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Haiti, Renewable Energy

A Green Future for Haiti

In the coming decades it will become more apparent to the developing countries (like Haiti) that the issue of food security is going to become harder and harder to solve if steps are not taken now to help fix it. Haiti is a very poor country in the Caribbean that is home to almost eleven million people, and almost all the people on the island live in the same conditions. A majority of the island lives in poverty and lacks essential supplies like food and clean water. Adding to Haiti's problems, the island lies in a seismically active area and is hit by many devastating earthquakes which recently killed thousands of people in 2010. However, all of these problems can be solved with hard work and ingenuity. Renewable energy such as solar and wind could help offer a solution to Haiti's energy problem. New technologies like desalination plants, hydroponics, and battery storage, are renewable energy sources that could all help this country in need. The help of developed nations, especially the United States, will play a major role in developing Haiti's food security. In doing all of this Haiti will become a safer, greener, and happier place.

While there is definitely resources available to help improve Haiti's situation, it will take the citizens of Haiti to continue improving their own food security situations and improving their living conditions. According to Britannica.com the majority of people that live in Haiti are under the age of fifteen. The second largest group is aged fifteen to twenty-nine. This is great news for our efforts to help Haiti with its food security. This means we have a young population that is fit to work and contribute to the cause of helping feed their country. However, this young population has faced serious problems. According to sos-usa.org, "Around 100,000 Haitian children aged between 0-17 have lost parental care because of AIDS." The issue of age is not only centered on the youth. Life expectancy is also of serious concern in Haiti. According to globalissues.org, Haiti "has a healthy life expectancy of 55 years for women and 53 years for men". This low life expectancy is an example of a society in which the citizens are over worked and under fed with terrible living conditions.

The situation in Haiti does not stop at family and age problems. Issues with drinking water is in dire need of fixing. According to sos-usa.org, "access to basic services is limited: 52 percent do not have clean drinking water and 80 percent do not have proper sanitation facilities". Adding to the list of problems, the usaid.gov website states that, "still roughly 50 percent of Haiti's population is undernourished, which has been exacerbated by a longstanding drought and a devastating hurricane in 2016 that severely affected 2 million people." Haiti is among the poorest nations in the world and some of that is due to the fact that the richest citizens control the majority of Haiti's wealth. This means that the poor are cheated out of essential funds and supplies that could improve their conditions.

The solution to helping solve a lot of Haiti's problems lies within renewable and sustainable energy. The basic stepping stones of modern society lay upon a societies basic utilities. While this includes sanitation, water, and energy, these utilities hinder upon the energy produced to run them. Take for instance a water pumping station. They require massive amounts of energy to operate, and this energy mostly comes from fossil fuels due to Haiti's lack of renewable energy. Since most of Haiti is run off of fossil fuels, such as coal or oil, it is a very expensive source of energy since all of the fossil fuels have to be imported onto the island. This process is also very dirty and hazardous to the environment. Not only is it a large endeavor to import these fuels, it is also very expensive, and unsustainable. Renewable energy is the logical way to go forward with Haiti's energy needs.

The first step that would need to be taken is world governments and organizations coming together and determining what types of resources Haiti needs and what different countries can do for Haiti. Solar panels and wind turbines are both logical solutions for renewable energy. Solar and wind, while not very cheap to install, are very easy to upkeep. Either could serve as a long term fix to Haiti's power problems. Another obstacle to overcome, would be getting supplies to the island without the rich stepping in and taking them and selling or misusing them. This could be easily enforced due to the fact that it is not money being transferred, but actual physical objects. While as a global community we need to work together in helping Haiti get supplies, we must be careful not to make Haiti too reliant on foreign aid. This could be disastrous if one country suddenly pulled all of their foreign aid, and left Haiti scrambling to find the funds or other resources to fill the gap.

Solar panels would serve as an integral part in making Haiti self-sufficient. Due to their high cost and difficulty to install, they would be hard to implement. However, solar panels are not hard to upkeep and Haiti is situated in a perfect area for solar collection: the Caribbean. Solar panels do not take up much room and could be installed on roof tops to avoid taking up land for cultivation. Another added benefit for solar panels is that they last a long time and do not need to be replaced very often. In the long run, solar energy would pay for itself, unlike coal and oil which have to be continuously imported and processed by massive power plants. Solar panels would also work great for small communities in the mountainous regions of Haiti. According to usaid.gov, "only about one-quarter of the population had access to electricity prior to the 2010 earthquake, and that remains the case today." By installing solar in hard to reach areas that lack infrastructure, Haiti will be better able to develop itself from the inside and be more self-sufficient.

Another source of renewable energy that could be implemented to help with Haiti's food security is wind power. Wind power is a high cost, high yield energy source that if implemented properly would be very beneficial to Haiti. To make this option work, there would definitely need to be backing from world governments and businesses. As stated before, Haiti's population is very young and because of this the population is largely un-educated. We can assume that the people of Haiti would probably not know how to install a wind turbine. Due to these circumstances, the international community would need to establish

a group of people that are skilled enough and can donate their time to help out Haiti in installing the turbines. Along with the skilled workers to install the turbines, they would also need to obtain the supplies to put them together. The money for this could easily be obtained from international government's foreign aid budgets. Haiti would be a great place for a wind farm because it has plenty of mountainous terrain that would be perfect for electricity production.

A solution that is also making headlines recently is energy storage. Energy storage is a very new subject in the renewable energy area and if implemented could prove very beneficial to Haiti. Since solar and wind energy have to immediately be used on the grid to be useful, the problem eventually arises when there is too much energy and it is wasted since it simply cannot be used. While technically this is not renewable energy, it still helps in the process of renewable energy. Energy storage could allow the small island nation to store energy, and then release it in peak demand times. This would help prevent blackouts and help keep vital utility systems online. Without the utility systems online and working the entire island cannot function, and in turn, agriculture production could come to a halt.

The biggest question is how in the world does renewable energy positively impact food security in Haiti? One of the biggest ways renewable energy will affect the food security in Haiti is that it will allow Haiti to build desalination plants. These plants will help produce more clean water to use for irrigation in fields. This would greatly increase the country's food output. It will also allow the country to build large hydroponic facilities to grow vegetables and other crops that are vital in the country's growth and development in the area of food security and self-sufficiency.

Desalination plants are not only very large and expensive, but they also use lots and lots of energy. Due to the fact that Haiti doesn't even produce enough energy as is, adding another large drawer of energy would only add to the burden. By installing renewable energy products like wind and solar power, the country would be able to produce more energy. With more energy being produced at a more manageable price, Haiti would be able to build desalination plants to help irrigate crops and increase yield. A big question is, how many plants would need to be built to satisfy Haiti's water needs. According to water-technology.net, Tampa's desalination plant (which is the largest in the US) produces ten percent of the Tampa bay area's water. Taking this number into account, and the Tampa bay area's population which according to worldpopulationreview.com is 2.8 million, we can infer that building about 19 desalination plants could satisfy Haiti's water needs. This also takes into account that around half of Haiti's population does have access to clean water. This would come at a steep cost considering Tampa bay's desalination plant cost around one hundred and fifty million dollars to construct. This means to build nineteen desalination plants that are the same size and have the same capacity as Tampa's, would cost around 2.8 billion dollars. This would be an extremely complex and costly project requiring financial aid and resources from other countries. To make a project like this more reasonable a scaled back plan to construct a smaller amount of desalination plants with increased output would be more economically and environmentally feasible. Also, due to Haiti's mountainous terrain and a need for many pumping stations,

a plan to construct more wells in the mountainous areas would be more cost efficient than building large water pipes and pumping stations up the mountain from the desalination plants. Before using desalination plants to irrigate crops however, Haiti would first have to invest in creating the infrastructure necessary to distribute the water to its citizens who are also in need of clean drinking water. This would include underground and aboveground pipes, pumping stations, and water filtration systems to make sure the water is safe to use. Once the desalination plants are producing a steady amount of water and have begun to produce excess, then water resources could begin to be used for commercial purposes. This would ensure that Haitians always have access to clean water. To pay for these massive projects international countries and organizations like the World Bank and the United Nations could help fund these projects.

Hydroponic farms are the most logical way to increase yield per acre of land in Haiti. However, like desalination plants, hydroponic facilities require lots of energy (and lots more energy if the plants are grown inside). Hydroponic systems do require large amounts of energy, but they also produce lots and lots of food at a very rapid rate. With hydroponics, farmers in Haiti would also use less land and less precious resources like fertile dirt and water. To decrease hunger in Haiti, hydroponic systems could be implemented in remote communities throughout the country to help create efficient self-sustaining sources of fresh vegetables for the local peoples. One way of implementing this would be to use commercial hydroponic systems that are already being produced in the United States in shipping containers. These containers are easy to transport and set up. Furthermore, using hydroponic systems built within shipping containers would mean that solar panels could be installed on the roofs to help power the systems. Water could be recycled from within the system to help in using less resources. In dealing with hydroponics, we also tend to deal with genetically modified organisms or GMO's. This technology of increasing yields and creating herbicide resistant crops by modifying the genetic structure of a plant is very controversial in Haiti. After the 2010 earthquake that wreaked havoc mainly in the capital city of Port-au-Prince, the seed company Monsanto, sent in relief supplies to the farmers in the form of seeds. However, the seeds sent to the farmers were genetically modified. For this reason, the farmers in Haiti burned the seeds because they do not believe in GMO's. Due to Haiti's resistance in using GMO's, this technology that would be extremely beneficial to Haiti, would not immediately be able to be used simply because of cultural resistance. This isn't to say that in the future the farmers in Haiti could be convinced to use GMO crops.

One barrier facing Haiti in terms of foreign aid, is getting countries such as the United States to invest into a country which is notorious for corruption. Due to the mindset in America, that we have enough problems in the United States and that as a country all of our problems should be solved, before solving other peoples is a tough topic. However, we have to look towards other endeavors to understand why we should care about other countries problems. We must look at it from another perspective. If we invest in Haiti now and help prevent a large humanitarian crisis from happening, which would cause refugees to come to the United States, then time, money and lives would be saved. Waiting to offer aid would ultimately cost more money and more resources then investing in Haiti now. Another way to convince the American people to commit US funds to Haiti, would be to improve the economy of Haiti and help conquer the corruption in Haiti. If Haiti's economy could support imported goods, then United States

exporters would benefit from a partnership as well. Another reason for supporting other countries is because it is our moral duty as a world superpower to help other countries in need.

Overall, the situation in Haiti is not getting any better. With increasing fossil fuel prices, it is only going to get harder and harder for Haiti to power its country. Without new power innovations, like solar and wind, desalination plants and hydroponic farms will never be able to be implemented. Ultimately, Haiti will fall into more disarray and corruption. It will take years for projects like this to get funding and permission. Developing a new global organization that focuses on providing renewable energy to poor countries, could help most of the world's population have a brighter and more sustainable future. For now, research can be gathered, sites can be located, youth can be educated, citizens can be trained, and the Haitian people can hopefully continue to improve their living conditions. As we work towards a better tomorrow we have to continue to learn new methods, and develop technologies that will be able to be implemented in leading Haiti to a greener future.

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