Eastern Caribbean Marine Ecosystems (PMIS 3858), is a regional project and will be channelled via the “NGO” window, specifically focused on the management of Marine Protected Areas. The required funding for Marine Protected Areas will flow via the Caribbean Biodiversity Fund, while the SIRF Fund will provide co-financing. Further investments into the SIRF Fund will be from: i) a water levy; ii) bilateral investments; iii) protected area fees; and iv) debt swaps (Figure 4). Besides the water levy – which is expected to be finalised in 2015 – the other investments are still under negotiation. These investments will fund debt reduction and insurance (loss and damage) windows of the fund – these windows are still under negotiation. As new investments are negotiated and implemented, the Board and/or the Donors of the SIRF Fund will determine which window they would like the funds to address. These windows will be established via By-Laws and/or Regulations.

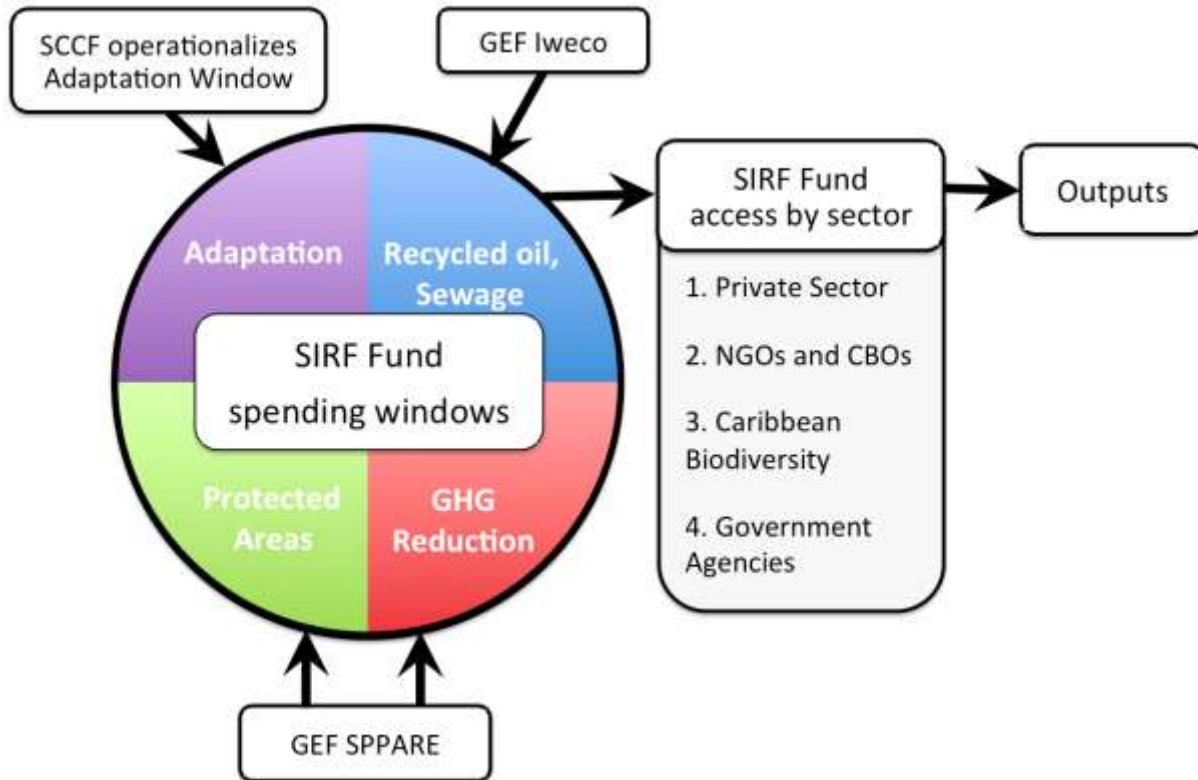


Figure 3. Schematic showing priority areas of the SIRF Fund and associated GEF projects.

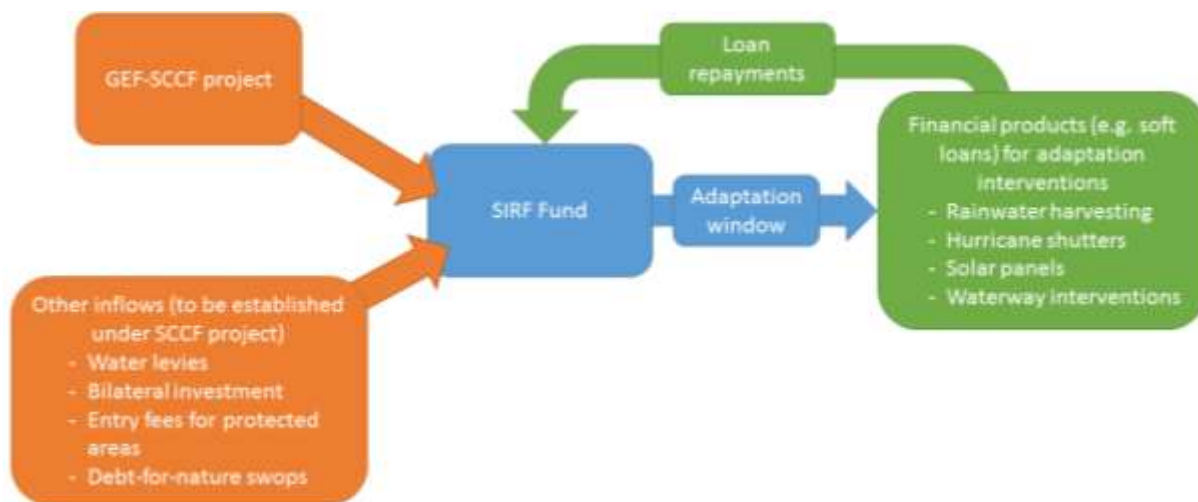


Figure 4. Diagram showing funding flows into the SIRF Fund, outflows through the adaptation window and repayments into the SIRF Fund from loan facilities.

112. GoAB – through the **Ministry of Works and Housing** – is undertaking design, implementation and maintenance of drainage works within the project interventions sites (see Component 3). A total budget of US\$ 6.8 million of co-financing is being provided for the period 2015–2018 under the National Budget for on on-the-ground investments into construction of drainage

(US\$ 6 million) and planning/management of waterways (US\$ 500,000) in the project sites to reduce flooding. A further US\$ 300,000 of co-financing will be provided by the Public Works Department through ongoing activities of the Survey and GIS Unit related to planning and design of waterways. These baseline activities are vulnerable to the predicted impacts of climate change, as they largely focus on addressing immediate priorities based on past and current climate trends. The proposed SCCF project will complement these activities by formulating integrated local area development plans as well as designing a suite of adaptation interventions that will reduce the effects of increased severity of flooding as a result of climate change in the three project demonstration areas.

113. The **Ministry of Health and Environment (MHE)** is mandated for overall management of the environment and health care services in Antigua and Barbuda. Within this ministry, the Environment Division oversees management of all environmental issues. In addition, it is responsible for M&E of environmental activities. The Central Board of Health is responsible for the regulation and management of public health care services. MHE will provide a total of US\$ 2.7 million in baseline co-financing for the period of project implementation as follows:

- project management and M&E – a total of US\$ 500,000;
- cleaning of waterways in the project’s pilot communities – a total of US\$ 2 million; and
- project staff and officers – US\$ 200,000.

114. The **National Office of Disaster Services (NODS)** is mandated with overall responsible for management of climate- and non-climate-related disasters in Antigua and Barbuda. This includes all aspects of preparation for, responding to, recovering from and mitigating against disasters. For the project duration, NODS will contribute a total of US\$ 2 million in co-financing through ongoing activities related to: i) public awareness and training; ii) coordination and collaboration between sectors, agencies and regional/sub-regional partners; iii) promotion of disaster risk management; and iv) sectoral-level policy-making and planning for disaster risk management. The proposed SCCF project will complement these activities by supporting improved decision-making as well as practical action concerning management of climate-related disaster risks. In particular, the project will: i) support policy-making and planning for climate change adaptation at the national, sectoral and local level; ii) implement on-the-ground, concrete interventions for climate change adaptation in project sites; and iii) improve regional, national and local knowledge-sharing and public awareness on climate change impacts and adaptation options.

115. The **Global Climate Change Alliance (GCCA) Project on Climate Change Adaptation (CCA) and Sustainable Land Management (SLM) in the Eastern Caribbean** has the overall objective to achieve the provisions enshrined in Article 24 of the Revised Treaty of Basseterre, that each Protocol Member State shall implement the St. George’s Declaration of Principles for Environmental Sustainability which seeks to, inter-alia, achieve the long-term protection and sustained productivity of the region’s natural resource base and the ecosystem services it provides. Its specific objective is to improve the resilience of the region’s natural resource base to the impacts of climate change through the following two components: 1) Effective and sustainable land management frameworks and practices, and 2) Specific physical adaptation pilot projects in relevant areas or sectors. The Project will co-finance physical interventions in the Cashew Hill area, as defined in Component 3 to the value of US\$ 1 million. The activities are aimed at achieving the restoration of functionality and remediation of water-related health issues in Cashew Hill community, including: waterway and drainage reconstruction; flood mitigation; wastewater management; and wetland restoration. The SCCF project will climate-proof the work of this GCCA project by providing a full design for the implementation of climate-resilient development options in the Body Ponds watershed, within which the Cashew Hill community falls. This will include conducting comprehensive hydrological surveys in the Body Ponds watershed and community outreach activities in Cashew Hill, as well as the design of watershed- and community-level adaptation measures. The SCCF project will

train local communities in the Cashew Hill community to implement and sustain adaptation interventions, contributing to the long-term climate resilience of the GCCA project interventions.

116. The **Regional Gateway for Technology Transfer and Climate Change Action in Latin America and the Caribbean (REGATTA)** has the objectives of: i) strengthening national capacity to address climate change; and ii) promoting knowledge sharing of climate change technologies and experiences for both adaptation and mitigation. An amount of US\$ 200,000 is available as co-financing for the proposed SCCF project. The proposed SCCF project will build on the achievements of REGATTA at a regional and sub-regional level, through sharing knowledge and awareness on the benefits of using innovative financing mechanisms to fund climate change adaptation interventions focused on ecosystems. REGATTA supports countries in addressing climate change through the exchange of knowledge, the development of pilot projects, and the provision of advisory services in adaptation and mitigation. These goals are achieved through regional Knowledge Centres for technology transfer on climate change. In response to priorities conveyed by government authorities, UNEP-ROLAC is working with governments and regional Knowledge Centres to conduct climate change vulnerability, impact, and adaptation (VIA) analyses in each of the four sub-regions of LAC. The national VIA in Antigua and Barbuda included:

- a climate change Vulnerability Impact and Adaptation analysis in water resources, agriculture and the health sector at the national scale;
- identification of adaptation options for national action; and
- support to policy-making and development planning processes.

To effectively achieve these objectives, a detailed methodology for climate variability analysis was developed and applied combined with national scale analyses of vulnerability (exposure, sensitivity and adaptive capacity) and adaptation options. The proposed SCCF project will build on this initiative by implementing critical adaptation strategies and generating state-of-the-art information on climate change technology to support integration of climate change into development.

117. The **UNEP-European Commission project Building capacity for Coastal Ecosystem-based Adaptation in Small Island Developing States (2014–2016; US\$ 200,000)** has the objectives of assisting countries and regions to develop and apply EbA approaches to building the resilience of coastal ecosystems and communities in SIDS. The project includes Grenada as a Caribbean pilot country. The proposed SCCF project will build on this initiative by integrating lessons learned and best practices into the regional knowledge-sharing initiatives under Component 4. Lessons learned from this project will also inform the design of ‘soft’ adaptation interventions under Component 3.

2.7 Linkages with other GEF and non-GEF interventions

118. There are several GEF and non-GEF national projects underway in the Caribbean and Antigua and Barbuda that present opportunities for synergies and knowledge exchange with the SCCF project. These projects are described below, along with descriptions of opportunities to enhance synergies and prevent duplication between project activities.

119. The recently approved UNEP GEF project titled **Sustainable Pathways – Protected Areas and Renewable Energy (SPPARE)**, project duration January 2015 – December 2018, will enhance the financing and management of protected areas through the generation of funding through renewable energy initiatives. The SPPARE project includes the development of a Sustainable Island Resource Financial Plan (SIRFP). The outcomes of the SPPARE project include *inter alia*: i) the identification of potential sources of revenue for protected area management; and ii) the development of a business plan for the implementation of the financial plan and associated legislation. Moreover, the SPPARE

project will establish the environmental management window of the SIRF Fund. The proposed SCCF project will draw on the knowledge base of and create synergies with the SPPARE project to develop the adaptation window for the SIRF Fund. For example, knowledge on financing mechanisms for environmental management will be used to inform design of financing mechanisms for adaptation. Benefits will be realised in two ways, namely: i) the lessons learned from the SPPARE project will be assessed to derive best practices for the proposed SCCF project and *vice versa*; and ii) direct links will be created between financing adaptation and sources of revenue for protected area management. For example, REDD+ initiatives can contribute towards adaptation objectives as well as support conservation of protected areas. Constant dialogue between stakeholders from both GEF projects will ensure that such synergies occur. Stakeholder dialogue is built into the project management structure, summarized in Figure 6, and key stakeholders to be engaged at various stages of implementation are identified in Section 5 and Table 5. Further, local communication forums to be held in communities are specified under Output 3.2.

120. The regional GEF project titled **Integrating Water, Land and Ecosystems in Caribbean Small Island Developing States (IWEco)** (2014–2019) builds on the “Integrating Watershed and Coastal Area Management (IWCAM) in the Small Island Developing States of the Caribbean” project, which strengthened and mainstreamed water resource management in the national development framework. In Antigua and Barbuda, the IWEco project will target land degradation through the development of financing mechanisms to promote and support sustainable land management activities. These financing mechanisms will form the basis of the environmental management window of the SIRF Fund. The activities of the proposed SCCF project for setting up the adaptation window will therefore complement those of the IWEco project, and lessons learned over the course of the development of both projects will be shared for mutually beneficial results.

121. The **Sustainable Financing and Management of Eastern Caribbean Marine Ecosystem Project** (2011–2016) is a regional GEF project being implemented by The Nature Conservancy. The goal of the project is to support long-term financing and sustainable management of marine ecosystems in the Eastern Caribbean, including Antigua and Barbuda. The project has a focus on: i) sustainable financing; ii) strengthening the phased expansion of Marine Protected Area networks; and iii) effective eco-regional and management monitoring. A regional fund – the Caribbean Biodiversity Fund – will fund NGO management of MPAs. The proposed SCCF project will benefit from lessons learned under this initiative on sustainable financing, particularly relating to setting-up and managing a financing mechanism for environmental management. This will feed into the design of the adaptation window of the SIRF Fund under Component 2.

122. The recently approved Inter-American Development Bank GEF project, **Sustainable Energy for the Eastern Caribbean Programme** will consist of five main components. The first two components will provide institutional strengthening and technical assistance on legal, regulatory, and institutional frameworks, as well as studies on existing financing options for Renewable Energy (RE) and Energy Efficiency (EE); and set the basis for a regional Nationally Appropriate Mitigation Action (NAMA). The next two components will focus on investment and financial mechanisms for implementing RE and EE projects. The final component will disseminate the results of the first four components. The proposed SCCF project will generate information on adaptation that will complement the mitigation focus of this project. In addition, lessons learned on design and implementation of financial mechanisms will be shared between the two projects.

123. The GEF-funded Global Support Programme titled **Assisting non-LDC developing countries with country-driven processes to advance National Adaptation Plans** (currently under formulation) will promote medium- to long-term planning for climate change adaptation in non-LDC developing countries including Antigua and Barbuda. This project will establish a mechanism for

institutional support, technical capacity-building and knowledge brokerage to provide non-LDC developing countries with enhanced capacity to plan, finance, and implement adaptation interventions through integration of climate change into medium- to long-term development frameworks. The proposed SCCF project will complement this Global Support Programme through its strengthening of the enabling environment for planning and decision-making on climate change adaptation in Antigua and Barbuda. Institutional strengthening undertaken under Component 1 of this project will serve to catalyse the advancing of various elements the NAP process in the country.

124. It is expected that there will be some projects funded through the **GEF Small Grants Programme** (SGP) to be implemented in the project sites in the near future. During the implementation of the proposed SCCF project, there will be close coordination between it and the proponents of any GEF SGP initiatives to ensure complementarity between activities.

125. The **National Portfolio Formulation Exercise (NPFE)**, developed as part of the Antigua and Barbuda: National GEF Implementation Strategy (2012-2014), identifies: i) the direct and indirect modalities of access that Antigua and Barbuda will use during the GEF6 cycle; and ii) capacity building requirements to meet this approach. The proposed SCCF project will form part of this capacity building and, as it is a GEF project, will be in line with the NPFE.

126. The **Caribbean Microfinance Alliance** (CMFA) works with microfinance practitioners, country-level networks, private sector operators, policy makers and donors to develop financial systems and innovative practices for MFIs and their clients⁹¹. Having created the **Caribbean Microfinance Capacity Building Project** (CARIB-CAP) – which is funded by the Inter-American Development Bank and the Multilateral Investment Fund – CMFA has knowledge that is applicable to the proposed SCCF project in Antigua and Barbuda. This alliance is consequently well positioned to inform the design of the adaptation window of the SIRF Fund. Information sharing between the SCCF project and CMFA will promote the development of the financial products that are appropriate to the socio-economic context of the targeted beneficiaries.

127. **Antigua Public Utilities Authority** (APUA) has been responsible for water and electricity supply and telecoms in Antigua and Barbuda since 2006⁹². Electricity supply is dependent on expensive imported fuel. Drinking water is in turn dependent on electricity, as more than 60% of Antigua and Barbuda's water supply is obtained through desalination. The remaining water is obtained from groundwater that is pumped from wells by APUA. As water demand will increase because of population and economic growth, greater desalination requirements with associated costs will be borne by the consumer. Collaboration between the proposed SCCF project and APUA will allow for improved management of water resources. For example, the design and implementation of watershed management plans will require considerable collaboration between APUA, the Environment Division and other stakeholders involved in implementation of the proposed SCCF project. This will support the integration of adaptation concerns into the design of future infrastructure and management options, with special reference to potential hurricane damage and limited water availability under projected climate change scenarios.

128. The **Caribbean Community** (CARICOM) is a regional body that contributes to improving the quality of life in the Caribbean. CARICOM has considerable expertise from on-the-ground experiences in climate change via its Caribbean Community Climate Change Centre (CARICOM CCC)⁹³. Consequently, CARICOM CCC well positioned to provide useful knowledge on climate

⁹¹ Caribbean Microfinance Alliance: <http://caribbeanmicrofinancealliance.com/>

⁹² Antigua Public Utilities Authority: <http://www.apua.ag/>

⁹³ Caribbean Community Climate Change Centre: <http://www.caribbeanclimate.bz/about-us/about-us.html>.

change vulnerabilities and adaptation interventions in Antigua and Barbuda that will be used to inform design of adaptation interventions under Outcomes 2 and 3 as well as the revisions of policies and plans under Outcome 1. CARICOM CCC may also be able to assist in raising co-financing from bilateral donors for ongoing replication of the proposed SCCF project's activities within Antigua and Barbuda. Best practices stemming from this project are also likely to be shared through CARICOM and its various mechanisms to promote upscaling of adaptation interventions demonstrated in this project – including innovative financing mechanisms for adaptation – throughout the Caribbean region.

129. The **CARIBSAVE** is a partnership between the University of Oxford and the CARICOM CCC, which addresses the challenges relating to climate change, economic development and community livelihoods⁹⁴. CARIBSAVE has historical knowledge on implementing projects in the region. The **CARIBSAVE Climate Change Risk Atlas (CCCRA)** provides information on: i) community livelihoods; ii) gender; iii) poverty and development; iv) agriculture and food security; v) energy; vi) water quality and availability; vii) sea-level rise and storm surge impacts on coastal infrastructure and settlements; viii) comprehensive disaster management; ix) human health; and x) marine and terrestrial biodiversity and fisheries⁹⁵. The proposed SCCF project will draw from the findings of the CCCRA for: i) formulation of a gender-sensitive climate change adaptation plan and implementation strategy; ii) integrating medium- to long-term adaptation into the National Environment Management Strategy; and iii) revisions to the Antigua and Barbuda building code. Furthermore, the CCCRA will be used to inform the adaptation interventions demonstrated through the proposed SCCF project to ensure that they are gender sensitive and address climate vulnerabilities within the local context.

130. The **Environmental Awareness Group (EAG)** of Antigua and Barbuda is a voluntary not-for-profit NGO. It works with sponsors, funding agencies, government and educational and environmental organisations to promote conservation and environmental awareness. It is familiar with the environmental problems facing the country and is engaging with concerned institutions. The proposed SCCF project will draw on EAG's experience in building awareness of the impacts of climate change as well as implementation of adaptation measures.

131. The **Caribbean Disaster Emergency Management Agency (CDEMA)** – originally known as the Caribbean Disaster Emergency Response Agency – is a regional body⁹⁶ focused on reducing risks and losses from natural hazards. The proposed SCCF project will collaborate with CDEMA in knowledge-sharing and awareness-raising activities to build regional awareness on climate change and adaptation interventions.

132. The **Centre for Resource Management and Environmental Studies (CERMES)** promotes sustainable development in the Caribbean region through: i) graduate education; ii) applied research; iii) innovative projects; iv) professional training; and v) involvement in national, regional and global initiatives⁹⁷. The centre also provides advisory and consulting services to government, NGOs and private stakeholders, and builds capacity and awareness through outreach programs. The proposed SCCF project will collaborate with CERMES for training and capacity building on climate change interventions and innovative financing mechanisms.

⁹⁴ CARIBSAVE: <http://www.caribsave.org/>.

⁹⁵ CARIBSAVE. 2012. CARIBSAVE climate change risk profile for Antigua and Barbuda: summary document.

⁹⁶ Caribbean Disaster Emergency Management Agency:

http://cdema.org/index.php?option=com_content&view=article&id=89&Itemid=79.

⁹⁷ Centre for Resource Management and Environmental Studies: <http://www.ciasnet.org/ciasnet-org/partner-agencies/regional/centre-for-resource-management-and-environmental-studies-cermes/>.

133. The **Caribbean Institute for Meteorology and Hydrology (CIMH)** assists in improving and developing meteorological and hydrological services for the Caribbean. The CIMH also conducts research, training, investigations and specialist services to increase awareness of the benefits of Meteorology and Hydrology for the economic wellbeing of CIMH member states⁹⁸. The CIMH is well positioned to assist in the capacity building activities of the proposed SCCF project, particularly concerning the continuing education/professional development modules on climate change and adaptation.

134. The Environment Division was in 2015 accredited as a **National Implementing Entity (NIE) for the Adaptation Fund**, which will allow direct access to resources available through the fund. The Environment Division is also pursuing accreditation for direct access to **the Green Climate Fund (GCF)**, and will in addition in 2016 implement other activities under the GCF Readiness Programme, in particular National Designated Authority (NDA) strengthening and the development of a Country Strategic Framework vis-a-vis the GCF. The proposed SCCF project will build technical capacity relevant to the GCF accreditation, which will assist the country further in accessing funds for adaptation interventions at a national level.

135. The **Climate Technology Centre and Network (CTCN)** is the operational arm of the UNFCCC Technology Mechanism. It is hosted and managed by UNEP in collaboration with UNIDO and with the support of 11 Centres of Excellence located in developing and developed countries. CTCN aims to: i) build or strengthen the capacity of developing countries to identify technology needs; ii) facilitate the preparation and implementation of technology projects and strategies to support action on mitigation and adaptation; and iii) enhance low-emission and climate-resilient development. The proposed SCCF project will draw from lessons learned through the CTCN, and will share project experiences through the established networks, including the Centres of Excellence in the region.

SECTION 3: INTERVENTION STRATEGY (ALTERNATIVE)

3.1. Project rationale, policy conformity and expected global environmental benefits

Project rationale

136. The SCCF project will build national capacity for climate change adaptation to increase the resilience of local communities and sectors in Antigua and Barbuda to the observed and anticipated effects of climate change, as described in the country's Second National Communication on climate change and the Technology Needs Assessment (see Section 2.1 for more detailed information on climate change predictions and Appendix 16 for the theory of change). In particular, the SCCF project will: i) build institutional and technical capacity to identify, implement, maintain and upscale adaptation interventions; ii) develop innovative financing mechanisms for funding adaptation interventions focused on building household resilience; iii) demonstrate cost-effective adaptation interventions focused on ecosystems; and iv) strengthen the knowledge base on climate change adaptation in Antigua and Barbuda as well as the broader Caribbean region.

137. There are a number of barriers to the success of the SCCF project in meeting its objective. The components of the project are designed to address these barriers. The interventions proposed in each component are detailed in Section 3.3.

138. The development of innovative financing mechanisms for funding adaptation interventions will have multiple social and economic benefits for local communities and sectors. Increased funding will enable the implementation, maintenance and upscaling of adaptation interventions to benefit

⁹⁸ Caribbean Institute for Meteorology and Hydrology: <http://www.cimh.edu.bb/?p=home>.

vulnerable communities. In particular, the innovative financing mechanisms will increase the funding available to low-income households that are unable to obtain funding through the present suite of financial products⁹⁹. Furthermore, adaptation interventions will enhance the climate resilience of development sectors. For example, reduction of flood risk will benefit the tourism sector – through protection of tourist facilities and reduction of losses – as well as the health sector – through reduction in climate-related diseases such as dengue fever and chikungunya.

139. The benefits produced by the proposed SCCF project are expected to be sustainable after the project implementation period. For example, once the financing mechanisms have been developed and procedures have been established, the adaptation window of the SIRF Fund will be able to continue to fund adaptation interventions indefinitely by regulating funding flowing into and out of the SIRF Fund. Furthermore, strengthening national capacity to plan, implement and upscale adaptation interventions will allow such interventions to be replicated in other areas across Antigua and Barbuda. By sharing lessons learned about innovative financing mechanisms and adaptation interventions through the REGATTA and OECS networks, other SIDS within the Caribbean region will have access to knowledge and information for replicating and upscaling such adaptation interventions.

Policy conformity

140. The SCCF-financed project is aligned with the GEF-6 Objectives¹⁰⁰. In particular, it is consistent with SCCF objectives “**CCA-1:** Reduce the vulnerability of people, livelihoods, physical assets and natural systems to the adverse effects of climate change”, “**CCA-2:** Strengthen institutional and technical capacities for effective climate change adaptation” and “**CCA-3:** Integrate climate change adaptation into relevant policies, plans and associated processes”. Specific contributions to these objectives are described below.

- Outcome 1 will support mainstreaming of climate change adaptation into policies as well as provide technical training to relevant institutions. This is aligned with SCCF Objectives CCA-2, Outcome 2.3: “Institutional and technical capacities and human skills strengthened to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures” and CCA-3, Outcome 3.2: “Policies, plans and associated processes developed and strengthened to identify, prioritize and integrate adaptation strategies and measures”.
- Outcome 2 will support the implementation of household-based adaptation interventions through increased access to funding for adaptation. This is aligned with SCCF Objective CCA-1, Outcome 1.1: “Vulnerability of physical assets and natural systems reduced”.
- Outcome 3 will support the implementation of adaptation interventions in prioritised watersheds that are prone to climate-induced hazards. This is aligned with SCCF Objective CCA-1, Outcome 1.1: “Vulnerability of physical assets and natural systems reduced”.
- Outcome 4 will support awareness-raising and knowledge-sharing both nationally and regionally. This is aligned with SCCF Objective CCA-2, Outcome 2.3: “Institutional and technical capacities and human skills strengthened to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures”.

141. The proposed project is aligned with Antigua and Barbuda’s policies and strategies on development and environmental management. These are communicated in the following documents: i) Sustainable Island Resource Management Zoning Plan (2011); ii) Environmental Management

⁹⁹ E.g. bank loans, credit unions.

¹⁰⁰ The original PIF was formulated under GEF-5 and aligned the following Focal Area Objectives: *CCA-1, Outcome 1.1: Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas; CCA-2, Outcome 2.2: Strengthened adaptive capacity to reduce risks to climate-induced economic losses; and CCA-3, Outcome 3.1: Successful demonstration, deployment and transfer of relevant adaptation technology in targeted areas.*

Strategy and Action Plan 2004 – 2009; iii) National Biodiversity Strategy and Action Plan; iv) Second National Communication to the UNFCCC; and v) Antigua and Barbuda’s Country Paper on National Climate Change Issues (2001); vi) Policy Framework for Integrated Adaptation Planning and Management in Antigua and Barbuda (2002); and vii) National Economic and Social Transformation Plan.

142. The alignment of the proposed project with the adaptation targets outlined in Antigua and Barbuda’s **Intended Nationally Determined Contribution** (INDC) (submitted in October 2015) are detailed below.

- *By 2030, all buildings are improved and prepared for extreme climate events, including drought, flooding and hurricanes.* The project will support the climate-proofing of households against such events through the provision of small loans for interventions such as guttering and tanks for rainwater harvesting, hurricane shutters and solar panels for emergency power. Moreover, it will establish a sustainable financing mechanism to continue the funding of such interventions beyond project completion.
- *By 2030, all waterways are protected to reduce the risks of flooding and health impacts.* The project will develop climate-resilient local area development plans in three of the country’s twelve watersheds. Furthermore, it will design adaptation interventions that reduce the risks of climate-induced flooding and health impacts through management of waterways. This will demonstrate watershed-level adaptation interventions that may be upscaled and replicated in future. Moreover, the upscaling strategy (Output 3.1) will guide future upscaling and replication of such interventions across the country.
- *By 2020, update the Building Code to meet projected impacts of climate change.* The project will achieve this goal by updating the Building Code to include guidelines for climate-resilient building design that address current and future climate change impacts.

SCCF conformity

143. As Antigua and Barbuda is a non-Annex I party to the UNFCCC, it meets the SCCF’s eligibility criteria to receive support. Furthermore, the proposed project conforms to the strategic objectives of the SCCF, as described below.

144. *Reduce vulnerability to the adverse effects of climate change:* The SCCF project will fund small loans to support the implementation of adaptation interventions for reducing household vulnerability to the effects of climate change. The project will also demonstrate cost-effective adaptation interventions with an ecosystem focus. These interventions will reduce the vulnerability of local communities to predicted climate change effects such as increased frequency and severity of extreme weather events.

145. *Increase adaptive capacity to respond to the effects of climate change:* The SCCF project will build technical capacity to: i) mainstream innovative financing mechanisms for adaptation into national policies; ii) access innovative financing mechanisms to fund adaptation; and iii) plan for and implementation adaptation interventions focused on ecosystems. This increased technical capacity will create an enabling environment for upscaling of project interventions, based on the development of viable business plans to access the adaptation window of the SIRF Fund. In addition, activities of the proposed SCCF project will train communities to implement and monitor adaptation interventions. This will enhance their resilience to the projected and predicted impacts of climate change.

146. *Promote transfer and adoption of adaptation technologies:* The SCCF project will identify cost-effective adaptation interventions for reducing vulnerability to climate change. These

interventions will be demonstrated in vulnerable communities to promote local support. Knowledge sharing through the REGATTA and OECS platforms will facilitate the transfer of lessons learned and best practices nationally and across the sub-region.

147. Additionally, the project will serve as a catalyst to leverage additional resources from bilateral and other multilateral sources by creating a mechanism for such resources to be administered through the SIRF Fund. The project will also facilitate technology transfer and associated capacity-building activities, as per the mandate of the SCCF¹⁰¹.

148. Antigua and Barbuda is party to the UNFCCC and the Kyoto Protocol. Accordingly, the project design is aligned with the guidance and eligibility criteria defined in these documents as described below.

149. *Participatory approach:* Activities and demonstration sites were selected through extensive stakeholder consultations at both local and national levels (Section 2.5). The proposed SCCF project will also create a participatory M&E system whereby local communities will be empowered to track the effects of project interventions. This will assist these communities to identify and prioritise appropriate interventions that can be implemented by accessing funding through the adaptation window of the SIRF Fund, the GEF Small Grants Programme and other sources of adaptation finance.

150. *“Learning-by-doing” approach:* The proposed SCCF project will pilot innovative techniques to build local communities’ resilience to climate change. Additionally, a strategy for upscaling funding for adaptation interventions will be produced. The lessons learned in this pilot phase – including best practices related to innovative adaptation financing – will be documented and disseminated nationally and regionally to inform development plans. The approach will provide future projects the lessons learned from the project interventions. Furthermore, the project is designed to complement other on-going and planned projects and programmes to prevent duplication (see Section 2.7).

151. *Multi-disciplinary approach:* The proposed SCCF project has been designed using a multi-sectoral approach. In particular, the water, agriculture and health sectors will benefit from project interventions. Stakeholders from these and other relevant sectors will be consulted extensively during project implementation to ensure that the project activities are consistent with stakeholder priorities.

152. *Complementary approach:* The proposed SCCF project will work in conjunction with relevant ongoing initiatives in Antigua and Barbuda (see Section 2.6). It will build on the activities of the identified baseline projects, increasing their capacity to achieve their objectives under conditions of climate change. The project will also exchange information with other ecosystem management projects to share valuable lessons and prevent duplication of efforts. In addition, a knowledge base on innovative adaptation funding will be created to promote climate change adaptation in Antigua and Barbuda as well as across the Caribbean region.

153. *Gender equality:* Men and women are affected differently by climate change¹⁰². Consequently, it is necessary to create an appropriate strategy for improving the climate resilience of particularly vulnerable women and men in Antigua and Barbuda. Female-headed households, elderly men and women, children and low-income households have been identified as vulnerable groups in Antigua and Barbuda. Moreover, there is little mainstreaming of gender concerns in policies related to climate change and the environment. The proposed SCCF project will mainstream gender equity by promoting

¹⁰¹ <http://www.thegef.org/gef/sites/thegef.org/files/documents/C.24.12.pdf>

¹⁰² Denton, F. (2002). Climate change vulnerability, impacts, and adaptation: Why does gender matter? *Gender & Development*, 10(2), 10–20. doi:10.1080/13552070215903

gender-sensitivity during the implementation of the programme activities. This approach is in line with regional and international obligations as well as Antigua and Barbuda's Strategic Plan of Action for Gender Affairs. Outcome 1 will include an analysis of the gender-related elements of vulnerability to climate-related risks in Antigua and Barbuda. These assessments will inform tailoring of climate-resilient and gender-sensitive investments to be implemented under Outcomes 2 and 3. In Outcome 2, operational guidelines for disbursement and management of outflows from the adaptation window of the SIRF Fund will give priority to female-headed and low-income households. By improving access to funding for adaptation interventions, the project will increase the resilience of the groups most vulnerable to climate-related natural hazards such as floods and hurricanes. These adaptation interventions include *inter alia*: i) increased access to clean, potable water – particularly during disaster events; and ii) reduced flooding of houses. Specific ways in which involvement of women will be facilitated under Outcome 3 include at least 50% women representation at training workshops, demonstration activities and management committees¹⁰³. Trainers will be required to have the skills and experience to plan and facilitate gender-sensitive workshops¹⁰⁴. In Outcome 4, knowledge generated by the SCCF-financed project will be consolidated into gender-responsive publications, language and messaging. This will enhance sensitivity towards differences among target audiences nationally and across the Caribbean through the REGATTA and OECS networks. In addition, appropriate access and communication channels to reach men and women equally when disseminating information will be used. Gender-disaggregated indicators will be developed and used for monitoring and evaluation of the SCCF project.

Overall GEF conformity

154. The proposed project has been designed to meet overall GEF requirements in terms of implementation and design. Core GEF criteria have been addressed as described below.

155. *Sustainability*: Building the technical capacity of local and national institutions to mainstream innovative financing for adaptation into policy and planning is a priority of the project. As such, adaptation interventions will be implemented in watersheds using a country-driven approach that promotes sustainability. Additionally, results and best practices will be documented to enable adaptation interventions to be upscaled and extend beyond the project's lifetime. See Section 3.8 for more information on sustainability. Project interventions will also address various elements of the NAP process in Antigua and Barbuda, particularly concerning institutional capacity for cross-sectoral adaptation planning and implementation. The SCCF project will therefore support enhanced action on climate change in the medium- to long-term.

156. *Replicability*: The project will systematically document the activities, management decisions, strategies, results and lessons learned. Such information will be used to guide the design and implementation of future similar projects, both nationally and regionally (refer to Section 3.9 for more information on replicability).

157. *Monitoring and evaluation*: the project design includes an effective M&E framework that will enable ongoing adaptive management. This will support the learning and dissemination of lessons by producing regular progress reports for stakeholders. See Section 8.6 for more information on M&E.

¹⁰³ This is not anticipated to be a problem as there is currently a high level of female participation in community forums. Female leadership within local community systems established during the project (3.2.3) will however need to be encouraged there is currently a relatively low level of female headship within community structures.

¹⁰⁴ Logistical support may be necessary to encourage women and elderly people to participate in workshops and demonstration activities. For example, childcare support will be provided while parents are attending training sessions and frequent breaks might be necessary for nursing mothers.

158. *Stakeholder involvement:* the project design was developed through extensive stakeholder consultations (Section 2.5). In addition, the design of the proposed project will engage a range of stakeholders throughout the project implementation phase.

3.2. Project goal and objective

159. The objective of the project is to build national and sub-national capacity for medium- and long-term adaptation planning, accessing innovative financing mechanisms and implementing cost-effective adaptation interventions focused on ecosystems for communities and sectors vulnerable to climate change in Antigua and Barbuda. Firstly, institutional and technical capacity to plan, implement, maintain and upscale adaptation interventions will be developed to improve climate resilience in the long term. Secondly, innovative mechanisms to promote funding flows into the SIRF fund and to disburse these funds through the adaptation window will enable the upscaling of adaptation interventions in Antigua and Barbuda. Thirdly, cost-effective adaptation interventions will be piloted in priority watersheds to reduce vulnerability to climate change. Finally, sharing of lessons learned on innovative financing for adaptation will broaden awareness on cost effective adaptation interventions within the broader Caribbean region.

3.3. Project components and expected results

160. The SCCF project will build on baseline projects identified during the PPG phase. Consequently, the SCCF project will contribute to the long-term sustainability of these baseline projects under conditions of climate change. The four components and associated activities that will be implemented by proposed project are detailed below.

Adaptation alternative

Component 1: Mainstreaming of innovative financing for adaptation into medium- and long-term policy and planning.

161. Activities implemented under Component 1 will strengthen national institutional and technical capacity for mainstreaming innovative financing for adaptation into policy and planning. The sectors targeted will be Physical Planning, Infrastructure Development and the Environment. The training and capacity building will therefore focus on the agencies and groups responsible for these sectors. Relevant policies and plans will be revised to promote climate change adaptation, including the use of innovative financing mechanisms to fund adaptation. Moreover, the integration of climate change adaptation into local-level planning will be promoted by training technicians from relevant institutions. Training will focus on the benefits of cost-effective adaptation interventions focused on ecosystems and on innovative financing mechanisms for adaptation. By building institutional capacity to access funding for adaptation and to identify appropriate adaptation interventions, activities under Component 1 will foster the mainstreaming of climate change adaptation in Antigua and Barbuda. This will primarily take place through the National Physical Development Plan by the production, approval and adoption into law of three local area development plans for the watersheds of the intervention sites.

Outcome 1: Policies, strategies and plans revised to promote medium- and long-term adaptation to climate change through mainstreaming of cost-effective adaptation interventions focused on ecosystems and innovative financing for adaptation.

Output 1.1: Institutional coordination mechanism established to guide medium- to long-term adaptation planning within the context of the NAP process.

162. This output will establish an institutional coordination mechanism to facilitate inter-sectoral planning and decision-making on medium- and long-term adaptation to climate change. Representatives from relevant government institutions will be identified to form an inter-agency climate change advisory committee to provide ongoing guidance on sectoral priorities for long-term adaptation. This committee will thus facilitate an integrated response to climate change vulnerability with a particular focus on Physical Planning, Infrastructure Development and the Environment. Furthermore, a climate public expenditure and institutional review will be conducted to map financial barriers, capacity gaps and other constraints to effective policy implementation pertaining to climate change adaptation.

The activities and sub-activities to be implemented under Output 1.1 are:

1.1.1: Identify focal points from key agencies – particularly the Environment Division, Surveys Division, APUA Water Unit, DCA, CBH and Public Works – to coordinate medium- to long-term adaptation planning.

1.1.2: Form an inter-agency climate change advisory committee to promote the mainstreaming of climate change adaptation – with specific reference to gender-sensitive adaptation approaches – into relevant sectoral plans as well as local area development plans.

1.1.3: Formulate a mandate and ToRs for the inter-agency climate change advisory committee defining its tasks and responsibilities in mainstreaming medium- to long-term adaptation to climate change into relevant policies and frameworks.

1.1.4: Conduct a climate public expenditure and institutional review to map financial gaps and other constraints to effective policy implementation, including detailing past expenditure on climate change and barriers to public and private sector financing of adaptation as well as outlining recommendations for future adaptation-related expenditure.

Output 1.2: Revised policies and plans – particularly local area development plans – that promote and facilitate medium- and long-term adaptation to climate change.

163. This output will promote the mainstreaming of climate change adaptation into national policies, planning and financing frameworks. Entry points for mainstreaming climate change into policies and plans will be identified. Based on this review, a draft National Climate Change Adaptation Plan and Implementation Strategy will be developed to articulate Antigua and Barbuda’s priorities for adapting to climate change. This strategy will be formulated based on up-to-date scientific knowledge on the expected effects of climate change on Antigua and Barbuda – as encapsulated in *inter alia* the country’s 3rd National Communication, NBSAP and UNCCD National Action Programme – and will follow the UNEP-UNDP Poverty-Environment Initiative approach for mainstreaming climate change adaptation.

164. Furthermore, local area development plans for the three project sites will be developed – following the provisions outlined in the SIRMZP and the National Physical Development Plan – and submitted through the DCA to the Parliament for approval and passage into law. The plans will be map-based and detail hydrological features such as watercourses, buffer zones, aquifer recharge areas and flood risk zones as well as human settlements, infrastructure and land use. The plans will also include a phased approach to the implementation of “hard” and “soft” adaptation measures for reducing vulnerability to climate change (see Outcome 3) such as guidelines for climate-resilient watershed management following a “Ridge-to-Reef” approach. After Parliamentary approval, the local area development plans will be included within the work plan of the DCA, the Public Works

Department and the Environment Division. Finally, the Antigua and Barbuda Building Code will be reviewed and updated to include guidelines for climate-resilient building design. The review will include lessons learned from the GEF project “Energy for Sustainable Development in Caribbean Buildings”. This will support the construction of climate-proof buildings, avoid construction in high risk flooding zones, and discourage watercourse alterations that reinforce flooding problems.

The activities and sub-activities to be implemented under Output 1.2 are:

1.2.1: Identify entry points for mainstreaming gender-sensitive adaptation to climate change in relevant national policies and frameworks, including opportunities for establishing innovative financing mechanisms. This will focus on policies/frameworks related to development planning, ecosystem management, water resources management, health and agriculture.

1.2.2: Develop local area development plan for key watersheds that will include climate-resilient development options, following the “Ridge-to-Reef” approach. These plans will be map-based and will include hydrological features, setbacks, no-building zones, aquifer recharge zones and flood risk areas.

1.2.3: Formulate a draft National Climate Change Adaptation Plan and Implementation Strategy as well as update the National Environmental Management Strategy to incorporate medium- to long-term considerations for climate change adaptation in alignment with the UNFCCC NAP process. These documents will include gender-specific adaptation considerations and will be based on *inter alia* the CPACC and VIA initiatives and will include the local area development plans for each of the intervention sites in the SCCF project.

1.2.4: Review and update the Antigua and Barbuda Building Code to include guidelines for climate-resilient building design. This will include identification and costing of building design related to adaptation measures that will inform the disbursement of funding through the SIRF Fund.

Output 1.3: Technical training delivered on integrating climate change adaptation into local-level planning, including cost-effective adaptation interventions focused on ecosystems and innovative financing mechanisms.

165. Under this output, the capacity of key personnel in relevant institutions to fund, plan and implement cost effective adaptation interventions will be developed. The policy and planning frameworks developed under Output 1.1 will be articulated in information briefs for policy- and decision-makers. The information briefs will detail: i) expected effects of climate change; ii) appropriate adaptation options for Antigua and Barbuda; and iii) cost-effectiveness of measures identified under Output 1.1 as well as Outcomes 2 and 3.

166. Capacity development will be further supported by: i) technical guidelines on implementation of local-level strategies and plans for climate change adaptation; ii) workshops to train civil servants on implementation of local-level strategies and plans for climate change adaptation; and iii) continuing education/professional development courses on climate change adaptation and development planning. This will help to address the technical capacity gaps within government related to climate change adaptation planning and implementation. In this way, key personnel in the government of Antigua and Barbuda will be better capacitated to respond to the challenges of climate change adaptation.

The activities and sub-activities to be implemented under Output 1.3 are:

1.3.1: Develop policy and information briefs for policy-makers – particularly the Ministry of Finance – on expected climate change effects and adaptation options in Antigua and Barbuda, as well as details of the revisions to policies, strategies and plans developed under Output 1.1, particularly with reference to gender-specific climate change vulnerabilities and adaptation options. These briefs will be based on the local area development plans as well as the National Physical Development Plan and will include IPCC-style infographics, short communications and detailed presentations.

1.3.2: Develop work programmes and advise strategies of relevant agencies on implementation of local-level strategies and plans for climate change adaptation based on the revised policies, strategies and plans developed under Output 1.1. The work programmes/strategies will inform requests to the Ministry of Finance for budget allocations. In addition, they will be formulated to be eligible for submission to the SIRF fund as well as other donors for funding of adaptation interventions.

1.3.3: Conduct training workshops with technicians from relevant institutions to implement strategic work plans developed in Output 1.2. The training will target technicians within the Environment Division, CBH, NSWMA, Surveys, Public Works and DCA to develop their ability to implement local-level strategies and plans that are climate-resilient.

1.3.4: Develop capacity of key personnel in relevant institutions on climate change adaptation through inclusion of continuing education and professional development courses – developed through Outcome 4 of this project and elsewhere – in formal staff training programmes.

Component 2: Innovative financing mechanisms for medium- and long-term adaptation

167. Component 2 will increase access of vulnerable community members to innovative financing for climate change adaptation. The Environmental Protection and Management Bill will legislate the SIRF Fund. As per the structure of the SIRF Fund, outlined in Figures 3 and 4, the SCCF project establishes and operationalizes the adaptation window. This will promote the flow of funds into and out of the SIRF Fund for financing household-level adaptation interventions.

168. Funds for implementation of the adaptation window and output interventions will be efficiently and equitably distributed to vulnerable community members. Small loans for adaptation interventions will be piloted through the adaptation window to test the procedures for disbursement and recovery of funds. Based on the results of these pilots, a strategy will be put in place to upscale and replicate funding for adaptation interventions. Ultimately, this will lead to sustainability and effectiveness of the SIRF Fund as a conduit for adaptation funding in Antigua and Barbuda.

Outcome 2: Access to innovative financing mechanisms to address the negative impacts of climate change in the medium and long term through adaptation interventions is increased.

Output 2.1: Operational guidelines and financial products developed for disbursement and management of outflows from the adaptation window of the SIRF Fund.

169. This output will develop mechanisms for disbursement of funding through the adaptation window of the SIRF fund. This process will be consultative and will involve engagement with CBOs to identify adaptation priorities as well as national and regional financial institutions – such as credit unions and banks – to design financial products that will reduce barriers to financing adaptation interventions. Financial products will include low interest loans to vulnerable households that are unable to access funding through means such as conventional bank loans. In designing these products, barriers in the private sector that inhibit access to financing for climate change adaptation will be identified and taken into consideration.

170. Furthermore, a suite of adaptation interventions eligible for funding through the adaptation window of the SIRF Fund will be developed. These interventions will focus on reducing vulnerability of households to the predicted effects of climate change in Antigua and Barbuda, particularly related to flooding and drought. The criteria for approval of applications for funding through the adaptation window of the SIRF Fund will then be defined. The main criteria will include the eligibility of households based on income and other socio-economic indicators, and the scope of the proposed interventions and the adaptation priorities to be addressed through them. For example, criteria for the selection of adaptation measures are likely to include, *inter alia*, i) potential for addressing identified climate risks (flooding, strong winds, droughts and vector-borne diseases); ii) cost-effectiveness; iii) sustainability; iv) environmental and socio-economic co-benefits; and v) addressing needs of various vulnerable groups (e.g. men, women, youth, elderly, people with disabilities).

171. Finally, the operational and financial procedures for disbursement and repayment of funding will be established. These procedures will ensure that applications for funding to the adaptation window are efficient and equitable. They will also ensure repayment of funds into the SIRF Fund to safeguard the sustainability of the fund. This will provide the necessary investment in the upscaling of adaptation interventions in Antigua and Barbuda, which will in turn build the climate resilience of vulnerable households.

The activities and sub-activities to be implemented under Output 2.1 are:

2.1.1: Identify the needs of government agencies, NGOs and CBOs as well as the private sector for adaptation funding and identify the main barriers to access available funds.

2.1.2: Consult with national and regional financial institutions – e.g. local banks and credit unions – to encourage the design of financial products that will finance adaptation interventions. These financial products may include low-interest loans to vulnerable households.

2.1.3: Develop a suite of adaptation interventions that are eligible for financing and adhere to revised policies and plans (see Outcome 1). Potential interventions include but are not limited to guttering and tanks for rainwater harvesting, hurricane shutters, solar panels for emergency power, waterway interventions, and other hard and soft engineering investments that improve resilience.

2.1.4: Define criteria for approval of applications for funding of adaptation interventions through innovative financing mechanisms. These criteria will include *inter alia* income levels of the applicants, the scope of the proposed interventions and the adaptation priorities to be addressed by the application.

2.1.5: Draft operational and financial requirements and procedures – for approval of the SIRF Fund Board – for financing adaptation through the SIRF Fund adaptation window, including arrangements for disbursements, repayments and auditing.

Output 2.2: Operational and financial guidelines developed for promoting funding flows into the adaptation window of the SIRF Fund.

172. Under Output 2.2, sources of funding inflows into the adaptation window of the SIRF Fund will be identified. Additionally, a general review of current financing mechanisms and access modalities for adaptation will be undertaken. The focus of this output will be on extracting lessons learned and best practices of mechanisms already in operation nationally and internationally. Mechanisms in place that could be examined include:

- Antigua & Barbuda’s existing environmental levy, which is an established financing mechanism from which lessons can be used to inform the structure of the proposed water levy.
- Antigua & Barbuda’s GEF Small Grants Programme’s funding for climate change adaptation at the community level has been very successful in distributing finances to community groups. An evaluation of the process and results of these projects, for which funds are currently being disbursed, could be used to inform the structure of the SIRF Fund access modalities for community groups and NGOs (Figure 3).
- The Caribbean Biodiversity Fund is a regional financing mechanism from which the SIRF Fund could refer to in the development of financing guidelines.

173. Lessons from the above case studies will optimise the efficacy of the adaptation window of the SIRF Fund, and serve to guide the development of financial and operational guidelines for regulating funding flows into the adaptation window. This will be done in close collaboration with the initiatives supporting the establishment of the other windows of the SIRF Fund – i.e. the GEF SPPARE and IWEco projects – to ensure a coordinated approach to the sourcing of funding.

The activities and sub-activities to be implemented under Output 2.2 are:

2.2.1: Amend the provisions of the SIRF Fund to establish an adaptation window including the management and operational structure of the window as outlined in Output 2.1.

2.2.2: Identify sources of funding inflows into the adaptation window of the SIRF Fund such as levies, tariffs, donor funds and private sector investment opportunities. This will be done in coordination with the GEF SPPARE and IWEco projects, and will inform the five-year business plan and fund-raising strategy for the adaptation window of the SIRF Fund (see Output 2.4).

2.2.3: Review current financing mechanisms and access modalities for adaptation drawing from international and regional lessons learned and best practices.

2.2.4: Develop financial and operational guidelines and manuals for regulating funding flows into the adaptation window of the SIRF Fund.

Output 2.3: Adaptation interventions demonstrated through piloting small loans disbursed through the adaptation window of the SIRF Fund.

174. This Output will provide proof of concept for the innovative funding mechanisms established under Component 2. A demonstration of the application and disbursement processes will help to facilitate the rollout of a higher volume of funding for adaptation interventions by informing the upscaling strategy formulated in Output 2.4.

175. To initiate these demonstrations, workshops and outreach activities with NGOs and CBOs will be conducted to introduce potential applicants to the adaptation window of the SIRF Fund. These applicants will be informed on *inter alia* the operational mechanism of the adaptation window as well as eligibility criteria and application procedures. Participants will include potential applications from the private sector as well as members of local communities that are vulnerable to the expected effects of climate change.

176. Subsequently, a number of small loans (ranging between ~US\$ 2,100 and US\$ 86,500 per loan; total value US\$ 1,620,000) will be disbursed through the adaptation window of the SIRF Fund for implementation of adaptation interventions. These loans will benefit low-income households that

are particularly vulnerable to climate change impacts through a needs-based assessment of the applications. The interventions to be funded will be selected by the applicants from the suite of interventions developed under Output 2.1. Loans will be disbursed on behalf of the households from the SIRF Fund directly to service providers – e.g. building contractors and suppliers – for purchases, installation and modification. After disbursement of funds, the efficacy of the adaptation interventions as well as the functioning of the disbursement and repayment arrangement will be monitored to provide lessons learned and best practices on implementation of innovative financing. This information will support the strategy for upscaling of the adaptation window of the SIRF Fund (see Output 2.4).

The activities and sub-activities to be implemented under Output 2.3 are:

2.3.1: Conduct outreach activities for potential applicants on applying to the SIRF Fund adaptation window for funding adaptation interventions. This will include informing them of eligibility criteria, the suite of adaptation interventions and the financial arrangements.

2.3.2: Disburse a number of small loans for adaptation interventions that qualify for funding based on the operational guidelines. These pilots will be used to test the disbursement and repayment arrangements developed under Output 2.2.

2.3.3: Monitor the implementation of the adaptation interventions and repayments into the SIRF Fund to provide lessons learned and best practices on the use of innovative finance mechanisms for climate change adaptation that can be replicated through the SIRF Fund.

Output 2.4: Strategy developed to upscale and replicate funding adaptation interventions through the adaptation window of the SIRF Fund.

177. Under this output, a business plan will be developed to guide the process of upscaling and replicating the funding of adaptation interventions through the SIRF Fund. This plan will be based on assessments of the sustainability and cost-effectiveness of adaptation interventions funded through the adaptation window.

178. Following development of the business plan, legislation for the SIRF Fund will be reviewed to accommodate innovative financing for adaptation through the adaptation window. Guidelines and training sessions on accessing innovative financing for adaptation through the SIRF Fund will then be provided to local communities, representatives of the private sector, local and national government institutions and CBOs/NGOs. This will capacitate relevant stakeholders to secure financing for adaptation through the adaptation window of the SIRF Fund.

The activities and sub-activities to be implemented under Output 2.4 are:

2.4.1: Assess the sustainability and cost-effectiveness of adaptation interventions implemented under Output 2.3 to identify interventions that provide real and sustainable benefits to beneficiaries and are therefore suitable for replication and upscaling.

2.4.2: Develop a detailed five-year business plan and fund-raising strategy for the adaptation window of the SIRF Fund – in coordination with the GEF SPPARE and IWEco projects – to guide the process of sustaining and upscaling the funding of adaptation interventions after project completion.

2.4.3: Develop guidelines and conduct training sessions on accessing financing through the SIRF Fund for community members, private sector entities, government institutions and CBOs/NGOs.

Component 3: Cost-effective pilot interventions for medium- and long-term climate change adaptation in vulnerable communities and sectors.

179. Under Component 3, cost-effective adaptation interventions will be designed and implemented to reduce the effects of climate change. The demonstration of these interventions will be planned at the scale of sub-watersheds based on the local area development plans (see Outcome 1) and using information generated through: i) comprehensive hydrological assessments; and ii) in-depth consultations with local communities living in the pilot watersheds. The information generated will be used to design local area development plans for the three sub-watersheds targeted in this project. The plans will be submitted through the DCA to the Parliament for approval and passage into law. Adaptation interventions will be demonstrated in the St. John's watershed, in the McKinnons/Fort Road area.

180. Local area development plans (see Outcome 1) will provide the basis of an upscaling strategy which will ensure that lessons learned from pilot interventions are captured and used to complete the vulnerability reduction program as well as be replicated in other development areas in Antigua and Barbuda. A detailed plan for up-scaling of pilot interventions will be developed to promote ongoing maintenance and replication during and after the period of project implementation. This plan will outline the processes for implementation of interventions as well long-term M&E activities. This will be complemented by capacity development for local communities and government technical staff to implement, maintain and monitor the adaptation interventions. The capacity development will follow a participatory approach in congruence with Principle 10 of Rio+20 concerning the participation of local communities in decision-making processes related to climate change.

Outcome 3: Adaptive capacity of local communities increased through implementation of pilot adaptation interventions focused on ecosystems in the St. John's watershed, to support them to cope with the effects of climate change in the long term.

Output 3.1: Cost-effective adaptation interventions designed for St. John's, Body Ponds and Christian Valley watersheds and implemented in St. John's watershed.

181. Under Output 3.1, appropriate adaptation interventions for the St. John's, Body Ponds and Christian Valley watersheds (see Figure 5) will be identified and implemented. Firstly, comprehensive hydrological assessments of the three watersheds will be conducted to identify important features such as watercourses, water bodies, flood risk zones and land-use patterns that impact on water resources. These assessments will be complemented by extensive consultations in the communities of Lower Gambles/Yorks (in the St. John's watershed), Cashew Hill (Body Ponds watershed) and Bolans/West Palm Beach (Christian Valley watershed). The community consultations will focus on identifying localised vulnerabilities and adaptation options related to flooding and other climate change impacts. In addition, the consultations will form the basis for engagement with local communities to implement the participatory M&E systems (see Output 3.2).

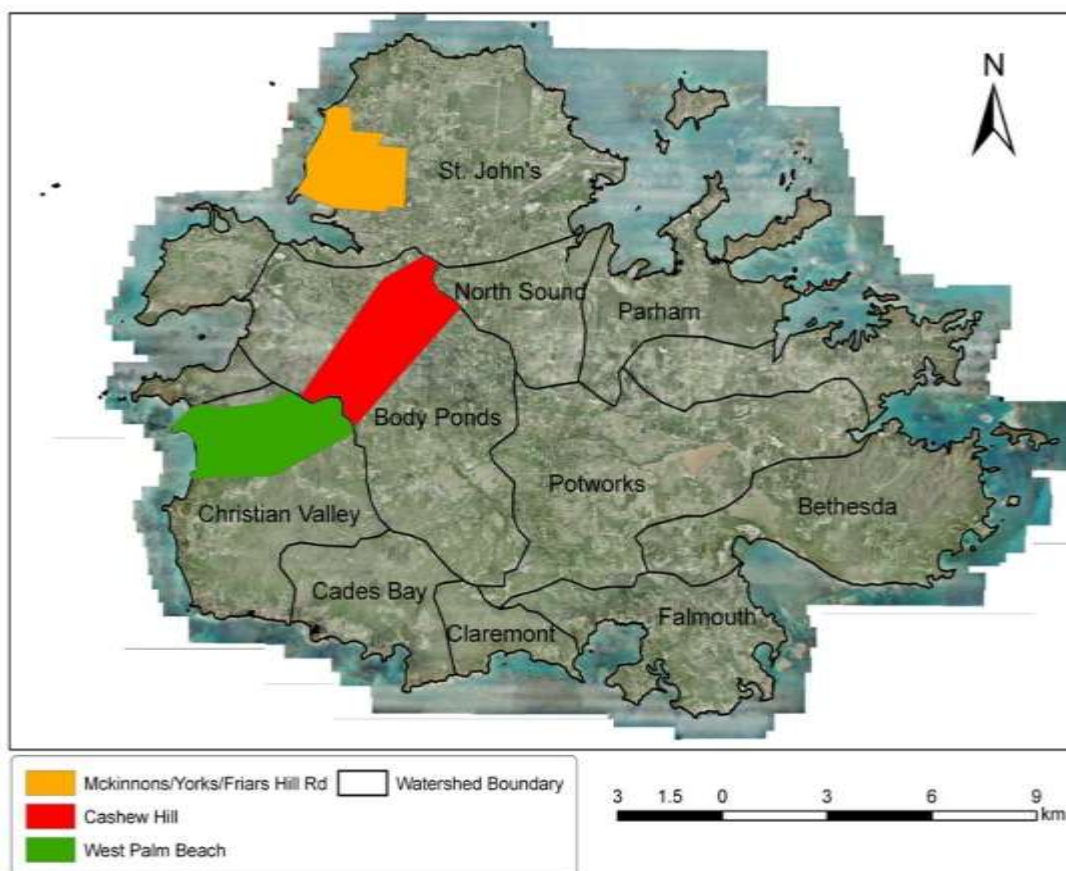


Figure 5. Map indicating the McKinnon’s Pond, Body Ponds and West Palm Beach/Christian Valley watersheds. Local area development plans will be formulated for all of these watersheds, with implementation of adaptation interventions to occur in the St. John’s watershed.

182. The insights from the hydrological assessments and community consultations will inform the drafting of local area development plans (see Outcome 1) for the St. John’s, Body Ponds and Christian Valley watersheds. The local area development plans will also draw on the findings of two recently completed studies, *viz.*: i) a national assessment of climate change impacts on the water sector¹⁰⁵; and ii) a vulnerability, impact and adaptation analysis¹⁰⁶. These local area development plans will regulate current and future development/land-use planning in a climate-resilient manner, as well as detailing “hard” construction and “soft” ecosystem interventions for climate change adaptation that are cost-effective and low or no regret. Moreover, the local area development plans will undergo UNEP’s Environmental, Social and Economic risk screening process. This will identify potential environmental, social and economic risks of the proposed interventions in order to address them adequately by avoiding, mitigating or minimizing them in a structured, consultative and planned manner, and to ensure that the selected adaptation measures provide positive environmental and social benefits. Interventions are likely to include *inter alia*: i) establishment of buffer zones around waterways to prevent building in flood risk zones; ii) managed aquifer recharge to increase infiltration

¹⁰⁵ The “Impact Assessment to Address Climate Change in the Water Sector for Antigua and Barbuda” was completed in 2014. It was a European Union-funded initiative, implemented by the CCCCC.

¹⁰⁶ The “Vulnerability, Impact and Adaptation Analyses in the Caribbean” initiative has conducted a VIA for Antigua and Barbuda. This initiative is supported by UNEP-REGATTA and implemented through CARIBSAVE.

while also reducing flood risk (see Appendix 17); iii) protection of vegetation cover to reduce erosion; iv) construction of check dams/retention ponds to reduce flooding; v) re-engineering of waterways to prevent flooding in urban areas; vi) bio-remediation to improve water quality and prevent disease outbreaks; and vii) clearing of blocked waterways to prevent flooding. Selection of ecosystem interventions will follow the guidance provided by UNEP’s Ecosystem-based Adaptation Decision Support Framework. Criteria for the selection of these interventions may include: i) priorities of local communities; ii) positive social and environmental impacts; iii) cost-effectiveness; iv) provision of multiple benefits; and v) potential for providing adaptation benefits under future climate change conditions.

183. Based on the prioritised adaptation interventions, capacity building of technical staff in relevant government institutions¹⁰⁷ will be undertaken. Staff will be trained by regional/international specialists on a range of technical skills relevant to planning and implementation of “hard” and “soft” interventions through a “learning-by-doing” approach. Training themes will include: i) use of equipment for watershed mapping and adaptation; ii) methods for community outreach and consultation; and iii) implementation of adaptation interventions. In particular, training will cover the planning of waterways, drains and gutters to cope with the expected increases in water volume that will result from climate change. This training will be complemented by implementation of prioritised adaptation interventions in the St. John’s watershed, based on the local area plan. This will form part of the “learning-by-doing” training, with technical staff being actively engaged in the implementation of the adaptation interventions.

184. Finally, a strategy for up-scaling of watershed management will be developed. This will be complementary to the national and local level plans/strategies on climate change adaptation (see Component 1). The strategy will detail: i) replication of local area development plans in other watersheds in Antigua and Barbuda; ii) upscaling of adaptation interventions; iii) on-going maintenance of adaptation interventions; and iv) long-term monitoring and evaluation of the effectiveness of adaptation interventions. Development of the strategy will be based on the lessons learned under this output to ensure that it is applicable to Antigua and Barbuda’s socio-economic context and specific vulnerabilities to climate change.

The activities and sub-activities to be implemented under Output 3.1 are:

3.1.1: Conduct comprehensive hydrological surveys of the pilot watersheds to map hydrological features, flood risk zones and land-use patterns. These surveys will feed into the local area development plan for each site as well as inform the design of “hard” and “soft” adaptation interventions.

3.1.2: Conduct outreach activities in communities within these watersheds to identify priorities for adaptation, including localised vulnerabilities to climate risks.

3.1.3: Design watershed- and community-level adaptation interventions – including both infrastructural (“hard”) and ecosystem-based (“soft”) measures – based on the hydrological surveys as well as the outputs from the EU-CCCC and REGATTA-CARIBSAVE initiatives. These will also feed into the local area development plans developed under Outcome 1.

3.1.4: Implement prioritised adaptation interventions in the St. John’s watershed based on the local area development plans developed under Outcome 1 as well as the findings from this output. These interventions are expected to include managed aquifer recharge, maintenance of minimum vegetation

¹⁰⁷ Including DCA, CBH and Environment Division.

cover in upper catchments, re-engineering of watercourses, construction of check dams/retention ponds, bio-remediation and clearing of blocked waterways.

3.1.5: Develop a strategy for up-scaled implementation and long-term monitoring and evaluation across other watersheds, based on lessons learned from this Output.

Output 3.2: Local communities in the project sites trained to implement and sustain adaptation interventions in the medium and long term.

185. Under Output 3.2, CBOs and local communities in the St. John's, Body Ponds and Christian Valley watersheds will be trained by community trainers/facilitators to identify, implement and monitor local-level interventions for climate change adaptation. The activities under this Output will be conducted in alignment with Principle 10 of Rio+20 by engaging local communities in decision-making processes related to climate change. Community-based training programmes will be developed on watershed management for climate change adaptation. These training programmes will include themes such as: i) identifying localised climate vulnerabilities; ii) prioritising community-level interventions to reduce vulnerability to climate change; iii) accessing financing for adaptation, e.g. through the GEF Small Grants Programme; and iv) implementing and sustaining adaptation interventions.

186. After development of the training programmes, community facilitators will be capacitated to train fellow community members on climate change adaptation. A "training-of-trainers" approach will be followed whereby these community facilitators will be trained on climate change projections, expected climate-related risks and appropriate adaptation responses. The community facilitators will then conduct a number of training sessions in local communities in the St. John's, Body Ponds and Christian Valley watersheds. The training sessions will follow the community-based training programmes and focus building the capacities community members and CBOs to identify, implement and monitor adaptation interventions.

187. To facilitate dialogue concerning climate change adaptation, local communication forums will be established. These forums will engage local community members, policy- and decision-makers, community-based organisations, development partners and other stakeholders. Forums are like to take the form of community workshops and experience-sharing days to showcase successful adaptation measures (such as those demonstrated through Output 3.1). By including policy- and decision-makers in these forums, local communities will be better able to advocate for increased action for climate change adaptation. At the same time, greater public awareness on the effects of climate change as well as options for adaptation will be fostered.

188. Finally, a participatory M&E framework will be established, guided by the principles of the GEF Scientific and Technical Advisory Panel's *Resilience, Adaptation Pathways and Transformation Assessment Framework* and other recent guidance on adaptation M&E. Within this framework, local community members within the project sites will be regularly consulted concerning their knowledge, attitudes and practices related to climate change adaptation. This will allow for the monitoring of biophysical and/or social-ecological benefits – as well as changes in community vulnerability – resulting from project activities. Lessons learned from these consultations will be collated and documented to provide insights and best practices for informing upscaling of adaptation interventions as well as for building national and regional awareness of climate change (see Component 4).

The activities and sub-activities to be implemented under Output 3.2 are:

3.2.1: Develop community-based training programmes on adaptation interventions for watershed management as well as accessing financing for implementing and sustaining such interventions (e.g. through the GEF Small Grants Programme).

3.2.2: Train community facilitators on climate change projections and appropriate adaptation interventions following a “training-of-trainers” approach.

3.2.3: Conduct training workshops with local communities on implementing and monitoring the adaptation interventions undertaken under Output 3.1.

3.2.4: Establish local communication forums – such as community workshops and experience-sharing days – to facilitate learning and dialogue among policy makers, implementers and local community members.

3.2.5: Design and implement a participatory M&E framework – following the Knowledge, Attitudes and Practices methodology¹⁰⁸ – to track the biophysical and social-ecological benefits provided by adaptation interventions implemented under Output 3.1.

Component 4: National and regional knowledge and awareness of innovative financing mechanisms for long-term climate change adaptation in the Caribbean.

189. Under Component 4, the national and regional knowledge bases for supporting the development of adaptation financing mechanisms and implementation of adaptation interventions will be strengthened. As part of a national awareness campaign, awareness products will be developed and disseminated to communicate: i) general information on climate change effects and adaptation; ii) the benefits of adaptation interventions that have been implemented through this project; and iii) the availability of innovative financing for interventions. By disseminating this information, a broad range of stakeholders – such as local community members, NGOs, CBOs, businesses and government agencies – will become aware of options for enhancing their climate resilience.

190. Complementary to the national awareness campaign, knowledge sharing across the Caribbean region on climate change adaptation will be supported. Insights and best practices about adaptation interventions and innovative financing mechanisms – as demonstrated through Outcomes 2 and 3 – will be shared during a regional workshop with local, regional and international climate change practitioners. Insights from these expert discussions will be shared through relevant forums as well as more broadly disseminated through regional level awareness-raising activities. By sharing knowledge regionally, the SCCF project will contribute towards improved climate resilience within the broader Caribbean region.

Outcome 4: Knowledge and awareness on adaptation financing mechanisms and implementation of adaptation interventions in the medium to long term is strengthened.

Output 4.1: National awareness raising activities undertaken on innovative financing mechanisms for medium- and long-term adaptation

191. Under this Output, the general public in Antigua and Barbuda will be made aware of appropriate adaptation options and opportunities for innovative financing for adaptation. Exhibits such as small models of climate-resilient housing and watershed management options will be developed and showcased in the Environment Division’s Botanical Gardens at Victoria Park. In addition,

¹⁰⁸ See Appendix 18.

knowledge and awareness products such as short documentaries, radio shows, infotainment programmes and social media campaigns will be developed. These will be disseminated via media including radio, television, community meetings and social media platforms.

192. Climate change and adaptation will also be integrated into the ongoing revisions of secondary school curricula. A teachers' toolkit will be developed to guide educators on climate change education. These activities will increase awareness and knowledge amongst the youth – a climate vulnerable demographic – by mainstreaming of climate change and adaptation into the national education system.

The activities and sub-activities to be implemented under Output 4.1 are:

4.1.1: Develop exhibits for the Environment Division's Botanical Gardens that showcase adaptation interventions piloted under this project. These will include small models of watersheds and communities to illustrate the effects of climate change and the benefits of adaptation interventions.

4.1.2: Design knowledge and awareness products – such as short documentaries, radio discussions, infotainment programmes and social media campaigns – on adaptation interventions (based on results from Outcome 3) and innovative financing mechanisms (based on Outcome 2).

4.1.3: Conduct national awareness campaigns that disseminate the knowledge and awareness products to the general public via appropriate media including radio, television, community meetings and social media platforms.

4.1.4: Integrate climate change and adaptation into on-going revisions of secondary school curricula for Geography and Social Studies. This will include development of a teachers' toolkit on climate change education.

Output 4.2: Regional knowledge sharing on innovative financing for medium- to long-term adaptation is enhanced in the Caribbean through exchange of lessons learned.

193. Under Output 4.2, knowledge about adaptation interventions and innovative financing mechanisms piloted in the SCCF project will be shared across the broader Caribbean region and particularly amongst OECS member states. This will be achieved by conducting a regional REGATTA-OECS workshop with local and international climate change practitioners to share information and best practices on “hard” and “soft” adaptation interventions as well as innovative financing mechanisms for adaptation. Insights generated in this regional workshop – along with international best practices and lessons learned from the project – will be used as the basis for the creation of professional development modules modelled after the REGATTA Communities of Practice, focusing on the Caribbean and SIDS. In addition to the workshop, regional awareness-raising activities – in particular amongst the OECS member states – will also be undertaken to share lessons learned and best practices from the regional workshops and project results. The SCCF project is a flagship initiative within the Caribbean region in terms of establishing innovative finance mechanisms and as such is well positioned to provide examples to inform replication of similar activities across the region.

194. The sharing of knowledge will be undertaken pursuant to Antigua and Barbuda's commitments under the St. George's Declaration for promoting environmental sustainability among OECS members. In particular, it is in accordance with Principle 18 – *Coordinated Work with the International Community* – and Principle 20 – *Obligations of Member States*.

The activities and sub-activities to be implemented under Output 4.2 are:

4.2.1: Conduct a regional REGATTA-OECS workshop for stakeholders from across the Caribbean to share information and best practices for climate change adaptation in SIDS. The focus of the workshop will be on adaptation interventions focused on ecosystems, as well as innovative financing mechanisms.

4.2.2: Collate lessons learned and best practices from the regional REGATTA-OECS workshop to inform the design of training programmes (Outcome 1), adaptation interventions (Outcomes 2 and 3) and awareness-raising activities (Outcome 4) in this project.

4.2.3: Create professional development modules modelled after the REGATTA Communities of Practice platform on innovative financing mechanisms, adaptation interventions focused on ecosystems and integration of climate change into school curricula within the context of Caribbean SIDS. These will be shared through REGATTA, the OECS and other relevant platforms.

4.2.4: Design and implement regional level awareness-raising activities – particularly amongst OECS members – to share lessons learned and best practices from the regional workshop and project results. This will include briefings to relevant organs¹⁰⁹ on high-level policy-making and planning, articles in relevant publications¹¹⁰, inputs into relevant workshops/trainings and short segments on OECS TV.

3.4. Intervention logic and key assumptions

195. The interventions designed in the SCCF project will: i) increase technical capacity of local and national institutions to mainstream climate change adaptation into policy and planning; ii) establish the adaptation window of the SIRF Fund to finance appropriate interventions for climate change adaptation in Antigua and Barbuda; and iii) reduce vulnerability of local communities and ecosystem-dependent sectors to climate change through pilot interventions with the development of associated upscaling strategies.

196. The activities to be implemented by the SCCF project are considered “low regret” or “no regret” options. This is because these activities will provide benefits at the regional, national and local level even if the effects of climate change are not as severe as currently predicted. For example, activities that focus on strengthening the technical capacity of local and national institutions (Outcome 1) will support improved planning and management, particularly with respect to budget allocations and the use of innovative financing mechanisms in a variety of relevant national policies and frameworks. In addition, activities which focus on the development of training programmes for individuals – such as technicians and members of local communities living in selected watersheds – will increase the human resources capacity of Antigua and Barbuda. Furthermore, design and implementation of adaptation interventions at project sites (Outcome 3) will improve human well-being by: i) protecting human lives and community assets from climate-related risks; ii) improving ecosystems services such as flood alleviation and water provisioning; and iii) reducing the likelihood of climate-related diseases.

197. Through the SCCF project, an adaptation window of the SIRF Fund will be developed to give vulnerable stakeholders within Antigua and Barbuda ongoing access to funding for adaptation interventions (Outcome 2). The adaptation window will empower stakeholders to access funds to climate-proof their infrastructure and assets. Additionally, mechanisms will be put in place to: i) promote inflows into the SIRF Fund (Output 2.1); ii) disburse outflows from the SIRF Fund; and iii)

¹⁰⁹ E.g. OECS organs such as the Authority, Council of Ministers, Assembly and Commission.

¹¹⁰ E.g. newsletters and press releases of OECS’s units (Environment and Sustainable Development, Social Development).

regulate repayments in the SIRF Fund. These processes will ensure that adaptation interventions will be funded during and beyond the extent of the SCCF project.

198. Based on the results of project activities, national and regional awareness campaigns will be conducted (Outcome 4). These campaigns will disseminate knowledge and information on opportunities for and benefits of climate change adaptation. These campaigns will focus on the particular vulnerabilities of Caribbean countries to climate change. This will enhance the sustainability, replication and upscaling of the project interventions during and after the period of implementation.

199. The following assumptions underlie the overall project design:

- project activities are unlikely to be undermined by extreme climate events during project implementation;
- local communities accept and are willing to participate in the proposed interventions during the implementation of the project.
- GoAB will fully support the project throughout its duration;
- GoAB and its relevant institutions will have sufficient capacity to support the project's activities;
- individuals that meet criteria will apply for small loans from the SIRF fund adaptation window;
- staff will remain in their government positions and apply their new skills acquired through training;
- sufficient national financial resources will be available to maintain the project's interventions in the long term;
- the priority interventions implemented are cost effective;
- baseline project activities will be implemented as planned;
- climate change adaptation priorities are unlikely to be undermined by national emergencies or civil unrest; and
- large-scale infrastructural developments – that would disrupt project activities – will not take place within the project areas during project implementation.

3.5. Risk analysis and risk management measures

Table 2: Risk matrix

Description	Potential consequence	Countermeasures	Risk category	Probability & impact (1–5)
Delays in policy revision process.	Inefficiencies in existing policy revision system hampers mainstreaming of climate change into national policies and plans.	<ul style="list-style-type: none"> The Project Steering Committee (PSC) to track and report on progress of policies as they move through the revision process – addressing procedural roadblocks as they arise. 	Organisational	P = 3 I = 2
High turnover of staff members in implementing agencies.	High staff turnover and poor institutional memory result in disruptions or delays in project implementation and coordination.	<ul style="list-style-type: none"> Deputies and alternative representatives within the institutions will be recommended at inception to ensure that sufficient membership continuity is available. As far as possible, deputies and alternative representatives will attend all trainings, workshops and decision-making fora to ensure the greatest possible spread of institutional knowledge. The PSC will make use of established government structures to capitalise on functioning systems. New training modules will be documented and made available within institutions and incorporated into ongoing and future training opportunities (see Output 1.3). New procedures will be incorporated into technical manuals to ensure that institutional memory is not lost. 	Organisational	P = 3 I = 3
Insufficient uptake of small loans from the adaptation window of the SIRF Fund.	Insufficient climate change adaptations interventions implemented by vulnerable households.	<ul style="list-style-type: none"> Workshops and outreach activities on applying to the SIRF adaptation window will be conducted. National awareness raising activities and campaigns will be rolled out to spread awareness of innovative financing mechanisms and adaptation interventions. 	Social	P = 1 I = 4
Improper application of	Funds used for purposes that	<ul style="list-style-type: none"> Loans will be disbursed on behalf of the 	Operational	P = 1

<p>funding from the adaptation window of the SIRF Fund.</p>	<p>are not for climate change adaptation or that do not fall within the Fund's eligibility criteria.</p>	<p>households from the SIRF Fund directly to service providers – e.g. building contractors and suppliers – for purchases, installation and modification in strict accordance with the applications that are approved.</p>		<p>I = 3</p>
<p>Limited capacity of institutions to undertake scientifically rigorous research in order to create local area development plans.</p>	<p>Effectiveness of local area development plans reduced.</p>	<ul style="list-style-type: none"> Government technicians will be trained on technical skills required to develop local area development plans <i>inter alia</i>: i) use of the EIMAS to store information and the use of GIS and other equipment/tools for mapping and planning; ii) management of threats to vulnerable ecosystems such as watershed degradation; iii) climate vulnerability and risk analysis; and iv) community engagement and outreach. 	<p>Institutional</p>	<p>P = 3 I = 4</p>
<p>Disagreement between stakeholders on the allocation of roles in the project.</p>	<p>Project interventions delayed or duplicated because of uncertain role allocation. Effectiveness of project management is reduced.</p>	<ul style="list-style-type: none"> Institutional representatives at the validation meeting will agree upon the roles and responsibilities of each participating stakeholder. The project will also address three key areas that are currently allocated by statute to respective agencies, namely Physical Planning, Infrastructure Development and the Environment. 	<p>Organisational</p>	<p>P = 2 I = 3</p>
<p>Lack of inter-institutional data sharing or collaboration.</p>	<p>Limited transfer of relevant project information amongst role players and end-users resulting in delayed or ineffective implementation of interventions.</p>	<ul style="list-style-type: none"> Representation of a range of stakeholders on the PMC and the TAC will promote collaboration and cooperation between government and other institutions. Support informal knowledge sharing opportunities such as networking events between relevant government departments/units. The local area development plans to be developed are required by law to have consultation and collaboration between institutions after which they will be approved and published by the Parliament. The new National Environmental 	<p>Organisational</p>	<p>P = 2 I = 3</p>

		Management Strategy (NEMS) will establish an environmental data system to provide detailed information to a wide range of stakeholders.		
Limited government support for project activities in pilot intervention sites.	Loss of government support may result in lack of prioritisation of proposed SCCF project activities.	<ul style="list-style-type: none"> • Training of government technicians, policy makers and other relevant stakeholders on: i) the effects of climate change on Antigua and Barbuda; and ii) the benefits of adaptation interventions implemented by the project. 	Organisational	P = 2 I = 4
Disagreement over allocation of loans through the SIRF Fund for implementation of adaptation interventions.	Dissatisfaction amongst community members concerning the operation of the adaptation window of the SIRF Fund	<ul style="list-style-type: none"> • Intervention sites have been selected based on a review of vulnerabilities through a transparent, logical and equitable site-selection process. This review is publically available and has been included as Appendix 21. 	Social	P = 3 I = 2
Extreme climatic events and climate variability.	Current climate and seasonal variability and/or hazard events result in disruption to implementation of adaptation interventions.	<ul style="list-style-type: none"> • Weather forecasting will be taken into consideration when planning climate-sensitive implementation activities. For example, no construction of hard infrastructure or planting will take place during hurricane season. 	Environmental	P = 3 I = 4
Implemented interventions are not cost effective.	Economic loss occurs and budget allocation to other activities is reduced.	<ul style="list-style-type: none"> • Analysis of project interventions undertaken before implementation to establish their cost effectiveness. 	Economic	P = 2 I = 3
Limited commitment/buy-in from local communities.	Lack of commitment/buy-in from local communities may result in failure of demonstration projects.	<ul style="list-style-type: none"> • A stakeholder engagement plan will ensure that local communities are sufficiently consulted during planning and implementation. • Capacity building and training of local communities will be undertaken to communicate the benefits of adaption interventions and involve them in implementation and monitoring and evaluation. • Awareness-raising campaigns will be undertaken to promote adaptation interventions. These campaigns will highlight the importance of SCCF project interventions. 	Social, Environmental	P = 2 I = 4

3.6. Consistency with national priorities or plans

200. The project is aligned with the primary development strategies of Antigua and Barbuda. These national priorities and plans are described below.

201. The SCCF project is aligned with **Antigua and Barbuda's Country Paper on National Climate Change Issues (2001)**. The Country Paper emphasises the need for increased capacity for climate change adaptation at a national level. This is addressed in the project through technical training of policy makers, government officials and technicians on the benefits of cost effective adaptation interventions and training of community members on how to implement and sustain adaptation interventions. The SCCF project is particularly aligned with several of the paper's recommended strategies for building capacity for adapting to climate change *inter alia*: i) improvement in physical planning and development control; ii) implementation and strengthening of building codes and legislation pertaining to development around watercourses; and iii) protection and maintenance of critical watersheds. Moreover, by developing mechanisms to promote funding flows into the adaptation window of the SIRF fund, the SCCF project will help to direct funding towards adaptation innovations that can address these strategic priorities going forward.

202. The **Second National Communication to the UNFCCC** asserts the need for projects specifically aimed at climate change risk reduction and adaptation. The SCCF project will assist local communities and sectors to adapt to climate change by: i) piloting adaptation interventions in selected sites; and ii) piloting a soft loan programme that will channel finance from the adaptation window of the SIRF fund for implementation of adaptation interventions for vulnerable households. The interventions promoted through the project will decrease the vulnerability of recipients to the predicted effects of climate change by for example reducing flood risk and climate-proofing buildings. Additionally, the SNC asserts that public awareness will be the critical factor in determining the success of climate change adaptation efforts. Congruently, the SCCF project includes a public awareness campaign that will disseminate information on ecosystem focused adaptation interventions and on related innovative financing mechanisms as well as targeted training and awareness-raising within local communities. The project will also involve the integration of climate change adaptation into ongoing revisions of school curricula.

203. The **Policy Framework for Integrated Adaptation Planning and Management in Antigua and Barbuda (2002)** provides basic guidelines for the establishment and implementation of a National Climate Change Adaptation Plan. This plan will be drafted during the SCCF project as a means of strengthening the capacity of local and national institutions to mainstream adaptation into policy and planning. The Policy Framework also advocates the development of economic incentives to encourage investment in public and private sector adaptation measures. The SCCF project supports this strategy through the creation of an adaptation window for the SIRF Fund to finance adaptation interventions at different levels – for example in business, households, and government agencies.

204. One of the strategic priorities of the **Environmental Management Strategy and Action Plan 2004 – 2009 (EMSAP)** is to design economic tools and incentives to encourage the most efficient and strategic use of limited natural resources in Antigua and Barbuda. The SCCF project is aligned with this priority as it will implement adaptation measures through Integration Watershed Management Plans which will guide the appropriate management of freshwater in the McKinnon's Pond, Body Ponds and Christian Valley watersheds.

205. The **National Economic and Social Transformation (NEST) Plan** is Antigua and Barbuda's strategic response to global economic and financial developments. The focus of NEST Plan is on stabilising the economy and securing the financial sector. The SCCF project will support the

development of a more climate-resilient economy by setting up systems to access and distribute international funding for adaptation interventions nationally. Additionally, the NEST Plan seeks to protect vulnerable communities and sectors within Antigua and Barbuda. In alignment with this, the SCCF project will implement measures to improve the climate resilience of: i) local communities that are vulnerable to the predicted effects of climate change; and ii) vulnerable sectors reliant on ecosystems – such as tourism, health, agriculture and water.

206. The **National Strategic Biodiversity Action Plan (2014–2020)** emphasises the effects of poor development planning on biodiversity and related ecosystem services. It advocates for the enforcement of policies, regulations and legislation affecting the sustainable use, protection and conservation of biodiversity in Antigua and Barbuda. The SCCF project is aligned with this objective in that it will support the formulation of local area development plans that will regulate infrastructure development and land-use planning in the three project sites. The local area development plans as well as the “hard” and “soft” measures implemented under Outcome 3 will focus on safeguarding ecosystem services that improve resilience to climate change, e.g. flood risk management.

207. The **Sustainable Island Resource Management Zoning Plan (2011) (SIRMZP)** is a strategic national spatial development framework. As such, it provides a platform for private and public sector development initiatives over the next 20 years. The SIRMZP is designed to promote the long-term maintenance of ecosystem functions, protection of critical habitats, and the sustainable use of natural resources. The SCCF project builds on the recommendations of the SIRMZP by designing and implementing local area development plans for priority watersheds.

208. The **United Nations Multi-country Sustainable Development Framework** for English-speaking Caribbean countries is currently under preparation. Consultations to date have led to the identification of four draft strategic priorities. The SCCF project is strongly aligned with the priority for “A sustainable and resilient Caribbean”. In particular, the project aligns with national-level priorities for climate change adaptation and disaster risk management, through the implementation of household- and watershed-level adaptation interventions to reduce the impact of climate-induced hazards such as flooding and hurricanes.

3.7. Incremental cost reasoning

209. The current and predicted effects of climate change will continue to have multiple negative effects on human health, economic development and ecosystems functioning in Antigua and Barbuda. The proposed SCCF project will increase the resilience of local communities and sectors to climate change. This will be achieved through strengthening the climate resilience of activities implemented by ongoing baseline projects.

Component 1: Mainstreaming of innovative financing for adaptation into medium- and long-term policy and planning.

210. Component 1 has a single outcome, namely to strengthen the capacity of local and national institutions to mainstream innovative financing for adaptation into policy and planning to address the negative impacts of climate change. To achieve this outcome, an amount of US\$ 342,894 will be allocated to: i) revisions of policies and plans to promote and facilitate adaptation to climate change including using innovative financing mechanisms; and ii) undertake technical training on integrating climate change adaptation into local-level planning, including cost-effective adaptation interventions focused on ecosystems and innovative financing mechanisms. The sectors targeted will be Physical Planning, Infrastructure Development and the Environment. The training and capacity building will therefore focus on the agencies and groups responsible for these sectors.

211. Without the interventions of the SCCF project, national policies and plans – particularly the National Environmental Management Strategy and National Physical Development Plan – will not take climate change and adaptation into account as quickly or as comprehensively as is necessary to cope with the predicted effects of climate change. While the Global Support Programme for NAPs in non-LDCs will support some elements of institutional capacity building, it is unlikely to provide comprehensive enough support to address all of Antigua and Barbuda’s needs for cross-sectoral coordination of adaptation planning. The mainstreaming of climate change into local area development plans would be significantly delayed, and economic sectors and local communities would remain much more vulnerable to the current and predicted effects of climate change. Importantly, the SCCF project builds a foundation of climate awareness for government technicians – such as engineers, planners and urban designers – and their technical capacity to plan and implement adaptation interventions, which is presently insufficient for integrating climate change adaptation into local-level planning. Consequently, the SCCF project’s value-added interventions will address various elements for advancing the UNFCCC-mandate NAP process in the country. Component 1 has been designed to provide a platform for catalysing adaptation initiatives and building some initial elements of the NAP process across Antigua and Barbuda by: i) mainstreaming climate change and adaptation into policy and planning (particularly the National Environmental Management Strategy and National Physical Development Plan); ii) formulating local area development plans to be approved by the Physical Planning authority; and iii) by building technical capacity to integrate climate change adaptation into local-level planning. Consequently, the SCCF project is contributing to mainstreaming of climate change and adaptation into development planning processes and legal procedures. This will systematically build climate resilience in the activities of key planning and implementation agencies.

Component 2: Innovative financing mechanisms for medium- and long-term adaptation.

212. Under Component 2, a total of US\$ 1,845,876 will be invested into achieving the following outcome: increased access to innovative financing mechanisms to address the negative impacts of climate change through adaptation interventions. This will be achieved by: i) developing mechanisms for promoting funding flows into the adaptation window of the SIRF Fund; ii) developing operational guidelines for disbursement and management of outflows from the adaptation window of the SIRF Fund; iii) demonstrating adaptation interventions through piloting small loans funded through the adaptation window of the SIRF Fund; and iii) developing a strategy to upscale and replicate funding adaptation interventions through the adaptation window of the SIRF Fund.

213. Currently, the flow of international funding into Antigua and Barbuda is insufficient to finance climate change adaptation interventions at a national scale. Additionally, there are limited financial resources available within the country’s small tax and market base to provide necessary investments in local-level adaptation. Compounding this problem, there is little proof of concept available for nationally-appropriate adaptation interventions to inform replication and upscaling strategies. Consequently, vulnerable households are ill-prepared to adapt to the predicted effects of climate change such as increased flooding and storm damage. The SCCF project will address these shortfalls by establishing the adaptation window of the SIRF. Sources of funding for inflows into the adaptation window will be identified, including options for private sector funding. Innovative financing mechanisms will be designed in consultation with national and regional financial institutions to overcome barriers to accessing financing. Successful applicants – particularly vulnerable households – will have access to funding for necessary adaptation interventions. Such interventions are likely to include *inter alia*: i) hurricane shutters to prevent storm damage; ii) rainwater water harvesting for emergency water supply; iii) solar panels for emergency power; and iv) construction of guttering, cisterns, roofs and other structures for rain-water harvesting. These measures will *inter alia* be identified in Component 1 through the revision of the Antigua and Barbuda Building Code. The

piloting of this innovative financing mechanism is expected to lead to the adaptation window of the SIRF Fund becoming a conduit for large-scale funding of adaptation interventions in Antigua and Barbuda in the future.

Component 3: Cost-effective pilot interventions for medium- and long-term climate change adaptation in vulnerable communities and sectors

214. To promote the upscaling of adaptation interventions, Component 3 will demonstrate adaptation interventions in priority watersheds. The outcome of the component is to reduce vulnerability to climate change through pilot interventions. To this end, US\$ 2,392,236 will be allocated to: i) implement cost-effective adaptation interventions in vulnerable watersheds; and ii) train local communities in the project sites to implement and sustain adaptation interventions.



215. Projected effects of climate change in Antigua and Barbuda include increased intensity of rainfall, storm surges and sea-level rise. As a consequence, local communities and sectors in Antigua and Barbuda are vulnerable to *inter alia* flooding, storm damage and salt water intrusion into aquifers. There is at present little proof of concept for cost-effective adaptation interventions that would help to build resilience against the project effects of climate change. The SCCF project will support design and implementation of a range of cost-effective adaptation interventions constituting a mix of “hard” and “soft” for reducing climate vulnerability. These interventions will reflect the priorities outlined in the local area development plans (see Outcome 1) and are likely to include managed aquifer recharge, maintenance of minimum vegetation cover in upper catchments, re-engineering of watercourses, construction of check dams/retention ponds, bio-remediation and clearing of blocked waterways. Additionally, an upscaling strategy will be developed – based on the local area development plans as well as lessons learned on the “hard” and “soft” adaptation measures – to inform replication in other watersheds in Antigua and Barbuda.

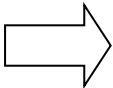
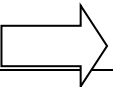
Component 4: National and regional knowledge and awareness of innovative financing mechanisms for long-term climate change adaptation in the Caribbean

216. Component 4 has a single outcome, namely to strengthen knowledge and awareness on adaptation financing mechanisms and implementation of adaptation interventions in the medium- to long-term. To achieve this outcome, an amount of US\$ 208,994 will be allocated to: i) undertake national awareness raising activities on climate change adaptation and innovative financing mechanisms; and ii) enhancing regional knowledge sharing on innovative financing for adaptation in the Caribbean.

217. Currently there is little public awareness of the predicted effects of climate change. While members of the general public are familiar with the term “climate change”, there is little knowledge as to what the implications thereof are. There is also very little information available – both nationally and regionally – on cost effective ways of adapting to these effects. Without a strong knowledge base concerning climate change challenges specific to SIDS and to the Caribbean, planning and implementation of adaptation interventions is likely to remain inadequate for adaptation needs. To address this, the SCCF project will strengthen national and regional knowledge concerning the effects of climate change as well as potential options for adaptation interventions. Table 3 below depicts the baseline/business-as-usual situation versus the adaptation scenario for Antigua and Barbuda.

Table 3. Comparison of the business-as-usual scenario and the adaptation alternative scenario

	Business-As-Usual		Adaptation alternative scenario
Problem Description	<p>Currently development planning in Antigua and Barbuda does not take climate change into consideration. In order to climate proof buildings and infrastructure, climate change and adaptation must be mainstreamed into development planning. The effects of climate change – such as increased flooding, storm damage and sea level rise – will jeopardise the livelihoods of local communities and impact a wide range of sectors, including tourism, water, agriculture and health. Climate vulnerability is exacerbated by factors such as widespread ecosystem degradation and limited capacity of government technicians to address the effects of climate change.</p>		<p>The proposed SCCF project will address climate vulnerability of local communities in Antigua and Barbuda by: i) increasing funding flows for financing adaptation; and ii) providing proof of concept for adaptation interventions appropriate in priority watersheds – laying the groundwork for upscaling nationally. Additionally, the SCCF project will support the mainstreaming of climate change and adaptation into policies and plans related to development planning, ecosystem management, water resources, health, energy, agriculture and tourism. This will contribute towards advancing the NAP process by strengthening the framework for medium- to long-term coordination of adaptation planning. The capacity of government technicians to plan and implement adaptation interventions and of local communities to implement and monitor interventions will be developed through the SCCF project, ensuring sustainability. A multi-sectoral approach will ensure that government, the private sector and civil society stakeholders are appropriately involved in project design and implementation.</p>
Project Outcomes	<p>Outcome 1:</p> <ul style="list-style-type: none"> • Climate change and adaptation is not included in relevant national policies and frameworks related to development planning, ecosystem management, water resources, health, energy, agriculture and tourism. • Limited cross-sectoral dialogue between sectors such as water, tourism and health on issues related to climate change and adaptation. • Limited technical capacity of government technicians for planning and implementing adaptation interventions in Antigua and Barbuda. • Limited availability of technical guidelines to apply adaptation interventions at a local level. • Limited flows of international and private funds constituting a bottleneck for upscaling adaptation interventions in future. • Limited awareness of the general public, policy- and decision-makers of the benefits of adaptation interventions to local communities. • Poor integration of climate change and adaptation into building guidelines resulting in climate vulnerable construction practices. 		<p>The interventions in this outcome will form a platform for catalysing large-scale adaptation initiatives in Antigua and Barbuda by:</p> <ul style="list-style-type: none"> • Identifying appropriate points for the integration of climate change and adaptation technologies into relevant policies and plans as well as guiding this integration. This will include reviewing and updating the Caribbean Planning for Adaptation to Climate Change outputs to develop a draft National Climate Change Adaptation Plan and Implementation Strategy. • Promoting cross-sectoral dialogue through the inter-agency climate change advisory committee – consisting of representatives from government, the private sector and civil society – to promote the mainstreaming of climate change into sectoral plans. • Formulating local area development plans to guide climate-resilient development. • Building the technical capacity of government technicians to plan adaptation interventions that will address the vulnerabilities of local communities to climate change. • Providing technical guidelines to be used by government technicians to promote a national and systematic approach to climate change. • Raising awareness of the benefits of adaptation technologies for local

			<p>communities amongst policy makers, technicians and other decision-makers.</p> <ul style="list-style-type: none"> Revising the Antiguan and Barbudan Building code to incorporate guidelines for climate-resilient building design, promoting climate resilient development in future. <p>Cost to SCCF: US\$ 370, 000</p>
	<p>Outcome 2:</p> <ul style="list-style-type: none"> Insufficient adaptation funding in-flows in Antigua and Barbuda to finance adaptation to climate change at a national scale. Lack of financial products available which prioritise or are specifically tailored for funding of adaptation interventions in local communities. Vulnerable local communities have limited awareness of options for funding adaptation interventions and the related benefits of such interventions. The private sector as well as local and national government institutions are uninformed about means of accessing innovative financing for adaptation through the SIRF Fund and related funding sources. Lack of a national systematic approach to adaptation funding. Lack of proof of concept for adaptation interventions in the context of Antigua and Barbuda. 		<p>The proposed project will promote the development of an adaptation window of the SIRF fund in order to build the resilience of local communities to the impacts of climate change through:</p> <ul style="list-style-type: none"> Establishing the adaptation window of the SIRF fund to act as a mechanism for funding flows for financing adaptation. Promoting funding flows for adaptation interventions by identifying potential sources of funding for the adaptation window of the SIRF Fund. Consulting with national and regional financial institutions – such as credit unions and banks – to design financial products that will reduce barriers to financing adaptation interventions. Conducting public awareness campaigns on the benefits of adaptation interventions and innovative financing mechanisms for adaptation. Develop guidelines and conduct training sessions for representatives of private sector, local and national government institutions and CBOs/NGOs on accessing innovative financing for adaptation through the SIRF Fund. Developing a suite of adaptation interventions that are eligible for financing. Funding a number of small loans for adaptation activities that qualify for funding through the SIRF adaptation window. <p>Cost to SCCF: US\$ 1,720,000</p>
	<p>Outcome 3:</p> <ul style="list-style-type: none"> Insufficient regulation and enforcement of infrastructural development around waterways is leading to increased incidents of flooding. Limited skills of government technical staff for implementing cost effective adaptation interventions. Incomplete information about state of waterways in Friars Hill Road, Cashew Hill and West Palm Beach watersheds. Local communities and their livelihoods remain vulnerable to the 		<p>The proposed SCCF project will demonstrate adaptation interventions and thus increase the climate-resilience of local communities living in and around the Friars Hill Road, Cashew Hill and West Palm Beach watersheds. Specific climate change risks to be addressed will include: i) increased frequency and severity of hurricane events; and ii) increased frequency of extreme rainfall events. This will be achieved through:</p> <ul style="list-style-type: none"> Conducting comprehensive hydrological surveys of the St. John’s, Body Ponds and Christian Valley watersheds. Developing local area development plans for the St. John’s, Body Ponds

	<p>effects of climate change.</p> <ul style="list-style-type: none"> • Poor development planning and environmental management within climate vulnerable watersheds in Antigua and Barbuda. • Limited communication between policy makers, implementers and local people living within and benefiting from selected intervention sites. 		<p>and Christian Valley watersheds that include protection orders regulating development close to waterways as well as appropriate adaptation interventions with an emphasis on cost-effectiveness.</p> <ul style="list-style-type: none"> • Training technical staff on themes relevant to implementation of cost-effective adaptation interventions. This will include: i) use of GIS and other equipment for mapping and planning; ii) management of threats to vulnerable ecosystems such as fires and deforestation; iii) climate vulnerability and risk analysis; and iv) community outreach. • Providing technical training to local communities on establishing, managing and monitoring the interventions. This will promote community support of the interventions and increase the sustainability of the interventions beyond the lifespan of the project. <p>Cost to SCCF: US\$ 2,350,000</p>
	<p>Outcome 4:</p> <ul style="list-style-type: none"> • Limited national awareness on climate change adaptation and innovative financing mechanisms. • Limited regional knowledge on innovative financing for adaptation in the Caribbean. 		<p>The proposed project will promote national and regional knowledge on climate change adaptation and innovative financing mechanisms through:</p> <ul style="list-style-type: none"> • Conducting awareness campaigns that disseminate knowledge and awareness products – such as short documentaries, radio shows, infotainment programmes and social media campaigns – on adaptation interventions and innovative financing mechanisms to the general public. • Integrating climate change and adaptation into on-going revisions of Geography, History and Social Studies school curricula. • Creating professional development modules modelled after the REGATTA Communities of Practice on innovative financing mechanisms and adaptation interventions focused on ecosystems within the context of Caribbean SIDS, based on project experiences. • Conducting awareness-raising activities to share lessons learned and best practices from the regional workshop and project results. <p>Cost to SCCF: US\$ 350,000</p>
Cost	Business-As-Usual Development Cost		Additional Adaptation Cost US\$ 5,000,000
Financed by:	Government of Antigua and Barbuda		SCCF

3.8. Sustainability

218. Various efforts will be taken to promote sustainability of SCCF project interventions. Some of these interventions are listed below:

219. **A consultative approach** supports the sustainability of interventions beyond the duration of the project by ensuring that the long term needs of climate vulnerable local communities and sectors are prioritised. An inter-agency climate change advisory committee will be formed to promote the mainstreaming of climate change into sectoral plans (Output 1.1). Additionally, workshops and outreach activities will be conducted in the communities of Lower Gambles/Yorks (in the St. John's watershed), Cashew Hill (Body Ponds watershed) and Bolans/West Palm Beach (Christian Valley watershed) to identify priorities for watershed management and adaptation interventions. This participatory approach is aligned with Principle 10 of Rio+20, which asserts that environmental matters are best handled with participation of all concerned citizens. An account of stakeholders consulted can be found in Section 2.5 and Appendices 20 and 21.

220. **Institutional capacity** for mainstreaming innovative financing for adaptation and implementing adaptation interventions will be developed through the SCCF project. This will be achieved by *inter alia*: i) training technicians from relevant institutions on cost effective adaptation interventions focused on ecosystems (Output 3.1); ii) training civil servants on implementation of local-level strategies and plans for climate change adaptation (Output 1.3); iii) developing capacity of key personnel in relevant institutions through attendance of continuing education/professional development courses on climate change adaptation and development planning (Output 1.3). By developing institutional capacity of fulcrum stakeholders in these and other ways the SCCF project will create sustainable processes and mechanisms to access funding for implementation of adaptation interventions in Antigua and Barbuda. This will feed into the broader NAP process in Antigua and Barbuda by strengthening coordination of medium- to long-term planning for climate change adaptation. This work will be complementary to the work of the Global Support Programme for NAPs in non-LDCs (currently under development).

221. An **enabling environment for financing mechanisms** will be created by strengthening institutional capacity for mainstreaming innovative financing for adaptation into policy and planning. For example, existing policies and strategies will be reviewed to develop recommendations – with reference to past expenditure and future budget allocations – that promote funding of adaptation interventions using innovative financing mechanisms (Output 1.1). National-level strategy revisions of this type will ensure the sustainability of the proposed SCCF project interventions beyond the scope of the project.

222. **An adaptation window of the SIRF fund** will be developed to give vulnerable stakeholders within Antigua and Barbuda ongoing access to funding for adaptation interventions (Outcome 2). Guidelines will be developed and training sessions conducted for representatives of private sector, local and national government institutions and CBOs/NGOs on accessing innovative financing for adaptation through the SIRF Fund (Output 2.4). This will empower stakeholders to access funds to climate-proof their infrastructure and assets. Additionally, mechanisms will be put in place to: i) promote inflows into (Output 2.2); and ii) disburse and manage outflows from and repayments into the adaptation window of the SIRF Fund (Output 2.1). These mechanism will support continued availability of funding for adaptation interventions during and beyond the implementation period of the SCCF project. The sustainability of the financing mechanisms will be further enhanced through the development of a detailed business plan for the adaptation window of the SIRF Fund to guide the

process of sustaining and upscaling the funding of adaptation interventions after project completion (Output 2.4).

223. Various interventions of the SCCF project will create a **framework for climate resilient infrastructure planning and construction**. Under Output 1.1, the Antigua and Barbuda Building Code will be revised and updated to include guidelines for climate-resilient building design¹¹¹. This revised Building Code will inform the climate-smart design and construction of buildings moving forward. Furthermore, local area development plans will be created and implemented to guide climate-resilient management of the St. John's, Body Ponds and Christian Valley watersheds (Outputs 1.2 and 3.1). The sustainability of these plans will be enhanced by the development of i) a strategy for up-scaled implementation and long-term monitoring and evaluation (Output 3.1); and ii) a revised National Environmental Management Strategy that includes medium- to long-term adaptation (Output 1.2).

3.9. Replication

224. There is considerable scope for the replication of the SCCF project interventions in other watersheds in Antigua and Barbuda. The project will also promote replication of interventions within other SIDS within the Caribbean region. Some of these interventions are listed below:

225. The various adaptation interventions implemented during the SCCF project will provide **proof of concept** for climate resilient development strategies in the context of Antigua and Barbuda. For example, the approach followed to develop local area development plans for the St. John's, Body Ponds and Christian Valley watersheds (Outputs 1.2 and 3.1) can be replicated for other watersheds in Antigua and Barbuda. Additionally, this will be augmented by the strategy for up-scaled implementation of local area development plans (Output 3.1). For example, long-term monitoring and evaluation will ensure that lessons learned during the planning and implementation of local area development plans and related adaptation interventions through the SCCF project are documented to support future replication efforts.

226. Additionally, the SCCF project will provide **proof of concept** for climate change adaptation interventions and innovative financing mechanisms for adaptation within the **broader Caribbean region**. Professional development modules – including recommendations and lessons learned from the project – will be disseminated through the REGATTA and OECS platforms (Output 4.2). Regional-level awareness-raising activities will also be undertaken to share lessons learned and best practices from the regional workshop and project results. By sharing knowledge regionally, the SCCF project supports the replication of climate-resilient interventions – including innovative financing mechanisms for adaptation – within other Caribbean countries and SIDS.

227. The **innovative financing mechanisms** implemented during the SCCF project will provide funding for the replication of pilot interventions. Specifically, the adaptation window of the SIRF fund (established under Outcome 2) will provide a source of funding for soft loans. Stakeholders – such as local communities, businesses and government agencies – will be able to implement adaptation to reduce their vulnerability to climate change by applying for funds for adaptation interventions. Ongoing access to funding will ensure that the adaptation interventions supported by the project can be easily replicated.

228. The **capacity of government technicians to implement adaptation interventions** will be developed during the SCCF project. Specifically, government technical staff will be trained

¹¹¹ e.g. hurricane shutters

implementation of local-level strategies and plans (Output 1.3). They will also receive training on themes relevant to implementation of cost-effective adaptation interventions (Output 3.1). These themes will include: i) use of GIS and other equipment for mapping and planning; ii) management of threats to vulnerable ecosystems such as fires and deforestation; iii) climate vulnerability and risk analysis; and iv) community outreach. By capacitating government technicians with these adaptation-related skills, the SCCF project will be capacitating them to replicate plans and interventions in other parts of Antigua and Barbuda.

229. **Knowledge and awareness raising activities** will be undertaken to develop awareness of: i) cost-effective adaptation interventions; and ii) opportunities and processes for accessing innovative financing mechanisms for adaptation within Antigua and Barbuda. Furthermore, a national awareness campaign will be used to enhance the public's understanding of the benefits of climate change adaptation and innovative financing mechanisms, thereby promoting adaptation finance mechanisms and project initiatives to local communities and policy- and decision-makers. These activities will contribute to enhanced utilisation of climate change adaptation funding, thereby enabling the replication of adaptation interventions in different sites across Antigua and Barbuda.

230. **Best practices and lessons learned** from this project will be shared through UNEP-REGATTA as well as the various OECS and CARICOM mechanisms. This will promote upscaling and replication of adaptation interventions demonstrated in this project – including on-the-ground interventions as well as the creation of financing mechanisms for adaptation – throughout the Caribbean and Latin-American region.

3.10. Public awareness, communications and mainstreaming strategy

231. Climate vulnerability of local communities in Antigua and Barbuda is exacerbated by limited knowledge and awareness of climate change and climate change adaptation strategies. For example: i) buildings constructed too close the ground are vulnerable to flooding; ii) infrastructure constructed close to watercourses is vulnerable flooding; and iii) infrastructure constructed close to the coast is vulnerable to storm surge damage. To address limited awareness of the effects of climate change and adaptation strategies, the SCCF project has a strong focus on building of national awareness of climate change effects and adaptation options. To this end, the project will support national awareness-raising campaigns as well as target awareness raising within vulnerable communities. Project interventions will inform people about the projected and predicted impacts of climate change (see Outcome 4) as well as cost-effective adaptation options (see Outcome 3). Community members will also be informed about the availability of innovative financing mechanisms for funding adaptation interventions (see Outcome 2). National awareness campaigns will be conducted through various media channels including radio, television, community meetings and social media.

232. The SCCF project will also educate youth – a climate-vulnerable demographic – about climate change and its predicted effects. Climate change and adaptation will be integrated into on-going revisions of the school curricula for Geography, History, Biology and Social Studies (Output 4.1). This will support the mainstreaming of climate change adaptation into public consciousness in Antigua and Barbuda through the national education system.

233. The SCCF project will also enhance Antigua and Barbuda's capacity for mainstreaming innovative financing for adaptation into policy and planning. An inter-agency climate change advisory committee – consisting of representatives from government, private sector and civil society – will be formed to promote the mainstreaming of adaptation and innovative financing for adaptation into sectoral plans (Outcome 1). The SCCF project will also revise relevant policies and plans to promote and facilitate adaptation to climate change (Output 1.2). Policy and information briefs will be

developed for use by policy makers on change impacts, adaptation interventions and innovative financing for adaptation that are adapted to the socio-cultural situation and the particular vulnerabilities of SIDS (Output 1.3). These and other SCCF project interventions will support mainstreaming of climate change adaptation into policies and plans.

3.11. Environmental and social safeguards

234. The interventions to be implemented by the proposed project will have positive environmental and social effects. The project will improve functioning of watershed ecosystems and enhance the capacity of local communities to plan and implement climate-resilient measures in these watersheds. Project interventions will result in benefits including: i) reduced rates of run-off; ii) decreases in soil erosion; iii) regulated flow of water in waterways flowing through local communities. The project activities are ‘no regrets’ interventions because they will improve upon the baseline conditions regardless of the severity of expected climate change effects.

235. The UNEP checklist for Environment and Social Safeguards (Appendix 18) reflects the positive environmental and social impacts of the proposed project. The PM, TAC and UNEP Task Manager (TM) will be responsible for overseeing adherence to these guidelines throughout the implementation of the project. This checklist will be reviewed and updated annually by the PM in conjunction with the UNEP TM. All activities implemented by the project will be designed to improve environmental conditions in vulnerable ecosystems. Environmental and social assessments will be undertaken as part of the formulation of local area development plans to ensure that positive environmental and social effects are generated by project interventions. These plans will detail mitigation measures to be undertaken to ameliorate any potential negative social or environmental effects.

236. The LDCF-financed project will adopt a gender-sensitive approach. Gender equality will be promoted throughout implementation of project activities. In particular, the vulnerabilities of women will be addressed through prioritisation of women-headed households to receive funding under Component 2. The project will adopt a participatory approach – initiated during the PPG phase – to identify vulnerable communities and priorities for interventions. This information will guide the design of all on-the-ground project activities. This participatory approach includes a strong focus on gender equality as well as the needs of the elderly, youth and other vulnerable groups.

SECTION 4: INSTITUTIONAL FRAMEWORK AND IMPLEMENTATION ARRANGEMENTS

237. The project will be implemented by UNEP and executed by the Environment Division of the Ministry of Health and the Environment over a period of four years. As the national Executing Agency, the Environment Division will have lead responsibility for project management and oversight during the execution of the project. Additionally, the Division will collaborate extensively with *inter alia* the Central Board of Health, APUA, NODS, the Survey Division and the Development Control Authority in the execution of project activities.

238. UNEP will be the Implementing Agency (IA) for the proposed project and will oversee the project, and provide the technical assistance required to meet the project goal. As such, UNEP will be responsible for project supervision to ensure consistency with GEF and UNEP policies and procedures. This supervision will be the responsibility of the Task Manager (TM) which will be appointed by UNEP. The TM will formally participate in the following: i) Project Steering Committee (PSC) meetings (at least once a year); ii) the mid-term and final evaluations; iii) the clearance of half-yearly and annual progress and financial reports; and iv) the technical review of project outputs.

Overview

239. The project management framework consists of two implementation/management units, and one coordination/oversight unit. The management entities are the Project Management Unit (PMU) and the Technical Advisory Committee (TAC), while the overseeing entity is the Project Management Committee (PMC). The PMC is the standard national terminology for the Project Steering Committee (PSC) and is referred to as PMC/PSC. The project management structure is explained in Table 4 and Figure 6, and the two subsequent sections. This structure will create a common framework to be utilised in the management of all projects in Antigua and Barbuda funded under GEF5 and GEF6. This includes the current GEF SPPARE and IWeco projects, as well as future potential projects.

Table 4. Institutional arrangements for project implementation and coordination

Name	Purpose and composition	Meeting frequency
Project Management Unit (PMU)	The PMU consists primarily of Environment Division staff, including project manager, project coordinator, administrative assistants and other technical staff working on the project, to coordinate and implement day-to-day activities.	The PMU works together on a daily basis, and meets monthly with the Project Manager.
Technical Advisory Committee (TAC)	The TAC is the source of technical expertise and support for the PMU. The TAC will advise, provide technical guidance, assist with developing TOR, and other project needs. The TAC has 20 members, and the PMU provides secretarial support.	The TAC meets monthly for the first six months, and then on a quarterly basis with additional meetings as needed.
Project Management Committee (PMC/PSC)	The PMC/PSC acts as an advisory, oversight and decision-making body to the project, providing budget accountability, project guidance, policy input and support. The PMC/PSC ensures project alignment to national priorities.	The PMC/PSC meets quarterly and accounts signatories meet monthly.

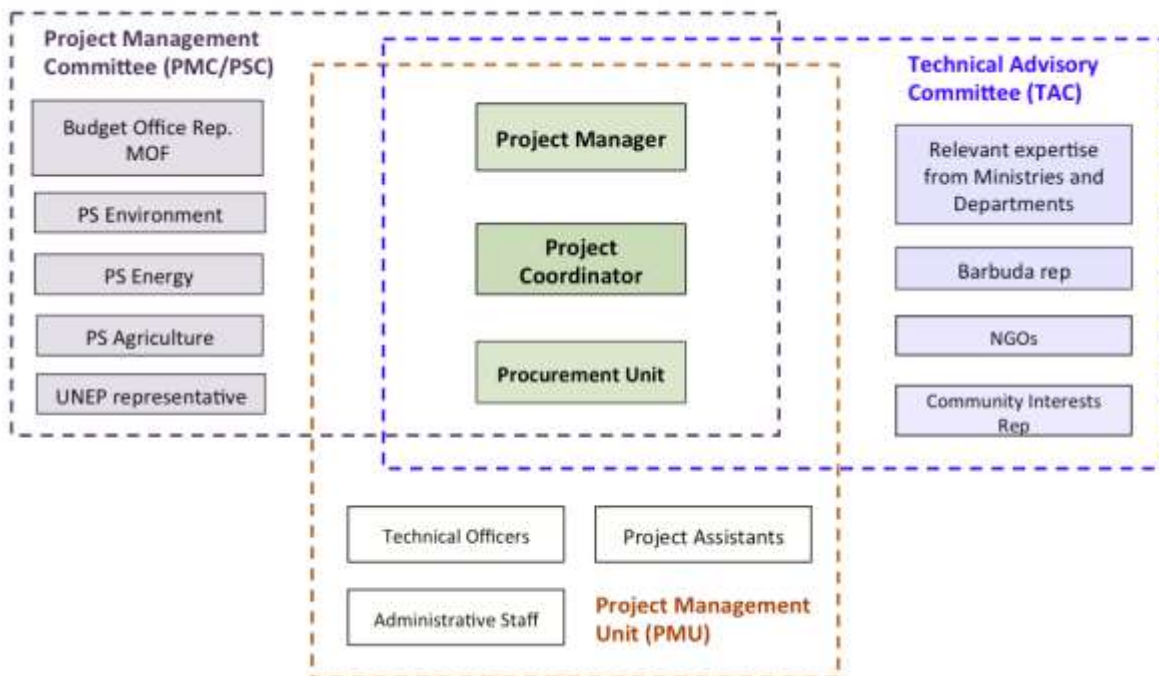


Figure 6. Diagram of the three key project management structures.

Implementation and Management Activities: the PMU and the TAC

240. Overall project management for GEF projects is the responsibility of the Project Manager and Project Coordinator, who ensure that the projects are progressing as per the log frame, work plan and budget. They are responsible for the project's financial management and related reporting, while specific responsibilities and activity delegation are described below. These positions will be staff-sharing positions with the GEF SPPARE project. This approach will ensure that the two complementary projects are implemented in close coordination, avoiding duplication and promoting synergies between the projects.

241. The Project Manager will be responsible for maintaining political buy-in and support at the highest levels of government. As illustrated in Figure 6, the Project Manager has a coordination role across all committees and units. The Project Coordinator (PC) will have lead responsibility for execution of the project under the Project Management Unit (PMU), and is responsible for daily implementation of project activities, and the completion of agreed work plans in a timely manner.

242. The project will have dedicated access to the technical capabilities of the staff within the Environment Division (as determined in the co-financing arrangements) through the designation of Division staff to the Project Management Unit (PMU). The composition of the PMU includes the Project Manager, Project Coordinator, administrative assistants and other technical staff – including short-term technical assistance procured through the project as well permanent staff of the Environment Division (Figure 6). The PMU will meet monthly to report to the Project Manager. Execution of the Project will be carried out on the basis of annual work plans, and the PMU is in charge of designing and implementing the activities in the annual work plans.

243. A Public Awareness and Community Outreach Officer will be hired jointly by the projects being implemented by the Environment Division, including this project. The Public Awareness and Community Outreach Officer will report to the Project Manager and the Project Management Unit.

244. The Unit will have responsibility for project implementation and management of resources on a day-to-day basis. The PMU will assist projects with *inter alia*: i) recruitment of international and national consultants, including candidate search/selection; ii) development of TORs; iii) supervision and coordination of project activities, including organisation of regular meetings with the implementing agency; iv) financial management and accountability; v) issuance of payments; vi) training staff on reporting; vii) ensuring completeness and timeliness of reporting; viii) technical reporting including preparation of progress reports; ix) monitoring and evaluation; and x) organisation of training/workshop activities.

245. The project accounts will be managed by a dedicated project administrative assistance in the PMU that is based in the accounts department of the Division. Private auditors will be procured via competitive bidding process to audit the accounts.

246. The Technical Advisory Committee (TAC) has been established by the Ministry and is comprised of representatives of Government, non-governmental organizations and representatives of community interests (see Appendix 22 for a list of attendees of the first TAC meeting). The Community Development officer at the Ministry of Social Transformation, for example, represents community interests at regular TAC meetings. The TAC, guided by an operations manual, will form sub-committees to work on technical and location-specific issues. For example, a “drainage” sub-committee may be formed to research standards, or a “Friars Hill Road” sub-committee may be established to organize special community consultations. The sub-committees will invite other participants, such as community members, credit unions and representatives of the private sector, to attend relevant TAC meetings. This arrangement has been design to maximize human resources and civil society interests by tailoring attendance to the meetings most topical to those interested.

247. The TAC has been meeting monthly since late 2014, and will meet at least quarterly during the project implementation period. The role of the TAC is to provide advice and technical guidance on all GEF projects. The PMU provides secretarial support to the TAC.

Coordination and Oversight Activities: the PMC/PSC

248. The Project Management Committee (PMC/PSC) is a cabinet constituted body to which the Project Manager will report project progress, to oversee project procurement and to provide guidance to the Minister and the Cabinet. The Project Manager and the Project Coordinator are responsible for linking project outputs with national government activities and priorities, including liaising with the Minister and the Cabinet to ensure that relevant policy and legislative actions are accounted for. This connection of project management to policy-makers is via the PMC/PSC.

249. The PMC/PSC will consist of at least five members. These are the Permanent Secretaries (PS) of the Ministry responsible for the Environment, Agriculture, Energy and the Prime Minister’s Office. There will also be representation of the Ministry of Finance, specifically the Budget Director’s Office, a UNEP representative, the signatories of the accounts¹¹² and a secretary. The PMC/PSC meets quarterly and the signatories to the accounts meet monthly. The PMC/PSC is an important component of the overall Monitoring and Evaluation plan of the Project.

¹¹² Signatories to accounts are normally the PS for Environment, the Deputy PS of another Ministry and the Project Manager.

250. The PMC/PSC will review and approve the work plans and corresponding budgets, and monitor and evaluate results and lessons learned. In addition, any decisions that require modification of the outputs and activities of the Project, or changes to legal structures and mechanisms, will be the responsibility of the PMC/PSC.

251. A full time Procurement Officer will be hired jointly by all GEF projects being implemented by the Environment Division, including this project. The Procurement Officer will report to the Chair of the PMC and will be required to liaise with the Procurement Unit within the Ministry of Finance¹¹³. The procedure for procurement of goods and services is included within Appendix 14.

Engagement of short-term consultancies

252. A number of short-term consultancies will be engaged for the implementation of various activities (see project budget in Appendix 1). Owing to the small population size, there is a limited pool of specialists with the requisite skills and experience to fulfil the tasks required for completion of project activities. Consequently, specialists will be preferentially recruited from the Caribbean region or alternatively from further afield if necessary (i.e. if the requisite expertise cannot be found in the region). However, past experience has shown that international consultants may not have the necessary insight into the local socio-cultural and environmentally contexts to tailor interventions appropriately. Therefore, consultancies for most of the project positions will take the form of a pairing of a regional/international specialist with a national consultant. The project will thus benefit from a combination of highly skilled/experienced experts with international experience as well as local specialists with in-depth knowledge of the national context. This will also serve to broaden the skills base within the country's pool of specialists through a "learning-by-doing" approach as national consultants benefit from exposure to international expertise.

SECTION 5: STAKEHOLDER PARTICIPATION

253. A range of national- and local-level stakeholders were engaged with during the PPG phase to ensure that the proposed project adequately addresses adaptation priorities. Furthermore, local communities will be consulted prior to and during the implementation of the project activities to engage them in decision-making processes for project interventions. For example, local communities will be consulted to inform the design and implementation of adaptation interventions under Component 3 of the project. Community members will also receive training under Components 2 and 3 to build capacity for planning and implementation of adaptation priorities.

254. Stakeholder participation will enable effective implementation of the proposed project. A stakeholder engagement plan to be used during the implementation phase will be developed during the project inception workshop. Mechanisms for stakeholder consultations will include: i) meetings with various government institutions; ii) consultation meetings with community members, NGOs (such as EAG) and CSOs (such as church and youth groups as well as the Yorks, Bolans and Cashew Hill Community Groups); iii) consultation meetings with local financing institutions such as credit unions; iv) consultations with the private sector (e.g. hotels and other tourism ventures); and v) public participation forums.

255. Coordination with other GEF initiatives will be achieved through the involvement of the Environment Division. The GEF Operational Focal Point is within the Environment Division and will

¹¹³ The procurement unit is yet to be established within the ministry of finance. The legislation to support this unit was passed in 2011.

thus be in a position to inform the PSC and PMU of any developments in national and regional GEF projects that are of relevance to this proposed SCCF project. Moreover, the Environment Division is the Executing Agency responsible for this SCCF project as well as the SPPARE project. Consequently, there will be close coordination between these two initiatives through the joint execution of the GEF SCCF and SPPARE projects.

256. Stakeholders to be engaged with during project implementation are presented in Table 5, along with their roles and responsibilities. Further details of stakeholder participation will be revised and finalised during project inception.

Table 5. Key stakeholders and roles/responsibilities during implementation of the SCCF project.

Outcome	Output	Stakeholders	Roles/responsibilities
Outcome 1: Policies, strategies and plans revised to promote medium- and long-term adaptation to climate change through mainstreaming of cost-effective adaptation interventions focused on ecosystems and innovative financing for adaptation.	Output 1.1: Institutional coordination mechanism established to guide medium- to long-term adaptation planning within the context of the NAP process	<ul style="list-style-type: none"> • Environment Division • Public Works • CBH • NODS • Development Control Authority • Surveys Division • APUA 	<ul style="list-style-type: none"> • Serve on the inter-agency climate change advisory committee to promote medium- and long-term adaptation planning. • Develop ToRs for the inter-agency climate change advisory committee. • Participate in the climate public expenditure and institutional review to map financial gaps and other constraints to effective planning and implementation of climate change adaptation in the medium and long term.
	Output 1.2: Revised policies and plans – particularly local area development plans – that promote and facilitate medium- and long-term adaptation to climate change.	<ul style="list-style-type: none"> • Environment Division • Public Works • CBH • NODS • Development Control Authority • Surveys Division • APUA 	<ul style="list-style-type: none"> • Support the development of a draft National Climate Change Adaptation Plan and Implementation Strategy • Support the development of local area development plans as a legally binding vehicle for integrated watershed management • Oversee the review of the Building Code • Integrate medium- and long-term adaptation considerations into sectoral work programmes, strategies and budgets
	Output 1.3: Technical training delivered on integrating climate change adaptation into local-level planning, including cost-effective adaptation interventions focused on ecosystems and innovative financing mechanisms.	<ul style="list-style-type: none"> • Environment Division • Public Works • CBH • NODS • Development Control Authority • Surveys Division • APUA • Ministry of Trade 	<ul style="list-style-type: none"> • Provide input into policy and information briefs, technical guidelines and training needs requirements • Participate in training and capacity building of key staff
Outcome 2: Access	Output 2.1:	<ul style="list-style-type: none"> • Environment 	<ul style="list-style-type: none"> • Overseeing process and provide

<p>to innovative financing mechanisms to address the negative impacts of climate change in the medium and long term through adaptation interventions is increased.</p>	<p>Operational guidelines and financial products developed for disbursement and management of outflows from the adaptation window of the SIRF Fund.</p>	<p>Division</p> <ul style="list-style-type: none"> • Ministry of Finance 	<p>technical input into establishment of adaptation window</p> <ul style="list-style-type: none"> • Provide input into mechanisms for promoting funding flows into the SRF Fund
	<p>Output 2.2: Operational and financial guidelines developed for promoting funding flows into the adaptation window of the SIRF Fund.</p>	<ul style="list-style-type: none"> • Environment Division • Ministry of Finance • Public Works • CBH • NODS • Development Control Authority • Surveys Division • Micro-finance institutions, credit unions, banks • District Disaster Coordinators for project sites • Local communities • NGOs/CSOs e.g. EAG, church groups, youth groups, community groups • Private sector (e.g. hotels) 	<ul style="list-style-type: none"> • Provide input into the development of operational guidelines for disbursement of outflows from the SIRF Fund • Develop a list of interventions eligible for receiving funding from the adaptation window • Develop criteria governing the approval of loans under the adaptation window • Provide input into the development of operational guidelines for recovery of loan repayments into the SIRF Fund
	<p>Output 2.3: Adaptation interventions demonstrated through piloting small loans disbursed through the adaptation window of the SIRF Fund.</p>	<ul style="list-style-type: none"> • Environment Division • Ministry of Finance • Public Works • CBH • NODS • Development Control Authority • Surveys Division • Micro-finance institutions, credit unions, banks • District Disaster Coordinators for project sites • Local communities • NGOs/CSOs e.g. EAG, church groups, youth groups, community groups 	<ul style="list-style-type: none"> • Oversee the disbursement and recovery of funds flowing through the adaptation window of the SIRF Fund • Oversee the implementation of household-based adaptation interventions

	Output 2.4: Strategy developed to upscale and replicate funding adaptation interventions through the adaptation window of the SIRF Fund.	<ul style="list-style-type: none"> • Environment Division • Ministry of Finance • Public Works • CBH • Development Control Authority 	<ul style="list-style-type: none"> • Provide input into the development of an upscaling strategy for the adaptation window of the SIRF Fund
Outcome 3: Adaptive capacity of local communities increased through implementation of pilot adaptation interventions focused on ecosystems in the St. John's watershed, to support them to cope with the effects of climate change in the long term.	Output 3.1: Cost-effective adaptation interventions designed for St. John's, Body Ponds and Christian Valley watersheds and implemented in St. John's watershed.	<ul style="list-style-type: none"> • Environment Division • Public Works • CBH • NODS • Development Control Authority • Surveys Division • APUA • District Disaster Coordinators for project sites • Local communities • Yorks, Bolans and Cashew Hill Community Groups • NGOs/CSOs e.g. EAG, church groups, youth groups • Private sector (e.g. hotels) 	<ul style="list-style-type: none"> • Coordinate the community consultations and hydrological surveys to inform the formulation of local area development plans and design of adaptation interventions • Implementing adaptation interventions based on the local area development plans • Oversee the development of a strategy for upscaling and long-term M&E
	Output 3.2: Local communities in the project sites trained to implement and sustain adaptation interventions in the medium and long term.	<ul style="list-style-type: none"> • Environment Division • Public Works • CBH • NODS • Development Control Authority • District Disaster Coordinators for project sites • Local communities • Yorks, Bolans and Cashew Hill Community Groups • NGOs/CSOs e.g. EAG, church groups, youth groups 	<ul style="list-style-type: none"> • Oversee the development of community-based training programmes for adaptation interventions • Facilitate training-of-trainers • Support training workshops and communication forums • Provide input into the design of a participatory M&E framework
Outcome 4: Knowledge and awareness on adaptation financing mechanisms and	Output 4.1: National awareness raising activities undertaken on innovative financing	<ul style="list-style-type: none"> • Environment Division • Public Works • CBH • NODS 	<ul style="list-style-type: none"> • Oversee development of training tools on climate change adaptation • Facilitate national awareness campaigns on climate change adaptation

implementation of adaptation interventions in the medium to long term is strengthened.	mechanisms for medium- and long-term adaptation.	<ul style="list-style-type: none"> • Department of Education • Local communities • NGOs/CSOs e.g. EAG, church groups, youth groups, community groups • Private sector (e.g. hotels) 	<ul style="list-style-type: none"> • Support the revision of school curricula to include climate change and adaptation
	Output 4.2: Regional knowledge sharing on innovative financing for medium- to long-term adaptation is enhanced in the Caribbean through exchange of lessons learned.	<ul style="list-style-type: none"> • Environment Division • UNEP-REGATTA • OECS 	<ul style="list-style-type: none"> • Facilitate a regional workshop on climate change and adaptation in the Caribbean • Oversee the development and dissemination of professional development modules on climate change through the Communities of Practice

257. Details of the stakeholder participation during the PPG phase are provided in Appendices 20 and 21.

SECTION 6: MONITORING AND EVALUATION PLAN

258. The project will follow UNEP standard monitoring, reporting and evaluation processes and procedures. Substantive and financial project reporting requirements are summarised in Appendix 7. Reporting requirements and templates are an integral part of the UNEP legal instrument to be signed by the executing agency and UNEP.

259. The project M&E plan is consistent with the GEF Monitoring and Evaluation policy. The Project Results Framework presented in Appendix 4 includes SMART indicators for each expected outcome as well as mid-term and end-of-project targets. These indicators along with the key deliverables and benchmarks included in Appendices 5 and 6 will be the main tools for assessing project implementation progress and whether project results are being achieved. The means of verification and the costs associated with obtaining the information to track the indicators are summarised in Appendix 7. Other M&E related costs include M&E officers to be engaged by the project. These costs are fully integrated in the overall project budget.

260. The M&E plan will be reviewed and revised as necessary during the project inception workshop to ensure project stakeholders understand their roles and responsibilities vis-à-vis project monitoring and evaluation. Indicators and their means of verification may also be fine-tuned at the inception workshop. Day-to-day project monitoring is the responsibility of the project management team but other project partners will have responsibilities to collect specific information to track the indicators. It is the responsibility of the Project Manager to inform UNEP of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely fashion.

261. The PMC/PSC will receive periodic reports on progress and will make recommendations to UNEP concerning the need to revise any aspects of the Results Framework or the M&E plan. Project oversight to ensure that the project meets UNEP and GEF policies and procedures is the responsibility to the Task Manager in UNEP-GEF. The Task Manager will also review the quality of draft project outputs, provide feedback to the project partners, and establish peer review procedures to ensure adequate quality of scientific and technical outputs and publications.

262. Project supervision will take an adaptive management approach. The Task Manager will develop a project supervision plan at the inception of the project which will be communicated to the project partners during the inception workshop. The emphasis of the Task Manager supervision will be on outcome monitoring but without neglecting project financial management and implementation monitoring in collaboration with UNEP's Fund Management Office (FMO). Progress vis-à-vis delivering the agreed project global environmental benefits will be assessed with the Steering Committee at agreed intervals. Project risks and assumptions will be regularly monitored both by project partners and UNEP. Risk assessment and rating is an integral part of the Project Implementation Review (PIR). The quality of project monitoring and evaluation will also be reviewed and rated as part of the PIR. Key financial parameters will be monitored quarterly to ensure cost-effective use of financial resources.

263. A mid-term review or evaluation will take place in early 2017 as indicated in the project milestones. The review will include all parameters recommended by the GEF Evaluation Office for mid-term reviews and evaluations and will verify information gathered through the GEF tracking tools, as relevant. The review will be carried out using a participatory approach whereby parties that may benefit or be affected by the project will be consulted. Such parties were identified during the stakeholder analysis (see section 5 of the project document). The project Steering Committee will participate in the mid-term review and develop a management response to the evaluation recommendations along with an implementation plan. It is the responsibility of the UNEP Task Manager to monitor whether the agreed recommendations are being implemented.

264. An independent terminal evaluation will take place at the end of project implementation. The Evaluation and Oversight Unit (EOU) of UNEP will manage the terminal evaluation process. A review of the quality of the evaluation report will be done by EOU and submitted along with the report to the GEF Evaluation Office not later than 6 months after the completion of the evaluation. The standard terms of reference for the terminal evaluation are included in Appendix 9. These will be adjusted to the special needs of the project.

265. The GEF tracking tools are attached as Appendix 15. These will be updated at mid-term and at the end of the project and will be made available to the GEF Secretariat along with the project PIR report. As mentioned above the mid-term and terminal evaluation will verify the information of the tracking tool.

SECTION 7: PROJECT FINANCING AND BUDGET

7.1. Overall project budget

Table 1. A breakdown of total project financing.

	SCCF Funds	Co-Financing	Total Costs
Total project cost (US\$)	5,000,000	12,900,000	17,900,000

7.2. Project co-financing

Table 2. Breakdown of project financing by funder.

	US\$	%
SCCF Funds	5,000,000	28
Co-financing		
Ministry of Health and Environment	2,700,000	15
Public Works	6,800,000	38
NODS	2,000,000	11
OECS	1,000,000	6
UNEP	400,000	2
Total	17,900,000	100

7.3. Project cost-effectiveness

266. The adaptation interventions to be implemented through the proposed SCCF project will restore natural ecosystems, enhance existing hard infrastructure and support climate-proof development planning in the project target areas. These interventions are no-regret¹¹⁴ and low cost with tangible benefits and will reduce the vulnerability of communities living in and around project intervention sites.

267. Globally, there is an urgent requirement to find tractable, sustainable, flexible and cost-effective interventions for local communities to adapt under conditions of climate change¹¹⁵. Recent research shows that EbA is most effective as part of an overall adaptation strategy. Such a strategy would include ‘hard’ and ‘soft’ adaptation interventions. The proposed SCCF project will implement ‘hard’ adaptation interventions such as the construction and rehabilitation of waterways. These interventions will be complemented by “soft” interventions such as bank stabilisation and ecosystem management in the target project areas¹¹⁶. Further ‘soft’ interventions, such as technical and institutional capacity building of national and local stakeholders, will enhance the sustainability of the SCCF project. Examples of the benefits of this complementary approach are well documented in international literature¹¹⁷.

¹¹⁴ No-regret options are those that are justified by current climate conditions and further justified when climate change is considered, e.g. pollution reduction in water supplies will be beneficial if water supplies decrease as a result of climate change. Lim, B, and E. Spanger-Siegfried. 2004. Adaptation policy frameworks for climate change: developing strategies, policies and measures. Cambridge University Press, Cambridge, UK pp 253.

¹¹⁵ Jones et al. 2012. Harnessing nature to help people adapt to climate change. Nature. Published online: 26 June 1012. DOI: 10.1038/nclimate1463

¹¹⁶ A study in Lami Town, Fiji, found that EbA options provide a high benefit-to-cost return in terms of avoided flood damages as well as provision of secondary ecosystem services. See: UNEP/STREP 2012. A comparative analysis of ecosystem-based adaptation and engineering options for Lami Town, Fiji: Synthesis Report.

¹¹⁷ A recent shift to integrate both hard and natural infrastructure in the Yangtze River in China has resulted in the seasonal opening of embankment sluice gates. This has restored the connections between the Yangtze River, three major lakes and their associated wetlands. Whereas dams and dykes on the Yangtze River provided water for agriculture, they also caused flooding, blocked animal migrations and degraded water-purifying vegetation, leading to eutrophication and loss of water quality. The integrated approach, including EbA interventions, has increased floodwater retention, water purification and

268. Under Outcome 2, an assessment will be undertaken to evaluate the sustainability and cost-effectiveness of adaptation interventions funded by innovative financing mechanisms (under Outcome 2) as well as adaptation interventions focused on ecosystems (Outcome 3). Additionally, a detailed business plan will be developed for the adaptation window of the SIRF Fund. This plan will guide the process of sustaining and up-scaling the funding of cost effective adaptation interventions. As such, cost effectiveness of adaptation technologies will be assessed in the context of Antigua and Barbuda and upscaling plans will be drafted accordingly.

269. The benefits of the adaptation interventions will be enhanced by training communities on the implementation and maintenance of adaptation interventions. The proposed SCCF project includes technical training for community members on adaptation interventions through a learning-by-doing approach. This will enhance community ownership of the project interventions and reduce the overhead for monitoring and maintenance of the activities. Additionally, community involvement will promote the sustainability of the project interventions beyond the lifespan of the project.

270. Under Component 4, a regional workshop will be conducted with local and international climate change experts to share information and best practices on EbA, non-EbA and innovative financing mechanisms for adaptation, focusing on the Caribbean. Lessons learned, best practices and project results, including the benefits of adaptation interventions and innovative financing mechanisms, will be consolidated in professional development modules for sharing via the REGATTA and OECS platforms. These lessons will also be communicated to the public – nationally and regionally – by means of awareness campaigns. Therefore, adaptation interventions will be promoted and upscaled in a cost-effective way.

271. The SCCF project will build on existing initiatives in Antigua and Barbuda which will reduce the costs for the project. For example, the SIRF fund will be used as a mechanism for increased adaptation funding flows. A dedicated adaptation window will be created for this purpose. Additionally, REGATTA and OECS both have online platforms to facilitate interaction and knowledge exchange on climate change adaptation technologies and experiences in the Caribbean region. The SCCF project will use these platforms to share lessons learned and best practices from project interventions. By building on current national and regional development programmes and collaborating with ongoing, related initiatives, the project will enhance economies of scale and the cost-effectiveness of the use of SCCF resources.

agricultural opportunities, and has restored migration routes for spawning fish. See: Jones et al. 2012. Harnessing nature to help people adapt to climate change. *Nature*. Published online: 26 June 2012 | doi: 10.1038/nclimate1463.

APPENDICES