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Sudan, Water and Sanitation

Dirty Water in Sudan and How it Affects Food

Sudan is often looked at as just another place in Africa. Africa is typically viewed as a wonderful place to visit, see animals, and jungles. When Americans hear the word, Africa, they think of *The Lion King*, discovery, or adventure. When people get past the facade they have put up, they find places like Sudan, with people who go through everyday life and death struggles. These people are forced to live with violence and shortages of food and clean water. This is the real Africa.

Sudan is a nation located in the north-eastern section of Africa, and has the coordinates of 15.00°N, and 30.00°E. The nation covers 1,156,672.5 square miles, it borders the Red Sea, and is divided straight down the middle by the Nile River (CIA, 2019). Being only 15°N of the equator, the climate here is typically hot and dry, with a light rainy season from April to November (CIA, 2019). Ever since Sudan achieved independence, in 1956, the government has ruled with a presidential republic format, and until 2011, was often in civil war with current day South Sudan (CIA, 2019). On multiple occasions throughout the civil war, the Sudanese government refused help from the United Nations (Connolly, 2008).

The Sudanese people have gone through a lot in the past few years, mostly because of the civil war. In the 1980's, Sudan's government hired a Janjaweed, a Sudanese militia, to help them fight the rebels in the South, and in the same year the United Nations accused the Sudanese government not controlling the militia (Connolly, 2008). The United Nations did this because the militia had started to destroy villages. Therefore making the lives of the citizens miserable, on top of the fact that there are six people living in one household making the situation potentially hectic. When the Janjaweed would destroy their villages, the people had no choice but to move, and the key to any successful settlement in Sudan is a nearby water source, and a reliable food source. When the people are forced to move, possibly the only water source they have ever known must be left behind, they are forced to hope to run into water, and for that matter, food.

Sudan's agriculture is the center of their economy. 65.4 percent of people in Sudan live in rural, farming areas, and 80 percent of people are somehow in the agriculture business (CIA 2019). The people produce cotton, nuts, sorghum, millet, wheat, sugarcane, mangoes, papaya, bananas, sweet potatoes, and sesame seeds, with cotton leading export profits (CIA 2019). 100 percent of Sudan's land is used for agriculture; 15.7 percent of the land is arable, 0.2 percent is permanent crops, and 84.2 percent of land is used for permanent pasture (CIA, 2019). The nation's exports also largely depend on agriculture with cotton, sesame, livestock, nuts, sugar, and gum arabic (CIA 2019). The main source of Sudan's water, the Nile, is used for farming. The Nile is polluted by waste and garbage from the capital city of Khartoum. This negatively affects everyone that lives and works along the river (Associated Press, 2015). Khartoum is in the southern half of Sudan and the Nile flows north, through the rest of Sudan. Most farms in Sudan are along the Nile and use the same water the people in Khartoum dump their waste and garbage into, to water their crops.

A large problem of Sudan's is their government rarely allows the United Nations to get into the nation to help. Recently, Sudan has not been allowing the UN to help bring peace to the fighting in Darfur and other places, although they do often allow members from the AU (African Union) into the fighting to help (Connolly 2008). The only problem with this is only 7,000 soldiers have been sent in to help, which is far too few. In 2006 though, Sudan seemingly agreed to allow the UN to come in, as long as it was

with the AU. President Bashir denied this by saying that,"talk of joint forces is a lie" (Connolly, 2008), and because of the fact that the Sudanese government is not allowing much help to come in, the people are "refusing aid for fear of retribution [punishment]" (Conolly, 2008). If the United Nations could get in to Sudan they could stop the Janjaweed and finally end this hectic mess. Going along with the fact that Sudanese government, specifically President Bashir, is not letting the United Nations in, comes the fact that in Sudan the president has unlimited five year terms. That could mean that the United Nations will not be allowed into Sudan for as long as President Bashir lives. He is currently seventy-five. Although the government said no to help from the United Nations, is there a certain point where "no" cannot be taken for an answer?

Another problem, running along with the previous problem stated, is that Sudan does not have the money to pull themselves out of this deep hole that they are in. The most influential reason that they do not have the money is because they pay twice as much money for their imports, $8.22 billion, than what they make for their exports, $4.1 billion (CIA, 2019). This is largely because almost all of their exports are based on agriculture (CIA 2019). Although they do export gold, and oil and petroleum products (CIA, 2019), they require extensive human labor, which takes time, and valuable resources. They just do not have enough people to quickly collect what they would need to make a profit. Making the problem even worse is the fact that a large amount of the money that Sudan has goes towards building and improving the capital city of Khartoum. The difference between Khartoum and the rest of Sudan is so atrocious that many people are calling Khartoum the most selfish city in the world.

Similar to the fact previously stated, nearly all of the money that Sudan is making is going towards larger cities. Arguably the best explanation for this is "Khartoum was a leech on Sudan's flesh almost from birth" (Malik, 2014). In the article the author also states that the reason the bigger cities are getting all the money is because the towns and villages outside of the city are too small (Malik, 2014). If anything, it should almost be the other way around. The smaller villages should be getting money to support themselves and improve their space. Although this should be the case, the bigger cities in Sudan seem to be keeping the majority of the money for themselves, and Khartoum almost takes it to another level. In Khartoum is where all the politicians, and elite or important people live. This is the case in other cities, but is most distinct in the capital.

Finally, the worst problem in Sudan is diseases. This stems from the fact that the most common diseases in this region are waterborne. This is largely because of Khartoum's waste being dumped into the Nile river which spreads diseases more quickly to the people consuming it. Diseases like Hepatitis A, Hepatitis E, Cholera, tapeworm infections, diarrhoea, typhoid fever, and schistosomiasis are all common (CIA, 2019). Diseases like this affect the digestive system which make people very sick. These diseases are all dangerous, and when there is not any money to stop them, they just keep spreading and growing which affects everyday life.

Branching off of that, there is less than one hospital bed per one thousand people, so even without this immense disease issue, the people have a disadvantage (CIA, 2019). The sickness will affect the productivity of the workers and they will not be able to produce enough goods to support the country and the families. The diseases are so bad in Sudan, it is almost like the nation is in a downward spiral. Of what workers there are, when disease is thrown into the equation, even fewer people can work because they are sick. Due to the fact that more and more people cannot work, the amount of work that is being done decreases as the number of workers decreases. When a smaller amount of work is done because of the sick laborers, less profit is earned than what workers we started with.

To stop the problem of Khartoum dumping waste into the Nile, the sewage could be collected, similar to campgrounds in the United States. After the sewage is collected it could be taken to sewage treatment facilities. These facilities produce biosolids which are safe and effective for farming. Using this form of

fertilizing instead of chemicals is a great way to keep underground water clean as well (DEQ, 2019). Biosolids are great fertilizers for crops, and if this is to be used, crops could spread further away from the Nile because the plants could still grow even without a constant supply of nearby water. Taking this fertilizer to farms would also eliminate the risk of drinking in heavily polluted water, and trying to collect the water to water crops which eliminates a large amount of people being affected by disease from the water in the Nile. At the end of the process to make these biosolids, the wastewater that is left over could be cleaned and used as fresh water source, "the cleaned water is returned back to Lake Michigan…" (Milorganite, 2019). The use of the leftover clean water will be mentioned later.

On another similar note, Khourtoum is dumping a great deal of garbage into the river as well. As for the food scraps and small amounts of yard waste able to be widely composted and used as extra fertilizer for farms. Compost has similar effects as biosolids, but what puts compost above biosolids is that composting is much cheaper. There are two categories of compost. The first category includes yard waste, such as grass clippings, dead leaves, and sticks (EPA, 2018). The other category consists of coffee grounds,vegetable, and fruit scraps (EPA, 2018). Recycling, especially in Sudan's case, comes in handy, recycling could save Sudan plenty of money, and valuable resources. Recycling would save money because it costs more money to completely make a new product or object than to use it for a different purpose. What is needed is already there. As for the resource aspect, recycling obviously makes a difference. Not so many resources need to be used all the time.

As for the remainder of the waste, there is a procedure in place in Sweden that is catching the world's eye. The Swedes are actually burning their garbage to create energy. They perform this operation in large power plants that simply burn garbage. "'I have not heard any complaints, I don't think — ever,' said Björn Palm, head of the energy technology department at Stockholm's KTH Royal Institute of Technology" (Haugen, 2013). Although this process would be costly, it would be worth it. This solution would be excellent for Sudan due to the fact that they are not exactly a large nation and do not have much room for landfills, and in the meanwhile they get energy.

Assembling more wells is a plausible solution being put into action. There are already several groups doing this all across Africa (Catholic Relief Services, 2011), but there is something special about this in Sudan. Wells serve as a needed clean source of water, and last a decent sized population about fifty years, although it only lasts fifty years (Catholic Relief Services, 2011). This is much better than the current status in Sudan, and gives the nation a chance to make some money to develop a more complicated water system. This could possibly come in the form of piping water to some purification facilities, and then piped all over Sudan. Or, the nation could come to largely control the underground water sources, and pipe that water all over Sudan. The key to launching this process is to make people aware. If the people are aware, then they will likely care somewhere along the road. To make people aware of the struggle in Sudan is the hardest part. This could be done through many relief groups similar to the Catholic Relief Services, like NeverThirst. NeverThirst is a non-profit organization whose goal is to "...bring clean water, health and hope — UNTIL ALL ARE SERVED" (NeverThirst, 2017). The possibilities for advertising this idea are almost endless. It could be done through television commercials, online advertisements such as youtube, or even advertisements on more standard websites. This in turn could lead to donations, or new members of these services.

Yet another solution to fixing these problems, would be to more industrialize Sudan to the point where they can export their goods to make money. Increasing industry allows Sudan to grow from an internal standpoint, it would also help the economy by giving them more space to improve their water quality and usage, which in turn helps their agriculture. A large part in making America successful was the Industrial Revolution. It allowed people to be more productive, and the nation to increase the number of exports, growing the economy and the cities. How this is done will be stated later. later.

One idea that was mentioned before would be using the Milogranite company. This process could be used to help farms all over the nation, and sort of recycle fresh water. The fresh water comes from the water that is left over after the process is complete, instead of putting the clean water back to the source (Milorganite, 2019), this could all be paired with a water bottling and shipping company such as Dasani, or Aquafina. This would benefit both the businesses and the people in the area. Although the Milogranite type of factory would need to be in, or close to, the city. The water bottling and shipping companies can be in more rural areas. This would give people in those areas jobs and would, in turn, earn money to support their community. The bottled water could be shipped all over the nation, and when the time comes exported out of the nation to make profits. This whole process could be used outside of every major city in the nation, which would mean lots of jobs, and lots of profits. Using this process to start an industrial boom in Sudan could be potentially magnificent. Other farming machine companies could come in to Sudan and start making machines such as tractors and combines which would both greatly benefit the farmers of the nation, and in the end everyone.

If Sudan can have something like the Industrial Revolution, not so much time would be needed to spend on agriculture and could free people up to contribute to the building of the economy with businesses and jobs, and allow people to make money. This would get money flowing, instead of everyone saving the little money that they have. Although this is arguably the most difficult task to accomplish, it would keep Sudan growing by creating more jobs, and as stated before, get money flowing. This could be achieved by other nations' help to start an industry boom in Sudan. Possible ways for other nations to help could be by recommending or guiding this industry boom, or just making it happen. Either way this happens, the people of Sudan would just need to be patient, and help make this happen. They could help by helping to build the facilities, or even just helping the workers that would build them in any way they can. In the end, it does not matter how it happens, it just matters that it does happen.

Finally, the most critical solution. As stated before, the Janjaweed are completely out of control. They are destroying villages, which forces the people to flee. All that would need to be done is stop the Janjaweed. This would either be accomplished by destroying them, or by putting the members in prison. Because of the fact that President Bashir is not allowing the United Nations into Sudan, the Afircan Union would have to do the job. It is not known if this possibility has been attempted, but the allies of Sudan could be used to somehow expel the Janjaweed, whether that is wiping them out, or putting them in prison. Doing this would allow the people to stay in one place and grow their villages and starting the industrialization process stated before. They would have the time to work on bigger projects that would improve their lives. They would not have to worry about anyone attacking them or making their lives worse. They could focus on making their lives better. Although this sounds easy, the Sudanese government would have to be on board with this too. They should be, but if they are not there could possibly be another civil war if the differences between the cities and the more rural areas become even more significant.

Although Sudan's problems seem to keep piling up with no end in sight, there also seem to be an alarming amount of causes for these problems. Now that the major causes of the problems have been identified, there are solutions to these problems like using biosolids to fertilize crops, or to implement the waste to energy plan, or composting, or build more wells, or to further industrialize. All of these solutions would either help Sudan make money, or give them time to make money. Although some of these solutions are very large and might be for sometime in the future, they are definitely achievable, and would be worth it in the end. Every problem has a solution, and so does Sudan.

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