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The Struggle: Water Scarcity in Haiti

More than half of the world has been hit by a horrifying earthquake and/or hurricanes. This dramatic setting has caused more damage to an economy and agriculture of a country than overpopulation ever will. One that has had a traumatic impact and it's damage is still left to be seen was the earthquake in 2010 and Hurricane Mathew in 2016 that hit Haiti. The earthquake was the strongest to ever hit the region in over 200 years, leaving over 200,000 Haitians dead and 895,000 Haitians homes destroyed. This quake caused water to be scarce within the country leaving the people to turn to alternatives to provide hydration and food for themselves. Hurricane Mathew affected about 2.1 million Haitians. Many crops, homes, and livestock were lost causing the regions' economy to suffer more than it already has.

Haiti has a population of 10.98 million last updated in 2017. 54.3 percent of the population lives in urban areas and 46 percent of the population lives in rural areas. 60 percent of the population lives in poverty trying to search for food, clean water, and a safe place to live. In urban areas those without access to a clean water source get their drinking water primarily from bottled water. Out of those who live in urban areas 66 percent has no access to improved facilities. In rural areas those without access to an improved water source gets their water from unprotected wells, rivers, and springs. 81 percent of the total population in rural areas lack access to clean water.

Agriculture serves as a major part in the Haitian economy making up "two-thirds of the labour but accounting for only about one-fourth of the GDP". There's only about a quarter of land in Haiti that is suitable for agriculture and about two quarters of land is under cultivation. Major problems that threaten Haiti's agriculture is the soil erosion, the scarcity of water, and the absence of irrigation. A factor that contributes as a major component to the regions' agriculture is the climate. Its climate is predominantly tropical, subtropical and oceanic. The climate also relates to what grows there and what the farmers tend to focus on growing. Many farmers concentrate on growing well-kept crops such as: corn, yams, sweet potatoes, bananas and plantains, and rice. One crop the country treasures is their arabica coffee which is their main cash crop. Some foods are sold along the roads and markets in rural areas helping most families get to their closest source to shop for food.

What conditions does a typical family live in? What is their normal intake of food? Majority of the families that live in Haiti all have housing in rural areas. The housing is usually around two-room dwellings that are made out of mud walls and floors and roofs. The windows are covered with wooden shutters and the home has little to no furniture. Most of these dwellings cooking areas are located outside of their homes and there is no electricity, sanitation, or piped water. Families mainly live like this because of the minimum income they receive which is approximately \$2.50-\$5.11.

Do families have access to the necessary necessities that they need? Education is a major thing in society; it also plays a major role in an economy. In Haiti, families have access to education however tuition yearly is about \$80 dollars in US money covering books, uniforms, and transportation, making education unaffordable for many. Healthcare is very poverty-stricken in Haiti. When the earthquake hit in 2010, hospitals began treating patients for free, however, due to the lack of money those free services has ended. About 24 percent of all Haitians have access to a toilet. 38.69 percent has access to electricity as reported in 2016. Mainly penniless families do not have access to telephones only wealthy families. Surprisingly, transportation is becoming more affordable for families. Some foods are sold in local markets and along roads. Now, our last and major concern in these families lives is fresh and clean water. Haitians found ways to get water but it was very dirty and unsanitary. This caused many illnesses to spread within the nation causing numerous amounts of deaths each year.

To this day, the country Haiti still struggles to find better alternatives for drinking water and sanitation systems. It has been nine years since the terrifying earthquake hit and three years since hurricane Mathew hit. The lack of sanitation and clean water as always been a large problem for Haiti for years, so the trend continues. There has been environmental issues in Haiti because of overpopulation, lack of sanitation, deforestation, and food insecurity. These are major issues within the environment because there's no management or protection for the country's natural resources. All of these things can fall back on the government system which is very different from other countries. They have a semi-presidential republic where the president is the head of state and the government. It being a very poor country there is very little the government can do, however, it could provide some aid to families that are poor or in need.

There have been many solutions that companies and organizations have thought of in order to make Haiti a safe and better environment. The organizations *The Water Project* and *Living Water Internationally* has been working together in pursuing their goal of repairing damaged wells in Haiti. They have already provided thousands of people with clean water. Passive solar disinfection is another solution that CDC has thought of to help clean the water. It was developed in the 1980s to disinfect water used for oral rehydration. Its proven to reduce any harmful bacteria in water and keep diseases caused the bacteria low. Recontamination is low because water is served and stored in the small narrow necked bottles. It is very cheap, sustainable, and simple making it a good idea to use. However, the water is warm, the people have to wait for it, and the turbidity is sensitive. There is a limited volume of water that can be treated all at once, the length of time needed to treat the water, and a large supply of clean and sustainable water bottles is needed. Another solution, ultraviolet disinfection which is very effective. The ultraviolet treatment process is an extremely quick physical process. Ultraviolet light degrades and/or modify bacteria DNA. In the UV disinfection process, water is purified as it runs through a stainless steel chamber (also called a "reactor") that contains a special UV- producing lamp. As the water flows past the lamp, the microbes in the water receive a lethal dose of UV. The water is then safe to drink. However, different organisms

require different levels of UV energy to disrupt their DNA. This energy level is known as a UV dose. The power requirements are low, only containing 200 watts of electricity and it is very sustainable. Cons of this solution: flow rates are low, it can be very complicated to install, and the bulbs require maintenance. It is also extremely expensive.

Most of these solutions can help improve the populations' living conditions. However there could also be a more effective solution that can benefit the country's economy, help the people, and Haiti's government—a dam. The government along with the help of other countries, companies, and organizations can help raise money to build the dam. First, there should be a meeting to discuss where the dam facility should be stationed and how it's going to benefit the habitat that is around it also. Second, make a blueprint on how the dam will look and include water filtration for the water to be clean. Third, map out how the water is going to get from the dam to the rural and urban areas of Haiti. Lastly, use pipes to get from the dam to the wells and homes of the families in Haiti. Community members can help build the dam, the government along with others can help fund this project, organizations can help by giving/loaning any necessary equipment and parts needed to build the dam. Other ways to fund this solution is fundraisers, charity balls, banquets, a gofundme account, and etc. The World Bank and the United Nations will help manage this project because they have been successful in improving economic issues. In order for this project to work ALL HANDS NEED TO BE ON DECK!

In conclusion, the fight for clean water is ongoing. People are immigrating from Haiti to the U.S because of the living conditions and scarcity of water. Each and everyday people are dying from diseases caused by the dirty water they intake. This is causing the population to drop dramatically. Nevertheless, with these solutions Haiti can restore its economy and produce more crops than before.

Bibliography

1. Encyclopedia Britannica, Agriculture, forestry, and fishing, *Britannica*
<https://www.britannica.com/place/Haiti/Agriculture-forestry-and-fishing>
2. Countries and their Cultures, Haiti, *Countries and their Cultures*
<https://www.everyculture.com/Ge-It/Haiti.html>
3. Haitian Appeal: Help us get clean drinking water (2018)
<http://www.aljazeera.com/news/2018/01/haitian-appeal-clean-drinking-water-180126113248044.html>
4. The Somerville Arts Council (2011) *Somerville Markets, Try This!*
<http://www.somervilleartscouncil.org/nibble/category/somervillemarkets>
5. *Sodis Safe drinking for all*
<http://www.somervilleartscouncil.org/nibble/category/somervillemarkets>
6. Water Crisis in Haiti, Katherine Sentlinger *For 1 Billion People Safe Water is Scarce*
<https://thewaterproject.org/water-crisis/water-in-crisis-haiti>
7. Centers for Disease Control and Prevention, Safe Water System. *Solar Disinfection*
<https://www.cdc.gov/safewater/solardisinfection.html>
8. How does UV Disinfection Work?, Viqua,
<https://viqua.com/water-treatment/uv-water-treatment/how-does-uv-disinfection-work/>