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Haiti, Water & Sanitation

Haiti: Cleaning up the Poorest Country in the Western Hemisphere

When people think of Haiti what do they think of? Is it the storms that continually batter the country or the poverty that is felt throughout the entirety of Haiti? Perhaps it's the fact that Haiti has so very little access to clean water and proper sanitation that the country's people are suffering greatly. All of these things cross our minds, but the question that needs to be asked is how can we, as a powerful and prosperous nation, help those people in need.

According to the World Bank, Haiti's population, as of 2016, is 10.85 million people. 60.9% of the population is urban and 39.1% is rural. Haiti's government is a semi-presidential republic with one president and one prime minister. The prime minister is the head of the government and the president is the head of the state, the president is elected to a five-year term and the prime minister is appointed by the president. The president and prime minister work together to govern the country. More than $\frac{2}{5}$ of the land in Haiti is under cultivation.

The average farm in Haiti is just slightly over one hectare, or 2.5 acres, compared to the size of a football field which is about 1.3 acres, that means the average farm in Haiti is almost two football fields in size. The major crops grown in Haiti are cassava, plantains, bananas, corn, yams, sweet potatoes, and rice. The major exports are oil, cocoa, coffee, mangoes, and apparel. Haiti's climate is warm, humid, and tropical with the average temperature being in the high 70's during January and February and the high 80's from July to August. Haiti is bordered by the Dominican Republic to the east, the Caribbean to the south and west, and the Atlantic Ocean to the north. Haiti is about 27,750 square miles, it is the third largest country in the Caribbean, after Cuba and the Dominican Republic. Its land is rugged and mountainous and has three main mountain ranges, the Chaine de la Selle in the south, the Massif de la Selle in the east, and the Massif de la Hotte in the west.

The typical family in Haiti is about 3.4 people (Www.unhcr.org), the homes in Haiti are made of mud walls and floors, and roofs that are thatched with local grasses or palm leaves. The use of mud for walls allows the house to be naturally insulated, keeping it cool in the summer and warm in the winter. With all of the storms and natural disasters that occur in Haiti building a home out of a natural material makes it easier and cheaper because they do not have to buy a whole lot of new materials to rebuild and repair. The typical meal consists of black-eyed peas, rice, pork, vegetables, goat, and beef. It is mostly what they can grow and raise on their farms. They typically eat two to no meals at all. The lack of adequate nutrition and proper calories is a big concern in Haiti, most of the country is malnourished, 11.6% of children under 5 years old are underweight and 1 in 14 children die before turning 5. (Meds & Foods For Kids)

Rural families get what food they can from the crops that are grown on their farms, but with poor weather conditions that can be challenging. Haiti's food is mostly imported from other countries, rice is among the top imports. More than 50% of Haiti's jobs are employed by agriculture and the average wage is about \$5.11, but three-quarters of Haitians live on less than \$2 a day and half of the population earns less than \$1 a day. (World Food Programs USA)

Haiti has the lowest rates of access to improved water and sanitation infrastructure in the western world. The rural population of Haiti struggles the most with over half, 52.4%, of the population having the inability to access clean water. (Central Intelligence Agency) Almost less than half of the population have access to improved water, that means that there are millions of people that don't get to drink clean water or sometimes any water at all. Here in the United States clean water is something we have mostly all of the time, there is always a faucet that brings water to us anytime we want it, there are filters that we can buy to make it extra clean but in Haiti, that's something that doesn't exist. The water they have either comes from a hand pump or the nearest body of water and they have to bathe in the same water they drink.

Animals use, and live in, the same water they're putting into bodies which leads to various diseases and there is no way that water tastes good. Waterborne illnesses such as typhoid, cholera, and chronic diarrhea are the cause of more than half of the deaths in the country every year (The Water Project). Only 24% of the population of Haiti has access to toilets, so they have to go to public places or the rivers and streams that is also their source of water (World Bank). 37.9% of the population has access to electricity so they don't have the facilities that we do here in the US.

The other part of the equation is sanitation, the people in Haiti have a considerable amount of access to improved water than they do to improved sanitation. Only 27.6% of the total population have access to improved sanitation practices (Central Intelligence Agency). With less than half of the population having access to better sanitation the presence of deadly diseases is not shocking. The lack of water and sanitation is also harmful to children's learning, nearly 60% of Haitian schools have no toilets and $\frac{3}{4}$ lack access to water.

In Haiti, most of the schools are private and the tuition costs can be too expensive for most families. Haiti's literacy rate is 52.9%, with only 8.6% having a secondary education (Schools for Haiti). In 2003, the average age of a kid in sixth-grade was sixteen years old (World Bank). The kids are ridden with diseases and their lives are commonly cut short. The water quality is improving, while sanitation has not seen much increase over the last few years. This could be attributed to the amount of harsh weather, poverty, and the need for relief efforts that are felt throughout the country.

Finding a solution to the tremendous problem of improved water and sanitation can, upon first thought, be challenging, but with a further look into what causes the problem and just how much it affects the

population of Haiti, the need of finding a solution becomes clearer. There are many solutions and relief projects that are currently taking place in Haiti, from the World Food Bank efforts to the church communities that send local groups. There are many factors that make finding a solution difficult, there are geological factors such as the rocks and limestone that make up and surround the island becoming contaminated by long-term sanitation.

There are ecological factors, like deforestation, soil erosion, and a hurting ecosystem. There are sociological factors, the Voodoo religion sees water as sacred and places like waterfalls and streams are viewed as sacred places because of beauty and supply. The Catholic religion sees water as sacred as well, but they connect it more closely to God because of its cleansing power. Because both of these religions see water as sacred and clean that means even if it's not visibly dirty, but still is contaminated with the multiple diseases, they will continue to use it. (Sustainable Safe Water Solutions) There are also economic factors that have to be considered when coming up with a solution, Haiti is a very poor country and most of it lives in poverty so funding for the project can be hard to find and to keep it sustainable can be hard as well because money will always be needed for repairs and expansions.

A solution to getting clean water to the people in Haiti is Solar Disinfection, which is otherwise known as the solar disinfection process. This works by using the sun to disinfect unclean water that has been put into a washed Polyethylene Terephthalate (PET) bottle and letting it sit for at least six hours in the sun. There are four parts to the solar disinfection process, first, you must use an appropriate material such as a Polyethylene terephthalate bottle, a glass bottle, or a special bag. Even though glass bottles and special bags may be used, a PET bottle is recommended because it is lightweight, doesn't break, and can be found in many places throughout the world. The bottle needs to be clear and colorless if they are heavily scratched than they will need to be replaced.

The second step is the turbidity, is the water clear or is it very foggy? This method will work better with water that has low turbidity because the sun can hit straight on to whatever bacteria is in the water, but if the water has high turbidity than the sun must clear out the fogginess of the water until it can start to really break down the viruses and diseases. This means that the effectiveness of the process will be lower. Before conducting the test, the third part to take into consideration is the cloudiness of the sky. If the sky is cloudy and the sun is having trouble shining through then instead of taking at least six hours it will take at least two consecutive days for the water to be properly disinfected.

While it is pretty easy to look at water and tell if it is cloudy or not, there is a test that you can use to figure out whether the water will need to be filtered before beginning the process or not. To test whether the water will need to be filtered the filled bottle is placed on the headline of a newspaper, looking through the neck of the bottle to the bottom of the letters cannot be seen that the water needs to be filtered because it is too turbid and can't be used. If the letters were visible then the water can be used without filtering. The fourth part is preventing further infection, the water should be kept in the bottle to prevent viruses and diseases from coming in contact with the water. If not kept in the bottle than it should be

poured directly into a cup and then drunk right away.

In a poor country, like Haiti, that wouldn't be able to afford the cost of making so many new bottles and the construction costs of the buildings that would need to be built to make the bottles, a method that can help improve the quality of water while reducing costs will help make a big change. One of the benefits of this method is that the bottles are cheap and easy to come by. The National Association for PET Container Resources (NAPCOR) estimates that 5.5 billion pounds of PET bottles and jars passed over U.S. shelves in 2006 (Live Science).

Other benefits that this method brings is that the bottles are reusable so they don't need to find a new bottle every time they want to get more water, after drinking the water that they put through solar disinfection they can simply fill it up and go through the process again. It will not only save money from not having to buy more bottles all the time, but it will also save the environment because it reduces the amount of plastic that will need to be produced and fewer bottles will be thrown out. Haiti is a country that experiences a lot of rain, so the rainwater can also be collected to use in the bottles as well.

The system is very simple, so people will be able to learn the process without a lot of professional help. It is not a perfect system however so there are a few cons when it comes to the process. Since the water has to sit in the sun for disinfection it gets warm, the process also takes time to complete so it's not attainable right away, and for the process to work efficiently it has to have a low turbidity level which can be hard to find in the water conditions that Haiti already has.

The sustainability of solar disinfection is high, because of the low cost the country won't have to spend tons of money on production materials. It does not require high levels of education so most people will be able to use it, because of Haiti's low education level it will be easier to approach the population with something that is not beyond their comprehension than the solution will be able to be sustained and encouraged for a longer period of time.

Foreign aid from the United States to Haiti is, in my opinion, very important and can be very resourceful. The United States has been one of Haiti's largest donors after a hurricane in 2010 devastated much of the country, the U.S. donated a total of \$5.1 billion dollars for the use of relief (The Borgen Project). There are people who don't think that foreign aid is something that we, as a nation, should be spending our money on. I mean, the national debt is projected to be at \$12.48 trillion dollars by the end of 2018 (US Government). If we have such a substantial debt of our own to pay off, then why are we wasting money on helping a foreign country that will probably just be struck by another hurricane?

In the United States we have a lot of our own problems to solve, i.e. the threat of war, the amount of immigration that occurs, and the unemployment rates, but providing foreign aid to Haiti and other

countries abroad can perhaps help us learn solutions to our problems here at home. Haiti has a large population, and the U.S. used to allow Haitians to come to our country with the use of a temporary visa to work as laborers, this was a source of jobs for us that proved to be beneficial on the economic side. This helped us to improve our economy while also helping the relief in Haiti.

Here in the United States, we don't manufacture most of our own products. We import things like our clothes, toys, and other items. With U.S. assistance, almost 13,000 jobs have been created in Haiti, largely in the apparel industry (U.S. Department of State). Without the use of foreign aid to countries, then we would be left without most of the clothes we wear today. If we do not lend our hands to help countries that are struggling or in need of help, then nine times out of ten we will not see the favor returned when we are the ones who are struggling.

So when people think of Haiti do they think of how we can improve the country? The people of Haiti are faced with the challenge of poor water and sanitation quality, today there is a need for change and people need a call for action. Our job is to find a way to bring clean water and sanitation to a country where that's hard to find. In the bigger picture it can seem scary to think about, solving an issue that has plagued the country for years, but if we can look at the problem as big parts of a small equation instead of small parts of a big equation then we can start to see that even the smallest of efforts can lead to an impactful change.

Bibliography

"Haiti." *World Food Program USA*, www.wfpusa.org/countries/haiti/.

"The World Factbook: HAITI." *Central Intelligence Agency*, Central Intelligence Agency, 7 Mar. 2018, www.cia.gov/library/publications/the-world-factbook/geos/ha.html.

“Malnutrition Statistics.” *Meds & Food for Kids*, 23 Apr. 2015, <https://mfkhaiti.org/malnutrition-stats/>.

“Water In Crisis - Spotlight Haiti.” *The Water Project*, <https://thewaterproject.org/water-crisis/water-in-crisis-haiti>.

“Grand Valley State University.” *Sustainable Safe Water Solutions for Haiti - Safe and Sustainable Water for Haiti - Grand Valley State University*, www.gvsu.edu/haitiwater/sustainable-safe-water-solutions-for-haiti-13.htm.

Intagliata, Christopher. “Does Recycling Plastic Cost More Than Making It?” *LiveScience*, Purch, 3 Nov. 2012, www.livescience.com/32231-does-recycling-plastic-cost-more-than-making-it.html.

“IDP Registration in Haiti Update and Analysis of the Population Remaining in IDP Sites.” *Www.unhcr.org*, Dec. 2012, www.unhcr.org/51dc0117b.pdf.

“Facts About Haiti.” *Schools for Haiti*, 2015, <https://schoolsforhaiti.com/facts-about-haiti/>.

“5 Things You Need to Know About Water in Haiti.” *World Bank*, www.worldbank.org/en/news/feature/2015/05/27/five-things-you-need-to-know-about-water-in-haiti.

“Four Things You Need to Know About Education in Haiti.” *World Bank*, www.worldbank.org/en/news/feature/2015/03/12/four-things-you-need-to-know-about-education-in-haiti.

“How the US Benefits from Foreign Aid to Haiti.” *The Borgen Project*, 20 Mar. 2018, <https://borgenproject.org/u-s-benefits-from-foreign-aid-to-haiti/>.

“Federal Debt Clock.” *US Government Healthcare Spending History with Charts - a Wwww.usgovernmentdebt.us Briefing*, www.usgovernmentdebt.us/.

“Haiti.” *U.S. Department of State*, U.S. Department of State, 16 Mar. 2018, www.state.gov/r/pa/ei/bgn/1982.htm.