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Working with water

Groundwater monitoring for mapping aquifers in Belize as a tool for climate change adaptation planning

Stakeholder working group description



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1 Introduction

1.1 Project summary

In Belize, 56% of the population lives in rural areas where groundwater is a vital source for fresh water and represents almost 95 per cent of the fresh water supply.

Groundwater is also used as a source of drinking water in the cities of the Corozal, Orange Walk, Cayo and Toledo Districts and in some rural areas of Toledo and Cayo. However, the existing aquifers and their annual recharge rate have not been quantified.

Increase in demand for fresh water resulting from increasing population, greater economic activity and agricultural expansion are threatening the quality and availability of fresh water. Each year during low rainy seasons exists the possibility of droughts due to low recharge of aquifers.

Transboundary aspects and distribution of population are other factors that affect the water sector. For example, central and northern regions (Orange Walk and Corozal) have much larger populations and higher agriculture zones for water intensive crops, but less water resources.

Although there is a need for groundwater information across the country, the priority area includes the New River watershed.

The Nationally Determined Contribution (2022)¹ indicated water resource assessment (especially groundwater) as part of the main actions to be implemented to build resilience.

The results of the prioritization of adaptation technology factsheets for the Water Sector documented in the technologies needs assessment (TNA) for adaptation (2017)² include:

- Drought Monitoring System for Northern Belize with Specific Focus on Groundwater Resources;
- Water Efficient Fixtures and Appliances;
- An Integrated Management Strategy for Water Safety for Eight Rural Water Supply Systems in Belize.

The National Hydrological Service (NHS) is leading a process for building an inventory of existing data on groundwater. The objective is to identify and homogenize information that is currently available but spread among different agencies and institutions, and their various departments.

Requests have been made from the executive level of the Ministry (responsible for the NHS) to other ministries for sharing of relevant groundwater data. However, this is still a work in progress. Additionally, the Ministry of Rural Transformation has indicated that they do not geo-reference their wells.

Following the foreseen adaptation actions in the NDC and the TNA for Adaptation for the water sector, the National Climate Change Office of the Ministry of Sustainable Development, Climate Change, and Disaster Risk Management, and the National Hydrological Service (NHS) is implementing a project to develop a Groundwater Monitoring System for the New River Watershed.

¹ Belize's Nationally Determined Contribution, 2022
<https://unfccc.int/sites/default/files/NDC/2022-06/Belize%20Updated%20NDC.pdf>

² Technology Needs Assessment for Adaptation, 2017
https://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TNA_key_doc/3db7d7bbba4c4deebecbc11fd24fb67d/5331353e87a0488e861d1fe6aca1b747.pdf

1.2 About this report

The purpose of this report is to describe the key project stakeholders and organisations that have formed the Stakeholder Working Group (SWG). Other relevant stakeholders may be identified during the project execution. In this case, the additional information will be added to an updated version of this report.

2 Stakeholder Working Group Description

The SWG consists of representatives of 10 organisations, taking account of gender balance and an adequate representation of sectoral interests and vulnerable groups. The SWG has been agreed to and formalised by the National Climate Change Office and the National Hydrological Service.

The SWG will provide technical oversight and high-level guidance at each stage of the assignment. The SWG is expected to make sound decisions on some key aspects of the technical assistance. These would be the identification of available information (Output 3), definition of the monitoring area, objectives, needs, the selection of technologies to collect (Output 4), analyse and store data on a regular basis, effective management of the monitoring system to be developed, and the training of the official representatives of Belize to the groundwater monitoring system (Output 5).

Table 2.1 presents a list of the members of the SWG and their agency's primary function, the agency focal point and agency representative serving on the committee. The first meeting of the SWG (the Inception meeting) was held in Orange Walk (Belize) on November 16, 2022. The Ministry of Economic Development was identified as an appropriate member of the SWG during this meeting and has been subsequently added to the SWG composition in this report. Table 2.1 identifies the SWG member institutions and representatives.

Table 2.1: Stakeholder map for Belize

No.	Stakeholder	Primary function / role	Agency Focal Point Name and Position	Agency Representative on the SWG Name and Email Address
1	National Hydrological Service (NHS)-Chair	The National Hydrological Service is responsible for the sustainable management of water resources to meet the economic, environmental, and social needs of Belize.	Mrs Tenniferle Hendy, Principal Hydrologist. Ms. Rhona Lopez Data Analyst.	Mrs. Tenniferle Hendy principal.hydrologist@naturalresources.gov.bz Ms. Rhona Lopez hydro.analyst@naturalresources.gov.bz
2	National Climate Change Office (NCCO)	The National Climate Change Office is responsible for the coordination of Belize's national climate Change policies and action such as the Nationally Determined Contributions and the National Climate Change Policy for Belize.	Dr. Lennox Gladden, Chief Climate Change Office. Ms. Gina Young, NDC Coordinator.	Dr. Lennox Gladden coord.cc@environment.gov.bz Ms. Gina Young ginayoung06@gmail.com
3	Department of the Environment (DOE)	The Department of the Environment enforces the Environmental Protection Act which grants regulatory and enforcement authority for the prevention and control of environmental pollution, conservation, and management of natural resources.	Edgar Ek, Deputy Chief Environmental Officer. Leonides Sosa, Environmental Officer.	Mr. Edgar Ek- Deputy Chief Environmental Officer deputy@environment.gov.bz Mr. Leonides Sosa projects@environment.gov.bz
4	Ministry of Agriculture, Food Security, and Enterprise- Extension service (MAFS&E)	• The MAFS&E provides an environment that is conducive to increase in production and promotes investment in the sector. It also encourages private sector involvement in agribusiness enterprises.	Mr. Clifford Martinez Chief Extension Officer.	Mr. Clifford Martinez clifford.martinez@agriculture.gov.bz

No.	Stakeholder	Primary function / role	Agency Focal Point Name and Position	Agency Representative on the SWG Name and Email Address
5	Department of Rural Transformation (DRT)	The Department of Rural Transformation's portfolio includes rural development and rural water supply. The Department also ensures a sustained strategy to improve the quality of life of the low-income rural population by guaranteeing that the rural communities have access to safe and healthy water sources.	Ms. Elsa Cardinez Coordinator of Rural Transformation.	Ms. Elsa Cardinez Coord.Rural.Dev@labour.gov.bz
6	Forest Department (FD)	The Forest Department oversees the sustainable management of Belize's Forest resources including wild species.	Ms. Minerva Gonzalez, Forest Ranger.	Ms. Minerva Gonzalez GonzalezMI@gobmail.gov.bz
7	Belize Water Services Limited (BWSL)	The Belize Water Services Limited delivers cost-effective and sustainable supply of high-quality water and wastewater services to improve the lives of consumers. The Water Service is regulated by the Public Utilities Commission (PUC).	Mr. Hugo Rancharan, Water and Wastewater Quality Compliance Manager. Mr. Ervin Flores, Resident Consultant Engineer.	Mr. Hugo Rancharan hugo.rancharan@bwsl.com.bz Mr. Ervin Flores ervin.flores@bwsl.com.bz
8	Ministry of Economic Development (MED)	The Ministry of Economic Development leads in formulating and recommending national development policies, strategies, and programmes to promote macroeconomic stability, sustainable socioeconomic development and the reduction of poverty. The Ministry is the National Designated Authority to the GCF, the National Authorizing Office of the EU, and interfaces with International Financial Institutions and Multilateral Development Banks.	Mr. Leroy Martinez Economist, GCF Focal Point.	Mr. Leroy Martinez leroy.martinez@med.gov.bz
9	Private sector- Belize Sugarcane Industry-ASR Group	The Private Sector represents private sector companies or groups with business enterprises directly or indirectly dependent on the availability of adequate water resources.	Mr. Adrian Zetina Sustainable Agriculture Lead.	Mr. Adrian Zetina adrian.zetina@asr-group.com

No.	Stakeholder	Primary function / role	Agency Focal Point Name and Position	Agency Representative on the SWG Name and Email Address
10	Women Group MAMAS Group- Orange Walk	MAMAS Group is committed to empowering women and children to be self-sufficient in their daily lives. Women are advocate for the protection of citizen rights and sustainable management of resources. Women are also recognized as the care providers within most households. Women also empower women and children to be self-sufficient in their daily lives.	Ms. Ophelia Novelo Coordinator.	Ophelia Novelo mamasgroupow@yahoo.com

Appendix

A Terms of Reference SWG

Groundwater monitoring for mapping aquifers in Belize as a tool for climate change adaptation planning

DRAFT Terms of Reference

Stakeholder Working Group

Background

In Belize, 56% of the population lives in rural areas where groundwater is a vital source for fresh water and represents almost 95 per cent of the fresh water supply. Groundwater is also used as a source of drinking water in the cities of the Corozal, Orange Walk, Cayo and Toledo Districts and in some rural areas of Toledo and Cayo. However, the existing aquifers and their annual recharge rate have not been quantified.

Increase in demand for fresh water resulting from increasing population, greater economic activity and agricultural expansion are threatening the quality and availability of fresh water. Each year during low rainy seasons exists the possibility of droughts due to low recharge of aquifers.

Transboundary aspects and distribution of population are other factors that affect the water sector. For example, central and northern regions (Orange Walk and Corozal) have much larger populations and higher agriculture zones for water intensive crops, but less water resources. Although there is a need for groundwater information across the country, the priority area includes the New River watershed. The Nationally Determined Contribution (2022)³ indicated water resource assessment (especially groundwater) as part of the main actions to be implemented to build resilience.

The results of the prioritization of adaptation technology factsheets for the Water Sector documented in the technologies needs assessment (TNA) for adaptation (2017) include:

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- Water Efficient Fixtures and Appliances;
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³ Belize's Nationally Determined Contribution, 2022
<https://unfccc.int/sites/default/files/NDC/2022-06/Belize%20Updated%20NDC.pdf>

ministries for sharing of relevant groundwater data. However, this is still a work in progress. Additionally, the Ministry of Rural Transformation has indicated that they do not geo-reference their wells.

Following the foreseen adaptation actions in the NDC and the TNA for Adaptation for the water sector, the National Climate Change Office of the Ministry of Sustainable Development, Climate Change, and Disaster Risk Management, and the National Hydrological Service (NHS) is implementing a project to develop a Groundwater Monitoring System for the New River Watershed.

Composition

The SWG consists of representatives of 10 organisations, taking account of gender balance and an adequate representation of sectoral interests and vulnerable groups. The SWG has been agreed to and formalised by the National Climate Change Office and the National Hydrology Service.

The Table below presents a list of the members of the SWG and their agency's primary function, the agency focal point and agency representative serving on the committee.

No	Stakeholder	Primary function / role	Agency Focal Point Name and Position
1	National Hydrological Service (NHS) (Chair)	The National Hydrological Service is responsible for the sustainable management of water resources to meet the economic, environmental, and social needs of Belize.	Tennielle Hendy, Principal Hydrologist Rhona Lopez, Data Analyst
2	National Climate Change Office (NCCO)	The National Climate Change Office is responsible for the coordination of Belize's national climate Change policies and action such as the Nationally Determined Contributions and the National Climate Change Policy for Belize.	Dr Lennox Gladden, Chief Climate Change Officer
3	Department of the Environment (DOE)	The Department of the Environment enforces the Environmental Protection Act which grants regulatory and enforcement authority for the prevention and control of environmental pollution, conservation, and management of natural resources.	Edgar Ek, Deputy Chief Environmental Officer Leonides Sosa, Environmental Officer

No	Stakeholder	Primary function / role	Agency Focal Point Name and Position
4	Ministry of Agriculture, Food Security, and Enterprise-Extension service (MOA)	The MAFS&E provides an environment that is conducive to increase in production and promotes investment in the sector. It also encourages private sector involvement in agribusiness enterprises.	Clifford Martinez, Chief Extension Officer
5	Department of Rural Transformation (DRF)	The Department of Rural Transformation's portfolio includes rural development and rural water supply. The Department also ensures a sustained strategy to improve the quality of life of the low-income rural population by guaranteeing that the rural communities have access to safe and healthy water sources.	Elsa Cardinez, Coordinator of Rural Transformation
6	Forest Department (FD)	The Forest Department oversees the sustainable management of Belize's Forest resources including wild species.	Minerva Gonzalez, Forest Ranger
7	Belize Water Services Limited (BWSL)	The Belize Water Services Limited delivers cost-effective and sustainable supply of high-quality water and wastewater services to improve the lives of consumers. The Water Service is regulated by the Public Utilities Commission (PUC).	Hugo Ranchoran, Water and Wastewater Quality Compliance Manager Ervin Flores, Resident Consultant Engineer
8	Ministry of Economic Development (MED)	The Ministry of Economic Development leads in formulating and recommending national development policies, strategies and programmes to promote macroeconomic stability, sustainable socioeconomic development and the reduction of poverty. The Ministry is the National Designated Authority to the GCF, the National Authorizing Office of the EU, and interfaces with International Financial Institutions and Multilateral Development Banks.	Leroy Martinez Economist, GCF Focal Point

No	Stakeholder	Primary function / role	Agency Focal Point Name and Position
9	Private sector- Belize Sugarcane Industry-ASR Group (BSI)	The Private Sector represents private sector companies or groups with business enterprises directly or indirectly dependent on the availability of adequate water resources.	Adrian Zetina, Sustainable Agriculture Lead
10	Women Group MAMAS Group- Orange Walk	MAMAS Group is committed at empowering women and children to be self-sufficient in their daily lives. Women are advocate for the protection of citizen rights and sustainable management of resources. Women are also recognized as the care providers within most households. Women also empower women and children to be self-sufficient in their daily lives.	Ms. Ophelia Novelo Coordinator

Function of the SWG

The SWG will provide technical oversight and high-level guidance at each stage of the assignment. The SWG is expected to make sound decisions on some key aspects of the technical assistance. These would be the identification of available information (Output 3), definition of the monitoring area, objectives, needs, the selection of technologies to collect (Output 4), analyse and store data on a regular basis, effective management of the monitoring system to be developed, and the training of the official representatives of Belize to the groundwater monitoring system (Output 5).

Responsibilities of the SWG:

- Facilitate where possible, the sharing of relevant data and information pertinent to the implementation of the ground water monitoring system;
- Review and comment on draft deliverables submitted to the SWG;
- Attend and participate in periodic SWG meetings (in person and / or virtual);
- Ensure that strategies, mechanisms, and recommended actions are in line with the government priorities including Horizon 2030, National Determined Contribution, Plan Belize Medium Term Strategy, Environmental Protection Act, and other national sector plans, policies and strategies;
- Review findings and identify broad themes, potential and actual conflicts, and information gaps;
- Provide advice on key factors to be considered for the development of the monitoring system.

1 Chair

2 The National Hydrological Service shall serve as chair of the SWG.

3 Alternate

4 Each organization shall appoint one alternate with expertise and or experience in the required discipline required for the SWG.

5 Quorum Requirements

At minimum five Organisations, inclusive of the chair is required for quorum to be established.

6 Frequency of Meetings

The SWG shall convene for progress and deliverable review on a quarterly basis (every three months) and may meet more often when required. It is anticipated that these meetings will take place in February 2023, May 2023 and August 2023 and will include presentation from the consultants on progress and planned activities as well as seeking feedback from the SWG on specific aspects relevant to the project. The agenda and any supporting documents will be provided in advance of the meetings. The chair of the SWG may establish sub-committees to deal with specific tasks or needs.

The consultant team may request bilateral meetings with members of the SWG as needed in order to identify and obtain datasets and resolve questions which arise during the project.

Participation of SWG Members

If a member of the SWG misses two (2) consecutive meeting where his/her expertise is required, without a valid reason, a formal letter will be sent by the Chair requesting a replacement. In the event that this is not possible, the other SWG Members can/will be asked to make suggestions as it relates to a possible replacement.

Secretariat Function

The project team will issue meeting invites and agendas, coordinate meetings, produce meeting minutes. The project team will be supported by the NCCO and NHS in following up with SWG members to maximise SWG attendance at meetings and in facilitating timely review and comment on deliverables.

Documents will be made available to the SWG members at least one week (five working days) before meetings.



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