

International Action

bringing clean water to Haiti



Community-Managed Water Supply Project in the Artibonite Region

International Action's mission is to improve the health of the Haitian people by providing their communities and schools with every day access to clean, safe water. There are roughly 350,000 Haitians that currently have every day access to clean water as a result of our efforts. Below is information about our work with clean water in Haiti, the poorest country in the Western Hemisphere, and about the project that we need your support for: The Artibonite Region of Haiti Clean Water Project – PHASE II. You can also view a three minute video linked [here](#), that features Zachary Brehmer, Executive Director of International Action, talking about our work in Haiti.

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General Summary of International Action's Water Treatment System

There are 10 million people in Haiti. Almost half of the population does not have access to clean, safe water. Most Haitians gather water from community water stations by carrying five gallon buckets to and from their homes. Local water committees reach out to us if the water at these neighborhood stations is not treated.

We help these communities by installing chlorinators at neighborhood water stations, which provide communities and schools with access to clean, safe water. We build the water station if the community is in need of one.

The chlorinator is a simple, gravity-fed system (it does not need energy or fuel to operate). It costs roughly \$65 to manufacture and ship to Haiti. For a community of 3,300 people it only costs \$48 (cost of chlorine) a month to operate the chlorinator.

Local water committees are trained by our staff to adjust chlorine levels, make minor repairs, and educate their neighbors about the value of clean water. Additionally, our staff helps maintain the equipment and answers questions raised by local water committees.

International Action's Answer to Sustainability – The Chlorine Distribution System

The whole point of Chlorine Distribution System is sustainability; communities transport and deliver the chlorine they need with their own resources, making the operation of the chlorinators completely sustainable. The idea for the Chlorine Distribution System came from a series of discussions with the water committees of Port-au-Prince, Haiti.

The Chlorine Distribution System: There is a central location that houses the chlorine. The warehouse is managed by a board of elected representatives from all of the communities that are participating in the Chlorine Distribution System -- a participating community is a community that purchases chlorine from the warehouse and arranges transport of the chlorine to their water stations. These representatives set the price of chlorine per tablet above the market level to pay for the chlorine itself and a stipend for the representatives that run the sale of chlorine at the warehouse (they rotate who is working). The price of the chlorine is fair because all of the communities that have a say in the Chlorine Distribution System are also purchasing chlorine. All of the representatives have received financial management training from a Haiti financial management training firm.

The Clean Water for the Artibonite Region of Haiti Project

Background

In partnership with Sunrise Rotary, the local Rotary in Haiti and St. Anne's church from Hagerstown, Maryland, we have installed six chlorinators, water pumps (run on generators), piping systems, and water reservoirs in four communities nearby Dessalines, the center of the Artibonite region of Haiti. These systems are designed to provide 51,000 people with potable water. The most important part about this project is that the communities want their access to clean, safe water to be completely in their hands after our help with design and installation. They want a self-sustainable water treatment system. For each installation, a water committee of three members has been elected by the communities to operate, maintain and collect the local funds needed to sustain these systems.

PHASE II

The communities need our help to introduce a method for collecting neighborhood funds so the water treatment systems can be sustained long-term. This will be done through the training of the water committees and community education events, enabling questions to be answered by and as a community. There are also three communities -- Nyel, Hatte Grammont, and Fabias -- with a population of nearly 22,000 people that are in need of water treatment systems. International Action will complete an evaluation of all water treatment systems in The Clean Water for the Artibonite Region of Haiti Project a year after the installations in Nyel, Hatte Grammont, and Fabias are completed. The evaluation will gauge the structural functionality of the water treatment systems, if the water collection fund is working, and if there are any other lingering challenges that need to be addressed.

The installation of these three water treatment systems will coincide with the water committee training and community education that the four communities already with water treatment systems and the communities of Nyel, Hatte Grammont, and Fabias will receive. These trainings are vital to the long-term sustainability of the project as they will include all families, ensuring the success of neighborhood funds collection by the water committees.

Why are we equipped to undertake this project?

This is an addition to an already established project. St. Anne's Church, one of our references, is the lead partner contact for this project.

As a small NGO, our main project by far is our clean water program. We have provided nearly 350,000 Haitians with everyday access to clean, safe water using the same chlorinator and water tank system that we are using in The Clean Water for the Artibonite Region of Haiti Project. Please find below a description of this water system and a picture of the chlorinator.

International Action's main intervention is to provide Haitian communities and schools with access to clean, safe water. In some cases we install the pumps, water tanks, chlorinators, piping and taps. However, in most instances, we only install the chlorinators, as the water tanks are often already present.

The chlorinator is a simple, gravity-fed system. It costs roughly \$65 to manufacture and ship to Haiti. It uses large chlorine tablets that can treat between 2,500 and 3,500 gallons of water, depending on the desired level of chlorine residual (the amount of chlorine left in the water after initial disinfection). Each chlorinator can fit about twenty tablets and is installed on top of a water station, reservoir or tank. The water is treated when the main intake pipe feeds water into the water station.

About 5% of this water is rerouted through the chlorinator and dissolves some of the chlorine from the tablet. The highly concentrated chlorine solution then continues into the water station / reservoir and mixes with the rest of the untreated water, creating the desired level of chlorine residual. The desired level of chlorine residual (0.5 mg of chlorine per liter of water) is reached by adjusting one simple valve attached to the pipe leading up to the chlorinator, making it very easy to operate. One of the main reasons we use chlorine is the residual effect that chlorine has, as it protects the water for 2 -- 4 days from re-contamination, which is important in Haiti because of the storage practices. The presence of chlorine residual in household water supplies is our main indicator of success.



Rationale for this project proposal in the community

The communities and their long-term partner, St Anne's Church of Hagerstown, Maryland, came to us because many people in the area suffer from diarrhea and there is no form of water treatment – while well water is often safe to drink it can become contaminated when it is stored for several days after retrieval, which is the custom in many Haitian homes. For several reasons, there was no initial study done to show that the water was contaminated or that there were very high levels of diarrhea in the beneficiary communities:

A) St. Anne's church has been working with the community leaders in this region for over 10 years and they know very well what the community has and what it is lacking. They reported that there was absolutely no access to treated water in region, from either the government or other NGOs. We followed up this lead with our own investigation and found that there are no organized water treatment systems in the area, besides one government made water treatment site over one hour away by car or truck.

B) Haiti also has generally poor metrics in regard to access to clean, safe water in rural areas. According to the United States Government, as of 2012, over 50% of Haitians living in rural areas do not have access to an improved water source, meaning, most Haitians in rural areas do not have access to potable water. This has changed very little over the years, with the UN Special Envoy to Haiti stating similar figures even before the 2010 earthquake.

The Artibonite region in particular has had a great many problems in regard to water and sanitation. The 2010 cholera epidemic began in the Artibonite region -- an epidemic that has sickened roughly 700,000 Haitians and killed over 8,000 people. There are still reports of cholera every month in this region, and many cases of diarrhea, which in Haiti, is most commonly caused by waterborne disease or infection. Below you will find a quote from a late 2013 release from the Pan American Health Organization regarding cholera in Haiti – you can find the full release linked here:

“In Haiti, since the beginning of the epidemic (October 2010) and until 13 November 2013, there have been 689,448 cholera cases, of which 384,956 were hospitalized (55.8%) and 8,448 died. The cumulative case-fatality rate remains 1.2 %, with variations ranging from 4.4 %, in the department of Sud Est to 0.6 %, in Port-au-Prince. An increasing trend in cases has been noted in the last two weeks. Since the 26 October 2013 Epidemiological Update on cholera, there have been 5,363 additional cases and 87 deaths reported nationally; with all departments registering new cases.”

C) The communities needed a project that it could maintain on its own after initial installation. The most important aspect about The Clean Water for the Artibonite Region of Haiti Project is that it is community-created and eventually will be completely community-operated. The leaders in the neighborhoods came to us seeking help. They want their access to clean, safe water to be completely in their hands after our help with design and installation is finished. They want to be self-sustainable.

Evidence of the potential success of the project

There are 350,000 Haitians that have everyday access to clean, safe water because of the 48 community chlorinator water treatment systems that we have installed and helped maintain. There are also 70 schools that have water tanks and chlorinators, ensuring that children have clean, safe water while they are learning.

CNN has documented our work in Haiti on their program 'Vital Signs', linked [here](#).

Furthermore, our own study, carried out in 2011 showed that households in communities with access to a chlorinator had a much higher chance (20%-50%) of having treated water in their homes than households that were not in a community with a chlorinator.

Direct and indirect beneficiaries of this project and target outcomes

The direct beneficiaries of the three new water treatment system installations are the 22,000 people that will gain access to clean, safe water.

Furthermore, there will be 73,000 Haitians, many of them women and children, that will be part of a self-sustained clean water system (the 22,000 people in Nyel, Hatte Grammont, and Fabias, and the 51,000 people in the four communities that we have already installed water treatment systems in). This will be possible after the water fund collection, led by the water committees, is up and running.

The following three outcomes will be achieved for the 73,000 people in these seven Haitian communities after their access to clean, safe water becomes an everyday reality:

A.) Improved water quality in Nyel, Hatte Grammont, and Fabias – This will result in improved health, both immediately and long-term, for the communities involved as it will protect them from waterborne disease.

B.) Improved School Attendance – Children in Haiti miss an average of one month of school every year. The main reason is diarrhea, and one of the most common causes of diarrhea in Haiti is a lack of clean water.

C.) Reduction in Water Collection Time – Currently, most families (usually women and children) in Nyel, Hatte Grammont, and Fabias spend over one hour collecting water each day. They do this because there are so few safe water sources in their community. With these new water treatment systems, it should not take most families more than 15 minutes to collect the water they need each day. That means that each woman or child that collects water every day will have an extra 33 whole working days to spend working, pursuing their dreams or doing something they love. With 33 days, a Haitian man or woman could earn the money they need to send their kids to school or gain a professional qualification that will enable them to support their family even better.

This project will also provide 21 Haitian individuals with jobs (water committees). The committee members will each earn three times the amount of money that the average Haitian makes in a year. These are not temporary jobs; these are long-lasting, permanent jobs.

Monitoring Plan

The local Rotary (part of the community) will complete monthly evaluations of each water station/water treatment system to see how they are functioning and if the communities' fund collection is working. The local Rotary really is part of the community here. These members of the local Rotary do their best to help the communities they live in any way possible. They have been essential to the success of The Clean Water for the Artibonite Region of Haiti Project thus far and have a major role in the long-term success of the project as well (detailed later in the proposal). International Action will be called in if more technical help is needed than the local Rotary can offer. We are training the local Rotary members in basic water testing and chlorinator maintenance. Here are three activities the rotary club members will investigate every month:

Water Quality Testing: The presence of chlorine residual in household water supplies is our main indicator of success. The Rotary club member or International Action staffer will gauge the quality of the water by measuring the chlorine residual in households' water supplies. If there is 0.5 mg of chlorine per liter of water in the drinking supply it is safe to drink. One of the main reasons International Action uses chlorine is that it has a residual effect, protecting the water for 2 -- 4 days from re-contamination, which is important in Haiti because of the storage practices.

School Attendance Monitoring: The Rotary Club members will talk with teachers and review the attendance rates of the schools in the area.

Funds Collection Follow-Up: The Rotary Club members will look at the funds each community attained through fund collections and compare it to how much chlorine is being used during the corresponding month.

What is the community's investment and participation in the design, implementation and ongoing maintenance of this project?

The project was created by the community leaders. They reached out to St. Anne's Church, who in turn reached out to us. The community leaders told us what they wanted, a self-sustaining water treatment project, and we have been able to provide that. The idea for collection funds and the amount collected came from the community. Our role has been that of an advisor and facilitator. We also constructed the water treatment systems. The ongoing maintenance and operation will be run entirely by the elected community water committees and the local Rotary Club.

Please find below a list of the various Roles and Responsibilities of the difference project stakeholders:

Rotary Club

The local Rotary Club and the water committees will:

- Organize community and stakeholder meetings when necessary (International Action, St Ann/Agnes, community, etc.)
- Implement the everyday operation of the project
- Maintain the project, and prepare for inevitable repair and replacement costs of the pumps, generators and pipe valves

The local Rotary Club will take the initiative to:

- Make the collection of funds process work
- Maintain communication with the water committee on chlorine and generator fuel levels, number of users, and any maintenance or community concerns

Key Responsibilities that the Rotary Club must perform:

- Understand all aspects of project – must be able to explain project to International Action staff, St. Ann's members
- Be able to work with already present water committee or help create water committee that involves election, selection by relevant skills (technician)
- Setup and facilitate meetings with the local community to help introduce the collection of funds and their importance including:
- How much is being asked for water funds why: funds have to be a certain level or the program won't be able to continue into the future because funds are needed for chlorine, fuel, daily operation, repairs and future replacement of pump, generators and piping
- Why they are important: providing safe water so the community doesn't get sick from cholera and so their children have less likelihood of falling ill with diarrhea and stomach ailments
- Who is involved: the Rotary Club, the water committee members (with their names) with support from International Action and St. Anne's
- Work with water committees to decide on schedule of when each water committee member is operating pump and water treatment system
- Be in charge of accountability of funds management at water treatment system:
- Decide where to store funds
- Save funds for future maintenance needs (establish a reserve)

- Know, on average, the funds needed for water committee salary, gas and chlorine each month
- Identify and reach out to local plumbers/technicians who can be trained to repair the chlorinator systems, generators and pumps. NOTE: several technicians can be trained and on the list to perform those repairs
- Reach out to St Ann/Agnes or International Action if they cannot solve an issue locally or would like advice on a particular issue.
- Help water committee set up chlorine purchase and distribution

Responsibilities of International Action

-- Install water treatment systems

-- Overall technical consultant, for water treatment and community engagement

- Provide training to water committee members, local plumbers/technicians and the local Rotary on operation and maintenance of chlorinators, pipes and pumps
- Provide information on why having access to potable water is important and help participate in initial community meetings
- Be available via phone, and if absolutely necessary, in-person for technical and maintenance questions

Responsibilities of Agnes and St. Ann's

- Help facilitate coordination of project between all partners
- Participate in initial community meetings
- Be a point of communication between all parties
- Check-in with the local Rotary Club

Responsibilities of Water Committees

- Establish a schedule of when each water committee member is operating the pump, water treatment system and water station
- Fill the reservoirs
- Test the chlorine levels
- Purchase diesel and refill generators
- Collect and keep track of funds collected at their respective water stations/water treatment systems
- Identify maintenance issues and call the local Rotary for repairs

How will the ongoing financial requirements of this project be sustained without our involvement?

After these improvements are made and the people of Nyel, Hatte Grammont, and Fabias have consistent, every day access to clean, safe water, they will be able to connect with our sustainable Chlorine Distribution System. Once the three communities (plus the four already with water treatment systems) have access to the Chlorine Distribution System the people will not have to rely on hope that someone will come and help them. They will be able to ensure that they have clean, safe water on their own.

On top of connecting up with the Chlorine Distribution System, which has been covered in detail in previous questions, the ongoing costs associated with the project will be covered completely by the community-created funding structure at each of the water stations. For every five gallons of water, people will donate 3 gourdes (or \$0.06). The amount was decided upon by the community leaders after the communities themselves said they wanted a clean water program that they could eventually operate on their own. They specifically wanted a self-sustainable program because, like many communities in Haiti, they have seen many projects that disappeared once the group that created them left because they were not built to be run by the communities themselves. The communities want sustainability. To ensure this, the amount chosen allows the chance for an excess of funds of \$1192 for every station. The communities chose to donate an amount that would provide a projected excess of funds in case the water stations do not bring in the funds expected or the costs associated with operating the water stations and water treatment systems prove to be more expensive than planned.

Below you will see projections that detail how much each water treatment system should cost to run for a year as well as the amount of estimated funds each water treatment system should collect each year.

Projections:

Donated amount for water: Three Haitian Gourdes per 5 gallon of water.

Funds Donated: $1,200 \text{ Gourdes/day} \times 30 = 36,000 \text{ Gourdes/month} = \$792/\text{month}$ or $\$9,504/\text{year}$

(1 Gourde = \$.022)

Anticipated yearly cost: $\$8,311.25/\text{system}$

Anticipated yearly Haitian financial participation: $\$9,504/\text{system}$

Excess Funds for Unforeseen Costs: $\$1192.75/\text{system}$

Costs of Maintaining Systems Explained:

Operational costs for each system per year: \$8,311.25/system

- Chlorine tablets:

5 tablets/month x 12 months = 60 tablets/year

96 tablets cost \$90 or \$.9375/tablet x 60 = \$56.25/year

- Generator Fuel:

Price of diesel as of July 2014: 150 Haitian gourdes/gallon or \$3.33 US/gallon

\$3.33 x 365 days = \$1,215/year

- Residual chlorine testing kits: Donated by International Action
- Equipment Maintenance:

Pump: no maintenance needed during life expectancy of pump

Generator: The oil will be changed every 100 hours of use, and the spark plugs are about \$1.50 each. Oil is also very cheap, about \$20 a year, and assume another \$20 is needed for general maintenance, although will likely not be an issue during the first year of use as the generators are new.

- Administration

Each community water station has a committee of three people that are in charge of running the taps at the station, testing water, purchasing and refilling chlorine and fuel, maintaining equipment and collection and management of money received from water station-donated funds. The water stations are open seven days a week. There is one water committee member always on duty, meaning that each water committee member will work a full 6 to seven days a month, but they will also have to meet to talk about chlorine and fuel uses, as well as other supplies, and to check and manage the funds collected from the station. Each committee member will be paid \$20 a day for each of the six to seven days that they need to manage the site, plus an additional \$10 per month flat rate, meaning each committee member makes \$1,800 a year, or \$150 a month. The committee members will not be staffing the water stations on the weekend. Instead, there will be a rotation from the community in order to provide extra money for community members that do not have consistent work -- one person at each station making \$10 each, which is about another \$100 a month in costs per station. The average Haitian makes about \$650 a year, and this would provide them with three times that. Haitian families can have a place to live, eat well, and send their children to school for about \$50 a week, or \$200 a month.

(\$1,800 a year for each committee member = \$5,400 for the entire year for staff)

Replacement cost

- Generator

Life expectancy: 10 years. Replacement cost: \$2,000.

Reserve to be built per year: \$200/year

- Pump

Life expectancy: 3 to 4 years due to Calcium carbonate built-up. Cost: Submersible pump: \$880.
Surface pump: \$470.

Reserve to be built per year: about \$240/year