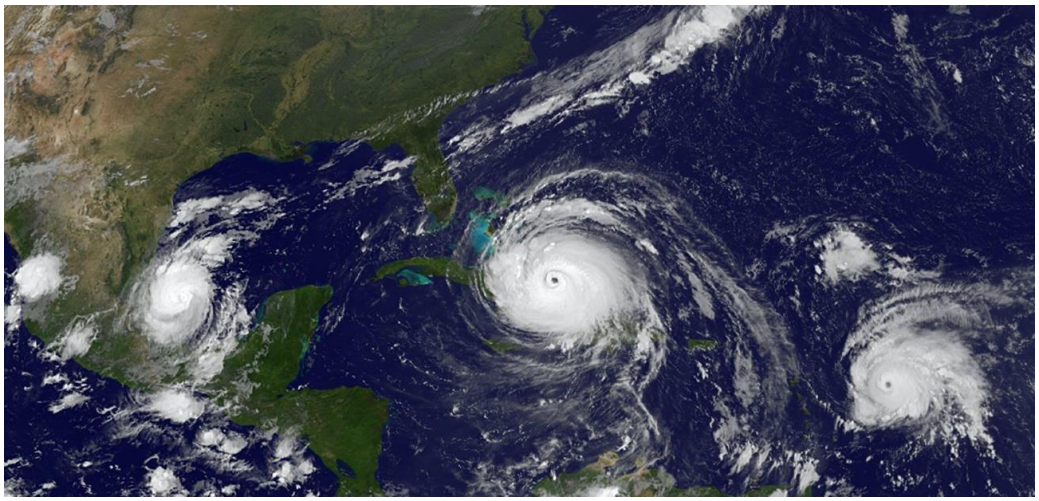
GOVERNMENT OF ANTIGUA AND BARBUDA

DEPARTMENT OF ENVIRONMENT

ENVIRONMENTAL SOCIAL IMPACT ASSESSMENT AND MANAGEMENT PLAN



DOE CLIMATE CHANGE PROGRAMME

RESILIENCE TO HURRICANES IN THE BUILDING SECTOR IN ANTIGUA AND BARBUDA

The Project Management Unit (PMU) of the Department of Environment, Ministry of Health, Wellness and the Environment

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Prepared for the Green Climate Fund

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List of Abbreviations

AC	Audit Committee
AF project	"An integrated approach to physical adaptation and community resilience in Antigua and Barbuda's northwest McKinnon's watershed"
CBD	United Nations Convention on Biological Diversity
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CDB	Caribbean Development Bank
CDM	Comprehensive Disaster Management
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CGA	Country Gender Assessment
CPA	Country Poverty Assessment
CSO	Civil Society Organisation
CSW	Commission on the Status of Women 2008
DCA	Development Control Authority
DOE	Department of the Environment
DGA	Directorate of Gender Affairs
EIMAS	Environmental Information Management and Advisory System
EMP	Environmental Management Plan
EMS	Environmental Management Systems
EPMA	Environmental Protection and Management Act 2019
FAO	Food and Agriculture Organisation
GCF	Green Climate Fund
GCF EDA	Green Climate Fund Enhanced Direct Access project
GDP	Gross Domestic Product
GEF	Global Environment Facility
GOAB	Government of Antigua and Barbuda
HDI	Human Development Index
HDR	Human Development Report
IADB	Inter-American Development Bank
INDC	Intended Nationally Determined Contributions
IPCC	Intergovernmental Panel on Climate Change
IWCAM	Integrated Watershed and Coastal Areas Management
MDG	Millennium Development Goals
MSJMC	Mount St. John Medical Center
NAP	National Adaptation Policy
NBSAP	National Biodiversity Strategy and Action Plan
NDC	Nationally Determined Contribution
NEMBU	
NODS	National Office pf Disaster Service
NGO	Non-governmental Organisations
OECS	Organisation of Easter Caribbean States

PMC	Project Management Committee
PMU	Project Management Unit
PPA	Physical Planning Act 2003
PV	Photovoltaic
PWD	Public Works Department
RE	Renewable Energy
RPFAB	Royal Police Force of Antigua and Barbuda
Rio+20	UN Conference on Sustainable Development
SDG	Sustainable Development Goal
SIRMZP	Sustainable Island Resource Management Zoning Plan
TAC	Technical Advisory Committee
TEC	Technical Evaluation Committee
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

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1. EXECUTIVE SUMMARY

The Government of Antigua and Barbuda is submitting a funding proposal to the Green Climate Fund, titled, *Resilience to hurricanes in the building sector in Antigua and Barbuda*. The project, which will total approximately United States Forty Six Million, One Hundred Thousand Dollars **(USD $46,100,000)** including co-financing, has 3 main components:

- **Component 1.** Climate-proofing interventions implemented in critical public service and community buildings to improve resilience to, and recovery from, extreme climate events.
- **Component 2.** Climate change adaptation mainstreamed into the building sector and relevant financial mechanisms
- **Component 3.** Climate information services strengthened to facilitate early action within the building sector to respond to extreme climate events

1.1. POLICIES AND DEFINITIONS

This Environmental and Social Impact Assessment and Management Plan has been developed in accordance with the Green Climate Fund's ESS and Gender Policies and the Department of Environment Gender Policies. For the purposes of this project, "climate proofing" is understood to be the application of adaptation measures so as to achieve a predetermined level of resilience to various slow-onset and extreme hydro-meteorological events, events which are deemed to have become more intense and extreme due to the onset of climate change, and are projected to intensify in the future according to the best available climate science. The critical facilities in this project are considered "climate-proofed" when they can withstand a predetermined Category of hurricane (preferably 5) and a 3-year extended meteorological drought as well as to continue operate at adequate levels. The scope of project interventions include i). retrofitting 52 existing Category 3 critical buildings to category 4 or 5 ii) Construction of one climate resilient warehouse/bunker and iii) construct extensions on five clinics to serve as hurricane shelters; iv) retraining programs for persons in the construction industry to support the shift from Category 3 to 4 and 5 hurricanes and v) building capacity in early warning systems to support vulnerable persons response to more intense storms.

1.2. SUMMARY OF ENVIRONMENTAL, SOCIAL AND GENDER RISKS

The environmental, social and gender risks assessed under this project were assessed and the project rated as a category B project i.e. risks are *limited adverse environmental or social risks and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures*. Some of the buildings that serve as health facilities and

the fire stations must be available full time for usage, especially during emergencies and cannot be closed for long. This project may require the temporary closure of these facilities and that closure may disrupt the provision of services needed by vulnerable members of the public.

The Environmental and Social Management Plan identifies mitigation measures, including:

- to appoint an accident prevention officer at each Site, responsible for maintaining safety and protection against accident;
- contractor requirements for security, safety of the Facilities, gate control, sanitation, medical care, and fire prevention;
- operations and maintenance schedules;
- construction insurance policies;
- a project Sustainable Procurement Plan to ensure that building aggregates are sustainably sourced;
- a requirement for site-specific Environmental Management Systems (ISO 14001), and registering their EMS Plans in the Environment Registry;
- Develop project partnerships for technical capacity around hazardous waste management; and clear responsibility and;
- budgeted costs for proper disposal of solid waste generated through project interventions.

2. INTRODUCTION

2.1. CONTEXT

Antigua and Barbuda forms part of the Leeward Islands in the eastern Caribbean. Most of the population, ~94,400 people, live on the island of Antigua, with a further ~1,600 residing in Barbuda[1,2]. As a small island developing state (SIDS), Antigua and Barbuda is among the most vulnerable countries to extreme climate events such as hurricanes and tropical storms[3,4]. This vulnerability is exacerbated by the country's long-standing macroeconomic and financial problems[5], with extreme climate events having significant impacts on the lives and livelihoods of local communities, as well as the local economy. In particular, damage to critical public infrastructure — including centralised power and water supplies, roads, hospitals, clinics, emergency services, telecommunications and schools — leads not only to disruptions to economic activity, but also to considerable recovery costs after an event. Moreover, it often takes several months for the country to recover from such disruptions, which leads to considerable declines in economic productivity and quality of life.[6]

2.2. CLIMATE RATIONALE

Historically, Antigua and Barbuda has only been hit by relatively low-intensity tropical storms, with those reaching hurricane status seldom strengthening above Category 3. The return rate of Category 4 hurricanes in the first half of the 20th century was only 1 in 50 years, and until 2017, the country had never experienced a Category 5 hurricane (Figure 1a). Consequently, building codes in Antigua and Barbuda did not prescribe the construction methods/technologies required to withstand above a Category 3 hurricane. While designing buildings to withstand up to a Category 3 hurricane was sufficient in the past, the increasing intensity of hurricanes hitting the country (Figure 1b) is having severe impacts on the country's built environment and population. For example, Hurricane Irma in 2017 resulted in the destruction of ~95% of all infrastructure on Barbuda, with total recovery costs estimated at US$222 million[7]. The recent occurrence of several Category 5 hurricanes in the region have also driven up insurance prices in Antigua and

[1] United Nations. World Population Prospects. Available at: https://population.un.org/wpp/DataQuery/. Accessed on 8 July 2019.

[2] Government of Antigua and Barbuda. 2011. Population and Housing census.

[3] The following explanation clarifies the use of the terms 'hurricanes', 'tropical storms' and 'high-intensity storms' in this Funding Proposal: The Saffir-Simpson Hurricane Wind Scale defines a hurricane as having sustained wind speeds of more than 74 mph (119 kmh), while a tropical storm has sustained wind speeds of less than 38 mph (61 kmh). Hurricanes are therefore likely to result in more damage to infrastructure and loss of life than tropical storms. Additionally, Category 4 and 5 hurricanes are considered to be high-intensity storms because of the associated sustained wind speeds of these hurricanes. According to the Saffir-Simpson Hurricane Wind Scale, Category 4 hurricanes have sustained wind speeds of 130–156 mph (209–251 kmh) while Category 5 hurricanes have sustained wind speeds upwards of 157 mph (252 kmh).

[4] Further details on Antigua and Barbuda's vulnerability to climate threats are presented in Section 3 of Annex 2: Feasibility Study.

[5] Further information on the country's financial challenges are presented in Section B.5 of the Funding Proposal, and specific details on these challenges can be found at the following reference: International Monetary Fund. 2015. Antigua and Barbuda. IMF Country Report number 15/189.

[6] Further information about the geographic, climatic and socio-economic context in Antigua and Barbuda is presented in Annex 2: Feasibility Study (Section 2).

[7] Government of Antigua and Barbuda. Antigua and Barbuda Recovery Needs Assessment.

Barbuda, this is true even if the event does not make landfall in the country. This trend of increasing intensity of storms within the Caribbean region is projected to continue in the coming century (see analysis below). Urgent adaptation measures for the building sector are therefore needed to address the impacts of climate change on the country. Further details on the climate change risks and impacts for Antigua and Barbuda are described below.

Figure 1: Historical data showing the frequency of Category 4 and 5 hurricanes in Antigua and Barbuda between 1900 and 2019.

While the data is too sparse to conduct a statistical trend analysis, there is a noticeable increase in the frequency of Category 4 hurricanes in the latter half of the century, with the first ever Category 5 hurricanes observed in 2017.

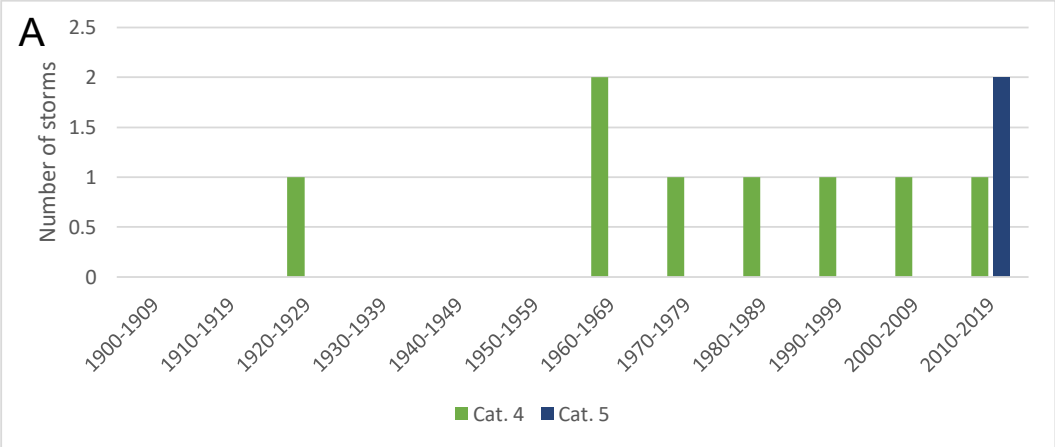
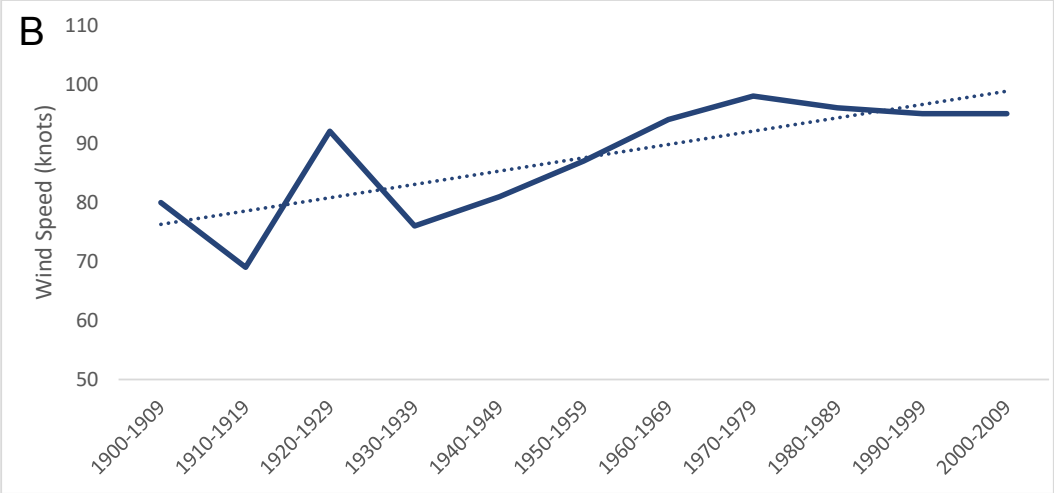


Figure 2: Historical data showing the average wind speeds of tropical storms and hurricanes in the Eastern Caribbean.

Although not statistically significant, an increasing trend has been observed in the average wind speed of storms in the region .



2.2.1. Climate Change Risks

Hurricanes and tropical storms are the main climatic hazards affecting Antigua and Barbuda. Since 1995, the country has experienced 15 hurricanes and 14 tropical storms. Most of these storms ranged from Category 1 to 3 in magnitude, with the notable exceptions of Hurricanes Luis in 2005 (Category 4), and Irma and Maria in 2017, which were the only Category 5 hurricanes that have affected the country and region in recorded history.[8] Hurricanes and tropical storms are the main climatic hazards affecting Antigua and Barbuda. Since 1995, the country has experienced 15 hurricanes and 14 tropical storms. Most of these storms ranged from Category 1 to 3 in magnitude with the notable exceptions of Hurricanes Irma and Maria in 2017, which are the only Category 5 hurricanes that have affected country in recorded history.[9]

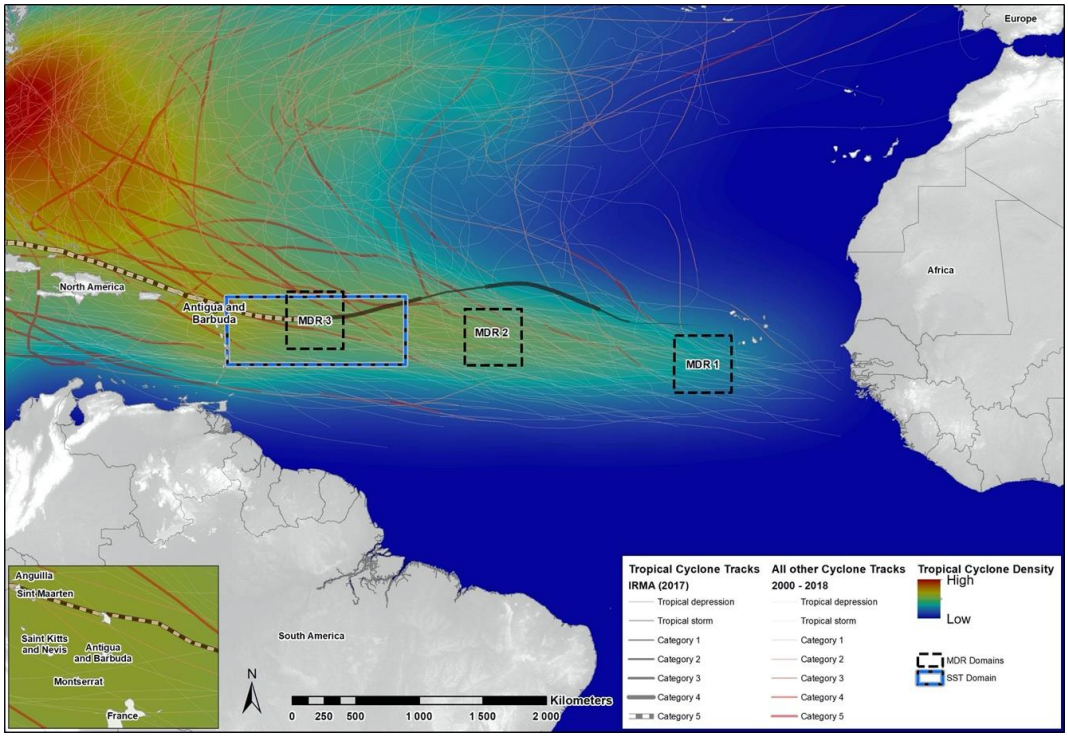
The frequency and intensity of these storms is strongly correlated to: i) high sea surface temperature (SST) in the major development region (MDR); ii) decreasing vertical wind shear (VWS) in the mid-troposphere during depression development; and iii) changes in the La Niña phase of the El Niño Southern Oscillation (ENSO). In the lead up to Hurricane Irma in 2017, the SST anomaly from baseline climatic conditions was shown to be in the order of 1°C in the region to the south-east of Antigua and Barbuda. Hurricane Irma was fluctuating between Category 2 and 3 strength before being deflected west south-west by a high-pressure system back over the area of warmer ocean[10]. This increased SST gave energy to the depression, contributing to its development into a Category 5 hurricane. The analyses below use these parameters to demonstrate the expected increase in the intensity of hurricanes over the next century.

To determine how climate change is likely to result in more favourable conditions for hurricane development, two factors were assessed, namely: i) SST over the oceans in the lead up pathway for most hurricanes affecting Antigua and Barbuda; and ii) VWS in three 4° x 4° locations in the MDRs (**Error! Reference source not found.**). An analysis of the projected ENSO cycle under future climate scenarios was not undertaken because of the uncertainty in the relevant literature[11].

[8] Details on the return periods of hurricanes and tropical storms within a range of 15 to 105 nautical miles are presented in Section 2 of Annex 2: Feasibility Study.

[9] Details on the return periods of hurricanes and tropical storms within a range of 15 to 105 nautical miles are presented in Section 2 of Annex 2: Feasibility Study.

Figure 3: Vertical wind shear (VWS) and sea surface temperature (SST) domains used for the analysis of major development regions (MDRs) for hurricanes that affect Antigua and Barbuda. Lines show the historical trajectories of hurricanes.

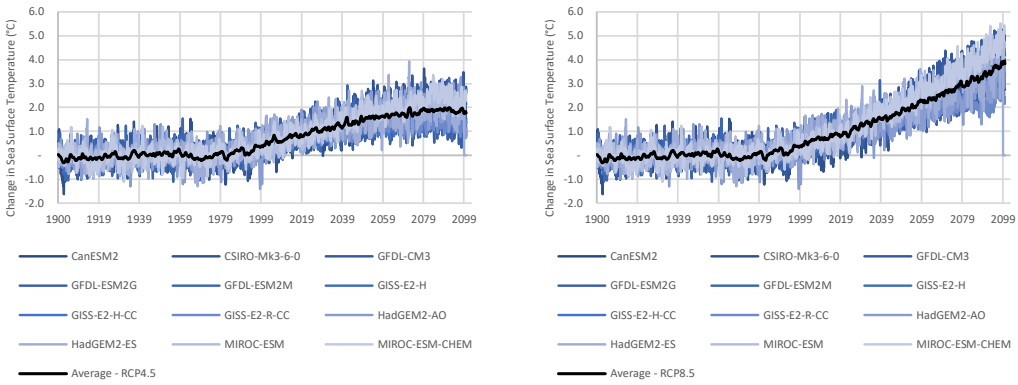


Climate change projections under both the RCP4.5 and 8.5 scenarios[12] indicate that, although the total number of storms is not expected to change significantly, there will be an increase in the frequency of high-intensity storms (Category 4 and 5 hurricanes) experienced by Antigua and Barbuda. Furthermore, a 20% slow-down in storm translation speed over land for Atlantic storms has been observed. These speeds are likely to continue decreasing under future conditions of climate change, resulting in heavier rainfall events and increased flood risk.[13] The changes in hurricane patterns are as a result of the projected changes in SST and VWS, which were assessed in the MDRs where most extreme climate events affecting the country develop (**Error! Reference source not found.** above). The results from this assessment show that under RCP8.5, SST in the 50th percentile is likely to increase from the baseline conditions by 2°C in 2050 and nearly 4°C by 2100 (**Error! Reference source not found.**) in the SST MDR.

[12] These representative concentration pathways (RCPs) are based on the main forcing agents of climate change, including GHG emissions, GHG concentrations and land-use change. RCP4.5 represents the likely best-case scenario with a peak radiative forcing of 4.5 W/m2 (~650 ppm CO2 eq) at stabilisation after 2100. RCP8.5 represents a very high GHG emission scenario with a peak radiative forcing of 8.5 W/m2 (~1,370 ppm CO2 eq) and no expected stabilisation in emissions. RCP8.5 indicates a business as usual scenario where the rate of GHG emissions continues to increase with no mitigation measures.

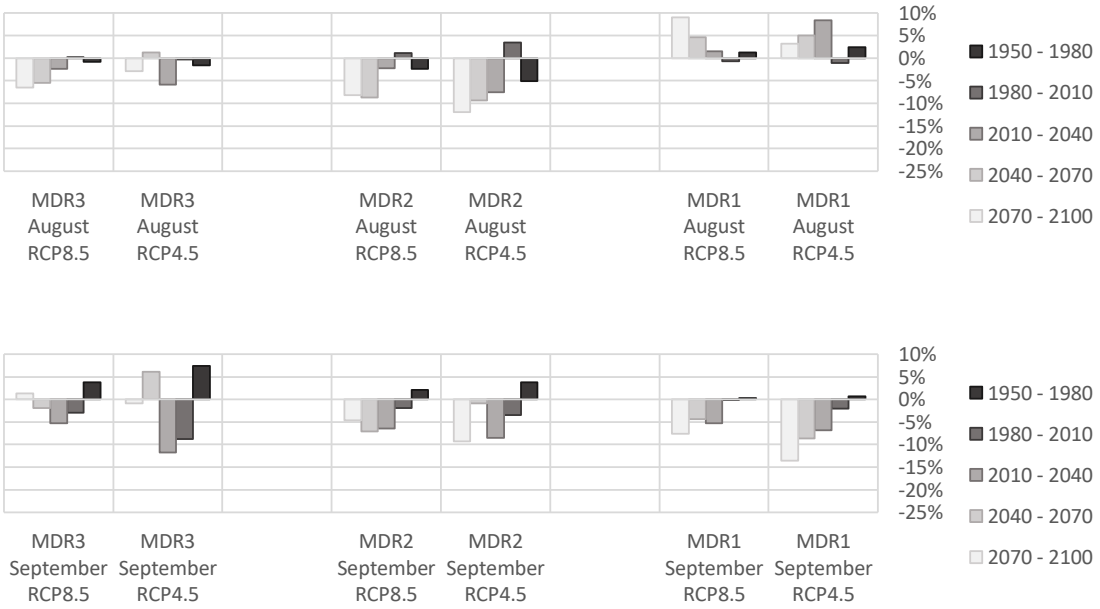
[13] Kossin J. 2018. A global slowdown of tropical-cyclone translation speed. *Nature.* 558: 104–107.

Figure 4: Sea surface temperature (SST) anomaly yearly for RCP4.5 (left) and RCP8.5 (right).

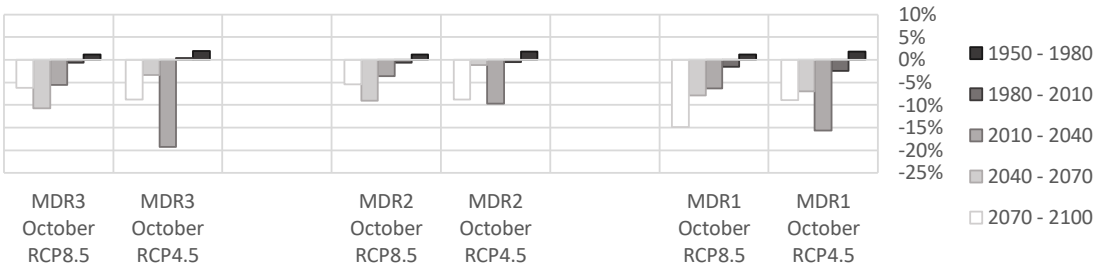


In addition to the increasing SST, a general decreasing trend in VWS is expected under both RCP4.5 and RCP8.5 climate scenarios (**Error! Reference source not found.**) and across all MDRs. Such decreases, combined with increasing SST, will create more favourable conditions for the development of high-intensity storms in the MDRs assessed. These key findings are supported by the most recent IPCC AR5 report, which emphasises an expected 50% increase in the frequency of high-intensity storms, along with increases in the magnitude of these events and their associated maximum wind speeds[14].

Figure 5: Change in VWS from August (top) to October (bottom) for MDR1-3 and under RCP4.5 and RCP8.5 scenarios. Climate change impacts and vulnerability



[14] The Intergovernmental Panel on Climate Change. Fifth assessment report. Available at: https://www.ipcc.ch/assessment-report/ar5/. Accessed on: 19 September 2019.



2.2.2. Climate Change Impacts and Vulnerability

Given that Category 4 and 5 hurricanes are expected to occur more frequently under future climate conditions, the combined impacts of intense rainfall and strong winds will become increasingly severe in the absence of urgent adaptation interventions. This will have severe impacts on the lives and livelihoods of local communities as well as the economy as a whole[15]. Following a Category 5 hurricane, power and water supply can be disrupted for up to 24 months, while damage to communication and transport infrastructure disrupts associated services for up to 6 months. Furthermore, rough seas and inflated insurance premiums after a storm disrupts the import of vital food, medical and building supplies for several weeks after an extreme climate event. The ability of the country to respond to such events is constrained by the vulnerability of critical public services, including healthcare, police, fire and rescue services as well as government coordination and response agencies. Disruption to these services caused by damages to critical infrastructure reduces the efficiency and effectiveness of emergency response and delays recovery. This vulnerability is further exacerbated by limited capacity within Antigua and Barbuda's Meteorological Services (ABMS) for early warning and preparatory action in response to an extreme climate event.

2.3. PROJECT DESCRIPTION AND OBJECTIVES

The **objective of the proposed project** is to increase the climate-resilience of selected critical public buildings in Antigua and Barbuda to hurricane. Project activities will:

i. Ensure that critical services remain operational during and following extreme climate events; and
ii. Bring about reduced maintenance costs of buildings owing to the installed climate-proofing interventions.

Through the proposed project, the private sector will also gain critical technical information generated by the project and access to increase cadre of trained construction workers for climate-proofing of their buildings.

[15] A detailed cost-benefit analysis is presented in Annex 3 and summarised in Section D.6 of the Funding Proposal. This analysis describes what the projected costs of extreme climate events will be in Antigua and Barbuda with and without project interventions under baseline and projected climate change scenarios.

Working at the national and community level as outlined below, the proposed project will incorporate lessons from past and ongoing initiatives such as the 'Global Climate Change Alliance+' (GCCA) and 'Sustainable Pathways – Protected Areas and Renewable Energy' (SPPARE), as well as the ongoing Special Climate Change Fund (SCCF) project[16]. Baseline initiatives have been carefully considered in the design of the proposed project and will be further detailed in the Feasibility Study during the development of the Funding Proposal. The DoE will also ensure alignment and complementarity with relevant ongoing parallel processes. In addition, the proposed project will be in line with the guidance provided in the SIRMZP and the EPMA. This project will also address the weakest performing area of the Comprehensive Disaster Management Audit of Antigua and Barbuda (see fig. 1)[17].

Through alignment with ongoing initiatives, the proposed project will further improve access to financing for adaptation measures via the generation of accurate and key information needed to provide policy and other interventions to scale up the number of buildings that can be considered a Cat 4 & 5 building. Improving access to financing options follows a similar approach to those being undertaken through initiatives supported by the Adaptation Fund[18], GEF Trust Fund[19] and GEF SCCF[20], as well as a concessional loan from the Abu Dhabi Fund for Development. The proposed project will build on the adaptation interventions being undertaken through the SCCF and Adaptation Fund projects.[21]

Barriers to the successful achievement of the proposed objective include *inter alia* the need to:

i. develop institutional and technical capacities for planning, implementing and maintaining measures for climate change adaptation in Antigua and Barbuda, especially within the building sector;
ii. upscale financing for implementation of such adaptation measures.[22]

The proposed project will therefore implement a range of activities under two inter-related outputs to address these barriers. These activities are outlined below and will be further detailed in the Funding Proposal and Feasibility Study. The investment in climate-resilient building measures (Output 2) will be supported by the enhancement of institutional, technical and financial capacity within the GoAB (Output 1), which is expected to create an enabling environment for climate-resilient building development in the long-term.

[16] The GCCA, SPPARE and SCCF projects are outlined in the following section, Section B.2.
[17] The 2018 Comprehensive Disaster Management Audit Tool is harmonized with the Sendai. Framework for Disaster Risk Reduction (2015-. 2030)
[18] The 'An integrated approach to physical adaptation and community resilience in Antigua and Barbuda's northwest McKinnon's watershed' project.
[19] The SPPARE project.
[20] The SCCF project titled 'Building Climate Resilience through Innovative Financing Mechanisms for Climate Change'.
[21] Such as developing Local Area Plans (LAPs) for Antigua. The SCCF and Adaptation Fund projects are detailed in Section B.2.
[22] Barriers are discussed in the sub-section above, 'Barriers to achieving the adaptation alternative'.

Table 1: Project Planned Activities

Project Activities	Project Inputs
OUTPUT ONE**. Climate-proofing interventions implemented in critical public service and community buildings to improve resilience to, and recovery from extreme climate events.**	
Activity 1.1. Implement climate-proofing measures on critical infrastructure.	○ Develop site-specific engineering designs for climate proofing critical infrastructure for 54 buildings. ○ Install climate proofing measures on 54 targeted buildings based on engineering designs developed in Sub-activity 1.1.1. ○ Develop site-specific operational procedures for long-term maintenance of climate-proofing interventions for each target building and integrate these procedures into the project O&M Framework. ○ Design climate-resilient renewable energy solutions for priority buildings taking into consideration energy efficiency (EE) and indoor air quality for those buildings that have heating, ventilation and air conditioning (HVAC) systems. ○ Install EE and RE solutions at priority buildings. ○ Design water harvesting solutions for priority buildings as well as stormwater drainage solutions for buildings in flood risk areas. ○ Install water harvesting solutions for priority buildings as well as stormwater drainage solutions for buildings in flood risk areas.
Activity 1.2. Construct climate-resilient storm shelters attached to public clinics.	○ Develop detailed, site-specific construction plans for hurricane shelters at five public clinics. ○ Construct hurricane shelters based on the designs developed under Sub-activity 1.2.1. ○ Equip hurricane shelters with renewable energy and climate-resilient water harvesting systems. ○ Develop emergency protocols for each shelter according to national guidelines.
Activity 1.3. Construct a climate-resilient bunker to store emergency supplies for the health, energy, building and welfare sectors	○ Complete a detailed design and construction plan for the bunker ○ Construct the bunker based on the design in Sub-activity 1.3.1. ○ Develop an operational protocol for the stock and distribution management of emergency supplies that will be stored within the bunker. ○ Develop a battery recharge and replacement protocol for critical services.
Activity 1.4. Implement measures to preserve vital information/data within public institutions	○ Develop backup protocols for critical information. ○ Train IT teams on the implementation of backup protocols ○ Design physical protection measures for critical IT infrastructure. ○ Implement physical protection measures for critical IT infrastructure
OUTPUT TWO**. Climate change adaptation mainstreamed into the building sector and relevant financial mechanisms**	

Activity 2.1. Mainstream climate change adaptation into the building sector by making provision for the national building code in the Physical Planning Act (2003), updating the EMS Plans and providing training for public and private sector representatives.	○ Draft regulations for the Physical Planning Act (2003) that makes provision for the Building Code for submission to and enactment by parliament. ○ Conduct Strategic Impact Assessment (SIA) of the building code regulations to assess the environmental and social safeguards and gender risks, consequences and mitigation measures related to the enactment of these regulations. ○ Make recommendations for the EMS Plans to be updated to include climate change adaptation measures for the building sector. ○ Conduct annual meetings with participation from relevant stakeholders to collate and share lessons learned from implementing the EMS plans and ensure that these plans are updated regularly where necessary.
Activity 2.2. Mainstream climate change adaptation for the building sector into public and private financial, insurance and banking sectors.	○ Consult with representatives from the public and private sector to identify entry points for accessing finance for climate change adaptation measures (incentives, programmes, levies, insurance/risk management products, data/information, policies and institutional arrangements). ○ Refine the SIRF Fund's list of adaptation options using an evidence-based approach that draws lessons learned from the SCCF, EDA projects, as well as lessons learnt the implementation of adaptation interventions under Activity 1.1 of this project. ○ Train decision-makers from NODS, DCA and PWD on how to (a) assess, calculate and report on the incremental cost of adaptation in public sector projects for the purposes of tracking the implementation of Article 2.1c of the Paris agreement (b) implement the new building codes and regulations to assess planning applications (c) to provide trained technical assistance to the SIRF Fund in the evaluation of private sector applications for loans and grants. ○ Collate and share lessons learned from SIRF Fund application & funding process, including fund replenishment.
Activity 2.3. Train relevant staff from the National Office of Disaster Services (NODS), Development Control Authority (DCA) and the Public Works Department (PWD) on operational procedures for long-term monitoring, maintenance and upscaling of climate-resilient RE and water harvesting technologies in accordance with the national building code.	○ Train building inspectors from DCA, building maintenance teams from PWD as well as technical staff from NODS and other relevant institutions on the implementation of the operational procedures for the long-term maintenance of climate-proofing interventions in the target buildings, based on building-specific O&M plans and updated national building code. ○ Design and implement a long-term monitoring framework for building-specific climate-proofing measures – including cost-benefit analyses – to demonstrate the long-term adaptation benefits. ○ Partner with local training institutions such as ABICE to develop and deliver training programmes for relevant technical staff from MoW and DCA; building inspectors, engineers, architects and draughtsmen; and the private sector on best

	practices for implementing, monitoring and maintaining climate change adaptation technologies, including climate-resilient RE and water harvesting solutions, and how to apply the updated national building code during the installation of these technologies. o Design and conduct a gender-sensitive awareness campaign targeting the public and private sectors on the updated Building Code, the benefits of taking up climate-adaptive solutions within the building sector as well as the availability of certified climate change courses. o Develop and implement a gender-sensitive awareness-raising campaign within the government system on the availability of the courses developed under Sub-activity 2.3.3.
Activity 2.4. Train the local workforce on the installation, operation and maintenance of climate-proofing measures for the targeted buildings.	o Engage with suitable training institutions such as ABICE to develop and deliver a training programme that targets the local workforce on how to install, operate and maintain climate change adaptation technologies in the building sector as well as implement early action protocols. o Develop training modules in line with regional and international occupational standards for climate change adaptation in the building sector. o Deliver training modules developed under Sub-activity 2.4.2. o Design and conduct an awareness building campaign on the opportunity for training on the installation, operation and maintenance of climate change adaptation technologies in the building sector, with the support of training institutions.
OUTPUT THREE. **Climate information services strengthened to facilitate early action within the building sector to respond to extreme climate events**	
Activity 3.1. Climate information services strengthened to facilitate early action for extreme climate events.	o Establish a centralised online server to enhance real-time processing of climate data. o Increase the technical capacity of staff within ABMS to collect, process and manage climate data in real time. o Conduct a knowledge exchange trip to strengthen the technical and institutional capacity within ABMS for impact-based forecasting. o Increase the technical and institutional capacity of AMBS to develop early warning information products, including infographics that are locally appropriate and easily interpreted by vulnerable communities.
Activity 3.2. Establish a formalised communication protocol to facilitate rapid information sharing and early action preceding an extreme climate event.	o Design and operationalise a formal communication protocol to facilitate effective communication of impact-based forecasts from ABMS to decision-makers within relevant government entities responsible for preparation ahead of an extreme climate event. o Design and implement early action protocols for critical public service and community buildings with variable responses dependent on the anticipated intensity of the incoming storm.

	○ Train public and private sector actors on the application of the early action protocols designed and developed under Sub-activity 3.2.2. ○ Improve the capacity of ABMS to disseminate early warning information products to critical service providers as well as the private sectors to facilitate early action.

2.3.1. Project Rational and Strategy

There are over 254 buildings used by the Government of Antigua and Barbuda to provide services. This project has taken a percentage of those buildings that, together if resilient to the strongest of storms will allow for a rapid recovery. Therefore, public sector buildings chosen to benefit from the project interventions were required to meet at least **two (2)** of the following criteria:

1. The building provides essential services to the population of Antigua and Barbuda pre- and post- extreme climate event, including:
   - Protective
   - Emergency services
   - Medical services
   - Post-disaster assessment and response
   - Critical government office
2. The location of the building maximizes the number of beneficiaries (e.g. in an urban or settlement area);
3. The location of the building provides essential services to geographically or socially vulnerable populations.

Table 2: Selected buildings within the GCF BUILD Criteria

() – number of buildings on the compound

BUILDING	**DESCRIPTION**		
	Building provides essential services to the population	Location of the building maximises the number of beneficiaries (e.g. in an urban or settlement area)	Location of the building provides essential services to geographically or socially vulnerable populations.
All Saints Clinic (1)	X (Medical)	X	X
All Saints Fire Station (1)	X (Emergency)	X	
All Saint's Police Station (1)	X (Protective)	X	
Analytical Services (2)	X (Critical)	X	
Antigua State College (2)	X (Critical)	X	

Bentals Health Clinic (1)	X (Medical)	X	X
Bolans Health Clinic (1)	X (Medical)		X
Clareview Psychiatric Hospital (4)	X (Medical)		X
High Court of Justice (part of Ministry of Legal and Justice Affairs Court) (1)	X (Critical)		X
Defence Force (2)	X (Protective)		X
Department of Environment (2)	X (Critical and Post-disaster assessment and response)	X	
Fiennes Building (2)	X (Protective)		X
Good Shepherd Children's Home (1)	X (Protective)		X
MET Office (airport terminal) (1)	X (Critical)	X	
Ministry of Finance (1)	X (Critical)	X	
Ministry of Tourism (1)	X (Critical)	X	
National Archives (1)	X (Critical)	X	
National Office of Disaster Services (NODS) (1)	X (Emergency)		X
Parham Health Clinic (1)	X (Medical)		X
Police Headquarters (1)	X (Protective)	X	X
Potters Health Clinic (1)	X (Medical)	X	X
Her Majesty's Prison (1)	X (Protective)		X
St. John's Fire Station (1)	X (Emergency)	X	X
Swetes Health Clinic (1)	X (Medical)		X
Liberta Police Station (1)	X (Protective)	X	X
Liberta Primary School (1)	X (Critical)	X	X
Urlings Primary School (1)	X (Critical)		X
Jennings Primary School (1)	X (Critical)	X	X

Bolans Primary School (1)	X (Critical)		X
Bendals Primary School (1)	X (Critical)		X
Pigotts Clinic (1)	X (Medical)		X
Princess Margaret Secondary School (1)	X (Critical)	X	X
Cedar Grove Clinic (1)	X (Medical)	X	X
Old Road Clinic (1)	X (Medical)		X
Freetown Primary School (1)	X (Critical)		X
Emergency Medical Service (1)	X (Medical)	X	X
Gray's Farm Clinic (1)	X (Medical)	X	X
Gray's Farm Police Station (1)	X (Protective)	X	X
Willikies Primary School (1)	X (Critical)		X
Red Cross (1)	X (Emergency)	X	X
Cedar Grove Primary (1)	X (Critical)		X
Clare Hall Secondary School (1)	X (Critical)	X	X
Bethesda Clinic (1)	X (Medical)		X
Cobbs Cross Primary School (1)	X (Critical)		X
Barbuda fire Station (1)	X (Emergency)	X	X
Barbuda Council and Treasury (1)	X (Critical)	X	X

Some of the facilities such as the National Office of Disaster Services are being reconstructed under other projects and may meet structural soundness and accessibility standards for resilience but will still need to achieve functional climate proofing through RE, water catchment and the development of resilience procedure. Other facilities such as the All Saints Police Station have been determined by the team of engineers to require complete reconstruction to meet soundness and accessibility requirements.

Other facilities may simply require the application of climate adaptation measures so as to meet the standard of climate proofing.

2.3.2. Project Implementation Arrangements

The Department of Environment (DoE) is an accredited entity to the Green Climate Fund (GCF) and will act as the implementing body for the proposed project with the Ministry of Finance

and Corporate Governance as the Executing Entity. The DOE and the EE will utilise GCF policies and procedures for the management of the assets of the project and will use joint procurement where this proves strategic. The general management structure of this project can thus be described as follows:

1) Department of the Environment as the **Accredited entity** and provision of **general oversight** and final decision making; the DOE will also provide monitoring and evaluation support to the Executing Agency.
2) The Ministry of Finance Project Management Unit (MOF-PMU) will be providing **project coordination** oversight and implementation;
3) The Project Management Committee (**PMC**) of the Department of the Environment, will approve budget and work programs, and approve procurement and staff hiring.;
4) The Audit Committee **(AC)** will provide support to the PMC for general financial oversight including review of the Results-based payment system.
5) The Technical Advisor Committee (**TAC**) will provide technical oversight, particularly in the areas where the PIMU are not normally competent. Further, the TAC, who's membership include NGO's, will provide ESS and Gender oversight

2.3.3. Project Stakeholders

The proposed project involves a wide range of stakeholders including communities, community-based organisations (CSOs), non-governmental organisations (NGOs), monitoring and research institutions, small- and large-scale private sector operators, and public-sector role-players from various spheres of government. During formulation of this Funding Proposal, consultations were undertaken with both local and central and relevant stakeholders in order to select project sites as well as district officials, private-sector role-players and communities.

The proposed project is being developed in response to a request from the GoAB to enhance resilience of the building sector to intensifying impacts of climate change, as expressed in the country's NDC. Through a fully consultative and country-driven process, the formulation of the proposed project will draw on extensive existing expertise within the relevant sectors and will be informed by stakeholder consultations to ensure that the priorities of a broad range of relevant parties are taken into consideration.

Key Stakeholders for project implementation are identified below.

GOVERNMENT

- *Development Control Authority* – National spatial development; approves building permits and oversees the Environmental Impact Assessment (EIA) process
- *Ministry of Education* – Responsible for public educational institutions

- *Ministry of Health, Wellness and the Environment* – Compliance with the Environmental Protection and Management Act, 2015
- *Antigua Public Utilities Authority* – Procuring APUA-certified local solar PV installers for installation, maintenance and monitoring
- *Ministry of Energy* – Technical support and oversight
- *Ministry of Public Works* – Training of civil engineering staff to prepare buildings for solar panel plus battery installation and maintenance post project
- *Ministry of Justice and legal Affairs* – Legal representation of vulnerable persons
- *National Office of Disaster Services* – verification of disaster mitigation standards achieved
- *Barbuda Council* – Oversight and coordination of works in Barbuda
- *Beneficiary facilities, including Management and administrative staff* – Asset ownership; training in reading smart meters and conducting Environmental Management Systems

COMMUNITY GROUPS

- *Community groups and residents* – Train qualified facility staff and volunteers in maintenance of solar PV systems
- *GEF Small Grants Programme* – several projects including in the target communities have included installation of Solar PV systems. Community members have been involved in solar energy training and have installed systems so local connections need to be build and strengthened to reduce risks.
- Other project partners identified in Section 10

PRIVATE SECTOR

- *Local contractors* – Beneficiaries of climate resilience training; competitive procurement process
- *Local consultants* – Beneficiaries of climate resilience training; competitive procurement process
- *Hardware stores* – building material inputs

OTHER PROJECT PARTNERS

- *United Nations Electricity Supply Partnership* – providing technical support to DOE via a Climate Technology Center and Network (CTCN) request
- *CDEMA* – Antigua and Barbuda is one of the regional coordinating nodes for disaster management. Specifically, this means that Antigua and Barbuda is the first point of response for Montserrat, Anguilla, British Virgin Islands, Sk. Kitts and Nevis and the Commonwealth of Dominica.

2.4. THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS IN ANTIGUA AND BARBUDA

The retrofitting of existing structures and the building of a climate-resilient bunker does not qualify as one of the developments under Schedule 3 of the Physical Planning Act 2003, and as such does not require a full EIA. However, building permits are required prior to approval of the drawings. In addition, Environmental Management System (EMS) site plans are required under the EPMA, 2019 for certain buildings. The types of buildings for an EMS are yet to be identified.

1.1.1 Screening and Scoping

2.4.1.1. Screening for Environmental Impact

The Development Control Authority (DCA) is responsible for initial screening of Development Applications that are likely to have an environmental impact. In undertaking this function, the DCA is guided by the PPA 2003 and the Sustainable Island Resource Management and Zoning Plan 2012. When a preliminary proposal application is submitted to the Chief Town and Country Planner (CTCP) at the DCA and it is determined that there could be Environmental Impacts, the CTCP submits the application to the Department of Environment (DoE) with a request for it to present views on how to address any likely Environmental Impacts.

Once the project has been flagged for screening, the DoE's Technical staff conducts a Screening assessment. The purpose of the screening is to identify the possible impacts and levels of risks that may be associated with the project. The Screening tool in Annex 1 may be used to guide this process.

It is not likely that this project will require an EIA. The AE/DOE will also conduct scoping assessment for each of the building as part of the individual application process. Since this is the upgrading of the buildings, the application process should be simple and the environmental implications should be minimal.

3. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK FOR ESS AND GENDER IN ANTIGUA AND BARBUDA

The following laws, policies and international conventions encapsulated in the table below are applicable to the DOE's Climate Change Program and this project in particular.

Table 3: Relevant Policies, Legal and Administrative Framework

Legislation	Description and relevance to the project
NATIONAL LEGISLATION	
Constitution of Antigua and Barbuda, 1981	The Constitution of Antigua and Barbuda prohibits discrimination on the grounds of sex, which refers specifically to the biological differences that determines an individual as male or female. Article 14 (3) states, "In this section, the expression "discriminatory" means affording different treatment to different persons attributable wholly or mainly to their respective descriptions by race, place of origin, political opinions or affiliations, colour, creed, or sex whereby persons of one such description are subjected to disabilities or restrictions to which persons of another such description are not made subject or are accorded privileges or advantages that are not accorded to persons of another such description" This therefore requires that all aspects of the project should include equal opportunities for men and women to be involved in the project as well as benefit from the impact of the projects
National Solid Waste Management Authority (Amendment) Act of 2005	The Act establishes the NSWMA as having general responsibility for the management of waste, including hazardous waste, the categorization of which includes poisonous (H6.1), corrosive (H8), toxic (H11), and ecotoxic (H12), which are relevant to this project.
Environmental Protection and Management Act (2019)	The EPMA serves as the principal guiding policy for the Department of the Environment. It establishes and consolidates the Implementation of the Multilateral Environmental Agreements in one legal regime and provides the financial framework for implementation. It governs sustainable environmental protection and management to establish effective allocation of administrative responsibilities for environment management, coordination of environmental management, and the incorporation of

Legislation	Description and relevance to the project
	international treaty obligations with respect to the environment into national and law related matters. The EPMA requires any commercial or industrial facility that handles, stores, processes, or otherwise controls any hazardous substance to prepare Site Environmental Management Plans (EMP) for approval by the Department of Environment (DOE). This section applies to the beneficiary facilities under this project, as batteries are considered a hazardous waste. The Government will implement Section 39 of the EPMA 2019 for public facilities on a pilot basis, beginning with Medical Clinics and Schools, which will receive small grants from the DOE to prepare their site Environmental Management Plans (EMPs), as required under the Environmental Protection and Management Act, 2015, using ISO 14000. As part of this process, the DOE will provide solar PV panels, batteries and accessories to Schools and Clinics in order to reduce their Greenhouse Gas (GHG) emissions, which is considered to be a Pollutant under the EPMA (2019). The facilities are also required to register hazardous waste in the Environmental Registry under Section 77(2)(a) of the Act.
Antigua and Barbuda Labour Code	The Act stipulates that no employer shall discriminate with respect to any person's hire, tenure, wages, hours, or any other condition of work, by reason of race, colour, creed, sex, age or political beliefs. It also prohibits
Physical Planning Act, 2003	The PPA controls the development of land; the protection of the natural environment; as well as building regulations and provides legislation for a National Development Plan and Local Area Plans for specific areas in Antigua and Barbuda. The Third Schedule of the Physical Planning requires an Environmental Impact Assessment (EIA) for ecosystem interventions.

Legislation	Description and relevance to the project
	Any material changes to land or buildings, including extensions to the roof, must be approved by the Development Control Authority (DCA), and as such the DOE works closely with the DCA on developments in the Third Schedule. Before installation of solar panels begin, the DOE will facilitate a feasibility assessment of infrastructure, including roofs, and seek necessary approval from DCA, where applicable. Though the Third Schedule of the PPA does not require an EIA for the installation of solar panels, which is expected to have minimal impact upon the environment, this EIA identifies the potential adverse impacts during the works e.g. noise and dust nuisances, waste management including disposal of panels which may break during installation or due to extreme climate events, and the occupational health and safety concerns of workers and persons using the facilities while works are undertaken. The assessment also considers impacts during operation.
Childcare and Protection Act, 2004	The CPA establishes a Child Protection Agency in Antigua and Barbuda and provides safety, care and protection for all children. It also provides standards for child care facilities including reporting abuse or neglect of children and requirements of children's homes.
Disaster Management Act, 2002	This Act provides for the effective organization of the preparedness, management, mitigation of, response to and recovery from emergencies and disasters natural and man-made in Antigua and Barbuda.
Disabilities and equal Opportunities Bill	The objectives of the Act are to : a) to improve the general standard of living for persons with disabilities; b) to provide a clear and comprehensive national mandate to facilitate the elimination of existing cases of discrimination against persons with disabilities, and to put safeguards in place to prohibit further discrimination against such persons;

Legislation	Description and relevance to the project
	c) to promote on a national level, the principle that a person with a disability is entitled to the same fundamental rights as a person who does not have a disability; and d) to ensure full and effective participation in all aspects of society for a person with a disability on an equal basis with a person who does not have a disability.
NATIONAL POLICIES	
Antigua and Barbuda Interconnection Policy, 2015	Antigua and Barbuda Interconnection Policy update in 2015 provides for Net Billing for systems between 0 – 5 kW for resident and commercial facilities. For systems between 5 – 50 kW, the Policy mandates a Feed-in Tariff (buy-all, Sell-all) at the avoided cost of fuel (XCD 0.45).
Department of Environment Environmental Social Safeguard Policy	The DOE operates within three modalities, namely legislative, institutional, and departmental operational. Within the context of these modalities, the Environmental and Social Safeguards Policy formalizes the DOE's commitment to promote environmental and socially sustainable projects. As such, its Environmental and Social Safeguards Policy ("ESS Policy") sets out the principles on which the approach to environmental and social safeguard review and management by the DOE is based and the environmental and social safeguard requirements that are carefully applied to each project.
Department of Environment Gender Policy	The Department of Environment Gender Policy formalizes the DOE's commitment to mainstreaming gender into its work programme and project portfolio. Gender is defined as "the social attributes and opportunities associated with being male and female and the relationships between women and men and girls and boys, as well as the relations between women and those between men. These attributes, opportunities and relationships are socially constructed and are learned through socialization processes. They are context/ time- specific and changeable. Gender is part of the broader socio-cultural context and intersects with other important criteria for socio-cultural analysis including class, race, poverty level, ethnic group and age. As such, the DOE's Gender policy sets out the principles on which the approach to environmental social safeguards and

Legislation	Description and relevance to the project
	gender review and management by the DOE is based and the and requirements that are applicable to each project.
Sustainable Island Resource Management Zoning Plan (SIRMZP 2012)	The Physical Planning Act of 2003 describes the intention for a Development Plan for any part of Antigua and Barbuda. The SIRMZP was commissioned as the national physical development plan and approved in 2012. This land use and zoning plan presents a development framework which labels the northwest coast of Antigua as a "settlement expansion zone". The target area is inside this zone.
National Poverty Strategy 2011-2015	The National Poverty Strategy 2011- 2015 has as one of its strategies, "Building Resilience through Environmental Sustainability – by making disaster risk reduction a feature of the planning process in the light of the high environmental risks that the country faces from hurricanes, earthquakes, and now sea rise, as a result of global warming."
National Youth Policy, 2007	The National Youth Policy identifies factors that are critical to youth empowerment and identifies eight key focus areas; including strengthening social environments, education and training, employment and sustainable livelihoods, health, participation and empowerment, care and protection, crime, violence and rehabilitation and gender equality and gender relations. By installing solar panels in schools, the project will reach young women and young men, and could build valuable skillsets for young professionals. This project directly impacts 5 of the 8 focus areas listed within the National Youth Policy: strengthening social environments, education and training, employment and sustainable livelihoods, health and participation and empowerment.
National Comprehensive Disaster Management (CDM) Policy and Strategy for Antigua and Barbuda	Government is committed to strengthen the national capacity and capability to implement CDM. This will be done through the elaboration of a series of inter-locking complementary policies and strategic actions in areas identified below. Government, through NODS or other organizations/sectors will mobilize resources from national, regional and international sources to support this strategic policy and plan. This policy calls for the modification of The Disaster Management Act (2002) to link and promote the coordination of all related national environmental policy and secondary

Legislation	Description and relevance to the project
	legislation into a legislative framework that supports and promotes the implementation of CDM. The governance structure of the national disaster management programme and of NODS will be streamlined to enable more efficient decision making and guidance.
REGIONAL POLICIES	
OECS Building Codes (Antigua and Barbuda Draft)	In 2015, the OECS Secretariat, with the assistance of the United Nations Development Programme and through the UNCHS/UNDP Project for Programme Support to the Human Settlements Sector in the OECS (CAR/89/006), updated the standard building codes and guidelines which speak directly to the specific requirement of each OECS country. The codes and guidelines are based on the Caribbean Uniform Building Code (CUBiC) and other regional codes such as the Bahamas Building Code, the draft Jamaica National Building Code and the Turks and Caicos Islands Building Code. Key to these updated codes is the recognition "that the damage caused by these extreme natural events affect the poor to a significant extent and have placed emphasis on the development of building standards which would prevent or mitigate the damage so caused. The Governments are also revising existing planning and building regulations so as to more responsive to the current needs, and to ensure as far as it possible to do so that all buildings are constructed in a "safe" manner and resistant to the natural hazards."
CARICOM Renewable Energy Building Codes	The 2018 CARICOM Regional Energy Efficiency Building Code (CREEBC) is an adaptation of the International Energy Conservation Code, 2018 Edition, published by the International Code Council. This CREEBC is meant to specifically meet the needs of the Caribbean and other countries in a tropical environment. It establishes minimum energy efficiency requirements inclusive of those for building envelope, cooling system, ventilation, pumping, lighting and the service water-heating systems in buildings. The technical requirements of this code are the product of both regional and international expertise.
MULTILATERAL AGREEMENTS, TREATIES AND CONVENTIONS	
Green Climate Fund Environmental Social Safeguard Policy	The Green Climate Fund Environmental Social Safeguard Policy was adopted via Decision B.19/10. This policy presents the commitments of GCF and articulates the principles and standards to which GCF will hold itself accountable. Through

Legislation	Description and relevance to the project
	this policy, GCF will require that all GCF-supported activities will commit to: (a) Avoid, and where avoidance is impossible, mitigate adverse impacts to people and the environment; (b) Enhance equitable access to development benefits; and (c) Give due consideration to vulnerable and marginalised populations, groups, and individuals, local communities, indigenous peoples, and other marginalized groups of people and individuals that are affected or potentially affected by GCF-financed activities. As an accredited entity to the Green Climate Fund, the Department of Environment is responsible for ensuring compliance with the GCF ESS policies with its project design and implementation procedure guided by the principles established by the GCF.
Green Climate Fund Gender Policy	The Green Climate Fund Gender Policy was adopted via Decision B. 24/12. This policy aims to consistently mainstream gender issues in the GCF's implementation arrangements and frameworks for its projects. As an accredited entity to the Green Climate Fund, the Department of Environment is obliged to actively mainstream gender into its project portfolio, staring from project design and inception, up to monitoring and evaluating project activities
Sustainable Development Goals	In September 2015, the General Assembly adopted the 2030 Agenda for Sustainable Development that includes 17 Sustainable Development Goals (SDGs). The project will contribute to the implementation of the following SDGs: GOAL 3: Good Health and Well-being Goal 5: Gender Equality Goal 6: Clean Water and Sanitation Goal 7: Affordable and Clean Energy GOAL 11: Sustainable Cities and Communities GOAL 13: Climate Action
Convention on the Rights of the Child	A United Nations Treaty outlining the rights of children in the following areas: civil, political, economic, social, cultural, health. Adopted by RES/44/25 at the 44th Session of the United Nations General Assembly in 1989
Paris Agreement, 2015	The 2015 Paris Agreement is an agreement within the United Nations Framework Convention on Climate Change

Legislation	Description and relevance to the project
	(UNFCCC) dealing with greenhouse gas emissions mitigation, adaptation and finance starting in the year 2020. Antigua and Barbuda has ratified the Paris Agreement and submitted its Nationally Determined Contribution under the UNFCCC.
The Stockholm Convention on Persistent Organic Pollutants	Ratified by Antigua and Barbuda in February 2004, the Stockholm Convention on Persistent Organic Pollutants (POPs) is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment.[23]
United Nations Convention on the Transboundary Movement of Hazardous waste and their disposal (Basel Convention)	Ratified by Antigua and Barbuda in May 1993, the Basel Convention entered into force in response to a public outcry following the discovery, in the 1980s, in Africa and other parts of the developing world of deposits of toxic wastes imported from abroad. The overarching objective of the Basel Convention is to protect human health and the environment against the adverse effects of hazardous wastes. [24]
United Nations Framework Convention on Climate Change (UNFCCC), 1992	The UNFCCC, which entered into force in 1994, provides a framework for intergovernmental efforts addressing climate change and its effects. Member States of the UN meet and share data on greenhouse gas emissions, national policies and best practices, with the goal of developing and implementing strategies for tackling emissions and providing financial and technical assistance for developing countries. The UNFCCC aims for gender balance in bodies established pursuant to the Convention and the Kyoto Protocol, to improve women's participation and inform more effective climate change policy that addresses the needs of women and men equally. The UNFCCC called for the national adaptation plan (NAP) process to be gender-sensitive, and calls on the Green Climate Fund (GCF) to promote environmental, social, economic, and development co-benefits and take a gender-sensitive approach. Each country formulates its Intended Nationally Determined Contributions (INDC) to the UNFCCC. By 2030, one of Antigua

[23] Overview of the Stockholm Convention on Persistent Organic Pollutants. Accessed 12 June 2018 http://chm.pops.int/TheConvention/Overview/tabid/3351/Default.aspx

[24] Overview of the Basel Convention. Accessed 12 June 2018 http://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx

Legislation	Description and relevance to the project
	and Barbuda's climate action target includes preparing buildings for extreme climate events, including drought, flooding and hurricanes, which is aligned to targets for this project.
Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW)	CEDAW is the principal instrument utilized by the UN to protect the rights of women and eliminate all forms of discrimination against them. Adopted by the United Nations General Assembly (UNGA) in 1979, CEDAW was ratified by the Government of Antigua and Barbuda in 1989 and its Optional Protocol signed in 1996. This convention mandates states to ensures that women equally represented their governments and international organizations; have equal rights to bank loans, mortgages and other forms of financial credit; (i) participate in and benefit from rural development; (ii) participate in development planning at all levels; (iii) obtain training, education, and extension services; (iv) have access to agricultural credit and loans, marketing facilities and appropriate technology; and (v) are treated equally in land, agrarian reform, and land resettlement schemes.
Beijing Declaration and Platform for Action from the Fourth World Conference on Women	This landmark Declaration and PoA called for actively involving women in environmental decision making at all levels, integrating gender concerns and perspectives in policies and programs for sustainable development, and strengthening or establishing mechanisms at the national, regional and international levels to assess the impact of development and environmental policies on women.
Commission on the Status of Women (CSW)	*The 52nd session of the Commission on the Status of Women (2008) identified gender perspectives on climate change as its key emerging issue.* The CSW, which is convened annually at United Nations Headquarters in New York, urged Member States to integrate gender into the design, implementation, monitoring and evaluation and reporting of national environmental policies; as well as to strengthen mechanisms and provide adequate resources to ensure women's full and equal participation in decision making at all levels on environmental issues, with particular emphasis on strategies related to climate change and the lives of women and girls.
UN Convention on the Rights of Persons with Disabilities (CRPD)	The Convention is intended as a human rights instrument with an explicit, social development dimension. It adopts a broad categorization of persons with disabilities and reaffirms that all persons with all types of disabilities must

Legislation	Description and relevance to the project
	enjoy all human rights and fundamental freedoms. It clarifies and qualifies how all categories of rights apply to persons with disabilities and identifies areas where adaptations have to be made for persons with disabilities to effectively exercise their rights and areas where their rights have been violated, and where protection of rights must be reinforced.
United Nations Conference on Sustainable Development (Rio+20) outcome document	Rio+20 affirms that green economy policies in the context of sustainable development and poverty eradication should enhance the welfare of women, mobilize their full potential and ensure the equal contribution of both women and men. *"The Future We Want"* was adopted in Rio de Janeiro in June 2012. It resolves to unlock the potential of women as drivers of sustainable development, including through the repeal of discriminatory laws and the removal of formal barriers.
UNFCCC Gender Action Plan	The UNFCCC Gender Action Plan aims to increase the participation of women in all UNFCCC processes. It also seeks to increase awareness of and support for the development and effective implementation of gender-responsive climate policy at the regional, national and local levels. The consultants drew on UNFCCC publications and best practices for Gender and Climate in the preparation of this ESIA.

4. APPROACH AND METHODOLOGY

4.1. RESEARCH METHODOLOGY

The methodology for undertaking this ESIA and ESMP is influenced by several contextual factors. Firstly, there exists within Antigua and Barbuda a legal and structured EIA process, which is outlined in Section 1.4 of this document. An EIA is not required for maintenance and retrofitting projects under national law. This project is one activity in an overall Climate Change Program, which targets climate resilience in buildings; as a result, there have been recent ESS and gender assessments done for similar projects. These include ESS and gender assessments for the Adaptation Fund and the GCF EDA projects. These were completed in 2017 and 2018 respectively. This assessment therefore built on those recently completed ESIAs and consultations specific to this project as well as general consultants and recommendations captured from the TAC meetings, PMC meetings, consultations for the GCF country program and consultations on EIA. This ESS report was prepared by the Project Management Unit of the DOE with developed with technical assistance from CTCN and incorporated inputs from stakeholders after consultations during the period ranging from 2016 – 2020.

Figure 6: Methodology for the development of the project's ESIA and ESMP

Considering the factors outlined above, the elaboration of this ESIA and ESMP involved the steps outlined in Figure 3. This ESIA and ESMP were developed by consultants within the Project Management Unit (PMU) of the Department of Environment. See Section 1.2.2 on Implementation Arrangements for details on the Project Management Unit and human resourcing arrangements.

4.2. DESKTOP RESEARCH

Desk research for this project involved the consultation of a number of sources including a legislative and policy review (as seen in Section 2) as well as the consultation of a number of professional studies and documents. As the various laws, policies and international regimes which have guided the preparation of this project were outlined in Section 2, this section on desk research will present the key technical documents used to support the elaboration of this project.

This project is one of the initiatives under the Climate Change Programme. Baseline data and documentation that are relevant to this ESIA and ESMP include:

- United Nations Electricity Supply Partnership report titled, Solar PV facility screening study for public and educational facilities on Antigua and Barbuda, prepared for CDB and shared with the Bank on 30 January 2018
- Environmental Impact Review – Wind Turbines at Crabbs, 2014 under the GEF-funded Special Pathways Protected Areas and Renewable Energy (SPPARE) project
- Antigua and Barbuda Renewables Readiness Assessment, 2016
- Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) for the Adaptation Fund project, including the Revolving Loan facility for homes and small businesses (includes installation of Renewable Energy), 2016
- Environmental, Social and Gender Impact Assessment and Management Plan for the Climate Change Programme Deploying Renewable Energy for Schools and Clinics via the Sustainable Financing Mechanism for Environmental Management – SIRF Fund
- Green Climate Fund (GCF) ESIA and ESMP for the Enhancing Direct Access project, including solar RE plus batteries installation for home and business owners, 2017
- Environmental Management Systems pilot for two facilities in Antigua and Barbuda, including installation of backup renewable energy, 2018
- Technical and Financial Feasibility and Impact Assessments for the Abu Dhabi Fund for Development (ADFD) with IRENA, 2015
- 2018 CDM Audit Tool Report - Antigua and Barbuda
- Barbuda Building Damage Assessment Preliminary Findings – United Nations Development Programme 2017
- Hurricane Irma – Preliminary Damage Assessment For Antigua and Barbuda's Fisheries Sector 2017
- Hurricane Irma Recovery Needs Assessment: A Report by the Government of Antigua and Barbuda – 2017
- Antigua and Barbuda 2011 Population and Housing Census

- Antigua and Barbuda: All Saints Urban Profile – United Nations Human Settlements Programme 2011
- 2018 Antigua and Barbuda Recurrent and Development Estimates
- Antigua and Barbuda National Mental Health Policy 2013
- Energy sustainability in Antigua and Barbuda: Peer Analysis and Recommendations on a Solar Buy-In Tariff and a Social Rate for APUA, 2015

4.3. CONSULTATIONS WITH STAKEHOLDERS AND INFORMAL INTERVIEWS

Public consultations for this project were achieved through two methods. Firstly, there were stakeholder meetings where an open and frank exchange was encouraged and secondly, through stakeholder interviews. ESS and Gender stakeholder consultations with representatives of the beneficiary facilities were held from 14 – 18 August 2017. In total, 35 participants were in attendance. In addition, consultations were held on 8-9 January 2018 with NGOs as well as representatives from the schools and clinics to consult on the DOE's draft Environmental and Social Safeguards Policy and draft Gender Policy. Interviews were conducted with community representatives as well as representatives from the government agencies through one-on-one interactions.

During the period 6 – 16 August 2019, consultations were held with project teams and executing partners including the Ministry of Works, the Met Office and NODS, through the C4 Eco Solutions. A total of 30 interviews were conducted in Barbuda during the period 12 – 16 August 2019 with government officials, including the Barbuda Council, nurses and security forces. Further, seventeen (17) interviews were conducted with regular household members as well as seven (7) interviews with business owners in Barbuda. Consultations continued in 2020 with representatives from the Ministry of Works, Ministry of Education, Data Management Unit as well as feedback from the Ministry of Finance and the Directorate of Gender Affairs on the Gender Action Plan.

Some important milestones in the consultation process include: final consultations will be held on the final draft of the FP going to the Board and disclosure of ESIA and GAP on the DOE website.

4.4. SITE ASSESSMENTS

4.4.1. Project Location

The propose project will execute climate resilience building on critical facilities across both main islands of Antigua and Barbuda. Specifically, identifying and implementing building-appropriate climate-proofing measures – such as water harvesting and storage systems, solar energy for emergency power, hurricane shutters and other retrofitting interventions.

Figure 7: Map of beneficiary sites on Antigua

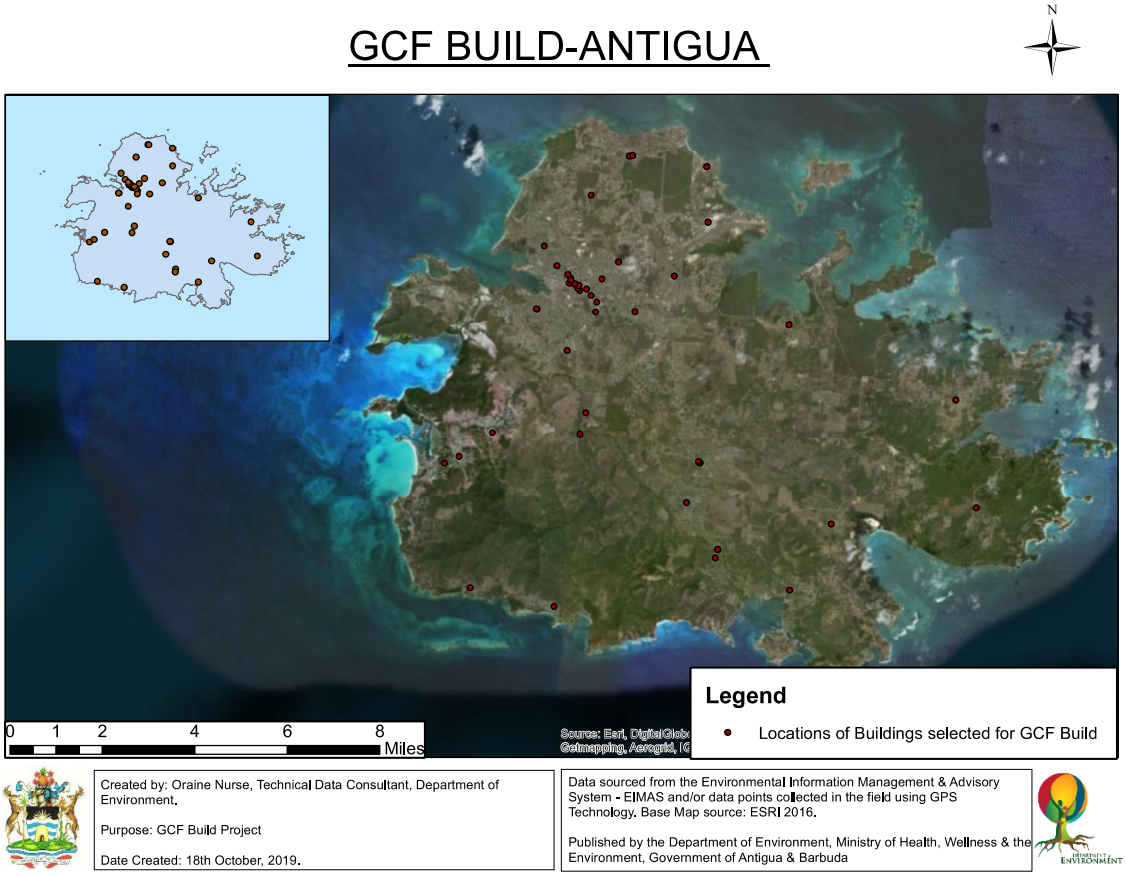
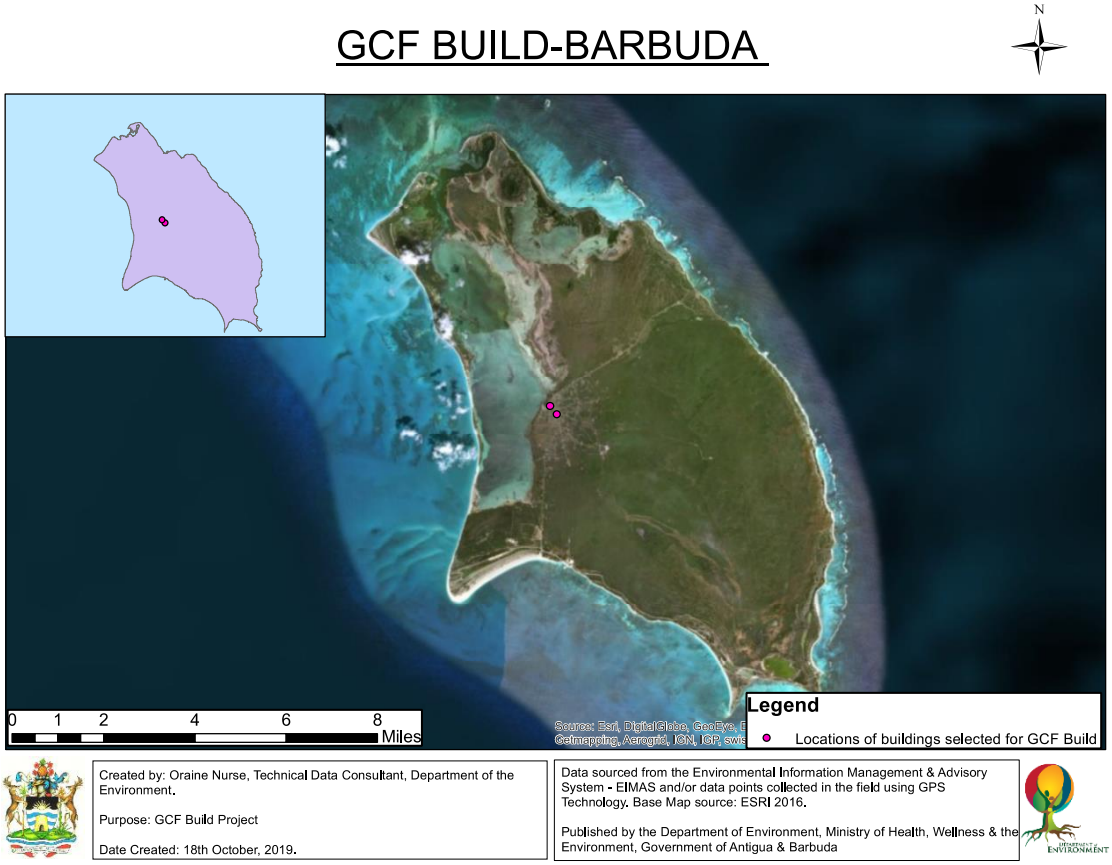


Figure 8: Map of Beneficiary sites on Barbuda



54 of the listed facilities to be serviced under this project were assessed by teams of engineers, building inspectors and other technicians to provide a clearer estimate of the total needs of the project. The CTCN consultant who is supporting the building climate proofing assessment process, anticipated the overall needs for public building upgrades.

Teams were trained using the Guidance Note for Data Collection; Technical Assistance for Resilience to Climate Variability in the Building Sector of Antigua and Barbuda and over the period of August 6- 23, 2018 conducted the necessary assessments. The training on the final assessment form was conducted by the CTCN consultant on 17th August, 2018.

The teams specifically assessed to determine the appropriate intervention from the list below:

- **Solar renewable energy systems.** Increased energy resilience through the provision of solar panels will allow electricity supply and communication channels to remain operational during and following extreme climate events. A grid-interactive system makes use of a battery back-up system to be used during power outages. An economic benefit of solar power is that the installation cost compared to the estimated lifespan of the technology will be approximately one-third of the overall utility bills.
- **Solar water heaters.** Installing solar water heaters eliminates the need for electricity, gas or other fossil fuels for water heating. This, in turn, reduces electricity costs for buildings that

can be diverted elsewhere – i.e. to overall maintenance. The installation of solar heating services needs to be secure to withstand strong winds and tropical storms. Solar water heaters are especially relevant to hospitals and clinics where regular sterilisation needs to take place, including during and following extreme climate events, when electrical water heating systems are often offline.

- **Energy-efficient appliances.** To reduce the total energy use of buildings – ~80–90% of which is owed to heating, cooling, lighting, ventilation and appliances – energy-efficient appliances can be retrofitted. In particular, the replacement of appliances assists with 'load shedding' of energy supply and allows solar power to be directed towards other electrical needs of the building. Energy-efficient appliances benefit both the environment and people because of reduced energy bills and carbon emissions.
- **Roof reinforcements.** For buildings in Antigua and Barbuda to withstand a Category 5 hurricane, roof structures should be reinforced by *inter alia* installing hurricane straps. Coupling roof reinforcing structures with air ventilation measures will reduce the potential for roofs to be damaged and/or removed during extreme climate events like hurricanes.
- **Window and door strengthening.** Much like roof reinforcements, windows and doors need to be strengthened in Antigua and Barbuda to withstand a Category 5 hurricane. Reinforcing windows and doors will not only reduce the damage to buildings but will also protect people. Window and door strengthening structures can be installed together with mosquito screens and air ventilation/cooling measures.
- **Central septic systems.** These central or community septic systems receive wastewater of more than 9,000 litres (2,500 gallons) per day and can serve two buildings per system. Having a central septic system allows for minimal land to be converted solely for the use of septic systems. In addition, making use of a central septic system minimises the risk of damage to multiple systems during climate change-induced events, such as hurricanes and flooding.
- **Water capture and storage.** As per the current Building Code, all buildings in Antigua and Barbuda are required to have rainwater harvesting systems in place. Harvesting rainwater benefits both the environment and people as it reduces runoff and flooding, and serves people during droughts and extended dry periods. There is also an economic benefit in that water utility bills are significantly reduced when using a rainwater tank for all internal building water needs.
- **Green infrastructure/pervious surfaces.** Allowing water to absorb through ground surfaces reduces runoff and flooding during and following rainfall events. No costing has been done thus far on implementing green infrastructure or pervious surfaces around buildings in Antigua and Barbuda.
- **Mosquito screens and nets.** Installing screens and nets that prevent mosquitoes from entering buildings helps to protect against the spread of vector-borne diseases, such as *inter alia* the chikungunya and zika viruses. Windows and doors may need to be restructured in some instances to allow for mosquito screens to be fitted. Mosquito nets should be fitted above all hospital and clinic beds.
- **Indoor air quality.** The design, construction, operation and maintenance of buildings impacts the air quality, energy consumption of the building and human health. To mitigate potential negative health impacts, options include ensuring natural ventilation and shading and fitting

air conditioners/cooling systems. Implementing these measures helps to reduce the negative impacts of increasing indoor air temperatures, such as heat stress.

5. ENVIRONMENTAL AND SOCIO-ECONOMIC BASELINE

5.1. OVERVIEW OF UTILITIES AND INFRASTRUCTURE RELEVANT TO THE PROJECT

5.1.1. General Baseline Scenario

A range of **non-climate change-related environmental and social issues** affect the population of Antigua and Barbuda. These issues are being considered as underlying and will only be identified in this report if these contribute to vulnerability and or risks of the project. Some of these include:

- Regulatory institutions are significantly behind the rapid growth in environmental issues as well as respective remedies;
- Inadequate financing to address major environmental issues such as pollution and environmental degradation;
- Developmental pressures have caused the country to damage its ecosystems as they are changed to be used for hotels and marina developments, thus reducing the natural protection of the country that is normally provided by mangroves, beaches and coral reefs;

In addition to the above, there are a number of **climate change-related threats** that affect the population of Antigua and Barbuda. Expected climate change impacts in Antigua and Barbuda include increased mean air temperatures as well as increases in the frequency and intensity of hurricanes, floods, droughts and extended dry periods. The climate change-related threats, with a focus on buildings, are summarised in the paragraphs below, and will be elaborated on during development of the Funding Proposal and Feasibility Study. They include:

i. damages to buildings from extreme climate events under current and future climate regimes;
ii. insufficient guidelines and standards, including climate change adaptation methods for buildings;
iii. less than adequate water and waste systems that take into account climate change impacts; and iv) impacts on health in the built environment.

Existing public buildings in Antigua and Barbuda are designed to withstand category 3 hurricanes and drought. The Buildings are all required by the DCA to capture and store water. With the onset of category 4 and 5 hurricanes, there is a need to upgrade the strength of the buildings as well as their operational continuity. The Atlantic hurricane season of 2017, and the damages that Hurricanes Irma and Maria have caused in Barbuda, Dominica, St Maarten, the Virgin Islands, Puerto Rico, Cuba and other Caribbean islands, underscore the vulnerability of these small island populations to the trend of intensifying hurricane impacts. Climate change projections indicate that damages caused by climate-induced disasters are likely to increase across the Caribbean in the future.

In 2012, the GoAB approved its national physical development plan which uses spatial land use zoning as a resilience strategy, the Sustainable Island Resource Management and Zoning Plan (SIRMZP)[25]. The five planning goals of the SIRMZP focus on:

(i) ecosystem integrity;
(ii) economic development and livelihoods;
(iii) liveability;
(iv) accessibility; and
(v) efficient and effective governance.[26]

Climate change was mainstreamed in the composite land-use suitability model in the SIRMZP, using building setbacks from beaches and coastlines, hurricane risk to buildings, and hurricane risks to natural areas to minimise exposed infrastructure (Table 2).

Table 4: Land-use suitability model indicating environmental risk. Source: SIRMZP 2012.

Component		Physical Planning Objective	Planning Principles
1	Slope	Minimize risk of land slippage.	Restrict development on slopes greater than 20%.
2	Elevation	Minimize risk of damage due to sea surge over next 100 years.	Prohibit development on lands less than 9.8ft (3m) elevation.
3	Erosion risk	Minimize risk of erosion.	Restrict development in areas with erosion risk greater than 3 on soil map.
4	Flooding	Minimize risk of flooding.	Restrict development within areas subject to frequent flooding. Require comprehensive drainage plan that is fully consistent with drainage plan for the local watershed.
5	Hurricane risk (buildings)	Minimize damage from hurricanes.	Hurricane resistant building guidelines should be applied throughout country. Special attention to sea front properties on the east coast.
6	Hurricane risk (natural area)	Minimize damage from hurricanes.	Restrict development in natural areas prone to hurricanes.
7	Climate change	Climate change adaptation.	Building setback from beaches, coastlines, minimum ground floor elevation.

The above predicted climate change-induced impacts and the effects thereof are also expected to impact negatively on human health[27]. The quality of the indoor environment – particularly air quality – will become an important determinant of the quality of life and health of the population under future climate change scenarios. Poor indoor air quality is currently creating numerous health problems for the country population[28]. Climate change is expected to exacerbate existing

[25] Sustainable Island Resource Management Zoning Plan (SIRMZP) for Antigua and Barbuda (including Redonda). 2011. GENIVAR Trinidad and Tobago, Ivor Jackson and Associates, and Kindome Consultants Inc.
[26] SIRMZP.
[27] US Global Change Research Programme (USGCRP). 2009. Global climate change impacts in the United States. Cambridge University Press. Available at: http://globalchange.gov/publications/reports/scientific-assessments/us-impacts [accessed 14.03.2017].
[28] USGCRP 2009 Global climate change impacts.

indoor environmental problems and introduce new challenges such as increased moisture, the spread of pests and disease vectors, as well as heat stress[29].

Over 50% of the population rely on the government health care system and even more relies on the Government's Pharmacy for medicine. Each citizen pays a fee into the health care program while some citizens also purchase private health insurance. After a hurricane, it is important that a percentage of the health care facilities are operational and can support a population to work on clean up and recovery.

5.1.2. Baseline Social Conditions

Antigua and Barbuda gained independence from British rule in 1981 and now form part of the British Commonwealth of Nations[30]. In 2018, the population density was ~232 people/km^2 and the total number of inhabitants was ~96,300[31]. More than 60% of this population lives within the coastal zone of the two islands[32]. Antigua holds most of the country's inhabitants, where the capital city of St John's alone is home to ~25,000[33] people. In contrast, the number of permanent residents on Barbuda is only ~1,600[34]. This number has decreased from 1,800 in 2017 after the extensive damage caused by Hurricane Irma resulted in the evacuation of all inhabitants from Barbuda to Antigua[35].

5.1.3. Vulnerability of the Population

Baseline information on population, socio-economic and vulnerability indicators is listed in 5. The Human Development Index (HDI) for the country has increased over the last decade from 0.766 in 2005 to 0.780 in 2017, indicating an improvement in overall human development[36,37]. Antigua and Barbuda is currently ranked 70 out of 189 countries, placing it within the 'high' human development category and giving the country the highest HDI rank within the Organisation of Eastern Caribbean States (OECS)[38].

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[29] Institute of Medicine (IoM). 2011. Climate change, the indoor environment, and health. US EPA. Available at: http://www.nationalacademies.org/hmd/~/media/Files/Report%20Files/2011/Climate-Change-the-Indoor-Environment-and-Health/Climate%20Change%202011%20Report%20Brief.pdf [accessed 14.03.2017].

[30] Nationally Determined Contribution (NDC). 2015. Government of Antigua and Barbuda.

[31] United Nations. World Population Prospects. Available at: https://population.un.org/wpp/DataQuery/.

[32] United Nations Statistics Division. 2017. UN Data: Antigua and Barbuda. Available at: http://data.un.org/CountryProfile.aspx?crName=antigua%20and%20barbuda.

[33] City Population. 2016. Antigua and Barbuda: Parishes. Available at: https://www.citypopulation.de/Antigua.html.

[34] Government of Antigua and Barbuda. 2011. Population and Housing census.

[35] The Guardian. 2017. The night Barbuda died: how Hurricane Irma created a Caribbean ghost town. Available at: https://www.theguardian.com/global-development/2017/nov/20/the-night-barbuda-died-how-hurricane-irma-created-a-caribbean-ghost-town.

[36] The Human Development Index considers three dimensions of human development, namely a long and healthy life, access to knowledge and a decent standard of living. Higher HDI values indicate higher overall human development.

[37] UNDP. 2018. Human Development Indices and Indicators: 2018 Statistical Update — Antigua and Barbuda. Available at: http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/ATG.pdf.

[38] UNDP. 2018. Human Development Indices and Indicators: 2018 Statistical Update — Antigua and Barbuda. Available at: http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/ATG.pdf.

Table 5: Baseline population, socio-economic and vulnerability indicators for Antigua and Barbuda

Indicator		Value	Year
Population	Total population	~96,300 people	2018[39]
	Population growth (per 1,000 population)	~1%	2018[40]
	Age dependency ratio — elderly	~10%	2018[41]
	Age dependency ratio — youth and children	~34%	2018[42]
	Percentage of population with access to electricity	~98%	2016[43]
	Total net enrolment in primary education (men and women)	~88%	2017[44]
	Mean years of schooling (of adults)	~9 years	2017[45]
Five-year indicators	Life expectancy at birth	~76 years	2017[46]
	Average annual rate of population change	~1%	2018[47]
	Crude death rate	~6 deaths per 1,000 population	2017[48]
	Infant mortality rate	0.54%	2017[49]
	Under-five mortality	~12 deaths per year	2017[50]
	Deaths by major area, region and country for 1950–2010	~3,000 deaths	2015[51]
Economy	Gross Domestic Product (GDP) per capita; PPP	~US$ 21,000	2014[52]
	Gross National Income (GNI) per capita; PPP	~US$ 25,160	2018[53]
	Inflation; consumer prices	~2%	2017[54]
Capacity	Roads; total network	~1,160 km	2002[55]
Vulnerability	Proportion of the population using improved drinking water sources	~98%	2015[56]
	Global Needs Assessment (GNA) Crisis Index	0	2012[57]
	GNA Vulnerability Index	1	2012[58]

[39] The World Bank. World Development Indicators. Available at: http://datatopics.worldbank.org/world-development-indicators/.
[40] The World Bank. World Development Indicators. Available at: http://datatopics.worldbank.org/world-development-indicators/.
[41] The World Bank. World Development Indicators. Available at: http://datatopics.worldbank.org/world-development-indicators/.
[42] The World Bank. World Development Indicators. Available at: http://datatopics.worldbank.org/world-development-indicators/.
[43] Available at: https://ourworldindata.org/country/antigua-and-barbuda.
[44] The World Bank. World Development Indicators. Available at: http://datatopics.worldbank.org/world-development-indicators/.
[45] Available at: https://ourworldindata.org/country/antigua-and-barbuda.
[46] Available at: https://ourworldindata.org/country/antigua-and-barbuda.
[47] The World Bank. World Development Indicators. Available at: http://datatopics.worldbank.org/world-development-indicators/.
[48] The World Bank. World Development Indicators. Available at: http://datatopics.worldbank.org/world-development-indicators/.
[49] Available at: https://ourworldindata.org/country/antigua-and-barbuda.
[50] Available at: https://ourworldindata.org/country/antigua-and-barbuda.
[51] United Nations. World Population Prospects. Available at: https://population.un.org/wpp/DataQuery/.
[52] Available at: https://ourworldindata.org/country/antigua-and-barbuda.
[53] The World Bank. World Development Indicators. Available at: http://datatopics.worldbank.org/world-development-indicators/.
[54] Available at: https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?locations=AG.
[55] Humanitarian Data Exchange (HDX). 2017. Antigua and Barbuda Baseline Data. HDX V1.8.7. Available at: https://data.humdata.org/dataset/atg_baseline_data.
[56] Available at: https://ourworldindata.org/country/antigua-and-barbuda.
[57] Humanitarian Data Exchange (HDX). 2017. Antigua and Barbuda Baseline Data. HDX V1.8.7. Available at: https://data.humdata.org/dataset/atg_baseline_data
[58] Humanitarian Data Exchange (HDX). 2017. Antigua and Barbuda Baseline Data. HDX V1.8.7. Available at: https://data.humdata.org/dataset/atg_baseline_data

Indicator		Value	Year
	Proportion of the population using improved sanitation facilities	~91%	2011[59]
	Per capita food supply	~2,417 kcal capita^{-1} day^{-1}	2013[60]

Antigua and Barbuda, along with seven other Caribbean Small Island Developing States (SIDS)[61], is considered to be a high-income country because its GNI per capita is larger than US$12,376[62] (Table 1). However, despite the country's high per capita income, approximately 18% of the total population falls below the poverty line[63] and 14% is unemployed[64]. When considering the proportion of the population that is at risk of falling into poverty if there is a shock to the economy[65], the percentage rises to 28%[66]. St John's is considered the poorest of the country's districts, with 22% of the city's urban population falling below the poverty line[67].

5.1.3.1. Major Economic Sectors in Antigua and Barbuda

Historically, Antigua and Barbuda relied on an agricultural economy based on the production of sugar. However, the current economy is based on the service sector[68], with tourism contributing: i) nearly 60% of the Gross Domestic Product (GDP); ii) 40% of investment; and iii) employment for 70% of the population[69]. Nearly one million tourists visit the country each year[70,71] and, as a result, the economy is largely reliant on the influx of foreign exchange. Major tourist attractions include the islands' numerous beaches and areas of high biodiversity. The country's offshore islands are particularly biodiverse, with the island of Redonda considered a Key Biodiversity Area[72]. Besides tourism, other prominent economic sectors are agriculture and industry, which contributed 2% and 21% respectively to the national GDP in 2017[73]. The greatest contributor to the agricultural sector is from fisheries exports, particularly on Barbuda[74]. Other agricultural products include sugar and its by-products, cotton, livestock as well as various fruits and vegetables[75]. Figure 2 shows land used on Antigua for agriculture, as well as other economic

[59] Available at: https://ourworldindata.org/country/antigua-and-barbuda.

[60] Available at: https://ourworldindata.org/country/antigua-and-barbuda

[61] Including Aruba, the Bahamas, Barbados, British Virgin Islands, Puerto Rico, Saint Kitts and Nevis and Trinidad and Tobago.

[62] The World Bank. 2019. Data: World Bank Country and Lending Groups. Available at: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups.

[63] The poverty line is a monetary measure of the minimum amount of money a household would need to spend to meet its minimum food and non-food requirements. In Antigua and Barbuda, the poverty line is US$2,366 per annum, or an average of US$6.57 per day.

[64] The World Bank. 2017. Data: Antigua and Barbuda. Available at: https://data.worldbank.org/country/antigua-and-barbuda.

[65] For example, a shock to the economy brought about by an extreme weather event.

[66] Government of Antigua and Barbuda. 2015. Third National Communication on Climate Change.

[67] Government of Antigua and Barbuda. 2015. Third National Communication on Climate Change.

[68] Global Water Partnership Caribbean. 2013. The Post 2015 Water Thematic Consultation: Antigua and Barbuda.

[69] Antigua and Barbuda economy — overview. Available at: https://www.indexmundi.com/antigua_and_barbuda/economy_overview.html.

[70] i.e. to both islands

[71] Caribbean Development Bank. 2018. Antigua and Barbuda: Country Economic Review. Available at: https://www.caribank.org/publications-and-resources/resource-library/economic-reviews/country-economic-review-2018-antigua-and-barbuda.

[72] Birdlife International. 2019. The World Database of Key Biodiversity Areas. Available at: http://www.keybiodiversityareas.org/site/factsheet/redonda-iba-antigua-and-barbuda.

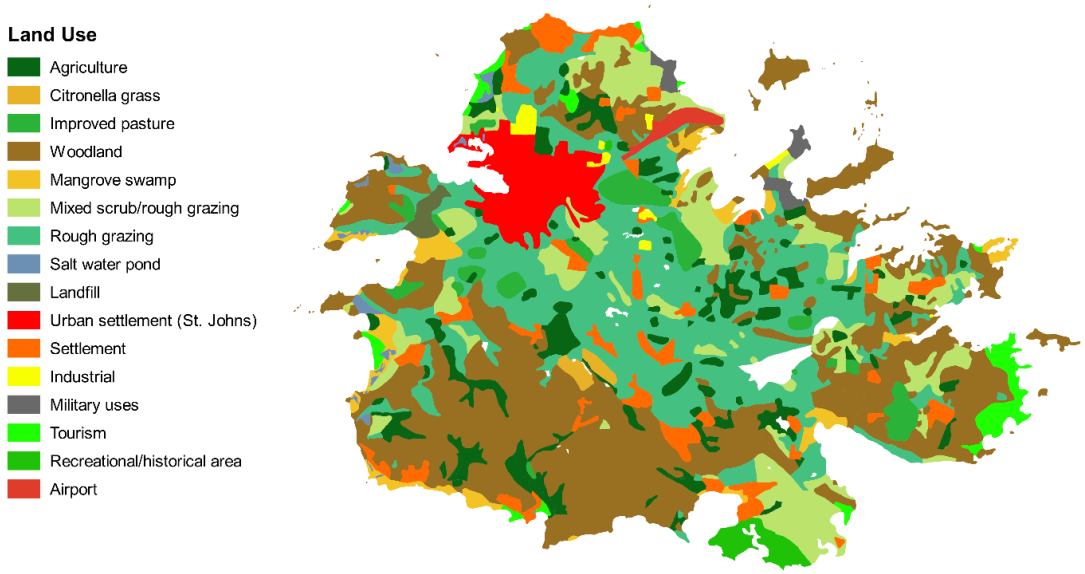
[73] Antigua and Barbuda economy — overview. Available at: https://www.indexmundi.com/antigua_and_barbuda/economy_overview.html.

[74] Government of Antigua and Barbuda. 2015. Third National Communication on Climate Change.

[75] Government of Antigua and Barbuda. 2015. Third National Communication on Climate Change.

sectors. As a whole, the agricultural sector is hampered by limited surface water supply related to droughts, damage by hurricanes and labour shortages resulting from higher wage opportunities presented by tourism and construction[76,77].

Figure 9: Map indicating land-use on Antigua



Because of its dependence on tourism, Antigua and Barbuda is sensitive to changes in the global economy[78]. For example, in 2009, the country was severely affected by the global economic crisis[79], whereby the country experienced a steep decline in tourism from 2009–2011. As a result, there was a considerable decrease in GDP from ~US$1.36 billion in 2008 to ~US$1.14 billion in 2011[80], reaching an all-time low GDP growth rate of -12.04% in 2009[81]. More recently, competition from other destinations and uncertainty around the United Kingdom's withdrawal from the European Union (BREXIT) contributed to a drop in real GDP growth from 5.3% in 2016 to 2.7% in 2017 because of a decline in tourists from the United Kingdom[82]. Along with global economic volatility, the country's economy is vulnerable to the effects of extreme weather events. From 1982–2001, it was estimated that Antigua and Barbuda incurred a total of US$87.2

[76] Antigua and Barbuda economy — overview. Available at: https://www.indexmundi.com/antigua_and_barbuda/economy_overview.html.

[77] Government of Antigua and Barbuda. 2015. Third National Communication on Climate Change.

[78] Caribbean Development Bank. 2018. Antigua and Barbuda: Country Economic Review. Available at: https://www.caribank.org/publications-and-resources/resource-library/economic-reviews/country-economic-review-2018-antigua-and-barbuda.

[79] Central Intelligence Agency (CIA). 2017. The World Factbook – Central American and Caribbean: Antigua and Barbuda. Available at: https://www.cia.gov/library/publications/the-world-factbook/geos/ac.html.

[80] Trading Economics — Antigua and Barbuda GDP. Available at: https://tradingeconomics.com/antigua-and-barbuda/gdp

[81] The World Bank. 2017. Data: Antigua and Barbuda GDP growth (annual %). Available at: https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=AG&view=chart

[82] Caribbean Development Bank. 2017. Antigua and Barbuda: Country Economic Review.

million in damages from hurricanes and tropical storms[83]. Between 2008 and 2017, the combined cost incurred to Antigua and Barbuda from named hurricanes was US$232 million. On average, hurricanes account for 8.4% of the annual loss in GDP for Antigua and Barbuda[84]. In terms of financial losses, the most destructive hurricane in recent history was Hurricane Georges, which resulted in almost US$11 billion in damages across the Caribbean in 1998, US$74 million of which was in Antigua and Barbuda[85]. The combined damages caused by hurricanes Irma and Maria in 2017 — which equated to US$136 million — lowered Antigua and Barbuda's GDP growth rate by 1.1% because of reduced tourism infrastructure and increased spending on relief efforts and repairs[86].

5.1.3.2. Security

Post Hurricane Irma, the police station in Barbuda was destroyed, causing police officers and fire fighters to share the same building, with a majority of files from both the fire and police station destroyed.[87] In addition to other essential services such as healthcare and education, the reduced capacity of security forces prevented a return to the island as well as normalcy for citizens. While crime remains relatively low in Antigua and Barbuda, post a natural disaster, global studies have found that crime such as property and gender crimes, due to disorder, is more likely. Furthermore, post disaster scenarios require active security forces for stability and a return to normalcy. This provides context for the importance of ensuring that these facilities are resilient and allow for continued service post disaster

Since these facilities are vital to the country further, consideration must be given to the effects of the implementation phase of the project, which includes renovation to the sites, on the continued well-being of staff and patrons. Construction on the sites will most likely impact the services of these agencies as, depending on the extent of renovations, certain buildings may be closed during construction and for those who remain operational during construction, there remain health and safety risks to both staff and patrons such as air and noise pollution. Mitigation measures must be put in place to address the impact of either options:

[83] Haites E. 2002. Assessment of the economic impact of climate change on CARICOM countries. Margaree Consultants, Toronto.

[84] Acevedo S. 2016. Gone with the wind: estimating hurricane climate change costs in the Caribbean. International Monetary Fund Working Paper.

[85] Acevedo S. 2016. Gone with the wind: estimating hurricane climate change costs in the Caribbean. International Monetary Fund Working Paper.

[86] Government of Antigua and Barbuda. 2018. Hurricane Irma Needs Assessment. Available at: https://www.gfdrr.org/en/publication/hurricane-irma-and-maria-recovery-needs-assessment-antigua-and-barbuda.

[87] Interview with Security forces

Figure 10: Mitigation Measures for Construction

Facility is closed during construction

- Early notice should be given to the public to seek service at other facilities. This is especially so for those who may go to the police station for police records
- At least two weeks notice should be given to other facilities to prepare for a larger number of patrons

Operations continue during construction

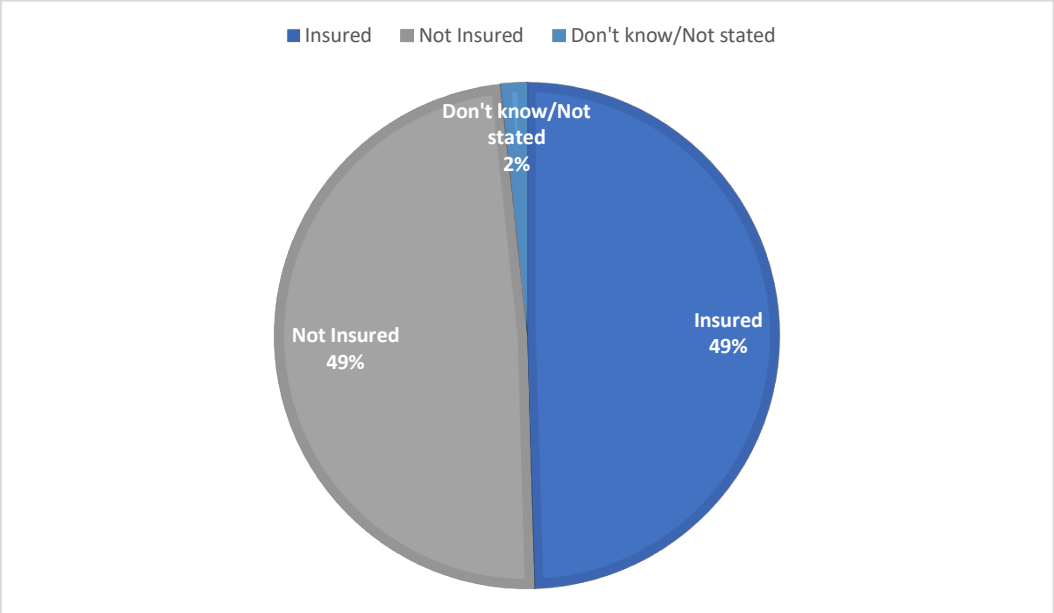
- Renovations can be phased to allow staff to use other rooms to serve patrons while renovations are occuring.
- Construction workers should be made aware of the sensitive nature of the workplace and be advised to limit verbal and other noises as much as possible
- Equipment should be used (eg dust screens or nets) in windows, doors and ventilators of rooms where demolition or other dusty construction activities are occuring.
- Ensuring good housekeeping and clean construction operations where among other necessary actions, dust should be quickly swept off cement floos and collected in covered containers

5.1.3.3. Healthcare

The proposed project seeks to build climate resilience in the public clinics for functionality immediately after a hurricane. In addition, some of the clinics will be retrofitted as shelters. Around 50% of the Antigua and Barbuda population rely solely on the public health clinics, majority of whom are persons in poverty or a lower income, persons in critical medical conditions HIV/AIDS patients and the mentally ill. In Barbuda, there are no licensed private health care facilities. Post disaster, they become even more critical. The rise of medical conditions post disaster which may require free medical services, especially for persons who cannot afford private hospitals or clinics is generally likely and demonstrates the importance of ensuring that these buildings are physically resilient to function during the disaster (for buildings with in house patients) and after the disaster for the population in need of medical care. Post Hurricane Irma, the significant damage to the island' s sole hospital prevented a return of the population to the island. Overall, healthcare suffered USD $1,784,300 in damages with an additional USD $65,200 in losses

Figure 11: Population by Health Insurance Status

Source: Antigua and Barbuda 2011 Population and Housing Census



The services provided by the Clarevue hospital for example may be necessary due to the impact of natural disasters on the mental health of a population. While there have been no formal mental health assessments completed post disasters in Antigua and Barbuda, interviews were conducted with Barbudans in the shelters after the passage of Hurricane Irma. Every women interviewed in the post disaster context indicated that psychosocial support was a priority and men were also reported as requiring mental health support.[88]

The implementation of climate resilient solutions within the community clinics provides the opportunity for clinics to also serve as shelters, with preference for vulnerable groups, and taken within the portfolio of the DOE projects which seek to increase climate resilience in individual homes as well as community centres, this begins to decrease the demand for schools to be used as shelters, thus allowing education institutions to restart almost immediately. This is particularly critical for clinics in rural communities where access to electricity as well as water is limited for both the clinic as well as the general community. Fourteen (14) of the selected clinics are in rural communities.

Similar to the facilities providing security services, consideration has to be given to the impacts of the implementation of the project (notably construction) on workers and patients alike, especially as it relates to health and safety risks. Patrons must be given sufficient notice (at least two-week notice) of intended plans to renovate the facilities in order to allow for redirection to nearby clinic

[88] Antigua and Barbuda Hurricane Irma Recovery Needs Assessment: A Report by the Government of Antigua and Barbuda (October 15, 2017)

5.1.3.4. Education

Antigua and Barbuda has an estimated total of 13,082 thousand persons within primary and secondary school institutions. Within Antigua, this is a combination of private and public institutions of which public institutions account for 50% in the primary level, 55% in the secondary level and one public tertiary institutions along with other post-secondary training schools. In 2019, the fourth landed campus of the University of the West Indies was launched. In Barbuda, all schools including pre-primary level are public schools and the island does not have a stationed tertiary institution. Costs for education are covered by the education levy which is taken from basic wages to cover transport, school infrastructure and class materials.[89]

Using data from the 2017 hurricane season, total damages and losses, including recovery needs were estimated at USD 4.62 million with damages in Barbuda accounting for most damages, specifically related to structural damages. Due to the mandatory evacuation from Barbuda, all Barbudan students were placed into primary and secondary schools in Antigua; a total of 162 primary students were placed in public primary schools while 66 students were accommodated by private primary schools; 116 secondary students were integrated into the public secondary schools while 4 students received scholarships into private secondary schools. Thus, an influx of students was integrated into an already over capacitated public-school sector with limited financial and human resource as well as space, resulting in over worked teachers.

For both Antigua and Barbuda, the 2017 hurricane season with the passages of three consecutive hurricanes, delayed the 2017-2018 school year; in addition, some public school buildings are identified as hurricane shelters for adjacent communities which require these buildings to be retrofitted for shelters during the season and returned to their intended state upon the reopening of schools, further delaying a return to normalcy.

These impacts have severe implications for ensuring quality education for all persons by exasperating developmental issues of capacity which are consistent in public educational institutions. It compromises the ability of teachers to provide quality education for students to develop within these institutions, especially boys who are already reportedly struggling within the public schools, as well as impoverished families who are unable to afford better education access outside of the public system. Further, longer periods of schools being closed, place an increased burden of childcare on parents, especially female-headed households, resulting in increased unpaid labour for women and decreased chances of revenue earning activities. This further complicates the recovery process and the efforts at a return to normalcy. For example, Barbudan parents were unable to return immediately due to the lack of educational institutions and the need to have children enrolled in school.

The increased resilience of educational facilities for children to return to school and families, particularly women, to return to work and recovery. Further, the increased retrofitting of clinics

[89] "Hurricane Irma Recovery Needs Assessment." *Hurricane Irma Recovery Needs Assessment*. St. John's, Antigua and Barbuda: Government of Antigua and Barbuda, 2017.

as shelters reduced the burden of schools being used as shelters, thus allowing children to return to school almost immediately

The schools can also serve as the perfect ground for public awareness and education of adaptation to climate change among young adults during construction. While care must be given to the atmosphere created by construction, the installation of renewable energy during the school year can provide students with a visual of climate change adaptation that can be applied to their own homes. While more serious construction can take place outside of school sessions, other aspects of renovation which include solar renewable energy systems, solar water heaters and energy efficient appliances can serve as a display for climate change adaptation for the college and may inspire interest for both men and women in such careers, especially for women who are significantly underrepresented in this field.

5.1.3.5. Social Services

Of interest are two institutions which house and provide social services for two main vulnerable groups: the elderly and young girls without homes. These include the Fiennes Institute and the Good Shepherd Home.

The Good Shepherd Home, which is affiliated with the Good Shepherd religious group, houses seven girls aged 6–20, all but one admitted because of the need for care and protection. Although this is a private institution, the government has particular interest in this institution, due to the target group 8.

As noted previously, particular climate change impacts such as increased hurricanes, droughts as well as rising temperatures has implications for the standard of housing and office buildings in Antigua and Barbuda. For the Fiennes Institute and the Good Shepherd Home which provide protective services for two particularly vulnerable groups, elderly men and young girls, these impacts can exasperate access to electricity, water as well as general humane conditions for residents who otherwise, are without assistance. Both institutions are without back-up power systems and are susceptible to longer periods of electricity cuts post weather events. Considering the limited lightening at the Fiennes Institute and the risk of sexual harassment highlighted previously, electricity outages worsens this risk post disaster.

5.1.3.6. Disaster Services

The remaining buildings identified for the proposed project play a critical role in disaster management. The Department of Environment, as part of its duty of environmental management is responsible for implementing climate adaptation measures in Antigua and Barbuda to mitigate against the effects of climate change which has resulted in an increase of natural disasters in the region. The Meteorological Office studies the earth's atmosphere, particularly climate and weather in order to forecast weather conditions and the National Office of Disaster (NODS) is the

focal point for disaster preparedness both pre, during and post disaster. In addition to the importance of the continued functionality of these facilities, these facilities can serve as examples of climate adaptation, which would complement their responsibilities in mitigating against climate change as well as serve as practical examples for the Antiguan and Barbudan community. Mitigation options for construction at the buildings (which include being closed during construction and remaining operation during construction) should be followed.

5.1.3.7. Baseline Gender Assessment

The ESIA and ESMP conducted under this project assessed environmental and general social impacts for this project while mitigating against risks. This Gender Assessment and Action Plan is produced as a separate document and sought to assess the perceived or real differential vulnerability of men and women that are expected to be further exacerbated by the impacts of climate change and that can impact on the project and make recommendations to mitigate the same.

In general, there are no known institutional and legal bias against men or women in Antigua and Barbuda. Even though this is the case and due to the lack of gender disaggregated data, however, many of the internationally known biases against women are many times included in project design. In the case of this project which specifically address infrastructure, the assessment has identified the following:

- Courses in construction were made available a few years ago to women. The first graduates are expected over the next few years; the project will establish an apprentice programme for these women newly coming into the field;
- Training in construction is predominantly delivered to men. The project notes the difference in learning between men and women and girls and boys and seeks to provide gender sensitive training;
- Most of government buildings do not have access for persons with special needs. While the project acknowledges this the budget is not adequate to make significant changes.
- The project benefits men and women equally, however, it mostly benefits persons who are very low income more so than on the basis of gender;

The Gender Assessment and Gender Social Inclusion Action Plan includes greater detail as well as baseline gender conditions

6. RISKS AND IMPACT ANALYSIS

Risks have been analysed using the ESS and Gender Policies of the Department of Environment as an Accredited Entity to the Adaptation Fund and the Green Climate Fund. Both the AF and the GCF policy guidance for ESS and Gender safeguards use as their basis the IFC's Environmental and Social Safeguards (2012) and the Global Environment Facility[90].

To evaluate the risk and categorize the project, the DoE uses scoping criteria based on probability of occurrence and impact that assesses the need for and to guide the preparation of the EIA for projects and development applications. The completed Scoping table has been included in Annex IV.

This project is rated overall highly positive in the EIA scoping criteria (see Table 16 for the Impact Analysis). Risks are expected to be adequately mitigated by adhering to national law, industry standard and best practices, as well as the precautionary approach of the Tender Document, which passes most of the risks onto the Contractor that will be delivering the Design, Supply and Installation (see Table 14 for the E&S Management Plan with the full list of risk mitigation measures). As such project proponents are confident that this project will have minimal (if any) adverse environmental and social impacts. Likely social and environmental benefits of climate proofing critical facilities within Antigua and Barbuda include:

- Increased consumption and usage of energy from renewable sources and decreased dependency on fossil fuels;
- Increased knowledge of the impact and effectiveness of alternative sources of energy by students, teachers, nurses, parents and vulnerable communities;
- Significant improvement in the resilience of the community to adapt to extreme weather events, which will now benefit from a continued supply of alternative energy via solar panels and batteries, and through this intervention are looking into the installation of air conditioning units to cope with extreme heat;
- Continuous access to health care or educational services as solar panels + batteries enable clinics and schools to reopen immediately after hurricanes to provide critical health and educational services to those in need, including children, women, persons with disabilities, persons living with HIV/AIDS, men and the elderly. Several stakeholders complained of a lack of generators impacting electricity and water supply and hence their ability to provide adequate care to patients and students. In the long run, one stakeholder suggested that PV solar panels can even power computers that enable staff to create electronic records for patients at health clinics;
- Increased number of climate resilient shelters, catering especially for vulnerable communities; this activity, in line with the DOE climate change programme, is expected to reduce the dependence on educational institutions as shelters and thus

[90] Adaptation Fund Environmental and Social Policy, Revised in March 2016. Accessed 12 June 2018 https://www.adaptation-fund.org/wp-content/uploads/2013/11/Amended-March-2016_-OPG-ANNEX-3-Environmental-social-policy-March-2016.pdf

allow such institutions to function more quickly in their intended state post natural disasters

- Improved quality and accessibility to early warning systems including the private sector and community members
- Improved capacity building of community members and vulnerable communities, including youth, women, persons with disabilities, men, and persons living with HIV/AIDS, in learning about and maintaining solar panels and relevant equipment; and
- Inspiring students as the next generation of environmental engineers and climate innovators.

The project's risk is categorized to be Category B:

"Activities with potential limited adverse environmental or social risks and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures".

The impact analysis for the project's activities is assessed in the table below, in accordance with the Environmental and Social Safeguards Policy and the Gender Policy of the Department of Environment in Antigua and Barbuda.

Table 6: Impact analysis of project risks

Checklist of Environmental, Social and Gender Principles	Impact Analysis	Impact (likelihood x scale)
Compliance with the Law *The project shall be in compliance with all applicable domestic and international law.*	All activities follow national law and regulations, including: - the Physical Planning Act (2003), - the Environmental Protection and Management Act (2019), and - the Public Utilities Act which requires water and/or electricity permits for certain capacity systems Permission will have to be sought from the DCA for any alterations to buildings. The project has to apply to the APUA for the RE connections. In order to fully comply with the EPMA (2019), the facilities must develop their Environmental Management Systems. **<u>Recommendations:</u>** - Building permissions from DCA for any building alterations - Any adjustments to building structures shall comply with building standards to ensure that persons with disability have access (DCA Building Code) - Facilities develop their Environmental Management Systems (EMS) per EPMA 2019	P = 1 I = 3 Overall rank: Low (3)
Access and Equity *The project shall provide fair and equitable access to benefits in a manner that is*	The project designed to provide resilience to buildings needed by all groups in Antigua and Barbuda. Access to these buildings are not a barrier and this should not change after the project. Access to these buildings and the services are however limited to persons with disabilities. Most buildings do not have wheel chair access	P = 3 I = 1 Overall rank: Low (3)

inclusive and does not exacerbate inequalities.	or access to the second floor. The project will therefore seek to remedy this situation as part of the detailed project design. Non-discrimination must be practiced within the procurement process and gender disaggregated M&E of beneficiaries will track access and equity. **Recommendations:** - Gender disaggregated M&E of beneficiaries - Building designs should improve access to disable persons; Project implementation - Women who are willing to work on the construction sector should be provided with that opportunity;	
Marginalized and Vulnerable Groups *The project shall avoid designing activities that will disproportionately affect groups of marginalized or vulnerable people.*	This project does not disproportionately affect marginalized groups. Rather, it seeks to empower vulnerable communities by improving essential community services (health and education) to beneficiaries and the intermediaries within the operational aspects of the project. The installation of water catchments, solar PV and batteries are generally a non-invasive activity. **Recommendations:** - Involve youth, and local community groups in Solar PV installation	P = 1 I = 1 Overall rank: Low (1)
Human Rights *All project activities shall respect and promote international human rights.*	This project respects all human rights, embodied within the Universal Declaration on Human Rights (UDHR), the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) and the CRC (Convention on the Rights of the Child). The DOE and the GCF both have complaints mechanisms in place where members of the public can file a complaint online or in-person and receive redress.	P = 1 I = 2 Overall rank: Low (2)

	<u>Recommendations:</u> - All beneficiaries must be informed about the DOE and GCF complaints mechanisms	
Gender Equity and Women's Empowerment *Projects shall be designed and implemented so that both men and women 1) have equal opportunities to participate, 2) have comparable benefits from the project, and 3) neither group are more likely to suffer as a result of the project.*	The gender analysis for this ESIA covers the following roles, and findings are also summarized: *Consultations* – vast majority women in attendance *Decision-making* during project implementation – majority women *Contractors* – majority male owned companies (construction and electrical engineering) *Owners/managers* of the beneficiary facilities – majority women *Clients or patrons* of the targeted facilities – generally gender balanced Different gender groups include: - Youth - Women - Men - Persons with disabilities and special needs persons - Persons living with HIV/AIDS **<u>Recommendations:</u>** - Gender disaggregated M&E	P = 2 I = 1 Overall rank: Low (2)
Core Labour Rights *Project activities shall meet the core labour standards per the International Labour Organization (ILO) and the Labour laws of Antigua and Barbuda*	The project will ensure that workers, labourers and sub-contractors are being paid the correct wages including respecting the minimum wage. This has been reflected in the Tender documents and contract provisions. Persons must have work permits, where necessary. Potentially adverse impacts to occupational/ worker and community health and safety due to the associated infrastructural upgrades required for several of the beneficiary buildings.	P = 1 I = 2 Overall rank: Low (2)

	Recommendations: - Labour Department to be notified of project and conduct due diligence as needed - Tender document specifies that the Contractor shall comply with all the relevant labor Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights - Appointment of an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents	
Involuntary Resettlement *Projects shall be designed and implemented to avoid or minimize the need for involuntary resettlement. When unavoidable, due process is required.*	There will be no land acquisition under this project as all interventions to be installed in-situ on existing facilities.	P = 1 I = 1 Overall rank: Low (1)
Protection of Natural Habitats *The project shall not involve unjustified conversion or degradation of critical natural habitats.*	There may be some construction resulting from the project activities, for example in the ground mounting or other auxiliary activities. Sustainable procurement of aggregates and other inputs will ensure these inputs are from sustainable sources. **Recommendations:** - Sustainable procurement policy to ensure that any aggregates purchased do not harm natural habitats	P = 1 I = 1 Overall rank: Low (1)
Conservation of Biological Diversity	The project activities are not expected to have a negative impact on biodiversity.	P = 1 I = 1

Projects shall be designed and implemented to avoid any significant or unjustified impacts to biological diversity or the introduction of known invasive species.	Invasive species can be introduced with the importation of equipment and other products **<u>Recommendations:</u>** - Inspect imported equipment for any potential importation of organic matter	Overall rank: Low (1)
Climate Change *Projects shall not result in any significant or unjustified increase in greenhouse gas emissions or other drivers of climate change.*	This project does not result in any significant increase in GHGs, but rather seeks to reduce the impacts of climate change on national infrastructure and the consumption of energy from fossil fuels, by installing PV solar panels to schools and clinics as an alternative source of energy. **<u>Recommendations:</u>** - None at this time	P = 1 I = 1 Overall rank: Low (1)
Pollution Prevention and Resource Efficiency *Projects shall meet international standards for maximizing energy efficiency and minimizing material resource use, waste material, and pollutants.*	7. Demolition and Construction Waste Removal The proposed project is expected to upgrade and expand upon several sites. This action will likely involve the generation of significant construction waste, dust and other particulates. 8. Traffic Congestion & Other Disruptions in Surrounding Areas The proposed project is slated to occur in and around critical facilities that are relied upon by much of the population. There is therefore concern as to how the project will be implemented without significantly impeding the flow of traffic (vehicular and pedestrian) around these facilities as well as impeding the use by stakeholders and the general public.	P = 2 I = 2 Overall rank: Medium (4)

	9. Access to water Although part of this project is to address the impacts of drought, during the implementation of the project access to water continues to be pressing concern. Some of the facilities may already have measures to provide water however the activities associated with the project may require additional water to be made available on site. 10. Sewage and Wastewater Treatment & Disposal The project will result in the increased generation of sewage and waste water during implementation. Measures must be put in place to ensure that those persons conducting the work are provided with the necessary amenities and if existing systems cannot absorb the increased waste appropriate measures be put in place to address such short comings. 11. Sourcing materials This project will entail considerable construction which means the provision of raw inputs (sand for concrete). It should be noted that the GoAb is also undergoing a massive road rehabilitation programme. This means that materials such as sand, and gravel may be in short supply. Coordination should be done with the Ministry of Works to ensure that sufficient materials are available for both public and private construction products.	
Public Health *Projects shall avoid potentially significant*	This project will increase continued access to public health care services by providing a consistent supply of electricity and water to clinics. Additionally, climate proofing will allow critical facilities to have less down-time during and immediately after major events	P = 1 I = 1 Overall rank: Low (1)

negative impacts on public health.	Stakeholders have expressed an interest in installing air conditioning, purchasing computers, etc, once reliable and affordable electricity can be provided. **<u>Recommendations:</u>** - Future applicants purchased should be certified energy efficient appliances	
Physical and Cultural Heritage *Projects shall avoid the alteration, damage or removal of any physical cultural resources, sites, and those with unique natural values, include access to such sites.*	While none of the targeted facilities are in national parks or other cultural sites, some of the areas may be of cultural value. **<u>Recommendations:</u>** - Building retrofitting will as much as possible respect physical aesthetics of buildings especially any historically relevant buildings	P = 1 I = 1 Overall rank: Low (1)
Lands and Soil Conservation *Activities shall promote soil conservation and avoid degradation or conversion of productive lands or lands that provide valuable ecosystem services.*	Minimal landscaping is anticipated under this project, as the building retrofits are in-situ. The risk of this project is the indirect effects of raw material extraction through the increased activity of the construction industry, for example sand mining. . **<u>Recommendations:</u>** - Sustainable procurement policy for construction works	P = 2 I = 2 Overall rank: Medium (2)

7. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Table 7: Environmental and Social Management Plan for the Project

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
A. POSITIVE – OPPORTUNITIES						
Employment opportunities, including for women, youth and disadvantaged groups	Fair access via contracts awarded	• Open and competitive bidding and selection • Gender-disaggregated M&E of beneficiaries • Contractor is required to subcontract local certified installer(s) and engineers • DOE Summer Internship Programme	During the procurement phase	• DOE Procurement Unit • DOE Data Management Unit • Contractor	USD 150/week internship stipend	Training in procurement for local firms

[91] The DOE responds to risks in four ways: Acceptance, Control, Avoidance and Transfer.

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
Vocational training and skill building	Re-training of existing civil and electrical engineers e.g. the engineers who service diesel generators should be retrained to service Solar PV and wind; local architects and civil engineers retrained in climate impacts	• Certified climate resilience certificates for civil engineers • Certified PV technicians, energy efficiency and wind • Certified architects and civil engineers in risk-based approaches to climate-proofing infrastructure	Mid-project	• Partner with a local training institution	TBC	
Participatory and	Disseminat ion of informatio	• Train DOE project staff in interfacing with the	Quarterly	• Integrated Health Outreach (Annex III) • Project Coordinator	USD 10,000	Photography Website and graphics

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
consultative approach	n for increasing public awareness creating the local ownership and buy in for this project	community (ongoing) • Implement the stakeholder engagement plan (Section 8) • Host Information Days for students, parents, nurses, patients, and Community Members around climate-proofing buildings	Annual	• Public Awareness and Community Liaison Officer		
B. NEGATIVE – IMPACTS						
Construction phase	Worker and community health and safety concerns	• Appointment of an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents • Development of an emergency	Within twenty-eight (28) days after the Effective Date of the contract	• Contractor • Public Awareness and Community Liaison Officer • DOE Complaints Officer • Monitoring and Evaluation Officer (specialist in ESS and Gender impacts)	N/A (included in Tender document)	Training/briefings on ESS and gender impacts

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
		preparedness and response system for construction • Contractor is required to deliver Site regulations, to include security, safety of the Facilities, gate control, sanitation, medical care, and fire prevention • Installation of proper signage and interpretation where necessary • Contractor is required to secure permits, approvals and licenses • Conduct workshops with workers on the DOE Complaints and Grievance Mechanism				

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
Noise Pollution	Better management of noise and vibrations by minimizing disturbances to residents, businesses and the general public	• Provide notice of works to nearby residents and the public • Avoid scheduling the noisiest civil works activities during sensitive day or early evening hours, where possible • Maintain machinery to a high standard to reduce noise levels • Use main roads to transport materials to and from the construction zone • Enclose stationary small plant and equipment (generators) to reduce noise • Equip motorized vehicles and	Throughout construction period Stakeholder engagement plan	• Public Awareness and Community Liaison Officer • DOE Complaint Officer • Contractor • Monitoring and Evaluation Officer (specialist in ESS and Gender impacts)	N/A (included in Tender document)	Training/briefings on ESS and gender impacts

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
		equipment with noise reduction parts • Conduct workshops with workers on the DOE Complaints and Grievance Mechanism • Conduct community outreach on DOE complaints mechanism • Respond to noise complaints reported during construction				
Ecological impacts referred to will entail impacts on fauna, flora and changes in the micro climate of	Minimisation of ecological impacts caused by construction	• No unnecessary clearing of natural vegetation will be encouraged. Where the vegetation must be cleared for, re-vegetation will be	Throughout construction period Stakeholder engagement plan	• Contractor • Public Awareness and Community Liaison Officer • DOE Complaint Officer • Monitoring and Evaluation Officer	N/A (included in Tender document)	Training/briefings on ESS and gender impacts

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
some sites as well as transfer of pests and diseases.		encouraged after work is completed. • Works undertaken in protected areas will be supervised by the Forestry Division. As much as is possible, impact on fauna and flora must be minimized. • Areas known to be frequent crossing for wildlife should be identified and signs erected to warn drivers. • No hunting of birds or other wildlife will be permitted by employees • There must be minimal impact to flora and fauna in the forest area. Policies, rules and		(specialist in ESS and Gender impacts)		

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
		regulations of all recognized natural habitats, wetlands and protected areas must be observed and consultation with the Forestry Division and the DOE Nursery staff should be undertaken **prior to construction.** • No soil must be transported from this area to other areas so as to curtail the spread of the Giant African Snail. • The wheels of all vehicles involved in soil excavation must be washed of all soils material to curb the transfer of				

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
		this snail to other areas. • Landscaping of the roads especially the tourism routes will be encouraged. As much as possible, the use of local plant will be encouraged • Conduct workshops with workers on the DOE Complaints and Grievance Mechanism • Conduct community outreach on DOE complaints mechanism				
Increase in greenhouse gas emissions	Minimization of emissions from	• Supervision of the number of trips scheduled for	Throughout construction period	• Contractor • Public Awareness and Community Liaison Officer	N/A (included in Tender document)	Training/briefings on ESS and gender impacts

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
	construction activities	transporting materials • Ensure that all construction machinery and vehicles (gasoline and diesel) are properly operated and maintained to minimise smoke emissions that result from their use • Repair malfunctioning equipment immediately or remove from the site • Construction Supervision Plan, including the number of expected trips needed to transport	Stakeholder engagement plan	• DOE Complaint Officer • Monitoring and Evaluation Officer (specialist in ESS and Gender Impacts)		

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
		• road material • Maintenance plan for vehicles • Train workers on management of air pollution from vehicles and machinery • Conduct workshops with workers on the DOE Complaints and Grievance Mechanism				
Air pollution: Dust nuisance to motorists, pedestrians, businesses, and surrounding properties	To prevent and reduce air pollution	• Train workers on dust minimisation techniques • Controlled water spraying/sprinkling to active construction areas to suppress dust • Avoid creating runoff with the application of water at the site(s)	Throughout construction period Stakeholder engagement plan	• Contractor • Public Awareness and Community Liaison Officer • DOE Complaint Officer • Monitoring and Evaluation Officer (specialist in ESS and Gender Impacts	N/A (included in Tender document)	Training/briefings on ESS and gender impacts

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
		• Reduce vehicle speeds per hour on unpaved surfaces • Do not carry out dust generating activities (excavation, handling and transport of soils) during times of strong winds • Suspend earthworks operations when visible dust is affecting properties adjoining the road • Cover inactive areas or rubble to reduce the potential for wind transporting dust • Stabilize and restore disturbed				

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
		areas following the completion of project activities • Record any complaints received regarding dust • Seal road surface as soon as possible • Remove loose dirt from construction equipment before it leaves the site • Vehicles delivering soil materials or transporting them offsite shall be covered to reduce spills and windblown dust • Vehicle speeds shall be limited to minimise the generation of dust on site and on				

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
		diversion and access roads • Conduct workshops with workers on the DOE Complaints and Grievance Mechanism • Conduct community outreach on DOE complaints mechanism				
Operational phase	Access to water for cleaning panels Maintenance plans including budgets Asset protection	• Contractor is required to deliver Operations and Maintenance Schedules, and Training to be submitted with the Guarantee Test results • Contractor is required to deliver Insurance Policies including details	Within ten (10) months	• Contractor • Regulatory Authority	N/A (included in Tender document)	Sensitize insurance companies about grid-interactive RE systems

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
	during hurricanes	on the identity of the insurers and the form of the policies				
Solid waste and hazardous pollution	Imported assets (solar PV and batteries) are properly disposed of or recycled at their end of life (life cycle analysis)	• Provisions for proper disposal and/or recycling of solar PV and batteries reflected in Tender documents and legal agreements • Develop partnerships for technical capacity around hazardous waste management • Facilities develop their Environmental Management Systems (EMS) per the EPMA, 2019 • Facilities to register EMS Plans	During the procurement phase Post-implementation Stakeholder engagement plan	• Project Coordinator • DOE legal unit and procurement unit • Public Awareness and Community Liaison Officer • Beneficiary facilities • DOE Project Coordinator for Solar project (Shema Roberts)	USD 5,000 per facility	Life cycle analysis Hazardous waste disposal or recycling Environment Registry Environment Management Systems (ISO 14000)

Impact areas	Desired outcome	Mitigation measures and monitoring performance indicators[91]	Timeframe	Responsible party	Incremental budget (USD)	Capacity building and training requirements
		in the Environment Registry (EPMA, 2019)				
Public disclosure of ESIA and ESMP	An informed and empowered stakeholder group	• Publish ESIA on DOE website • Inform beneficiaries of DOE Complaints Mechanism and CDB Complaints Mechanism • Training to DOE PMU staff who will interface with community members (see Annex III)	Within 30 days of CDB No Objection of ESIA Annual	• DOE Project Coordinator	USD 5,000 for training	N/A
Compliance with Building Code	Facilities are in compliance with the Building Code	• Permissions from the DCA for any alterations to buildings to include accessibility for persons with disabilities	During the procurement phase	• DOE Project Coordinator	None	None

8. MONITORING PLAN

Monitoring and evaluation (M&E) is an essential part of implementing environmental projects at the Department of Environment (DoE). The primary reasons for effective M&E are, transparency, accountability, learning & improvement. The DOE is legally required under the Environmental Protection and Management Act (EPMA, 2019) to maintain an inventory of relevant environmental information that can be used to inform environmental management processes in the country and relevant requirements under multilateral environmental agreements (MEAs).

During the project implementation of the ESIA and ESMP, project-level M&E will be undertaken in compliance with the DoE's requirements as outlined in the Monitoring & Evaluation Framework. The Monitoring, Evaluation & Data Management Unit (DMU) of the DoE implements this framework on internationally funded projects. The DMU, in collaboration with the Project Coordinator (PC), contracted from the PMU, will review and adapt this framework to meet the obligations of this specific project. In addition to the mandatory DoE M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed on during consultations between the DMU and the PC.

Monitoring is an on-going activity is documented as tasks are completed. It is a system for collecting information that tracks progress against stated plans. Evaluation is designed for the project to understand how it can make a greater contribution to the overall outcomes. It incorporates before-after comparisons and, through this analysis, documents key lessons learned to improve the project and inform future decision making and planning.

8.1. M&E OVERSIGHT AND MONITORING RESPONSIBILITIES:

The M&E approach to this project can be divided into three components. The first deals with the selection of appropriate indicators to monitor during project implementation. These indicators will be defined and monitored periodically with a definite timeline agreed upon by the DMU and the PC. The second is the monitoring of the ESMP (section 8). This Plan was elaborated through close collaboration among the PMU officers. The final component is the list of recommendations for improved performance. These are summarized below:

I. Selection of indicators to monitor during project implementation

II. Monitoring of the ESMP

III. Listing of recommendations

8.1.1. Selection of indicators to monitor during the development of the ESIA & ESMP

The consultancy team worked collaboratively to develop the ESIA and the ESMP. The DMU and PC will hold discussions to develop a list of possible indicators to monitor throughout project implementation. Once the final set of indicators have been drafted, the Data Manager will approve them. The final M&E report will present a summary of these indicators along with the monitoring information. Examples of these indicators are, but not limited to, the following:

1. ESIA indicators:
   a. Number/summary of consultations held
   b. Demographic profile prepared
   c. Impacts of works on stakeholders
2. ESMP indicators:
   a. Monitoring of risks
   b. Risk mitigation measures identified
   c. Benefits gained by stakeholders

8.1.2. Monitoring of the ESMP

The ESMP for this activity is presented above in section 8. The status of implementation of this plan will be monitored periodically. The relevant information will be extracted and inserted in the M&E report. Similar to the indicators defined above, a final M&E report will present a summary of the monitoring information.

8.1.3. Listing of recommendations

This section will include a list of recommendations that will provide insight to both the consulting, as well as the DoE team on ways to improve implementation.

9. DOE COMPLAINTS MECHANISM

In compliance with the GCF Independent Redress Mechanism requirements, the DOE has an approved Complaints Mechanism for the purpose of dealing with concerns submitted by the public or by entities working on projects, regarding environmental, social and gender harms caused by the projects/programmes. Any project affected persons can communicate project related concerns through the Complaints Mechanism of the DOE. Complaints can be submitted electronically via email, in person to, or in writing to the DOE Complaints Officer. The complaint is presented to the Ethics Committee, and is channeled through the following general process:

Figure 12. General process for handling a grievance/complaint via the DOE mechanism

The DOE complaints mechanism is also outlined on the website in video format:

Figure 13. Video summary of the DOE Complaints Mechanism. Source: https://environment.gov.ag/contact

Environmental complaints are sent to the National Environment (NEMBU) Unit at the DOE.

Serious complaints may be referred to the Ethics Committee or to the Information Commissioner under the Freedom of Information Act 2004 or to the Integrity Commissioner under the Integrity in Public Life Act 2004. Whistleblowers may make anonymous complaints to the Complaints Mechanism and their cases can be dealt with anonymously, or they can be

referred to either of the statutory bodies mentioned above, where protection is available under the law.

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11. ANNEX I - TERMS OF REFERENCE

CONSULTANCY FOR SITE-SPECIFIC ENVIRONMENTAL SOCIAL AND GENDER INVESTIGATIONS FOR THE RESILIENCE TO HURRICANES IN THE BUILDING SECTOR OF ANTIGUA AND BARBUDA

1. BACKGROUND/INTRODUCTION

1.01 Hurricanes are becoming increasingly destructive in Antigua and Barbuda. The recent hurricane Irma left behind three casualties, 1800 evacuated inhabitants and 95 per cent of Barbuda's buildings and infrastructure damaged or destroyed. It is imperative to build back better and ensure that critical public service buildings and emergency services can withstand major local disasters.

1.02 On 6 September 2017, a powerful category 5 hurricane, Irma, hit the islands with an over 185 km/h sustained wind speed. There were three casualties and the hurricane damaged or destroyed 95 per cent of Barbuda's buildings and infrastructure, including the fire station, the police station, and the hospital. All of the Barbuda's 1,800 inhabitants were evacuated to Antigua where the wind speeds had been significantly lower (Category 3) and the hurricane did not have as devastating an impact. Reconstruction is estimated to cost at least USD 215 million. As of December, 2017, only 100 people were able to return home to Barbuda due to the lack of healthcare and security services. The IPCC projects that hurricane intensity will increase between 5 and 15% under the mid-range climate scenario.

1.03 To address these impacts, UN Environment Programme is developing and submitting a funding proposal to the Green Climate Fund titled, *Resilience to hurricanes in the building sector in Antigua and Barbuda*. The project, which will total approximately US$45 million, has 3 components:

- **Component 1.** Climate-proofing adaptation measures implemented in 30 public and community buildings (categories of buildings include Medical/health; Safety and security; Disaster services; and Other)
- **Component 2.** Strengthened Early Warning Systems and communication systems for Antigua and Barbuda
- **Component 3.** Enhanced institutional and technical capacities for planning, implementing and monitoring of adaptation measures in the building sector

1.04 The Department of Environment will serve as Executing Entity for this project.

2. OBJECTIVE

2.01 The primary objective of this consultancy is to assess the project's components and conduct an Environmental, Social and Gender Impact Assessment of the project's interventions,

propose measures that will guide mitigate risks, and develop an Environmental and Social Management Plan and Gender Action Plan.

3. SCOPE OF WORK

3.01 The scope of services is understood to cover all activities necessary to accomplish the objectives of the consultancy, whether or not a specific activity is cited in these terms of reference (TOR). A participatory and consultative approach is required in the conduct of the services.

3.02 Specific duties and responsibilities of the Consultants include but are not limited to the undertaking the following:

(a) Environmental and Social risk assessment;

3.03 In undertaking the surveys and assessments, the consultants will be required to undertake the following tasks:

(a) **Social and Environment Risk Assessment**

(i) conducting a assessment of potential significant environmental and social impacts (including gender assessment) and the associated mitigation and monitoring measures required for successful implementation of the proposed project. It should include an assessment of baseline environmental and social conditions as they relate to the proposed locations of major works as well as relevant policies, legislation and regulation which have implications for successful implementation of the proposed works;

(ii) preparing a demographic profile and detailing the socio-cultural characteristics of the resident population in the project area, disaggregated by sex;

(iii) conducting consultative and participatory meetings with stakeholders and in particular, community representatives and residents, users of and workers in the facilities who will be directly impacted by the project;

(iv) assessing the impact of the works on stakeholders, recommend risk mitigation measures, and monitoring indicators, disaggregated by sex;

(v) developing an Environmental and Social Management Plan to monitor and mitigate risks identified;

(vi) exploring how the economic opportunities generated by the civil works can benefit socially-excluded groups including youth and women;

(vii) Convening a stakeholders' workshop to discuss the findings of this consultancy and to seek clarification on issues from participants for incorporation in the draft final report; and

4. IMPLEMENTATION ARRANGEMENTS

4.01 The Consultant will report to the Project Manager (PM) or his/her designate within DOE, who will have overall responsibility for the management and implementation of the consultancy and facilitate the work of the consultant. PM will make available all studies, reports and data relevant to the completion of the exercise and will act as liaison between the consultants and DOE officials and stakeholders. PM will make arrangements for the introduction of the Consultant to the key stakeholders.

5. QUALIFICATIONS AND EXPERIENCE OF CONSULTING TEAM/ KEY SPECIALISTS

5.01 It is the consultant's responsibility to ensure that their team has an appropriate mix of key and non-key experts required to satisfy the full requirements of the TOR.

5.02 As a guide only it is considered that the consulting team is likely to need to include the following key experts, from which a Team Leader shall be selected and proposed. The consulting team should be multidisciplinary and comprise following:

(a) Environmental Specialist
(b) Social and Community Liaison
(c) Gender Expert
(d) Civil Engineer

5.03 The consultant will present detailed CVs for each member of the Core Consulting Team, and their corresponding level of effort. The consultant shall also indicate if they require additional specialists, their expected role and the aggregated level of effort.

6. REPORTING REQUIREMENTS AND DELIVERABLES

6.01 The consultants will deliver the following:

a) The Preliminary ESIA, ESMP and Gender Action Plan: Will be concise and limited to significant environmental and social issues. The main text must focus on findings, conclusions and recommendations. The Report will have the following outline:

(i) Executive Summary

(ii) Environment and Social Impact Assessment (ESIA)

(iii) Environmental and Social Mitigation Management Plan (ESMP)

(iv) Gender Action Plan (2-3-page table)

b) Final ESIA, ESMP and Gender Action Plan

7. DURATION

7.01 The consultancy is expected to be undertaken within a period of one month.

8. SCHEDULES

(a) Preliminary ESIA, ESMP and Gender Action Plan by **31 August 2018**

(b) Final ESIA, ESMP and Gender Action Plan by **15 September 2018**

(c) All background reports shall be submitted to DOE as soon as completed.

12. ANNEX II – SCREENING AND SCOPING TEMPLATES FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PROCESS

DEPARTMENT OF ENVIRONMENT: ENVIRONMENTAL SCREENING AND SCOPING EVALUATION

PROJECT:

PROJECT LOCATION:

PROJECT DESCRIPTION:

SCREENING DATE: **SITE VISIT DATE:**

OFFICER(S) REPORTING:

Criteria	Yes/No	Comment
1. Does the development fall within Schedule 13 of the Physical Planning Act 2003		
2. Is it in a Protected Area?		
3. Is the area flood prone/are there drainage concerns?		
4. Are there likely to be significant negative environmental impact with respect to: a. The nature of the proposed development		

b. The geographic scale of the proposed development c. The extent of changes to the environment likely to be caused by the proposed development d. The degree of scientific certainty about the nature of the proposed development and its likely impact on the environment;		
5. Is there a sensitive ecosystem/species nearby?		
6. Is the site within the appropriate zoning category?		
7. Are there likely any (negative) social impacts?		

13. ANNEX III – DEPARTMENT OF ENVIRONMENT: ENVIRONMENTAL SCOPING EVALUATION

PROJECT: CLIMATE CHANGE PROGRAMME

PROJECT LOCATION: public buildings in multiple Parishes, Antigua and Barbuda

PROJECT DESCRIPTION: The objective of the proposed project is to increase the climate resilience of critical public buildings in Antigua and Barbuda to hurricanes, droughts and extended dry periods, flooding and increased air temperatures. Project activities will: i) ensure that critical services remain operational during and following extreme climate events; and ii) will bring about reduced maintenance costs of buildings owing to the installed climate proofing interventions.

SCOPING DATE: **SITE VISIT DATE:**

OFFICER(S) REPORTING:

	Feature being assessed	SCORING					Briefly describe potential impact	**List applicable policies/legislations/initiatives**
		-2 Very Negative	-1 Slightly Negative	0 Neutral	+1 Slightly Positive	+2 Very Positive		
	General Characteristics							
1	Changes in Land use			**x**			This project will not change the land use at any of the sites as the core function of the activity is to facilitate the resilience and further use of these sites during and after a natural disaster.	PPA, 2003

	Feature being assessed	SCORING					Briefly describe potential impact	**List applicable policies/legislations/initiatives**
		-2 Very Negative	-1 Slightly Negative	0 Neutral	+1 Slightly Positive	+2 Very Positive		
2	Topography/Elevation			**x**			The installation of solar panels on roofs is not expected to affect topography or elevation in anyway. However if panels are mounted on the ground there may minimal impact digging holes and erecting foundations with mounting stands.	PPA, 2003
3	Use of natural Resources					x	This project will achieve the non-extractive use of sunlight to power solar grids	National Energy Policy Interconnection Policy
4	Habitat Destruction or Fragmentation			**x**			No impact	Environmental Protection and Management Act. Sustainable Development Goals Nationally Determined Contributions
5	Introduction of non-native species			**x**			No introduction of species	Environmental Protection and Management Act, 2015
6	Unique/important/Endangered wildlife or wildlife habitat			**x**			No importation of species	Environmental Protection and Management Act 2015

	Feature being assessed	SCORING					Briefly describe potential impact	**List applicable policies/legislations/initiatives**
		-2 Very Negative	-1 Slightly Negative	0 Neutral	+1 Slightly Positive	+2 Very Positive		
7	Soil			**x**			The installation of solar panels on roofs is not expected to affect soil in anyway. However if panels are mounted on the ground there may minimal impact digging holes and erecting foundations with mounting stands.	OECS Building Code
8	Protected Area/Plans			**x**			NA	
9	Scenic landscape			**x**			Panels will not interfere with vistas as they will either follow the slope of the roofs. As there is also the possibility of mounting panels on the ground no impact is expected on scenic landscape	OECS Building Code

	Feature being assessed	SCORING					Briefly describe potential impact	**List applicable policies/legislations/initiatives**
		-2 Very Negative	-1 Slightly Negative	0 Neutral	+1 Slightly Positive	+2 Very Positive		
10	Emerging Trends/Risks in the Area				**x**		This project aims at addressing the rising trends of climate change	Environmental Protection and Management Act. Sustainable Development Goals Nationally Determined Contributions
Infrastructure and Common Services								
11	Air Quality				**x**		The use of solar panels and batteries will lead to less exhaust by generators. However the installation of such may result in fugitive dust and minor construction particulates	Environmental Protection and Management Act. Sustainable Development Goals Nationally Determined Contributions
12	Traffic Patterns			**x**			Negligible	
13	Noise Levels				**x**		Minor noise during construction Less noise due to less reliance on generators	Environmental Protection and Management Act.
14	Water Supply			**x**			NA	
15	Water quality			**x**			Negligible as a result of construction	

	Feature being assessed	SCORING					Briefly describe potential impact	**List applicable policies/legislations/initiatives**
		-2 Very Negative	-1 Slightly Negative	0 Neutral	+1 Slightly Positive	+2 Very Positive		
16	Energy Supply & Consumption					x	Project will improve energy resilience primarily for schools and clinics. There will also be a secondary benefit to communities	Environmental Protection and Management Act. Sustainable Development Goals Nationally Determined Contributions
17	Accessibility (disabled/other)				**x**		One of the sites chosen for this project is a school for the disabled and special needs	Disabilities and Equal Opportunities Bill
Socio-Economic								
18	Potential for employment				**x**		A few jobs for construction and erecting panels; panels will be imported from an overseas supplier.	

	Feature being assessed	SCORING					Briefly describe potential impact	**List applicable policies/legislations/initiatives**
		-2 Very Negative	-1 Slightly Negative	0 Neutral	+1 Slightly Positive	+2 Very Positive		
24	Gender equity & women's empowerment			**x**			The project benefits both women and men: Consultations – vast majority women in attendance. Decision-making during project implementation – majority women. Contractors – majority male owned companies (construction and electrical engineering). Owners/managers of the beneficiary facilities – majority women. Clients or patrons of the targeted facilities – generally gender balanced.	

	Feature being assessed	SCORING					Briefly describe potential impact	**List applicable policies/legislations/initiatives**
		-2 Very Negative	-1 Slightly Negative	0 Neutral	+1 Slightly Positive	+2 Very Positive		
25	Poverty				**x**		This project will improve the quality of services available to low-income communities and exceptionally vulnerable people.	
26	Property value				**x**		Property value expected to increase after installing solar panels. Most of the buildings are public	

	Feature being assessed	SCORING					Briefly describe potential impact	**List applicable policies/legislations/initiatives**
		-2 Very Negative	-1 Slightly Negative	0 Neutral	+1 Slightly Positive	+2 Very Positive		
27	Impact on interest groups in the area				**x**		Disabled students at the Victory centre will be less affected by power outages. They will also be able to return classes sooner after a disaster. Clinics in poor communities can function longer. Medications that need to be kept refrigerator will be safeguarded.	
Cultural Heritage								
28	Archaeological resources			**x**			NA	
29	Cultural heritage/monument			**x**			NA	
34	Recreational value			**x**			NA	
Disaster Reduction Services								

	Feature being assessed	SCORING					Briefly describe potential impact	**List applicable policies/legislations/initiatives**
		-2 Very Negative	-1 Slightly Negative	0 Neutral	+1 Slightly Positive	+2 Very Positive		
35	Floodplains / wetlands			**x**			Panels on roofs will not harm flood plains. Ground mounted panels may cause site to experience minimal runoff	
36	Drainage Basins			**x**			Solar panels will not affect drainage. Ground-mounted panels should not be in flood-prone areas	
37	Stream-flow characteristics/ surface runoff			**x**			Ground mounted panels may cause site to experience minimal runoff and erosion	

	Feature being assessed	SCORING					Briefly describe potential impact	**List applicable policies/legislations/initiatives**
		-2 Very Negative	-1 Slightly Negative	0 Neutral	+1 Slightly Positive	+2 Very Positive		
38	Climatic susceptibility of the area				**x**		Antigua is located in a very active zone for hurricanes. Climate models are predicting more intense hurricanes and rainfall events. Contingency measures will be needed for extreme (category 3+) hurricanes	National Adaptation Plan (under development)
39	Carbon sequestration					x	Use of panels will avoid and replace electricity generated from fossil fuels.	Nationally Determined Contributions

14. ANNEX IV – STAKEHOLDER LIST

NO.	NAME	ORGANISATION
1	462-0360 – Commissioner of Police, Mrs. Defoe Commissioner Rendell Robinson cop@ab.gov.ag	Police headquarters and police stations
2	Bernard Perceval Admin Coordinator (Gary Thomas 464-9505) Carol Scholar, carolscholar@gmail.com	Mount St John Medical Center
3	Elvis Weaver abfirebrigade@gmail.com Ms. Thomas 462-0020 462 0044	Fire stations
4	Churchill	DOE interpretation center
5	Min of Edu	Antigua State College
6	Min of Edu	The University-Five Islands
7	Mr. Prosper	The Archives
8	Min of Edu	The Library
9	Michelle Henry	The Museum of Antigua and Barbuda
10	Anne Marie Martin Secretary Tamika Wilson	Nelson's Dockyard National Park
11		Hannah Thomas Hospital (Barbuda)
12		DOE office (Barbuda)
13	Dr Christian	Analytics Lab
14	Mr. Hanley and Wesley	Public Works Department
15	Southwell	Development Control Authority
16	Mullin	NODS
17	Mrs. Rodrigues	Bureau of Standards
18	Challenger	Ministry of Energy
19	Minister Weston	Ministry of Finance
20	Ruth Spencer	MEPA Trust
21	Data Management Unit (DMU) project team	

Department of Environment
Ministry of Health and the Environment
#1 Victoria Park, Botanical Garden
P.O, Box W693
St. John's
Antigua, W.I.
Tel: (268) 462-6265
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Email: antiguaenvironmentdivision@gmail.com

27 February 2017

Re: Request for a meeting to discuss a Green Climate Fund (GCF) project for Antigua and Barbuda's Nationally Determined Communication

Dear Colleague,

The Department of Environment (DoE), within the Ministry of Health and the Environment, is the National Designated Authority to the Green Climate Fund (GCF). As such, the DOE is developing a pipeline of projects that will assist the country to implement its Nationally Determined Contribution[1] (NDC) commitments.

The DoE and UN Environment are developing a USD 35 million project, titled *Resilience to Hurricanes, Floods and Droughts in Buildings in Antigua & Barbuda*. Aligned with the NDC, the project will finance adaptation in buildings to cope with increased frequency and severity of droughts and more intense hurricanes (up to a Category 5 hurricane). The project will be executed via the Sustainable Island Resource Framework Fund (SIRF Fund), and will build resilience and adapt the public, private and NGO sectors to climate change.

International consultant Mr. Dirk Snyman of C4 EcoSolutions in South Africa will be on island from **Monday 6th March to Wednesday 8th March, 2017** to meet with stakeholders and solicit input into the project.

The DoE values the contribution of stakeholders in guiding the development of environment and climate-related projects in Antigua and Barbuda. As the National Focal Point, we require your

[1] Antigua and Barbuda's Nationally Determined Contribution (NDC) climate change goals: http://www4.unfccc.int/submissions/INDC/Published%20Documents/Antigua%20and%20Barbuda/1/INDC_Antigua_Barbuda.pdf

participation in the project development for this process to be successful. The DoE is therefore requesting your assistance in meeting and sharing your views with the consultant while he is on island for baseline data and information collection.

Kindly confirm your availability for a meeting with Mr. Snyman and a representative of the Department of Environment (DOE) during the period 6th – 8th March 2017. You will be contacted shortly to arrange a time that is convenient for you.

Please do not hesitate to contact the DoE if you have questions via email lia.nicholson@ab.gov.ag and copied to antiguaenvironmentdivision@gmail.com, or by phone at 728 9009 or 562 2568.

The DoE looks forward to your agency's input into this important climate adaptation project to build resilience in buildings.

Sincerely,

.....

Director
Department of Environment

15. ANNEX V – PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT PLAN

15.1. SUMMARY OF PUBLIC CONSULTATIONS

An in-country mission and consultation was held from 14th to 18th August 2017 and the CTCN consultants conducted site visits in July 2018; members of the Technical Expert Group did site-specific assessments from June – August 2018. In addition, during the period 6th – 16th August, 2019, C4 Ecosolutions conducted a mission to Antigua to consult with the project teams and key executing agencies and consultations were held with the people of Barbuda during the period 12 – 16 August 2019.

An analysis of stakeholder issues and options for project-responsive design is included in *Table 9. Stakeholder inputs and responsive project design*.

Table 8: Summary of stakeholder inputs and responsive project design

Stakeholder Input and Concerns	**Options for incorporating into Project Design**
Disruption of schools and/or clinics	While the stakeholders suggested that the installation of the solar panels should be during the weekend or school vacation in order to avoid disrupting the service of the schools, it is not expected that the installation of the solar panels will disrupt the ability of the schools and clinics to continue their service to patients and to students. Rather, it is expected that installing the solar panels on the sites while the clinics and schools are in operation will help to bring awareness to renewable energy initiatives for both patients and students. However, per the request of the stakeholders, it is encouraged that one weeks notice is provided by the DoE in order to allow clinics and schools to prepare in any way for the installation of the solar panels Recourse: The DOE has a complaints mechanism where any challenges can be reported online or in-person, and must be addressed. GCF and DOE Grievance Mechanisms: • Project Complaints Policy • Whistleblowing Policy
Vandalism of solar panels and schools/ clinics	Safety measures are put in place to ensure solar panels cannot be vandalized This also reiterates the importance of the mandate of the project which specifically requires the project to ensure community ownership of climate resilient community solar panels Stakeholders suggested installing external charging portals are setting up picnic benches and interpretation signs on RE so community members can access electricity during power outages without vandalizing clinics/ schools.

Stakeholder Input and Concerns	Options for incorporating into Project Design
	However, this particular recommendation, although not implemented under this project, is already facilitated under the AF and waterway projects
Public awareness of alternative and renewable energy (RE)	The DOE should partner with Schools and Clinics to host Information Days for students, parents, nurses, patients, and Community Members around solar panel installation and renewable energy. Stakeholders indicated gender norms which have been formed and which continue to impact women's role in technical fields. Stakeholders also suggested the project could promote awareness campaigns which include showcasing female role models within the primary schools, going up to the tertiary institutions.
Employment opportunities	Ensuring that persons from within schools/ clinics/ the local community, including persons with disabilities, women, the elderly and persons living with HIV/AIDS, are trained by contractors to maintain solar panels. This will support the mandate of the project which involves capacity-building and will also meet the need of stakeholders to provide technical skills that can be used by vulnerable communities;
Sustainable maintenance of solar panels	Stakeholders suggested that the DOE engage and integrate students, community members, and those of vulnerable communities into its planned training on operating and maintaining solar panels. The project is only scheduled to train five locals for a limited amount of time and the stakeholders have suggested a wider much wider range of training that is expected to exceed the allocated time for training as well as the number of persons that is expected to exceed the number of persons that the project has the capacity to train. However, the Department has offered general training for groups under the project Due to the Information Day as well as the installation of solar panels during school hours and public clinic hours, it is expected that nurses and teachers will become knowledgeable in understanding any defects that may come with the installation of the solar panels and should be able to report such defects to the Ministry of Public Works for the clinics and to a private maintenance company for the private schools
Reallocation of budgetary savings	Stakeholders working within government health facilities expressed concern that budgetary savings by government would not be reallocated/ redound to the benefit of health clinics. However, the bill is being paid by all citizens as citizens pay taxes. The Government is doing the reallocation in the capital cost of the project which should have a payback rated of a few years. So there will not be any paybacks for some time) They also indicated that citizens are dis-incentivized in switching to solar panels given current APUA standards, which allow them to only utilize solar energy in their own private homes during the off-grid/ evening periods. While these may be considered as outside the remit of the current project, the DOE should bear these in mind for future negotiations/ projects.
Infrastructural Concerns regarding Roofs	At least one stakeholder noted that the roof of her clinic could not support solar panels. The project coordinator advised that feasibility assessments

Stakeholder Input and Concerns	Options for incorporating into Project Design
	would be carried out prior to the installation of solar panels and where necessary, solar panels will be ground mounted.

15.2. ENGAGEMENT AND COMMUNICATION PLAN

Community resistance to redevelopment projects can slow them down or prematurely kill them. On the other side of the coin, fear of opposition can push development efforts away before they even get started. Winning over sceptical residents can appear a daunting task, but it is one worth making, and early and consistent stakeholder engagement is a critical component of project success.

Table 9: Step-by-step process for conducting community consultations

Step 1. Plan and organize Commit **to considering the results of the consultation in the decision–making process. Consultations should only be done if there is a reasonable chance that they will affect the outcome of a decision. Consultations should not be undertaken to convince stakeholders that a particular course of action is the right one.**	• **Identify and map stakeholders by importance and influence relative to the project** • **The consultation plan should be approved before starting the consultations** • **Consultations should be planned thoroughly with considerations of the key decisions for which input is sought, the methods to be used to obtain this input, the resources needed, identification of participants, schedules and plans for evaluation of the consultation**
Step 2. Conduct the consultations Accountability **refers to the roles and responsibilities during the consultation process.**	• Define the roles and responsibilities of all involved beforehand.
Step 3. Follow-up Transparency **requires that the consultations be documented and the outcomes distributed appropriately in a timely fashion.**	• Document the following: Input that is given at key decision points; statements of the decisions taken; a list of participants; the issues on which the consultation was based; a summary of views, important comments, criticisms and suggestions; specific responses to significant issues

Continuous stakeholder engagement throughout the project cycle is important to bringing about behavioural change in tandem with projects interventions. Stakeholder engagement being conducted on a continuous sustained basis allows for insight into the social consequences of the project, an appropriate gauge on the expectations that stakeholders have of the project; identification and analysis of social, political, environmental, economic contexts in the target

area; and the determination of their appropriate responses and strategies for mitigation of conflict.

Figure 14: Women's Organizations in Antigua and Barbuda, identified by the Directorate of Gender Affairs

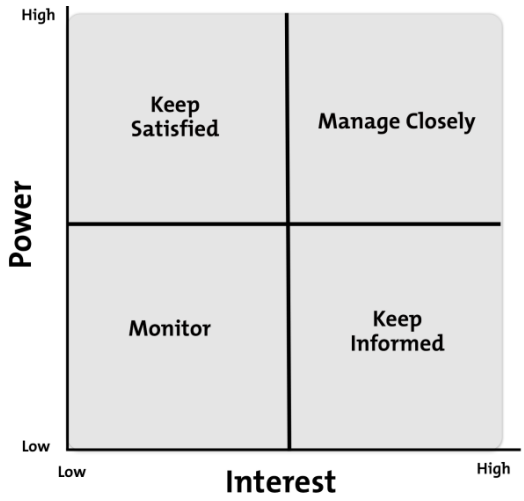
Source: https://genderaffairs.gov.ag/uploads/1494248893ANTIGUA%20&%20BARBUDA%20CEDAW%20REPORT.compressed.pdf

Concrete steps and requirements should be in place to ensure the heads of the HIV groups, specially abled and other key groups are involved in the project meetings since they are mentioned and again as a risk mitigation strategy. Youth is also mentioned but for them to really benefit from the training, the groups and places they frequent must have information disseminated to them in a timely manner for possible involvement through the work of the contractors. This is a mitigation against theft and for ongoing maintenance since there is local ownership and buying once the youth is included and involved in the installation process where knowledge and awareness will take place and green jobs provided. Churches can serve as entities for the dissemination of information for increasing public awareness creating the local ownership and buy in for this project. Stakeholders for this project are mapped below and it is recommended that the project provided targeted outreach to these stakeholders.

Power Interest Grid

Guiding questions for: ***Opinion, interests, feelings, discourse, information etc about the ecosystem service and the change in question.***
• What financial/ emotional or other interest does this group have with regard to the ecosystem service and the changes necessary for its maintenance/enhancement?

Figure 15: Guidelines for identifying stakeholder groups and guiding project engagement



- How well informed are they on the issue?
- What is their current opinion on the issue? Discourse (ie the economy is most important)? Is it based on good information?
- Who influences their opinions, and whose opinions do they influence?
- If they are not in quadrants B or D (high interest), how can you increase their interest?
- If their support in unlikely, how can you manage their indifference or opposition? (is it important to do so?)

The key person responsible for implementation will be the Department of Environment's **Public Awareness and Community Liaison Unit within the Project Management Unit of the Department of Environment**. This stakeholder engagement plan is a living document and will be updated during project implementation.

Table 10: Stakeholder engagement plan for the GCF BUILD

Type	Stakeholder	Position in Power / Interest Grid[92]	Opinion, interests, feelings, discourse, information etc about the project change in question	How can they help in making the necessary change happen? (Concretely, what can they do?)	How should they be reached?
Government	**Ministry of Education**	Keep Satisfied	Interest in the intervention and endorsement of the project; usually understaffed and unable to fully participate	Integrating climate proofing into curricula	Technical Advisory Committee (TAC)
	Ministry of Health & Environment	Keep Satisfied	Interest in the intervention and endorsement of the project; usually understaffed and unable to fully participate	Environmental Management Systems to support energy efficiency Operations and maintenance	Technical Advisory Committee (TAC)
	Ministry of Works & Housing	Keep Satisfied	Interest in the intervention and endorsement of the project; usually understaffed and unable to fully participate	Operations and maintenance	Technical Advisory Committee (TAC)
	Ministry of Energy	Keep Satisfied	Interest in the intervention and endorsement of the project; usually understaffed and unable to fully participate	Scaling-up project interventions to all facilities nation-wide	Technical Advisory Committee (TAC)
	APUA	Manage Closely	Generally not supportive of grid-interactive system installations; however APUA Management has shown high commitment to supporting the project; the PMU should maintain positive collaboration	Project Engineer has been assigned from APUA Additional support to installations and commissioning	Technical Advisory Committee (TAC) Monthly Project Implementation Unit (PIU) meetings

[92] Manage Closely (high power, high interest); Keep Satisfied (high power, low interest); Keep Informed (low power, high interest); Monitor (low power, low interest)

	NODS	Keep Satisfied	Interest in the intervention and endorsement of the project; usually understaffed and unable to fully participate	Disaster preparedness and recovery Certification of hurricane shelters	Technical Advisory Committee (TAC)
	Barbuda Council	Keep Satisfied	Interest in the intervention and endorsement of the project; usually understaffed and unable to fully participate	Oversee works done on selected buildings in Barbuda	Technical Advisory Committee (TAC) Monthly Project Implementation Unit
Local Organizations	**Beneficiary schools and clinics**	Keep Informed	Generally interested but the project needs to empower and structure ownership	Information Day All aspects of the project	Small grant to host Information Day
	Antigua and Barbuda Waste Recycling Company	Keep Informed	Supportive; organization faces financial difficulties so would expect payment for assistance	Ensure proper disposal of waste panels and batteries	Feris 562 - 6038 720 - 3574
	E-waste recycling	Keep Informed	Collects and processes e-waste in Antigua and Barbuda	Ensure proper disposal of waste panels and batteries	Emailing list (268) 776-8453 recycle@antiguabarbudaewastecenter.org
	Zero Waste Antigua Barbuda	Keep Informed	Recently formed NGO, several very active members; likely to support project interventions	Could assist with identifying solar and battery waste management options	Elliot Lincoln
	A&B Training School	Keep Informed	Interest in the intervention and activities; usually teachers are busy but if they see the benefits they may be interested in closer collaboration	Facilitate vocational training of PV technicians, energy efficiency and wind technicians	Technical Evaluation Committee (TEC)
	Bendals Community Group	Keep Informed	Supportive; an active community group with capacity to support implementation, O&M, and other training	Benefit from training with Bendals Clinic RE installation and post-O&M	Emailing list Linley Winter linleywint@yahoo.com
	A&B Association for Persons with Disabilities	Keep Informed	Early adopted of Solar PV and very experienced with lessons learned; the association received a GEF SGP to install solar PV and build a hydroponics setup	Benefit from experience and training; specialized training for special needs populations	Invite to Information Day Bernard Warner President

	Women Against Rape	Keep Informed	Generally supportive; national non–governmental organization formed in response to the unprecedented reported number of rape cases in Antigua and Barbuda in 2007	Demonstrate benefits to women of installation stable energy sources and mini-grids	Emailing list Alexandrina Wong
	Red Cross Red Crescent	Keep Informed	Supportive, would like to learn more	Experienced in deploying new technology through community networks	Invite to Information Day Adolph Audain adolpha@email.com
Local Private Sector	**Antigua & Barbuda Institute of Architects**	Keep Informed	Supportive; sceptical of working with Government in general due to pace of implementation	Infrastructural works	Emailing list ial@candw.ag +1-268-562-2770
Regional Organizations	**Caribbean HIV AIDS Alliance**	Keep Informed	Likely to be interested in the impact of an energy project on the health sector	Could be an avenue for scaling up lessons learned for RE systems with batteries for all clinics in the Caribbean	Disseminate lessons learned
	Caribbean Policy Development Center	Keep Informed	Likely to be interested; lessons learned from capacity building and multi-sector partnerships	Could be an avenue for scaling up lessons learned for RE systems with batteries for all clinics in the Caribbean	Disseminate lessons learned
	CANARI	Keep Informed	Sustainable energy is one of CANARI's focus areas; likely to be interested to learn from experiences	Could be an avenue for scaling up lessons learned for RE systems with batteries for all clinics in the Caribbean	Disseminate lessons learned

Information regarding the GCF as well as the DOE Complaints/Grievance Mechanism will be disseminated to all stakeholders above via:

- Electronically sharing a one-page procure and link
- Verbally informing participants at each workshop/event/information day related to project activities
- The video on accessing the DOE Complaints Mechanism can be screened at appropriate info-sessions: https://environment.gov.ag/contact

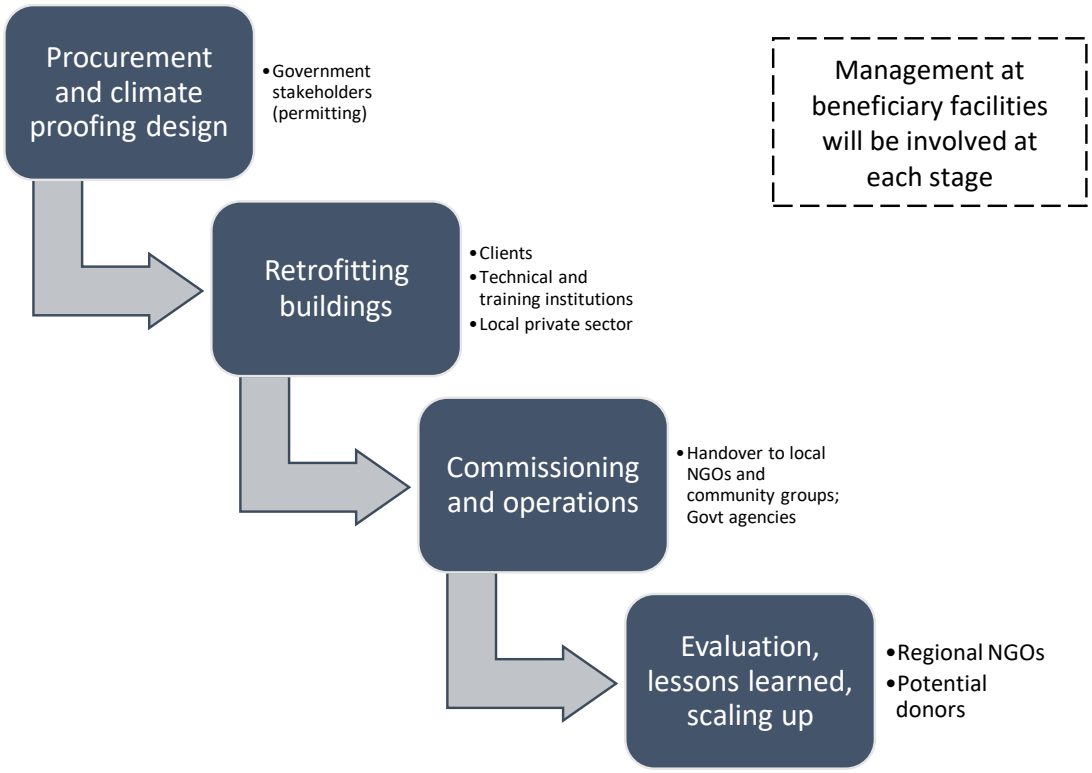


Figure 16. Summary of project delivery process and the main stakeholders to engage at each step

16. ANNEX VI – SENSITIZATION WORKSHOP FOR PROJECT MANAGEMENT UNIT DOE STAFF

A four-week workshop was held at the Department of Environment in February 2018 with PMU staff to sensitize staff of Environmental and Social Safeguards, managing interactions with diverse stakeholders, and building and managing productive and supportive relationships.

Social-Emotional Learning Facilitation

SELF ADULT PROGRAMME: LEVEL 1

The **Social-Emotional Learning Facilitation (SELF) Adult Level 1 Programme** provides participants with the skills and knowledge necessary to understand and manage their emotions, thoughts and behaviours; establish and maintain positive peer, client, professional, and community relationships; and make effective decisions.

The SELF-Adult Level 1 Programme is a series of three introductory-level workshops. Each one runs for 75-minutes once per week for a three-week duration. The workshops focus on emotional awareness, coping skills, stress management, and peer/community building.

SELF-Adult Level 1 is recommended for:

- Vulnerable and marginalized individuals and groups;
- First responders, community outreach professionals, front line staff;
- Team leaders who train or advise staff or volunteers;
- Teachers and healthcare professionals;
- Employees, managers, and general staff members; and
- Community groups and agencies.

Agenda and Learning Objectives

Coping Styles: Understanding and Mastering Your Emotions and Stress Responses

Week 1, 75-minutes

This workshop introduces participants to a three-step framework for understanding their stress responses and techniques to master them. It includes: understanding the nature of coping styles, positive focusing, and self-management proficiencies. Participants will learn skills through lectures and experiential exercises.

Goal

To assist individuals in mastering emotional awareness for personal and professional success.

Objectives

At the end of the session, participants will be able to:

- recognise their emotional responses to stress and challenges;
- apply effective emotional-regulation techniques; and
- better manage their emotions, stress, and challenges.

Social-Emotional Learning Facilitation

Emotional Self-Management: Building Effective Skills for Resilience

Week 2, 75-minutes

Participants will gain skills to effectively recognise the difference between unhealthy and healthy coping styles for better self-regulation and self-management. Workshop includes techniques for greater self-awareness and self-mastery. Participants will learn skills through presentations, experiential exercises, and a variety of learning materials.

Goal

To assist individuals in mastering healthy coping skills for wellbeing and personal, professional, and community success.

Objectives

At the end of the session participants will be able to:

- identify unhealthy coping styles;
- develop healthy coping skills; and
- retrain their brain to manage emotional challenges more effectively for improved personal, professional, and community wellbeing.

Peer/Client/Community Dynamics: Identifying and Managing Emotional Triggers

Week 3, 75-minutes

In this workshop, participants will gain greater understanding of emotional triggers and how to deal with them for improved peer, client, professional, and community relationships. This includes techniques for managing emotional triggers and integrating this knowledge into individual, client, network, organizational, and community levels. A mix of presentations and interpersonal exercises will be used for instruction and learning.

Goal

To assist individuals in implementing effective skills for improved interpersonal and intrapersonal relations.

Objectives

At the end of the session, participants will be able to:

- understand triggers that cause conflict with others;
- effectively manage triggers for greater self-management and positive peer relationships; and
- reduce professional stress, increase personal calm, and improve relationships with others.

Social-Emotional Learning Facilitation

Facilitator's Bio

Dr. Nicola Bird is Director of Integrated Health Outreach (IHO) a non-profit organization that implements and facilitates preventive mental, behavioural, and social healthcare and wellbeing through programmes, research, and education. Dr. Bird is an Antiguan psychotherapist who lives between Toronto, Canada and Antigua. She developed the Social-Emotional Learning Facilitation (SELF) Programmes for children, youth, and adults that are being successfully implemented in Antigua and Barbuda.