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Botswana, Factor 2: Water Scarcity

Water Scarcity in Botswana, Africa

Botswana, Africa is home to more than 133,829 elephants, which is more than any other country in the world. Botswana is the 48th largest country in the world at a size of 224,610 sq mi. In 2014 the country's population was around 2,155,784 million people. The population density in Botswana is 8.9/sq mi and in 2014 the country had a Gross Domestic Products(GDP) of 14.78 billion dollars. Botswana is a landlocked country in the southern part of Africa. The country's predominant religion is Christianity, and the most common languages include English and Setswana. There are many different ethnic groups in Botswana, but the most common group is Tswana which makes up 79% of the country's population ("Countries and Their Cultures"). The country of Botswana is a country with great potential, it faces many challenges, but there are solutions to these challenges.

The family size of Botswana can be compared to the United States' average family size. In 1807 Botswana's total fertility rate was very high at 6.5 children. Over the years that number gradually dropped. Now, in 2013 the total fertility rate is 2.6, which is much lower than it once was ("Gapminder"). The average family size in Botswana ranges from four to five people. This includes parents and children. In a typical family, the two children walk to and from school everyday. The mother stays home and gardens or cares for any livestock the family may have. The father is gone most of the day at his job where he makes money to provide for his family. As the children grow older they are expected to take on more responsibilities within their household. Education for children consists of primary and secondary school. In comparison to the United States, these primary and secondary schools are like our elementaries and high schools. If a child wishes to continue his or her education, they can attend college after they are done with secondary school. A child would also have to have exceptional grades and the financial ability to pay for college ("Botswana"). A popular local dish in Botswana is called serobe. Serobe is made from goat, sheep, or cow lungs and intestines. The meat is rolled into balls and covered in bread flour. Then the breaded balls are fried and typically served them with vegetables ("Food & Daily Life"). Botswana also uses a primary health care system ("The Health System").

In Botswana about 40% of the country's gross domestic product (GDP) came from agriculture ("Climate & Agriculture"). However, about 0.7% of the total land is arable. Farmers in Botswana face many problems, such as drought and erosion. A typical farm size in Botswana is about 2.3 hectares. In comparison, 2.3 hectares is about 5.7 acres. The crops that are typically grown in Botswana consist of sorghum, maize, millet, beans, sunflowers, and groundnuts. Sorghum is a major source of grain and is often used as feed for livestock. Maize is a plant that is used as a replacement for flour. Its primary baking use is in tortillas. Millet is a gluten-free alternative to wheat, and it can also be used as food for birds. Beans are grown for eating, and sunflowers and groundnuts are used for different purposes in the country and outside of the country ("Country Profile- Botswana"). Raising cattle is one of the most profitable farming activities in Botswana. The country has an estimated 2.5 million head of cattle ("Botswana Agriculture"). The farmers of Botswana have established a well-known cattle industry in their country. Over 95 percent of the cattle produced is exported. A large portion of the cattle exported goes to Europe. In Botswana, only 20% of land is suitable for grazing. Overgrazing also has a negative impact on the remaining suitable land. Food in Botswana is typically grown in a small family garden that provides enough produce for the household. Food can also be bought from a small village market. Unfortunately, not every area of agriculture in Botswana is as successful as the cattle industry. One area in which Botswana is lagging behind is dairy. Only 30% of the country's fresh milk is supplied from family and farms that are within the country. Most of the milk needs to be imported from neighboring countries.

Botswana receives help through the The National Agricultural Master Plan for Arable Agriculture and Dairy Development (NAMPAADD). In 2002 the NAMPAADD was created. NAMPAADD's main goal is to help develop all aspects of agriculture in the world (Hartston).

The people living in the country of Botswana are faced with many barriers. These barriers affect all different areas of their lives. These barriers range from agriculture productivity to employment. Farmers in Botswana have to grow crops that can stand to grow in dry weather because the country doesn't get much rainfall in a year. The country's rainfall may be between 250-650 mm per year. The conversion rates from millimeters to inches shows that Botswana may only get 9.8 inches- 25.6 inches of rain. To put that into perspective, Des Moines, Iowa, on average, receives 36.0 inches of rain a year ("Average Annual Precipitation for Iowa"). As you can see Iowa has much greater rainfall than Botswana. Therefore, Iowans can grow different crops and have a sufficient amount of water to grow those crops. The lack of rain in Botswana is definitely a barrier that prevents the country from being its absolute best.

A large social barrier that the country of Botswana faces is that a large number of the people living in their country have HIV or AIDS. In fact Botswana has the second highest HIV infection rate in the world, right after Swaziland ("New Agriculturist"). Approximately one in three adults in Botswana are HIV positive. A large number of the country's people living with this disease has taken a toll on the life expectancy of the country. It has also caused many children to become orphans. The government has taken action to inform the people of Botswana about this disease that is so easily transmitted. They have also started to seek out more medical assistance when dealing with people who have HIV or AIDS (Caremark).

Lastly, a large barrier that is prevalent in food markets and sanitary water is the removal and disposal of waste. Most of Botswana does not have proper toilet facilities. This leads to feces all over the ground that the people walk on. In many cases human and animal feces are around the market area. Particles from the feces are transferred to the food that a person is buying. Then, when they get back home they may or may not wash the food before they eat it. If they wash the food they run the risk of washing the food with unsanitary water. Urine and feces are also washed into the river or pond that people go to bathe, wash their clothes, or get water from. The country then doesn't have good enough purification systems to clean the water, making the water useable. With all of the feces and urine out in the open, diseases get spread around easier and everyday materials are not very sanitary.

Water scarcity is a very large problem in Botswana. Water scarcity is the lack of sufficient available water resources to meet the demand of water usage within a region ("USDA ERS"). Water affects many different areas of life, from food to quality of living. One role that water sufficiently affects are gardens. With Botswana's little rainfall per year it's hard for families to get water to water plants in their gardens. The people there rely on the food that they grown in their gardens. As mentioned earlier, the people in Botswana have a very well established cattle industry. They need to have clean water to give to the cattle in order for the cattle to grow and survive. Also, the rivers might not have a lot of water in them due to little rainfall or quick evaporation.

Improving issues regarding water scarcity would greatly improve living conditions in Botswana. If the country of Botswana were able to build multiple desalination plants by it's rivers, then this could make the water cleaner for the people. Desalination is the process of removing dissolved salts and bacteria from water which then produces clean water (Webb). This clean water then can be pumped through pipes to reach smaller villages or groups of people who may have had to walk over a mile to get to a river of water. Depending on the time of year the river could also be dried up, so the people wouldn't have any water. With pipes controlling the water, farmers would be able to irrigate their crops better. More clean water being pumped to villages, will help with making more land arable. Cleaner water from desalination plants would be healthier to the people living in these areas. Since the water will be cleaned and purified,

people would be less likely to drink bad bacteria and particles of feces or urine. Disease wouldn't spread as fast, overall allowing people to not get sick as easily. This cleaner water will also be used for washing clothes and bathing. Desalination plants will clean up the water in Botswana allowing better living conditions and happier people.

Other major issues will improve because of this plan. For one, the population of the country Botswana will increase. This will happen because people won't get sick as easily from the dirty, bacteria-filled water. When the amount of bacteria decreases, the odds of a person getting sick from the water will decrease as well. With less people becoming sick and dying, the life expectancy will go up and so will the population. The issue of water scarcity will improve because a town or village will have a well available for the people. The people will also know that the water they are getting from the well is clean, purified water that won't get them sick.

In Botswana water from dams and rivers contributes about one-third to nation water consumption. In the north there are two perennial rivers. The Okavango river and the Chobe river. Something that is perennial is long lasting or appears to be infinite. The rest of the rivers in Botswana are ephemeral rivers, this means that the rivers only last for a short amount of time. Dams are also common in Botswana. The biggest dam in Botswana is the Gaborone dam. This dam can hold up to 141.4 million cubic meters of water, but only supports two towns. The combined population of these two towns is about 330,000 people. In northern Botswana the surface water from these dams is the main source of water. Northern Botswana is becoming more urbanized so there is more water needed to support these people ("Botswana Water Statics").

Ground water is the main source of potable water supply in Botswana. About sixty-six percent of of people in Botswana depend entirely on groundwater. The issue that arises from so many people relying on groundwater is the rate at which the water is replenished as compared to the rate of extraction. Basically, more water is being taken from the ground than being stored. The Department of Water Affairs (DWA) is a local government organization that is responsible for supplying groundwater seventeen major villages. This organization also protects water surface resources from pollution and aquatic weed. The DWA is mostly working in the northern and middle parts of the country. Also, standpipes have been a common way to get ground water for over thirty-eight years. The standpipes are mostly used in the rural areas of Botswana. Recently, the government has decided to put water meters in urban and rural cities in an attempt to reduce the amount of water wastage. Depending on the time of year controls and limit may be put on the extraction of water. Depending on the time of year high temperatures can lead to high evaporation rates. This isn't good because Botswana already has low rainfall. Too much extraction of groundwater can lead to rivers drying up and the level of groundwater reducing significantly. The South African Geographical Journal entitled 'Water resources in Botswana with particular reference to the Savanna Regions' by Du Plessis, A.J.E and Rownetee, K.M say that "Botswana is already experiencing so-called 'water stress' which is related to a number of factors such as rapidly increasing population leading to a sharp increase in water demand; low and variable rainfall, high rates of evaporation. The lifetime of surface and groundwater resources is limited to decades" ("Botswana Water Statics").

Wetlands are also common in Botswana. There is approximately 25,000 km2 of potential wetland area in Botswana. That's about four percent of the total land area of the country. There are wetlands all over Botswana not just in the northern part of the country. Some positives of wetlands is that for one it provides a variety of goods and services. Also fisheries, transportation, timber and non-timber resources, tourism and recreation as well as ecosystem maintenance. Not all of the wetlands offer the same good and services. Although there are many positives of wetlands a negative would be that humans can not consumer the water in the wetlands. ("Botswana Water Statics").

I mentioned earlier that the DWA was responsible for discharge permits. These permits show people different qualities of wastewater for different uses. This department also monitors the water waste and sanitation sector performance and is a coordinator at central and local government levels. Local authorities and councils govern the wastewater produced in an area. In addition, they deal with new water connection and sanitations and executing the planning of wastewater and sanitation at local levels. The private sector is responsible for the provision of consulting services, construction of facilities and provision of wastewater and sanitation services ("Botswana Water Statics").

Even though my plan has many benefits it also has a few drawbacks. For starters it will cost a lot of money to start and build these desalination plants, pipes, and wells. The financial issues could be taken care of through the help of the World Bank. The World Bank could loan the country of Botswana money to build these purifying plants. Then over time the country could pay back its loan. With the help of the cleaner, safer water, farmers will be able to produce more crops that they can sell to make money. Also, they can feed crops to their cattle and help grow that industry as well. The cattle industry is the most well developed industry in Botswana. With more money being made, the country will be able to pay back its debt. Botswana's government would also have to play a part in keeping the country clean. The government would have to keep an eye out for these plants to make sure they stay in proper working condition. The government in Botswana should continue to monitor how much groundwater is being consumed and have a way to get water to people when the water level in rivers is running low. With all of these factors playing a role, the overall well being of Botswana will greatly improve.

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