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Chad, Factor 9: Water and Sanitation

Chad: Sanitizing drinking water

Most citizens of the United States are fortunate enough to be able to walk to their kitchen sink and fill a glass with clean, reliable water. These people probably have not given it a second thought. They have never thought of a life without this luxury because they never had to. They don't even think of this gift as a luxury. Why would they? They have never gone without it. I did not think about these seemingly simple things either until I began my research for this essay. Few have ever felt the pains of dehydration driving them to drink from a puddle that has turned opaque with mud and unknown contaminants. Few have sat in their home holding the frail hand of a loved one who had fallen ill from a disease that was contracted by doing something as simple as taking a drink of water. This is daily life for the majority of Chadians. Many choose between two horrors unknowingly; the shattering pain of severe dehydration or the risk of suffering from worms, salmonella, E. coli, and various other diseases. All because of their attempt to satisfy their thirst from contaminated water sources. Numerous people are unaware of these feelings and decisions but even one victim of this agony is one too many.

1.Life in Chad
Life in Chad is a novel concept for citizens of the US. This underdeveloped country is one of the most malnourished countries in this world (Food Security Index. Web). About 85% of the work force work on farms with workers earning an average wage of $1,030 a year (Central Intelligence Agency (CIA)). The large majority of these farms are family owned and operated and most of their crops are used in their own household to feed a Chadian's average large family (Our Africa). A husband will often have multiple wives, each wife having a few children (Britanica). Close relatives usually stay in the same group or general region as their family members. Elderly members stay with younger generations to be cared for in their old age. These families continue to expand quickly considering that about 66% of women are married by the age of 18. Many are even married by 15 (Britanica). This leads to the even bigger burden of trying to harvest enough crops in the sandy soil and finding enough water for these large family groups.

There are three regions of the country that, due to rainfall, are best for farming. Many citizens of Chad farm rice, cotton, and livestock. Most farms are owned by families who harvest their own crops and send livestock to the slaughter house. Cotton is a major crop for exports and provides many jobs for citizens. Livestock is often raised but has not been shown to help the economy. Farmers in the area are trying to find hardier breeds to raise. Rice is grown in the southwest and wheat is raised near Lake Chad but neither are predominantly sold commercially. Half of the fish caught from Lake Chad, Chari, and Logone Basins are salted and exported. Mechanical equipment is rare on farms. Most farmers use basic tools such as sickles but mainly use their hands for work. Cotton and cattle are the main exports. Cattle-herders are mainly nomadic traveling north in the rainy season and south in the dry season (Rural Poverty Portal). Most grain production is consumed locally. Big cities have shopping centers but most food is purchased from local farmers or grown on the family farm (Encyclopedia of the Nations).

In dry regions, millet and dairy are the base of most meals. Agricultural areas grow sorghum, millet, and maise to be ground into flour to make porridge (also known as boule). Onions, tomatoes, beans, meat, and fish are often used to add flavor to the boule. This diet is often repeated from day to day due to lack of variety in crops (Britanica). The buole offers nutrients but not enough to support the body to recover from any illnesses that a person might have. Because of random residency, sick people don't always have the

option of going to the doctor and getting medicine because of the distance to medical facilities. Families are widely scattered throughout the area but healthcare facilities are only located in larger cities. Small health facilities are spread throughout the country but large scale hospitals exist in cities such as N'Djamena, Sarh, Moundou, Bongor, and Abéché. The government has recently started a health education and training program through the World Health Organization. This program works to fight off diseases like malaria, sleeping sickness, leprosy, etc. The leading cause of death is HIV/AIDS. The HIV/AIDS prevalence rate is above the world average but similar to nearby countries (Living in Chad). Those infected have many barriers to getting treatment, sadly bringing the average life expectancy to 51 years of age (CIA).

2. Set-backs

Families are often reluctant to send their children to school because of the great distance to schooling facilities. Citizens are fairly widely dispersed so it is difficult to find a nearby school. Less than 50% of school aged children are enrolled in a school system. Government officials in Chad are trying to boost the country's school attendance rate. There is a college in the capital for students who wish to go further in school (Britanica).

The main barrier in agriculture is rainfall but farmers also don't always have access to different crops. Most farm and use their crops for themselves. They sell very little product on the market unless they are on a fairly big farm. These crops are often wheat that will be ground into flour to make gruel and bread (Britanica).

3. Current water situation

Being in the region of sub-saharan Africa, the climate is very dry and there is an extreme lack of rainfall. There are a few water sources such as Lake Fianga, Lake Fitri, Chari River, Logone River, etc but these are known to be polluted (FAO). Lake Chad is the largest source for water but is located on the southwest border. It is also used by other countries that border this lake (Niger, Nigeria, and Cameroon). Since the 1960's the overuse of Lake Chad has caused the body of water to shrink by 95% (Lake Chad). Citizens are often desperate for water and do not think about quality. Various parasites and diseases have been traced back to these unfit water sources but water filtration systems are still extremely poor and offer little help.

4.Chad's current means of filtration

There is very little documentation on any larger scale filtration systems that would be used in urban areas but there are stories of filtration systems being built in refugee camps. This small country's water filtration systems are not completely undeveloped but they are far from where they need to be. Only 9% of the population has access to water that has been through a sanitation facility (Countries). It was reported from a refugee camp in Ab Gadam that volunteers held contaminated water in onion shaped tank where it would be chemically treated. This system is still struggling to keep up with the demand of the large quantities of people in the camp (Liquid Treasure). The rural communities spread through the country typically rely on nearby natural water sources or handmade wells, both being contaminated in a large majority of cases.

5. Need for clean water

It is undeniable that we use water for so much in this world. It is absolutely critical to our survival. It is used for hydration, cooking, and cleaning for the most part but in order to be useful in these areas, it must be clean. With few water filtration systems that are often of very poor quality in Chad, its citizens have the daily struggle of boiling water for drinking, cooking, and cleaning (Lake Chad). Boiling the water in their homes can only be done in small amounts and does not get rid of dirt and other particles, though it may kill some diseases and parasites. Urban areas have access to prefiltered water (though it is not always successfully decontaminated), but these people account for a small amount of the population. Some

citizens are driven by painful thirst to drink even the murkiest of water as soon as it is found. Any water that they have is cherished, sanitation being the least of their concerns. Anything they have to nourish their aching, dehydrated bodies, even temporarily, is welcomed with open arms. Every day is a hard fight against water-borne diseases.

6. Effects of unclean water

E. coli and salmonella are predominant diseases that are both water borne. These, along with many other water borne diseases, cause nausea, vomiting, cramps, diarrhea, fever, bloody stool, etc. Treatment are only found at the larger hospitals in Chad and are very expensive for the average Chadian family. A mixture of fluids, electrolytes, vitamins, and minerals is pumped through the patient's body to restore the digestive system. These diseases can easily lead to death, especially when left untreated (Our Africa). No one should have to fear for life because they gave in to their undeniable thirst.

7. Solution

As I thought about this paper, I contemplated different solutions to help the people of Chad. I thought of solutions to research and various ways to attempt to improve the water filtration systems currently in Chad. As I looked through my ideas, I realized that all of my ideas could take years to become fully effective. People are suffering from dehydration NOW. People in Chad are dying NOW. I couldn't ignore that. I soon remembered reading an article about filtration straws that were being sent to Ethiopia. This seemed to fit so perfectly with what I was trying to accomplish that I chose it as my solution.

8. Lifestraws

LifeStraw is a personal water filtration system that was created by a company called Vestergaard that is used by many outdoors enthusiasts. It is lightweight and can filter up to 1,000 liters of contaminated water. The hollow fiber filter rids any water of bacteria and protozoa, using zero chemicals. This straw is easy to use and highly effective. Cleaning is as easy as blowing through the straw. When there is no water nearby, this filtration system is also offered in the form of a water bottle. Water can be collected in this bottle from any water source and by screwing on the lid, you can have clean water readily available. A family system is also available. This larger size system forces water through the same fibers which trap bacteria and flush out of a red tap, while clean, drinkable water drains out of the blue tap for collection (LifeStraws). Both systems have won awards and have proven themselves effective when they were used as an emergency response tool in areas heavily affected by hurricanes. Even the concept of this filtration via different fibers could be put to use while funding for these systems is still underway. Families could make their own temporary filtration systems using organic material such as sand, clay, charcoal, tree fibers, etc. These homemade systems are a temporary solution to be used before Lifestraws and any others long-term systems reach the country. Any kind of filtration could quite possibly save lives.

9. Funding and distributing LifeStraw products

It is not enough to just help send filtration systems to Chad. We have to educate the public so that every man, woman and child knows of the struggle that so many are blind to. Volunteers, government officials, and members of organization working to help third world countries could host clinics or conferences to show citizens just how important sanitation is. These conferences would also be an ideal time to distribute life straws and demonstrate how they work.

10. Filtration systems made by citizens

The idea that the LifeStraw presents could be translated into methods that could be made in the home of every Chadian once educated on the subject. Clay, charcoal, sand, and various plant and tree fibers are known by survival specialists to have effective filtration properties when used correctly. Layering these components in a container with larger filtration materials on top working down to finer materials is the key to these kinds of systems. This will allow larger contaminates and debris to be filtered out first and smaller impurities to be filtered in the final stages. You would first want to prepare the container by

making a small hole on the bottom to allow water to drain out. You would then need to secure a piece of fabric over this new opening to ensure that none of the filtration materials would run out of the container with the water. Then, layer the materials as mentioned before and pour water into the top. The newly filtered water can then be collected at the bottom as it works its way through the container. This will remove a significant amount of contaminants but may not be completely effective in removing all bacteria from the water.

So that we can ensure a better future, I believe that we should fundraise through interactive activities with school aged children and teens to be able to send filtration systems to Chad but also to educate them of the challenges that some people face. Sales of cookie dough, candles, wrapping paper, and various other goodies could be sold in order to redeem prizes. Elementary children could work to earn toys, candy, and gadgets while teens could sell a larger amount of items for iPods, tablets, or laptops. Before each sale, the students will be introduced to the cause that they are supporting and could even see demonstrations of the LifeStraws. If possible, we would set up a video chat with people in Chad who have been affected by our funding and help. The student selling the most items could even be offered a trip to an amusement park or a movie. The students should know what they are working for, but could also be excited to help because of the great things it would bring them. Students across the country could learn the struggles of different nations and be able to proudly say, “I made a difference.”

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