Create a Sustainable, Solar-Powered Desalination and Distribution System for Anse-à-Galets on La Gonâve, Haiti

La Gonâve is a small, Haitian island lying off the coast of Haiti. It's only city, Anse-à-Galets, serves as the main port and is the closest connection to the mainland 12 miles across the ocean when crossing at the narrowest point.

While the small island is estimated to support a population of 120,000 people, this population is increasingly abandoning the unproductive mountain regions and moving nearer Anse-à-Galets. During the school year alone, many children and their caregivers move to the city for improved educational opportunities, swelling the city's population as high as 50,000.

Because of its relative isolation and the lack of natural resources, La Gonâve is considered by many to be one of the most neglected and difficult places to live in Haiti. Very little government presence can be observed and the local economy has been painfully impacted by the lack of water, electricity, infrastructure, and investment—until now.





"We are incredibly excited about this technology, as we feel that it has the ability to change life for the millions of people who live with the reality of choosing between spending nearly an entire day's pay on a bottle of water or drinking contaminated, disease-ridden water." ~ Kyle Stephan, VP of Operations, GivePower

The Forgotten Haiti & The Problem of Access to Clean Water

La Gonâve is called "The Forgotten Haiti," where three out of every four children under five years of age are malnourished and where most people have no access to safe, clean water.¹

- Haiti has the **lowest rates of access to improved water and sanitation infrastructure in the western hemisphere**.² Nearly 45% of the population lacks access to an improved water source.³
- La Gonâve is one of the poorest regions of Haiti, the most destitute country in the Americas, where the per capita income is less than \$400 and 80% of people are living under the poverty line.⁴ For comparison, in the U.S., our median per capita income is \$33,205 per year.
- Potable bottled water can be purchased at just over \$0.50 per gallon⁵—that's nearly half of their daily income.
- Because clean water is expensive and/or inaccessible, "the people of Haiti often resort to gathering water from 'garbage-filled' ravines and unclean springs to supply their households with water for their daily needs, including cooking and drinking.⁶"

Haiti currently has the highest infant mortality rate in the Western Hemisphere and **the leading cause of infant mortality and illness in the children of Haiti is contaminated water**.⁷ Indeed, **Haiti also has one of the highest incidence rates of cholera—a waterborne disease—in the world.** Almost 10,000 people have died from the disease since 2010 and more than 27,000 suspected cases have been reported so far this year, an estimated 1 in 3 of them children.⁸

The deadly impact of contaminated water usage on La Gonâve:⁹

- 1 in every 13 children die before their 5th birthday
- 3 of every 4 children under 5 are malnourished and underweight
- 2 of every 3 children are anemic
- 1 of every 3 children are infected with intestinal parasites
- Diarrhea causes more deaths than any other illness



Creating Collaborative Change: Turning the Water Problem into a Renewable Water Resource

In order to improve both water and sanitation on La Gonâve as well as increase access to and the accessibility of clean water on the island, a three-part solution is recommended that uses clean energy, draws upon local resources, and can self-sustain.

In partnership with World Hope International (WHI) and West Indies Self Help (WISH), GivePower is developing an installation in La Gonâve which would support the community in Anse-à-Galets. **The project will include a 20,000 gallon per day solar powered desalination system that would support both tap water and bottled water.**

GivePower will work with WISH to maintain the equipment and sell the water to the community at a rate that is typically equal to or lower than the current market rate. **The sale of the water allows the installation to be entirely self-sufficient**, covering the ongoing maintenance of the equipment and salaries of the local technicians and staff. **It also presents other locals with opportunities for entrepreneurship** by creating micro distribution companies that can purchase and deliver the water to people's homes.

In addition to providing safe water to the community through improved faucets, the project will likely consist of a bottling operation that will sanitize, bottle, and seal reusable 5 gallon jugs. The local community will be the primary benefactor of the water supply, while local businesses such as the nearby hospital and clinic will consume the additional capacity.



GivePower

GivePower uses solar energy to power basic necessities for communities who need it most and has provided solutions for over 300,000 people worldwide through **clean energy innovation.** Their microgrids power villages, schools, food production, wildlife conservation centers, and desalination systems.

WISH

WISH has worked with WHI for over 20 years, since a small ice plant on La Gonâve was first built by WHI and turned over to WISH. An eager and capable partner with a long local history, **WISH is managed by skilled Haitian technicians** who oversee electrical power service and water projects on the island for four decades.

Part 1: Reverse Osmosis Desalination

- Reverse osmosis removes over 99% of all dissolved solids, bacteria, and viruses.
- Reverse osmosis is the preferred treatment technology for raising the quality of water to World Health Organization standards.
- Purifying seawater allows us to tap into new water sources, reducing the reliance on scarce and contaminated freshwater sources.

Part 2: Solar Power

- Clean energy produced by a renewable resource.
- Eliminates reliance on toxic energy sources.

Part 3: Sanitation and Bottling

- Eliminates use of contaminated jugs / jerrycans.
- Ensures that the water people are consuming is safe.
- Critical to combating the spread of waterborne diseases like cholera.

A Powerful Impact

The direct and immediate impact of this project is the introduction of **a reliable clean water source that will serve the community for at least 20 years.** Additionally, the installation of this unit will **support the local economy** by hiring local contractors, operators, and delivery persons.

SOLAR

WATER

ENERGY 120kWh store

50 kW solar 6x SMA solar inve

90,000 liters water storag 75,000 liters a day capacit



Putting the Plan into Action

In order to create this self-sustaining, environmentally friendly, solar powered water desalination and distribution center, an initial monetary investment has to be made to cover upfront costs.

GivePower and WHI will split the implementation costs for launching this market-driven, community-led solution. Water matters to the people on La Gonâve, and we invite you to join us at World Hope in providing the \$285k needed for our share of this remarkable project and to invest with us in the lives and futures of the people on "The Forgotten Haiti."



"WHI is keen to partner with WISH and GivePower to deliver this project for La Gonâve. We are excited to see how clean energy and clean water delivered through a market-based approach can bring sustainable health and livelihoods *development to the people* of Anse-à-Galets in Haiti." ~ John Lyon, President and CEO, WHI

How to Partner with Us & Launch the Solar Desalination & Water Distribution Center

We are hoping to launch this center in April and are excited for the opportunity to be part of the transformation of a community through the utilization of cutting-edge technology and partnerships, and we hope that perhaps one of our partners making it possible will be you.

To partner with us on La Gonâve or to learn more about the project, you can reach out to:

- Dan Irvine, WHI Director of Strategic Engagement: <u>DanIrvine@worldhope.org</u> or 770.773.5279
- Nancy Green, WHI Director of Strategic Engagement: <u>NancyGreen@worldhope.org</u> or 703-401-5852

You can also contact our office in general at info@worldhope.org or 703-923-9414 or online at www.worldhope.org.

4. 5. 6. 7. 8. 9.

One more thing!

In collaboration with the local school teachers, a community education program will also be launched. It will teach families about the importance of consuming clean water from this new utility.

Points of Reference

- <u>http://starfysh.org/about/</u> Water, Sanitation and Hygiene in Haiti: Past, Present, and Future (<u>National Institutes of</u> 1. 2. Health) 3.
 - According to a study conducted by The Center for Human Rights and Global Justice (The Water Project) CNN
 - Robin Churchill (WISH)
 - The Water Project
 - International Action Unicef
 - All data for La Gonave is sourced from http://starfysh.org/about/