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Uganda, Water Scarcity

Uganda: Every Drop Counts

Uganda, located in Eastern Africa and bordering Kenya, South Sudan, and the Democratic Republic of Congo has a total land area of 93,065 square miles. Which in comparison is a little smaller than the state of Wyoming. The top three major imports in Uganda are refined petroleum, palm oil, and packaged medicines. 80% of Uganda's exports are agricultural products. These major exports include coffee, maize, fish, and tobacco.

In Uganda, the main causes of unemployment are gender discrimination, limited access to education, and unfit skills. Currently in Uganda the unemployment rate is steady at 1.80% and is projected to stay there throughout 2021. The average household size in Uganda is 4.7 persons per house. According to *Habitat for Humanity*, "It is estimated that Uganda has about 7.3 million households living in 6.2 million housing units." Due to there not being enough houses for everyone, big families are being forced to cram into small, inadequate spaces. On the other hand, some families are just left homeless. In rural Uganda the typical house is made of mud and thatched-grass roofs. Thatch is a mixture of dead grass and stems. With an average monthly salary of $65 per person, there is not much money left for upgrades. According to an article from *Habitat for Humanity*, "By 2022, Uganda's population is projected to be about 45 million people and the housing need will be about three million housing units." The lack of quality housing for people is not only unhealthy, but it also compromises development opportunities.

With a population of 44.27 million people, 80% of Ugandans work in agriculture. Agriculture is not only important for Uganda's exports, but it is also a lifestyle for many families. Due to the large amount of rain that Uganda gets, it makes great conditions to grow crops and gives high potential for agriculture. The average farm size in Uganda is 2.5 hectares, which in perspective is roughly the size of five football fields. After harvest, the average farmer will take their crops to a roadside shop to sell them. In Uganda, the natural environment provides great grazing for cattle, sheep, and goats. Unfortunately, Uganda's dairy industry has not not done so well due to a number of problems. Because of the fact that farmers had to sell their dairy products for such low costs, after medicine and transportation costs, there was not much of a profit.

In Uganda, the social norm is that the male is dominant to the female and because of that, land is considered a man's asset. There are also many obstacles that make farming difficult. Weather can change and ruin crops and soil can erode, shifting field platforms. Although these are major problems, something the people of Uganda really struggle with is their lack of technology. Due to the lack of technology, Uganda's people are not able to access modern technology or equipment that would make farming a lot simpler. Uganda could use the technology to detect upcoming weather which could potentially affect the growing season. Improved technology could also help with irrigation and other water management

technologies. Like I said before, with an average monthly salary of $65, nobody has enough money to purchase any of this technology. Another struggle that many Ugandan farmers face is their lack of land. Without land, you cannot farm and because of this many families struggle to provide for their children. The average Ugandan diet is composed of mostly starchy roots and cereals. To compliment their meals, nuts and green, leafy vegetables are added. Interestingly in urban areas, food patterns are shifting and rice is growing in importance due to a nutritional value. In Uganda most families only have two meals a day, lunch and supper. In the morning, most Ugandans will only have a cup of tea or a bowl of porridge. The recommended amount of calorie intake in Uganda is 3,440 calories a day. However, Uganda's average is 2,800 calories a day. Clearly, Ugandans consume less than they should, which is leading to sickness and other medical problems.

Education is a high priority in Uganda. Their typical education starts with seven years of primary school and six years of secondary school, which is divided into four years of lower secondary school and two years of upper secondary school. Lastly there are three to five years of postsecondary school. In Uganda the government recognizes education as a human right and is always working towards providing free education to all the children in the country. Unfortunately, there are many problems that make achieving this very difficult. Some of the issues include poor funding, teacher training, and insufficient buildings. Due to these roadblocks, it makes it hard for Uganda's government to continue to provide high quality education for Uganda's people.

The life expectancy in Uganda is only 60 years old. According to the *World Health Organization*, "Uganda was the most physically active nation in the world." In fact, only 5.5% of the locals do not get 150 minutes of moderate physical activity or 75 minutes of intense physical activity per week. The work that is done in Uganda is usually very extreme and hard on Ugandans. In addition, commuting by a motorized vehicle rarely occurs. Even with being very active, the people of Uganda experience a wide variety of diseases like HIV/AIDS, tuberculosis, malaria, respiratory tract infections, and diarrheal diseases. The main source of all of these diseases come from malnutrition, unprotected sexual activity, and contaminated water.

A big problem Ugandans face is their lack of water in multiple locations. According to an article from *Generosity.org*, "1 in 3 rural Ugandans, which is about 10 million people, don't have access to clean and safe drinking water." Many people have to travel by foot everyday just so their families can have clean water to drink. According to an article from *One Atta Time*, "75% of diseases in Uganda are caused by lack of clean water and proper sanitation. Around 24 million people lack access to clean drinking water." This is obviously something that needs to be addressed immediately. Traveling this long of a distance for something that is needed to survive is unreasonable, especially when most of the time it is contaminated and unsafe to use or drink anyway.

In Uganda, most people have to walk a very long distance to get their water. It would be one thing if the water was clean and usable, but it's not. Unfortunately, the people of Uganda walk sometimes up to three hours several times a day just to collect dirty, contaminated water that will most likely give them an illness in return. The problem that Uganda has is not the amount of clean, drinkable water, it's the unequal

distribution of it throughout Uganda's land. According to an article from *Drop4Drop*, "Using and drinking unsafe water is one of the leading causes of death and disease across Uganda with 4,500 children dying every year due to having no other option but to drink this unsafe water." Across Uganda there is not an equal spread of clean, drinkable water. Since water is a necessity, Uganda's people are using what is closest to them, which unfortunately isn't safe drinking water at all.

Sadly, only 28% of Uganda's people have access to electricity legally. Without suitable access to electricity, many Ugandan people suffer from diseases because of improper sanitation and their inability to follow correct cleaning procedures. Having electricity could help people have access to better
technology which could improve the sanitation of the water, lower the amount of deaths due to sickness, and provide clean water for drinking and cooking. Additionally, having better access to electricity could also improve the infrastructure in Uganda. This would also allow proper pipes to be put in to transport clean, usable water. Pipes could also be used to separate clean and contaminated water so the people of Uganda are only provided with safe water. Therefore, improving the access to electricity would not only clean the water for Uganda's people, but it would also save many lives.

There are many solutions to help improve the quality of life for the Ugandan people. However, the best solution, and in the end the ultimate goal, is to be able to provide everyone with affordable, clean water to drink and cook with. The unfortunate thing is none of these solutions are going to be cheap. Drilling wells is pricey and is not a good, long term plan because the Ugandan people will simply not be able to afford to keep them running efficiently. According to an article from *Water4*, "When affordable access to safe water is available to all, communities thrive and lives are changed forever." If water could be easily accessed at a low cost, the quality of life for Ugandan people would improve drastically. Even with the large amounts of charities there are nowadays, the cost for this is still very expensive. Charities can help a lot, but they can only do so much.

Digging a well might be a simple solution, but Ugandan people do not have the proper equipment nor education to accomplish that task. The downfall is that digging a well would be a great solution to Uganda's problem, but one well can't provide for all the people of Uganda. Another solution is building an electric solar well. Many charities have projects in place to raise money and go on trips to build these wells to help the people of Uganda. There are many advantages to using solar pumps over regular hand pumps. The solar pumps are able to pump water from 100 meters, even on cloudy days. It is able to serve more people in a shorter amount of time than a regular hand pump would. Since the solar pump is powered by electricity, it would make it accessible to all ages of the community. Another great quality that the solar pump has is that it would be able to treat and store large amounts of water in storage tanks right next to the pump itself. In addition to that, most solar pumps continue to function for more than ten years. The solar pump is an innovative system that can help provide clean water, even in the most remote places. Along with providing safe drinking water, it would also provide maintenance jobs for local civilians. The jobs would include making sure that the pump is working correctly, fixing the pump if needed, cleaning the pump, and clearing limbs or debris that might be blocking sunlight from reaching the solar panels. With the help of professionals and local Ugandans, a solar pump would be a low-maintenance option that could easily be installed on site.

Another solution that could help improve water scarcity in Uganda is drilling boreholes for the Ugandan people to use. A borehole is a hand pump that commonly ranges between 30-250 feet in depth. This is the most common mechanical pumping system that is used because it is a primary drinking source for millions of people in Uganda. This would also be a cheaper option compared to the solar pump solution mentioned before. On the other hand, with the large amount of joints, pins, and parts that are used to create these pumps, there is always the possibility of breakdowns. With that being said, most of the time these maintenance measures are often neglected and the pump is then not able to be used because nobody has the tools nor knowledge to fix it. The physical labor that this pump requires also makes it not accessible to all of Ugandan's people, especially the young and elder. By teaching the community how to properly care for these pumps they will be able to receive water from them for an extended amount of years. In return, having these pumps could also provide jobs for the Ugandan people. With a little bit of labor, this is a great way to provide Uganda's people with high quality water to use.
My third solution would be a rainwater collection system. Rainwater can be collected anywhere there is a metal roof where water can fall on it. Through a gutter system on the roof, the water can travel through the gutter and then into a large tank which would be placed on a cement pad near the building. When the water travels into the tank, it flows through a filtration system to make sure that the water is safe to use. This solution works perfectly because Uganda gets plenty of rainfall throughout the entire year. With employment low, jobs can be hard to find in small communities. With the rainwater collection system jobs can be made and people can also learn. Maintenance on the collection system would have to be done regularly. The roof would have to be kept clean and free of debris and the tank filter would have to be changed periodically as well. Within the community children could learn about how the system works and how the filter works to purify the water. This solution also allows the Ugandan people to always have water on hand for gardening and other agricultural uses. The rainwater that would be collected would be free from any ground chemicals which allows it to be suitable for irrigation and watering gardens. Unfortunately, the Ugandan people would have to have a lot of trust in mother nature to provide them with lots of rainfall, but with the way the weather patterns have been, it seems very promising. This is a simple, inexpensive solution for the Ugandan people that takes natural rainwater and turns it into clean, usable water.

Another effective solution are practices that the Greek philosopher Aristotle created. Filling a jug or bottle with water and letting it sit in the sun is a practice that dates back to many years ago. However, that doesn't mean it can't still be used to this day. The sun's rays can kill germs and bacteria that could be in the water providing clean water to use at no cost at all. The good thing is that you can also reuse water bottles and jugs too. Another simple solution would be to boil water over a fire to kill any viruses or bacteria that may be in the water. These processes may take some time, but the time is worth it when your life may be at stake.

My fifth solution is a more complicated one. Unfortunately, this solution would require help from charities and would also be very expensive. The process is called desalination. This is the process of removing salt from seawater and making it into clean, drinkable water. The ocean covers over 70 percent of the earth. The only problem is that we are not able to drink this water due to the fact that it has salt in it. The most common ways to remove salt from seawater is to either use reverse osmosis or distillation.

Reverse osmosis is done by using lots of small filters to free the seawater from salt. Distillation is basically boiling the water and collecting the water vapor on a larger scale. Both of these options take a lot of energy and would require a lot of infrastructure and money. Unfortunately, Uganda is not located on a coastline, so the water from the ocean would have to travel long distances just to get to the people of Uganda. In addition, there are also environmental concerns. Plants in the ocean that require seawater could be harmed or even killed. This process could also harm or kill fish and other ocean life. Although this solution is more costly and requires a lot more components, in the end, the people of Uganda would be receiving the water they need to survive.

My final solution to providing clean usable water is to have proper education to Uganda's people. Proper education would not only improve the water quality, but it would also improve the quality of life there. If the people of Uganda were taught the best ways to properly clean their water they would not be exposed to contaminated water anymore. In addition, teaching personal hygiene would be another key point that would be taught to adults and children. Education is important because it's not only about cleaning the water, it's about avoiding diseases and illnesses so the people of Uganda can stay safe and healthy.

It is clear that Uganda needs a permanent solution to their water scarcity issue. As you can see, there are many solutions to help improve the availability of water in Uganda. It is my hope that in some way I can
be of help in solving the water scarcity issue Uganda is struggling with currently. With the help of others and myself, improvements can be made and lives can be saved. The reality is that we must respond because this is not someone else's crisis, it's all of ours as human beings.

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