

TERMS OF REFERENCE

Revision Barbados Water Authority Non-Revenue Water Reduction Strategy and its alignment with the American Water Works Association and International Water Association guidelines and deliverables for the Water Sector Resilience Nexus for Sustainability in Barbados (WSRN S-Barbados)”

I. BACKGROUND

Beneficiary country

Barbados, like many small island developing states (SIDS), cannot ignore the overwhelming impact of climate change and the need to engage in adaptive and mitigation strategies to slow or retreat the deleterious effects climate change is having on our land and its development.

Current State of Affairs

This consultancy is related to the conditional approval, by the board of directors of the Green Climate Fund (GCF), associated with the project titled, “Water Sector Resilience Nexus for Sustainability in Barbados (WSRN S-Barbados)”. This project was developed through a collaboration between the Government of Barbados, Barbados Water Authority (BWA) and the Caribbean Community Climate Change Center (CCCCC). However, prior to project implementation, a revision of the BWA’s Non-Revenue Water (NRW) Reduction Strategy must be completed and presented to the GCF for final approval. The NRW revision is expected to follow the International Water Association (IWA) and the American Water Works Association (AWWA) standards. The present Terms of Reference (ToR) is for the revision of the BWA’s NRW strategy to ensure it encompasses IWA and AWWA standards.

WSRN S-Barbados Project Brief

Water Sector Resilience Nexus for Sustainability in Barbados (WSRN S-Barbados) was conditionally approved at the 19th sitting of the GCF board and is expected to commence implementation in September 2018. The idea underpinning WSRN S-Barbados is heighten awareness of the water cycle and climate change impacts threatening the island’s drinking water supply in the Barbados’ society, create resilience to severe weather impacts, reduce greenhouse gas emissions, reduce consumption, and promote appropriate uses of diverse water sources and legislation to support climate smart development and water sector resilience.

The WSRN S-Barbados objectives 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.
- 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 support climate smart development and water sector resilience.
- 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.

Although the project is cross-cutting, addressing several vulnerabilities of the Barbados water sector and the Barbados Water Authority (BWA) operations, an up-to-date Non-Revenue Water (NRW) strategy is needed. This is the primary focus of this consultancy.

As part of efforts to curb NRW on the island, the BWA recently: (i) replaced 49 km of mains, (ii) completed installation of smart water meters across the island, (iii) created a centralized management information system (MIS) for customer and financial information, (iv) installed SCADA systems at their facilities. Replacement of their leaking reservoirs is ongoing. Public education and outreach on new meters has resulted in many persons addressing leaky pipes and toilets in their homes. Unfortunately, the distribution network has pipes dating back to the 1850's, resulting in a high rate of pipe bursting, 2.4/km. BWA's NRW level estimated for the entire island is 43% of potable water supplied with 7% commercial losses and 36% real losses¹.

While the BWA's NRW approach is comprehensive and addresses the various aspects provided by IWA/AWWA guidance documents (AWWA, 2003; 2012), studies have emphasized that they prioritize replacement of mains while still addressing other activities to reduce NRW. The majority of the NRW activities supported through this WSRN project will be financed through BWA funds.

II. OBJECTIVE OF CONSULTANCY

The main objective of this consultancy is to review and revise the BWA's current NRW strategy, as necessary, to ensure that the strategy is: (a) **robust** and aligns with all sections of the IWA/AWWA standards; (b) **comprehensive** - addressing all shortcomings, and includes recommendations on efficient activities/actions, projected cost and implementation timelines to achieve the strategy; (c) **consistent** with the current operating capacity at the BWA and projected expansion and development plans aimed at satisfying increased demands in the water sector.

III. SPECIFIC TASKS AND RESPONSIBILITIES

The specific tasks to be conducted by the Consultant in revising and updating BWA's Non-Revenue Water Reduction Strategy must include:

- a. **Task 1:** Review of documentation including but not limited to:
 - i. Revised Barbados Water Authority Non-Revenue Water Reduction Strategy.
 - ii. Project documents, including past, ongoing and pending implementation by the BWA.
 - iii. American Water Works Association (AWWA) and International Water Association (IWA) guidelines and GCF related templates and guidelines.

¹ Stantec (2016) Consulting, Water Supply Upgrade and Development Project (WSUDP) Feasibility Study Final Report prepared by Stantec Consulting International LLC, February 29th, 2016.

- iv. GCF Secretariat’s and Independent Technical Advisor Panel’s (iTAP) Review of the funding proposal titled, “Water Sector Resilience Nexus for Sustainability in Barbados (WSRN S-Barbados)” and the associated recommendations and conditionality.
- b. **Task 2:** Participate in Inception Meeting and throughout the course of this Consultancy, consult and engage with Core Project Team and other major Stakeholders including:
- i. Barbados Water Authority (BWA)
 - ii. Ministry of Agriculture Food Fisheries and Water Resource Management
 - iii. Caribbean Community Climate Change Centre (CCCCC)
 - iv. University of the West Indies (UWI)
 - v. University of South Florida (USF)
- c. **Task 3:** Source and analyze additional data/information including:
- i. Existing primary data (survey and customer data) that the BWA might possess.
 - ii. Existing secondary data such as studies on Non-Revenue Water in Barbados and the wider Caribbean.
- d. **Task 4:** Produce deliverables outlined in Section IV below and present the findings of the draft report to stakeholders by virtual means and incorporate the verbal and written feedback from stakeholders into the “**Final Barbados Water Authority Non-Revenue Water Reduction Strategy**”.

IV. DELIVERABLES

The main deliverables of this consultancy include:

1. **Inception Report**, to be submitted following an inception meeting with core project team held within first week of contract execution; identifying *inter alia* additional data required, stakeholders to be consulted and issues to be discussed.
2. **A Draft Report titled, “Updated Barbados Water Authority Non-Revenue Water Reduction Strategy”**. This report must include:
 - a. Best practices of water audits and NRW programs in accordance with the American Water Works Association (AWWA) and International Water Association (IWA) guidelines.
 - b. Revision and Updates to the Non-Revenue Water Reduction Strategy and its alignment with water audits and NRW programs in accordance with the American Water Works Association and International Water Association guidelines.
 - c. Actions that align the Non-Revenue Water Reduction Strategy with the relevant deliverables for the project proposal, “Water Sector Resilience Nexus for Sustainability in Barbados (WSRN S-Barbados)”.
 - d. A conclusion highlighting how the BWA’s Non-Revenue Water Reduction Strategy aligns with best practices from the American Water Works Association (AWWA) and International Water Association (IWA) guidelines and deliverables for the Water Sector Resilience Nexus for Sustainability in Barbados (WSRN S-Barbados).

- e. An action plan for implementation the Non-Revenue Water Reduction Strategy, considering the impending implementation of the Water Sector Resilience Nexus for Sustainability in Barbados (WSRN S-Barbados), that includes budget and timelines for the recommended actions.
- 3. A Presentation of the Draft Report** to the core project team and other major stakeholders, which could include the GCF.
- 4. A Final Report titled, “Final Barbados Water Authority Non-Revenue Water Reduction Strategy”.** This report must incorporate:
- a. Feedback for project core team and other stakeholders.
 - b. Any other updates deem necessary to the Draft Report.
 - c. An executive summary that highlights the most important findings (maximum 2 pages).

V. OBLIGATIONS OF THE CORE TEAM

To aid the execution of this consultancy the project core team (CCCCC, BWA, UWI, and USF) will provide the following:

- a. Provide the Consultant with the proposal entitled “Water Sector Resilience Nexus for Sustainability in Barbados (WSRN S-Barbados).”
- b. Provide the Consultant with a document entitled “Revised Barbados Water Authority Non-Revenue Water Reduction Strategy.”
- c. Provide the Consultant with any documents requested that are readily available and accessible for sharing.
- d. Facilitate any meetings/site visits if requested by the consultant (consultant would include costs in her/his budget).
- e. Organize conference call meetings (weekly) between the consultant and the project core team (CCCCC, BWA, UWI, and USF) to address any questions or concerns and to provide updates about progress made on the study.
- f. Review the draft “*Updated Barbados Water Authority Non-Revenue Water Reduction Strategy*” within a week of its submission, providing feedback to the consultant.
- g. Organize a meeting for the project results to be presented to stakeholders.

VI. LOCATION AND DURATION OF ASSIGNMENT

The consultant is expected to work from his/her home base. If an international or regional consultant is selected, he/she is expected to travel to Barbados for at least a week (one (1) trip to Barbados) for consultations and data capture. *The estimated duration of this assignment is 8 weeks, commencing June 18, 2018 and ending August 10, 2018.*

VII. MANAGEMENT ARRANGEMENT

The consultancy will be commissioned by the CCCCC. The Consultant will report to will report to the Head, Programme Development and Management Unit, CCCCC or his designated representative, on contractual and administrative matters. Other members of the project core team from USF, UWI, and BWA will provide additional technical advice and inputs, overall coordination and oversight for this study. The Consultant will liaise with personnel from the project core team but will ultimately report to CCCCC.

The consultancy will be guided by the following timeframe and payment schedule for each deliverable.

Deliverables	Timeframe	Payment Schedule
1. Inception Report	1 Week after contract signing	20% upon contract signature and approval of inception report.
2. Draft Report	6 weeks after contract signing	50% upon submission and presentation draft Updated Barbados Water Authority Non-Revenue Water Reduction Strategy.
3. Presentation of Draft Report		
4. Final Report	8 weeks after contract signing	30% upon submission and approval of the Final Barbados Water Authority Non-Revenue Water Reduction Strategy.

VIII. QUALIFICATIONS AND KEY EXPERTISE

The assignment is to be undertaken by a qualified Individual consultant (supported by Sub-consultants, as necessary), with citizenship or legal residence status in the USA, selected CARICOM Member States or other developing countries, eligible for consideration under GeoCode 937 USAID CCAP Funding stipulations.

The Consultant should possess general experience and proven track-record in the development of Non-Revenue Water Strategy. Applicants will be evaluated and consultant selected based on the following qualifications and experience:

- At minimum, Master’s degree, preferably in the environmental field, economics, water resource management or related field.
- Working knowledge of American Water Works Association (AWWA) and International Water Association (IWA) guidelines.
- At least 5 years **general** experience in the water sector in the Caribbean with an understanding of Non-Revenue Water in Caribbean island nations.
- At least 3 years **specific** experience in the field of Non-Revenue Water (NRW) with strong track record of preparing high-level documents and reports on NRW.