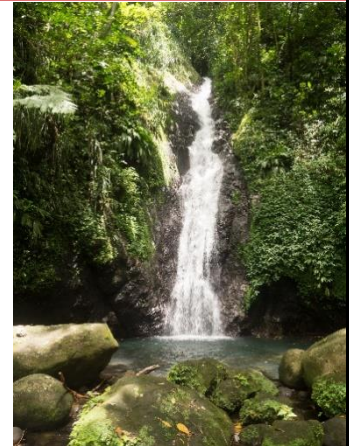
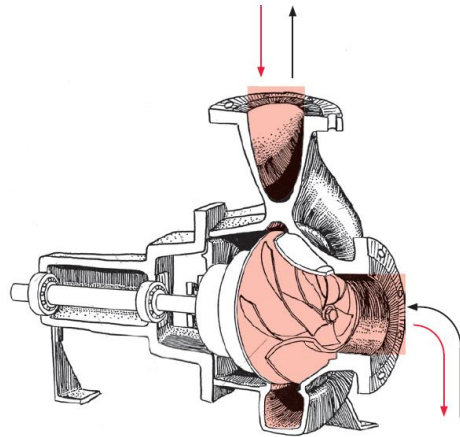




G-Hydro

Innovative electricity production in Grenada through In-Conduit Hydropower



Challenge

As most Small Island Developing States, Grenada is almost fully dependent on fossil fuel imports. Grenada is committed to reduce its CO₂ footprint by increasing the share of renewable energy in its energy mix. Thanks to Grenada's topography, hydro-energy is a renewable energy source that is found in the country's water supply system and that is currently not utilized. At the same time, the efficient management of water resources is becoming increasingly important within the context of decreasing available water due to the effects of climate change. It is therefore important for the National Water and Sewage Authority (NAWASA) to work with highly efficient systems when it comes to water and energy management.

Objective

The objective of G-Hydro is to initiate an innovative pilot project on so-called In-conduit Hydropower, which is based on the installation of small hydro turbines in the portable water distribution system in order to produce electricity by using the energy available in the pipelines.

Partners

The pilot project "In-conduit hydropower for Grenada's portable water system" (G-Hydro) is jointly implemented by the Ministry of Infrastructure Development, Public Utilities, Energy, Transport and Implementation, the National Water and Sewage Authority (NAWASA) and the Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ). G-Hydro is part of the project "Reform of the Electricity Sector to Support Climate Policy in Grenada" (G-RESCP), which is funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) as part of the International Climate Initiative (IKI).



Approach

G-Hydro focusses on Grenada's hydropower potential within the portable water distribution system. Dams and water treatment plants that supply the people of Grenada with fresh water are predominantly located in the mountainous inner part of the island, while the main consumption areas are located close to the coast on considerably lower elevation. As the water flows downwards through pipes, it carries energy in form of water pressure that can be used to produce electricity.

Currently, pressure reduction valves (PRV) are used to decrease the water pressure to the required level, for the customers use. This also helps to reduce water losses and prevent pipes from bursting. However, these PRV's do not convert the energy into usable electricity.

G-Hydro's approach is to reduce the pressure in the pipes and at the same time produce electricity. The PRV's will be replaced by small hydro turbines which will power a generator that will produce electricity. The electricity will be sold to the local electricity utility, generating additional income for the government owned water utility NAWASA.

Utilizing the existing energy in the portable water system is a way to build and operate a small hydro power plant with no environmental impact because all the water pipes and tanks are already in place, so only minimal construction work needs to be undertaken.

Achievements

A joint task force with members from the Energy Division at the Ministry of Infrastructure Development, Public Utilities, Energy, Transport and Implementation, NAWASA, GIZ, and a consultant has been formed. Feasible sites have been identified based on topographical data, as well as water flow and water pressure measurements by NAWASA. A first technical concept for the installation has been drafted and discussed among the members of the task force. This concept confirms the technical and financial feasibility of the G-Hydro approach. Specifications for the equipment have been developed and the procurement is planned for the second quarter of 2017.

Contact

GIZ:

Dieter Rothenberger
Head of Project
Ministerial Complex, Botanical Gardens
St. George's, Grenada
Tel: + 1-473-534-8000
Email: dieter.rothenberger@giz.de

Energy Division:

Christopher Joseph
Energy Officer
Ministry of Infrastructure Development,
Public Utilities, Energy, Transport
and Implementation
St. George's, Grenada
Tel: + 1-473-435-8708
Email: krispjj@gmail.com

