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Mozambique, Factor 9: Water and Sanitation

Water: The Basic Component of Life

Have you ever wondered what it feels like to go to bed hungry? Ever have to starve because of the scarcity of food? Over 870 million people in the world are suffering of hunger and malnutrition; they go to bed starving and scared knowing that there will not be any food tomorrow. Almost all of the hungry people in the world, 852 million, live in a developing country (WorldHunger.org). A developing country is a nation that has a low standard of living and is seeking to become more advanced economically and socially. People living in a developing country are usually living in poverty and are surviving on $1.25 a day or less. Poverty is what causes hunger. Poverty comes in many forms, but the common result is people lacking sufficient funds to afford the food or the farming supplies to grow their own food, causing them to go hungry all the time. Typically rural households are the most affected by the consequences of poverty and hunger. The real question is what causes so many people to go hungry?

Mozambique became an independent country just 39 years ago, after rebelling against the control of Portugal. The rebellion initially began in 1963, but quickly transformed into a brutal civil war in 1973. After being under Portuguese rule for 470 years, Mozambique became an independent country on June 25, 1975. In 1985 after ten years of being independent, the Mozambique National Resistance fought for changes in the government. A new constitution was written with three branches of government and civil liberties were granted to then Mozambique's 13.3 million people. Mozambique had one of the world's largest economic growth rates in the late 1990s, but has suffered from natural disasters including flooding, which occurred in 2000 and 2001. Since then the country has struggled with poverty and agriculture activity.

Today Mozambique is the world's 35th largest country (by square miles) and is comparable to the size of Turkey. Mozambique is located on the southeast coast of Africa and borders the Indian Ocean. The country has five main rivers, the Zambezi River being the most important. Mozambique has Tropical Wet-Dry climate, which can be described as hot all year, with tornadoes common during the wet season. The temperatures range from 55°F-88°F. Depending on the region, the average annual rainfall is 19.7 to 35.4 inches. Rainfall in Mozambique is heavier along the coast and decreases as you move from the North to the South. Mozambique's natural vegetation can best be classified as Tropical Grassland. This is characterized by huge expanses of grass growing in the warm lands nearest the Equator. It also means trees and other plants are scattered throughout the landscape.

Mozambique is a developing country because over half of Mozambicans are living in poverty. Currently, of its 24 million people, only 31.2% live in urban areas. Living in rural areas can cause several problems for people already living in poverty. The average family of Mozambique has an annual income of $1000USD. The water and sanitation problems are twice as high. Sixty-seven percent of the rural population is living with contaminated water, compared to the 22% of the urban population. Parts of Mozambique are also exposed to severe droughts which make water even scarcer. Agriculture activity also suffers from drought, making it another problem the people must face.

However not all of the country lives in poverty. Mozambique has a huge labor force, an excellent port, and good transportation connections (Baerwald 566). It has tremendous reserves of coal and a huge hydroelectric dam. To top it all off, most of Mozambique's land is arable, but 90% of it is remains uncultivated. In light of these benefits, one might wonder how over half of the country's population can be living in poverty.

About 97% of agriculture production comes from 3.2 million subsistence farms. Since almost all of the agriculture in Mozambique is done by small farmers, large amounts of crops are not being produced. Small farmers cannot afford the technology and equipment for higher yields, forcing them to use low intensity fertilizer and pesticide, or none at all. The subsistence farmers of Mozambique need higher yields to produce more food than just for themselves, so they can make a living and help stop the cycle of constant hunger. In terms of livestock: cattle, goats, sheep, and pigs are the main markets, with the poultry industry rapidly growing. The contaminated water causing disease in the livestock however is the main setback of increasing the livestock numbers.

The typical Mozambique family is five people. Since most of the country's population is rural, subsistence farming is how they make a living and survive, albeit barely. Twenty-three percent of Mozambique's GDP (Gross Domestic Product) is a result of agriculture. Since the average income is only $60USD a month, it is understandable that that percent is as small as it is, for farming supplies can be expensive. The average family farm in Mozambique is only 2 ½ acres. The main crops grown there are: cotton, cashew nuts, tomatoes, cassava, and corn. The problems with agriculture in Mozambique are that the crops are poorly diversified and farmers usually rely on rainfall which the country does not always receive what it is needed. Farmers that do not rely on rainfall use irrigation systems, but irrigation systems only cover 3% of the country.

Work is not easy to find for the people living in rural and urban areas. In the article "*Progress & Poverty*," a woman describes how she hoped to find work in Mozambique's largest private employer, a cashew factory. Cashews are a main cash crop and export for Mozambique. The woman would walk for more than two hours just to get to work where she worked six days a week and only brought home $25USD a month. After the price of cashews raised ten cents a bushel, many factories closed, leading to over 10,000 workers losing their steady-income job.

Education is another key factor for why most of the country is living in poverty. Just over half of the children in Mozambique are able to read and write. All Mozambicans are required by law to attend school through the primary level; however, a lot of children in Mozambique do not go to primary school because they have to work on the family farm. As late as 2007, one million children still did not attend school. Children need to get an education in order to get a quality job to have a higher income in the future. A higher education could also teach them new farming techniques in order to help the family survive.

Access to safe drinking water is a severe problem facing the entire world (Gelletly 84). For Mozambique this is the chronic problem. With over two thirds of the country living with contaminated water, it is almost impossible for residents to escape poverty and for Mozambique to become a developed country. The people have nearly no access to freshwater and must rely on rivers and lakes for this supply, but with their land primarily being tropical grasslands and the droughts throughout the year, it is laborious work to get to the water. The women are usually assigned with this task, but sometimes even children. They must walk miles and miles to just reach the water source and then walk back home carrying each heavy water container on their head or back. The amount of water women carry each day could fill twenty-eight Empire State Buildings. The hours and hours women put into by obtaining fresh water is greater than the number of hours worked in a week by American employees at Wal-Mart, McDonald's, IBM, and Target combined (Water.org).

The availability and demand of water are very imbalanced. There is great demand for potable water from the people of Mozambique, but it is simply not available. The country depends on water resources that originate in neighboring countries (Unicef.org). Fifty-four percent of Mozambique's water does not even come from their country. The water that they are using, seven out of ten times, goes toward agriculture production. Yes, water is needed for agriculture but water is desperately needed for drinking, the basic component of life.

Access to clean drinking water is critical for the health of children. Mozambique has high levels of diarrheal diseases because of the poor access to water and sanitation supplies. They also still have one of the highest rates of infant mortality. One hundred seventy-eight children out of every 1,000 die before their fifth birthday because of malaria, acute respiratory infections, AIDS, malnutrition, diarrheal diseases and measles (Unicef.org). Many of these deaths can be avoided by vaccinations and other medical treatment, but with little money for and barely any access to health care, it makes it hard to afford these options.

Living in rural areas makes healthcare very difficult to reach. In the province of Tete, there are two million inhabitants and just 63 doctors (GlobalHealthCheck.org). That means there is just one doctor for 30,000 people! There are many barriers for appropriate healthcare, including the distance to travel to a health facility plus having the worry if the staff is there and if they have medicine. Half of the people of Tete live more than five miles from a health facility and with no public transport they must walk this distance. Many people consider the distance as a reason to stay home and if they do go it is usually too late. Although Mozambique has lowered the rates of diseases, access to healthcare and training of medical staff is still a must.

It is clear that Mozambique has a multitude of problems, but there is however a solution to each one of these problems. It is obvious that most of Mozambique's water is contaminated and needs to be improved. One solution to fix this is to drill wells in the rural villages of Mozambique and teach the villagers how to properly maintain them. Wells can give the people clean water that is needed for their health. This project can be costly, but is necessary. The average cost of a village-sized well is $7,000USD, but can vary from $7000-$10,000USD. The cost of a well depends on many factors including materials, labor wages, depth of well, and type of pump (WaterWellsForAfrica.org). Another factor for the cost of a well depends on the geography of where the well is needed. The type of land can be a deciding factor of what type of well is needed.

There are many different types of wells with different ways to drill them. The simplest wells have traditionally been hand dug (TheWaterProject.org). These wells have a minimum depth of fifty feet but are usually deeper. The hand dug wells are used when ground water is abundant. While they are very simple, these wells are extremely dangerous to build and accidents are common, especially for unskilled workers. If these wells are left uncovered, the water inside can easily be contaminated. They are not always the ideal well to have but once properly installed and taken care of they can be quite effective.

Today other African countries dealing with water scarcity, including Kenya, are using small, shallow wells. With the help of machines that can dig up to 150-200 feet, these wells can be easily installed. These machines are very cost effective and get the job done. They can be moved easily allowing work to happen quickly. The machines drill through rock and dirt to create a hole for the well. After the hole is prepared the pump mechanism is lowered into the hole and a hand pump is attached so the water can be accessed. These wells are completely sealed, ensuring that the water stays clean and can be consumed without any treatment needing to be done.

Depending on the geography of Mozambique some wells may need to be over nine hundred feet deep. This introduces a whole new type of challenge and expense. Because of the materials needed to drill these deep wells, this project can become very timely. A motorized pump must be used because the water is simply too heavy to lift from that depth with a hand pump (TheWaterProject.org). These deep pumps can cost $30,000USD or more, making it very costly to even think about investing in. These wells, however, can serve over three-thousand people making them quite cost effective. Since over half of Mozambique's people living in poverty, these types of pumps are necessary to help improve the health of these people.

Regardless of the type of the well selected, the people of Mozambique are not able to cover all of the expenses associated with bringing a well to their communities. This is where international aid foundations and charities, as well as global donations for this project would greatly ease the burden of bringing clean water to Mozambicans. The Hall Steps Foundation is an organization that raised money to build a well and medical clinic at the Pemba base in Mozambique. Founded in 2009 by professional runners Ryan and Sara Hall, the Hall Steps Foundation is a non-profit movement to fight global poverty through better health. The Hall Steps Foundation believes that the answer to fighting poverty is to "build a community and provide each member an opportunity to take their own STEPS toward relieving suffering and helping the poor rise out of poverty" (The Hall Steps Foundation).

Of course the people of Mozambique would need to be taught how to properly care for these wells to receive the best benefits. As stated before, building a well does not just end there. Maintenance of the wells is a must. To provide proper care for the wells the people of Mozambique must be educated about the maintenance. To do so the businesses that build the wells will also be responsible for a straining of well maintenance and care. During the time the well is being built, instructors will sit down with the villagers and explain what is being done. Once the well is completed, the instructors from the businesses will continue teaching proper care of the well for an extended three days.

Also, the country of Mozambique can invest in building these wells in hopes that the expenses associated with healthcare will decrease. The Federal Government could set aside 1% ($50,000USD) of their country's annual $5 million USD cashew export profits to be used solely for the purpose of building and maintain wells in rural Mozambique. Depending on the well selected this money could build between 1 and 7 wells a year. Another solution involving the Federal Government might be to offer generous tax break incentives to Mozambique's urban businesses who agree to build and maintain (like a sponsorship) a well for 5 years.

If the cost of a well is too much rain harvesting could be an alternate especially November to April as this is the wet season. In the North the average rainfall per month is 150-300 mm with the South averaging 50-150 mm. It is important for communities to have containers that can utilize in a way to decrease and avoid contamination of the water supply. This would also be a great alternative while wells are being constructed, which will serve as a more consistent source of clean and healthy water for the people of Mozambique.

In 1862, the Homestead Act was passed by the U.S. Congress. This legislation offered 160 acres of Western land to American families. The only condition of the Homestead Act was that the head of household agreed the family would live and make improvements to the land for 5 years (DiBacco 315). As a result, the American families benefitted from the Homestead Act when expectations were met. A program similar to the Homestead Act, that could be used today in Mozambique, could offer a newly licensed American doctor a forgivable loan (30% of medical school tuition), if he/she agreed to faithfully practice medicine in the country for 3 years. The typical American doctor enters the profession with over $275,000 in student loans. A forgivable loan, sometimes called a soft second, of $75,000, might entice a number of doctors to work in Mozambique. With new medical facilities being built in Mozambique by foundations such as The Hall Steps Foundation there will be facilities that need highly trained doctors and health care professionals that can help improve the health of people in the region. Just like the American families in 1862, the doctors would benefit from such agreement.

Additional, the American doctors could offer medical help and train medical staff in Mozambique. Most Mozambicans do not speak English and may have trouble trusting a doctor that cannot speak their language. The aid of a local translator can assist the people of Mozambique in trusting and understanding what the doctor has to say, offer, and teach. The American doctor would work in a medical institute throughout the day from eight a.m. until two p.m., caring for the health of the people of Mozambique.

After the six hour shift of caring for the people, the doctor would then teach from three to six p.m. The doctor would both work at the medical institute and teach during the weekdays, and on weekends only care for the health of the people of Mozambique for three hours a day. The American doctors' lessons would include how to address and care for wounds, proper hygiene (proper hand-washing, sneezing into your elbow, not sharing toothbrushes), how to give medicine in proper dosages, and much more.

Since its independence in 1975, Mozambique has struggled to become a developed country. It has been plagued by economic, social, and environmental problems. The people have suffered through war and natural disasters. Everyday their lives are challenged by a lack of clean drinking water and poor sanitation practices. While the people of Mozambique are a diverse population, they are a friendly, hard-working people, committed to using their talents and resources toward national improvements and solutions. In order for Mozambique to enter the developed world, time, money, and resources need to be divided for proper hygiene and sanitation.

With the water conditions in Mozambique, installing wells are a desperate need. Building a well can easily be done and will have a huge impact on the people of Mozambique. Wells will provide clean and safe drinking water, which is needed in order for the people to escape poverty. Mozambicans will of course need to learn how to properly maintain the wells, but this can easily be provided to each village.

Building and maintaining a well can be costly. To pay for the expenses, the Federal Government of Mozambique can set aside 1% of their annual cashew export profit. This $50,000USD can be used to build up to seven wells depending on the type of well selected. Another way to cover the costs for a well is to have the Federal Government offer generous tax break incentives to Mozambique's urban businesses if the requirements of maintaining a well for five years are met.

As you have read, over half of the Mozambique population is living in poverty. Many Mozambicans die from diarrheal disease, hepatitis A, and typhoid fever, diseases caused by the contaminated water. With the little money they have, it is hard to access healthcare to prevent these deaths. By having a newly licensed American doctor work and teach in Mozambique for three years to forgive his/her student loans, access to healthcare can become more of an option for the people of Mozambique. The doctors cannot only offer medical health, but can teach local villagers how to provide health services for their people.

As an American, you have probably never gone to bed hungry or thought *"Where will my next meal come from?"* In Mozambique, though, 13 million people are faced with these challenges. Mozambicans are ready for change! It will be through hard-work, compromise, and innovation that Mozambique becomes a modern, developed 21st century country.

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