

The triangular cooperation model under the United Nations framework is replicable and sustainable, and led to the launch of a China–Ethiopia/Sri Lanka triangular cooperation project on renewable energy technology transfer. The project is funded by the Ministry of Commerce of China and Ethiopia and Sri Lanka equally. The project aims to create a sustainable, accessible and cleaner energy supply for Ethiopia and Sri Lanka, especially for the agroindustry sector. The project is currently being implemented and will see biogas, solar and biomass technologies from China being demonstrated in Ethiopia and Sri Lanka. The experience accumulated during the Ghana/Zambia project will be important for the success of this project. The Technology Transfer South–South Cooperation Centre, the think tank, the appropriate sustainable development technology catalogue, as well as administrative measures, will provide support to the implementation of the Ethiopia/Sri Lanka project. Cooperation through international organizations and multilateral mechanisms such as the United Nations is creating a new model of government-led and expert-supported assistance. This model of triangular cooperation can be adapted to benefit other country settings.

3.1.11. Improving water supply management in Grenada through a geographical information system-based monitoring and control system for water loss reduction

Participating country: Grenada

Partners: Wood Public Limited Company, GISCAD Ltd., Grenada Water Stakeholder Platform

Start of technology uptake process: 2017

Climate technology: GIS and web-based GIS data mapping platform

Contribution to NDC implementation: Improved water resource management

Further information:

CTCN technical assistance: <https://www.ctc-n.org/technical-assistance/projects/improvement-water-supply-management-grenada-through-gis-based>.

Climate technology: GIS and web-based GIS data mapping platform to reduce water loss through better leakage management control and faster detection and repair of pipe systems

Uptake of the climate technology: As a SIDS, Grenada is highly vulnerable to hurricanes, storms and flooding caused by climate change. Such events have led to damage to key infrastructure, including in the water sector. In addition, climate change is aggravating water scarcity problems, with increasing average temperatures, more erratic rainfall, more frequent heavy rainfall events, saltwater intrusion in groundwater owing to sea level rise and more severe droughts. The country has repeatedly experienced major droughts, during which the production capacity of the domestic water supply systems was reduced by up to 75%. An assessment of the United Nations Economic Commission for Latin America and the Caribbean found that the country's water demand could exceed its water supply as early as 2025. Tackling water loss is therefore critical to enabling the country to better adapt to climate change and climate variability.

GIS modelling and data analysis can increase efficiency in water service management and delivery, data processing, calculations, reporting and decision-making, thus creating a powerful platform for water loss management interventions. NAWASA identified GIS-based monitoring and control approaches as a suitable management tool to reduce water loss across the country. Through CTCN technical assistance, the Climate Technology Network member Wood Public Limited Company and the Caribbean GIS solution provider GISCAD Ltd. supported NAWASA to establish in-house GIS structures and procedures, build capacity for data management and system integration, and apply GIS technology in pilot district metered areas. First, Wood Public Limited Company and GISCAD Ltd. reviewed and refined the available data sets, before training NAWASA staff on the use of new GIS-based data collection tools and on the detailed mapping and remapping of the pipeline distribution network in two pilot zones, which more than doubled the recorded pipe network length. Then, joint work was undertaken to digitize meter readings and locations and workflows for the leak detection crew and for the capture of materials used to improve inventory management. Finally, the new data sets were integrated in a web-based GIS mapping platform to visualize the findings and achievements.

The CTCN technical assistance also used South–South cooperation as an approach for effective knowledge transfer by facilitating a study tour of NAWASA staff to Trinidad and Tobago and a virtual exchange with multiple Caribbean water agencies to share experiences in the use of GIS-based technologies for water management. The work under the CTCN technical assistance programme served as an important contribution to the approval of the Climate Resilient Water Sector in Grenada project, funded by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection under the International Climate Initiative, the GCF

and the Government of Grenada, to comprehensively mainstream and implement climate resilience throughout Grenada's national water sector. The Climate Resilient Water Sector in Grenada project is being delivered by NAWASA in partnership with the Government of Grenada, the Grenada Development Bank and GIZ from 2019 to 2025 and enables the further deployment of GIS-based technology in the country.²⁷

Gender-responsiveness: The CTCN technical assistance was designed to ensure that all project activities were inclusive and enabled engagement from all relevant NAWASA staff regardless of gender, age or sexuality. Under the subsequent Climate Resilient Water Sector in Grenada project, a gender action and monitoring plan was developed to ensure gender equality in the implementation of project activities. The gender action plan is based on a gender analysis conducted in the design phase of the project, supplemented with data gathered through consultations with project stakeholders. Specific approaches for ensuring gender equality and gender-responsive approaches are detailed for each of the project's five components.²⁸

Financing: The introduction of the GIS-based monitoring and control systems for water loss reduction was supported by technical assistance provided by the CTCN with Wood Public Limited Company as the implementing partner, building on previous work in this area undertaken by GIZ with financial support provided by Germany. The CTCN technical assistance in turn helped Grenada to secure a USD 45 million GCF project that more broadly aims to create a climate-resilient water sector in the country through increased freshwater availability and demand reduction measures.

Contribution to NDC implementation: Grenada's intended NDC, first NDC and second NDC all address aspects of improved water resource management. These aspects are further detailed in Grenada's National Water Policy and the country's NAP, which has as one of its priorities to ensure sustained water availability and establish a climate-responsive water governance structure.

Other impacts and results: Following the CTCN technical assistance, under the C-CREWS project nine young people were trained on and got hands-on experience with the use of GIS-based mapping technology,²⁹ which allowed them to pursue careers in this area of work. In addition, the C-CREWS project illustrated the applicability of technology through the introduction of handheld measuring devices, which resulted in other departments now also using handheld devices to increase the efficiency of their daily operations.

Challenges and lessons learned: Lessons learned include the importance of engaging all stakeholders, from the design phase to the implementation and monitoring and evaluation of a project. There were a few assumptions made on behalf of the end users and the results show that the assumptions were not precise. The end users did not feel a sense of ownership of the project and were at first hesitant in the implementation phase.

Long-term sustainability, replicability and potential for scaling up: The long-term sustainability of the introduction of the GIS-based technology will be ensured through the economic benefits that NAWASA will gain from increased revenue to compensate for the additional costs of data management and processing. The C-CREWS project shows that the approach used for the introduction of GIS-based technology is replicable in other parts of the country, with its use now being scaled up from the initial two pilot areas to eventually covering all three islands that Grenada comprises.

27 See <https://www.greenclimate.fund/project/fp059>.

28 See <https://www.giz.de/en/downloads/giz2017-en-gcf-gender-action-plan.pdf>.

29 See <https://www.youtube.com/watch?v=UcYwZKB9qDE>.