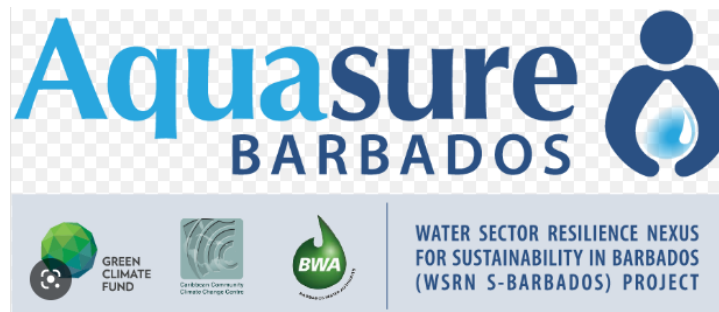


Barbados Water Authority

PROJECT MANAGEMENT OFFICE (PMO)



BRIEF ON WATER SECTOR RESILIENCE NEXUS FOR SUSTAINABILITY BARBADOS – GREEN CLIMATE FUND



WATER SECTOR RESILIENCE NEXUS FOR SUSTAINABILITY - BARBADOS GREEN CLIMATE FUND – FUNDING PROPOSAL FP 060

PROJECT SUMMARY

PROJECT DETAILS ¹	
Project Title	Water Sector Resilience Nexus for Sustainability in Barbados
Financial Entity/Fund	Green Climate Fund (GCF)
Funding Mechanism	Grant + Co-Financing
Project Finances	Grant: BBD 55,210,020 (61.07%) Co-financing: BBD 35,200,000 (38.93%) Total Project Value: BBD 90,410,020
Access Modality	Payments from grant direct to consultants/contractors (through the Accredited Entity)
Executing Entity	Grant: Caribbean Community Climate Change Centre + Barbados Water Authority Co-Financing: Barbados Water Authority
Anticipated Project Duration	Start Date: 1 st February 2019 End Date: 1 st May 2024
Project Financial Responsibilities	Grant: Caribbean Community Climate Change Centre (CCCCC) Abu Dhabi Fund for Development - United Arab Emirates Ministry of Foreign Affairs Co-Financing: Barbados Water Authority (BWA) Caribbean Development Bank (reported as a separate project) European Investment Bank and Corporación Andina de Fomento (to be reported as a separate project) Inter- American Development Bank
Project Coordination	Co-financing (internal execution): BWA Project Coordinator: Mr. Erskine Alleyne Grant (external lead): CCCCC project team: Mr. Nichols/ Dr. Cain/ Dr. Elon Cadogan
Capital Allocation²	2019: BBD 18,512,980 2020: BBD 22,117,660 2021: BBD 7,303,060 2022: BBD 2,184,360 2023: BBD 1,654,740 2024: BBD 437,220
Spent Resources (Project)³	Execution Status: Grant Funds: BD \$32,197,317.44 or 54% of total grant funds(Stage III: Execution) Co-Financing: BD 41,264,252.56 out of BD \$34,848,000.00 or 118% (up to April 30, 2023)

¹ All values shown are exclusive of any local taxes, for example Value Added Tax (VAT)

² Please see individual co-financing projects for individual capital allocations.

³ This Report only provides information on the Grant portion spent on the project. Please refer to other project reports for co-financing spent

DESCRIPTION OF THE PROJECT

PROJECT PURPOSE

The main objectives of the projects are to:

- Build greater resilience to extreme storm events and drought conditions by utilizing cleaner energy sources, decentralising water storage, promote rainwater harvesting at the household and community level, and improve the efficiency with which rainwater runoff replenish aquifers in Barbados.
- Further advance adaptation and mitigation initiatives in the water sector of Barbados by redirecting and mobilising local funds through a revolving adaptation fund.
- Reduce the greenhouse gas emissions intensity of water provision by integrating renewable energy with back-up natural gas turbines and sustainable Water Loss Reduction (WLR) initiatives.
- Contribute to capacity building via knowledge sharing and lessons learnt platforms within communities, educational organizations, private sector, civil society, BWA and the Government of Barbados to manage and monitor water resources.
- Support the review and development of a legislative framework to supports climate smart development and water sector resilience. 6. collate and disseminate lessons learnt for use in developing further adaptation and mitigation initiatives and raising public awareness about climate change, water conservation, recycle and reuse, the revolving adaptation fund, Green Climate Fund and in general this project.

PROJECT ACTIVITIES

Component 1: To reduce the greenhouse gas emissions intensity of water provision by integrating renewable energy with back-up natural gas turbines and sustainable Water Loss Reduction (WLR) initiatives.

1. Installation of 6.5MW of renewable energy through
 - a. Installation of 2MW of solar PV at Belle Plantation
 - b. Installation of 2MW of Micro-turbine facility at Belle Plantation with flexibility to be installed at multiple sites as necessary and based on available infrastructure
 - c. Installation of 2MW of solar PV at Hampton Plantation
 - d. Installation of an additional 0.5MW of solar PV at Bowmanston

Component 2: To further advance adaptation and mitigation initiatives in the water sector of Barbados by redirecting and mobilising local funds through a revolving adaptation fund.

1. Revolving adaptation facility fund – charter and manual development along with implementation of the same.

Component 3: To build greater resilience to extreme storm events and drought conditions by utilizing cleaner energy sources, de-centralising water storage, promote rainwater

harvesting at the household and community level, and improve the efficiency with which rainwater runoff replenish aquifers in Barbados.

1. The procurement of five (5) 1,500 gallon water tankers and 5,000 gallon tank and tractor unit by the BWA.
2. The re-implementation of the Personal Tank Programme to complete the installation of 1,500 total systems at residences identified under the Needs Assessment consultancy.
3. Installation of 200 Rainwater Harvesting Systems
4. The installation of de-centralised storage for the Queen Elizabeth Hospital and the start of the same for 9 Polyclinics and Schools to be identified
5. The Development of a real-time Decision Making Tool (SCADA Upgrade)
6. Retro-fitting of suck wells for increased re-charge of aquifers across the island.
7. The development of a hydro-geological (groundwater) model

Component 4: To contribute to capacity building via knowledge sharing and lessons learnt platforms within communities, educational organizations, private sector, civil society, BWA and the Government of Barbados to manage and monitor water resources.

1. Gender Certification of 500 BWA employees
2. Training in ISO 45001 – occupational Health and Safety for 500 BWA employees
3. Communications and marketing strategy along with products such as a website to facilitate access to project information
4. Implementation of Communications and Marketing Strategy
5. To support the review and development of a legislative framework to support climate smart development and water sector resilience.
6. To collate and disseminate lessons learnt for use in developing further adaptation and mitigation initiatives and raising public awareness about climate change, water conservation, recycle and reuse, the revolving adaptation fund, GCF and in general this project.
7. Knowledge management consultancy with University of South Florida

PROJECT BENEFITS

The below table lists the benefits by sectors

Sector	Benefit
General Population Government of Barbados	More reliable availability of potable water to the public (improved water and food security). Greater awareness about the effects of climate variability and change by the population of Barbados and the wider Caribbean. Installation of 4.5 MW of PV panels at the Belle, Hampton and Bowmanston to potentially save BBD 489,000 per year in foreign currency. Expected total number of direct and indirect beneficiaries & Number of beneficiaries relative to total population, disaggregated by gender. Direct Beneficiaries: Total no.: 189, 002 (66.3%) ⁴ Gender disaggregation: Males: 90, 532 (31.7%), Females: 98, 470 (34.6%) Indirect Beneficiaries: Total no.: 284 996 (100%) Gender disaggregation: Males: 136, 498 (47.9%), Females: 138, 498 (52.1%)
Environment and Energy	Reduced greenhouse gas emissions and the intensity of greenhouse gas emissions in the provision of water. Swift and immediate adaptation and mitigation actions by mobilising localised funds for climate action.
Water and Tourism	Improved legislative environment that supports climate smart development and water sector resilience.
CARICOM	Scalable and replicable in other Caribbean Countries.

⁴ This value includes all the residents benefitting from the Belle, Hampton and Bowmanston areas, as well as the 1,300 vulnerable households, hospitals, polyclinics, community centres, and schools.

PROJECT STATUS – MAY 2023

Description	Company (ies)	Project Status	Activities
Component 1: To reduce the greenhouse gas emissions intensity of water provision by integrating renewable energy with back-up natural gas turbines and sustainable Water Loss Reduction (WLR) initiatives.			
Installation of 2MW of solar PV at Belle Plantation	DCH Solargiga GmbH (Germany)	On Hold	Pending Planning Approval – EIA Townhall Public Consultation Scheduled for June 7, 2023
Installation of 2MW of Micro-turbine facility at Belle Plantation		In Progress	Equipment Received in February 2023. Civil Works Preparation of Foundation in progress Consultations with NPC in progress
Installation of 2MW of solar PV at Hampton Plantation		Not Started	BWAPMO working towards Planning Approval
Installation of an additional 0.5MW of solar PV at Bowmanston		In Progress	Expected Completion – August 2023
Component 2: To further advance adaptation and mitigation initiatives in the water sector of Barbados by redirecting and mobilising local funds through a revolving adaptation fund.(RAFF)			
Charter and manual development	USAID Consultant	Completed	Completed in Draft in December 2021. Adopted by BWA Board of Directors in December 2022.
Implementation of the RAFF	Fund Access	In Progress	Development of Mechanism for operation in progress
Component 3: To build greater resilience to extreme storm events and drought conditions by utilizing cleaner energy sources, de-centralising water storage, promote rainwater harvesting at the household and community level, and improve the efficiency with which rainwater runoff replenish aquifers in Barbados.			
The procurement of five (5) 1,500 gallon water tankers and 5,000 gallon tank and tractor unit by the BWA.			
Needs Assessment for The re-implementation of the Personal Tank Programme and Rainwater Harvesting systems	Integrated Sustainability (Canada)	Completed	
Installation of 1,500 personal tank systems and 800 Rainwater Harvesting Systems for vulnerable	• Supply of Materials and Equipment –	In Progress	Approximately 53% completed with installations across the island.

Description	Company (ies)	Project Status	Activities
households, polyclinics, schools and community centres.	Rotoplastics Barbados Ltd. • Installation works – Innovative Plumbing Solutions Caribbean Inc.		
The installation of de-centralised storage for the Queen Elizabeth Hospital	Design & Supervision Consultant – Teknik Structures	Procurement in Progress	Civil and Installation works contractor procurement approaching completion
The Development of a real-time Decision Making Tool (SCADA Upgrade)	SUEZ (Spain)	Upgrade of Operating System Completed	Extension of contract in progress for additional works in progress
Retro-fitting of suck wells for increased re-charge of aquifers across the island:	Consultant – CERMES, UWI – Cave Hill Civil Works – to be determined	Needs Assessment Completed	Procurement of Civil works contractor to start in June 2023.
The development of a hydro-geological (groundwater) model	Consultant to be procured	Procurement in Progress	
Component 4: To contribute to capacity building via knowledge sharing and lessons learnt platforms within communities, educational organizations, private sector, civil society, BWA and the Government of Barbados to manage and monitor water resources.			
Gender Certification of 500 BWA employees	Institute of Gender Development Studies (IGDS) of the University of the West Indies	95% Completed	Refresher course to be completed prior to December 2023.
Training in ISO 45001 – occupational Health and Safety for BWA employees	QSSI (Jamaica)	Completed	268 BWA employees trained
Communications and marketing strategy along with products such as a website to facilitate access to project information and Implementation of	Herald Media Inc.	Completed	

Description	Company (ies)	Project Status	Activities
Communications and Marketing Strategy			
Stakeholder Engagement Consultancy - To support the review and development of a legislative framework to support climate smart development and water sector resilience.	Not Assigned	Procurement of consultant in progress	
To collate and disseminate lessons learnt for use in developing further adaptation and mitigation initiatives and raising public awareness about climate change, water conservation, recycle and reuse, the revolving adaptation fund, GCF and in general this project. Knowledge management consultancy.	University of South Florida	In Progress until end of Project	
Public Relations Outreach for Personal Tank and Rainwater Harvesting Systems	Haigh Communications Inc.	In Progress	Expected completion in June/ July 2023.

Appendix 1- PHOTOGRAPHS OF PROJECT ACTIVITIES

COMPONENT 1: SOLAR PV AND MICROTURBINE INSTALLATIONS



Figure 1- Co-financing Solar PV system completed and connected in March 2020 at Bowmanston funded by a grant from the United Arab Emirates



Figure 2 - Natural Gas Micro-turbine delivered to Belle Stock yard



Figure 3 - Lands at Belle Plantation where 2MW Solar PV to be installed

Adaptation Initiatives

SOLAR PHOTOVOLTAIC INSTALLATIONS AT HOMES

RAINWATER HARVESTING RETENTION POND AT LEARS PLANTATION AGRICULTURAL SMALL FARMERS PROJECT

DRIP IRRIGATION SYSTEMS FOR AGRICULTURE

POTABLE WATER AND RAINWATER HARVESTING SYSTEMS

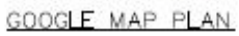
WATER SAVING DEVICES

AQUAPONICS FOR SMALL FARMING

Aquasure BARBADOS

WATER SECTOR RESILIENCE ACTION PLAN FOR SUSTAINABILITY IN BARBADOS (SWAN 1 BARBADOS) PROJECT

Figure 4- Suggested Adaptation Initiatives to be funded by the RAFF in Component 2



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Figure 6- existing 50,000 gallon tank to be replicated at Queen Elizabeth Hospital



3 – SCADA Progress



PERSPECTIVE MODULE – MOBILE APP
(We will show it in runtime)



WSRN S-BARBADOS PROJECT

12 | BWA SCADA migration



Figure 7 - Upgraded BWA SCADA System in Operation - Also accessible by mobile device





Figure 10 - one of 5 x 1,500 gallon water tankers procured



Figure 11- Gender & Infrastructure Certification in progress



Figure 12 - Presentations made to raise Project Profile at COP27 - Egypt