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Somalia, Factor 2: Water Scarcity

Hope in Somalia, One Drop At A Time

Somalia, Africa is located off the east coast of Northern Africa. Somalia is bordered by the Indian Ocean along the east coast, the Gulf of Aden along the north coast, Ethiopia to the northwest, and Kenya to the southwest. The current population is 10,251,568 people (*Central Intelligence Agency*). Seventy one percent of Somalia's total workforce hold jobs within the agricultural industry, raising livestock in a nomadic way, or growing common crops of maize, sorghum, rice, and sesame (*Rural Poverty Portal*). Most of the country's production agriculture takes place near the Juba and Shabelle rivers. In spite of civil unrest, Somalia continues trying to rebuild governmental policies to strengthen agriculture throughout.

The average Somali family has an income of \$600 per year, compared to the United States whose average household income comes to a total of \$65,000 ("Income"). For many, the income is often less and families maintain an undernourished diet, living off less than a dollar a day. Poverty is a daily reality for many here. A typical Somali family is composed of seven to eight family members. The average education a single person receives here is three years, and 49% of children, between the ages of five and 14 are in the workforce. Within Somalia, 49% males are granted the opportunity of an education, and a measly 25% females are granted the same opportunity (*The World Factbook*). Measures taken regarding improving education have risen in recent years, and a higher demand for more secondary schools as well as qualified teachers is prevalent (*Education In Somalia*).

Low life expectancy in Somalia can be blamed on a number of harsh conditions, most having to do with human services. Health care in Somalia is very limited, with the numbers of citizens given access to a physician at an astonishing .04/1000 people. The average life expectancy is 51 years of age in Somalia (*Central Intelligence Agency*). For many Somalis, clean water access is a big issue and also hinders health as well as agricultural production. Many diseases are contracted from the lack of clean water, for example, hepatitis A and E and typhoid fever.

Main exports of Somalia include livestock, hide, fish, and bananas (*Rural Poverty Portal*). Most agriculturalists consist of smallholders and pastoralists. Cash crops include sugar cane, rice, cotton, lime and bananas. In the northern region, many farmers raise livestock, mainly cattle, sheep, and goats on the semi-arid land in a nomadic way. Near the Shabelle and Juba rivers, commercial agriculture takes place. In the early 1990's, several government farms were scattered about these rivers, however due to civil unrest, many of these farms, including the large-scale irrigation systems that helped raise yields, were destroyed within the decade due to civil disputes. Farmers in the river region depend on rain, as well as hard work. Somalia agriculture is not near advanced in its agricultural production methods as the United States is. Many farmers use their own hands to plant and reap the crops.

Many barriers restrict this country's access to a plentiful food supply, thus leaving Somalia a third world country. If these barriers could be solved, Somalia would be able to raise its standard of living and food

security, leading to more plentiful lives for its people along with eliminating its name off the list as a Third World Country. The following factors are predominant in limiting food supply and the lower standard of living.

Civil disputes erupted in the 1990's in Somalia, and without a central formal parliament for several years, it has left many agricultural lands in ruins ("Somalia Profile."). This problem continues today as many different villages fight about the right to land and water usage. Livestock and equipment have been destroyed throughout the decade, which has also caused people to be displaced from their land. Many once-flourishing crops are now being held back in terms of production from lack of civil security and ongoing clashes for control, especially in the exporting business.

Availability to new farming technologies is extremely low in Somalia. Many farmers are smallholders, meaning they farm five or less acres, most of which cultivated and planted by hand. Tools, like hoes, are used in the production process. Raw manpower is the biggest component of these smallholders' farms. This method hinders these small farmers from being more efficient with their work, as well as allowing them to expand their farms. Not being able to increase production hurts these families. The standard of living will never increase much with these practices.

Unlike the neighboring country of Kenya, Somalia is in fact decreasing in population. A key reason why this is happening is due to malnourishment and famine, as well as disease. A decreasing population can lead to labor shortages, which can be devastating in smallholder farming operations. Malaria outbreaks are to blame for numerous agricultural labor shortages, as many of the areas are damp during planting season. Another reason for decrease in population is the constant migration to neighboring Kenya, as civilians are seeking refuge from civil unrest ("Misery Follows As Somalis Try To Flee Hunger").

Rainy seasons near the Shabelle and Juba rivers cause flooding along much of the agricultural land. The lack of flood gates and river control of this area leaves thousands homeless and hungry year after year. Years back, the Juba and Shabelle Rivers had flood diversion systems, but have collapsed and caused very poor drainage since (*Aquastat*). These floods destroy farmland, specifically the breadbasket of Somalia, which is near the middle of the Shabelle River. Often times, flooding creates a disease outbreak as well, which hinders many because of lack of access to medical supplies.

Another factor that greatly prohibits citizens from being able to become more profitable in agriculture is the fact that only half the population receives an education ("Education"). Even then, the average student is only in school for three years. Somalian farmers lack the basic knowledge and understanding that certain crops are more productive under different conditions, like soil types and climates. If farmers were educated in this area, it would allow more crops to be produced and help eliminate malnourishment within Somalia. Farmers could learn about rotational grazing for livestock, as well as using the manure from production livestock to fertilize their crops, thus making it a cycle of renewable resources and limiting potential costs of fertilizers and feeds. Another key component within education would be irrigation systems. A farmer being able to water his plants in the midst of the drought could be the difference between famine or fortune within the country. An organization such as Heifer International or an extension service like we have here in the United States would be an ideal way of helping teach and implement new farming practices. Extension services would enable in-depth agricultural education for

local officials, which, like the Heifer International example in mind, the knowledge could be passed onto local farmers and workers.

The lack of infrastructure hurts Somali farmers and exports, as the means for transporting goods are not high. Zero improvements have been made to deteriorating roads and bridges, leaving access to markets limited, mostly caused by lack of governmental funds from ongoing civil dispute. Even though most farmers in Somalia do not have a bumper crop year to year, it still remains a vital part in increasing the standard of living by being able to transport goods more than a couple miles. This continues to hinder food security within the nation. New roads or infrastructure is needed in order for farmers to be able to sell their product, as well as import the plentiful crop that is currently rotting because of lack of distribution to poorer areas around the world.

Drought and low rainfall have caused agricultural production to fluctuate greatly. Two seasons of monsoons creates much flooding, however, during the “dry” season, farmers have no access to water, thus making this region less productive and continually leaving the Somali population in a famine. It was not always like this though. The Somali government, before the 1990’s, provided funds to set up irrigation systems along the two major rivers running through this nation (*Rural Poverty Portal*). Also, a reservoir was created in upstream Jowhar to allow for water access year round for many, where this innovation would catch the excess flood waters and provide for farmers and community members throughout a dry season. Now, a broken civil war zone has ruined the once-improved innovations the government was trying to implement. Access to water is obviously essential to life, leaving nomadic herders over-grazing land that is near natural springs so their livestock may drink. This alone could leave farmers jobless for many years down the road, as rebuilding a herd is costly. Having year-round access to sanitary water, specifically for livestock and crop farmers, would increase food production greatly, leaving households with plenty of food, and create commerce amongst each other with the extra product they had left.

If better water conservation practices were in place, Somalia would be able to eliminate several factors that are hindering potential agricultural production throughout the nation. It would take cooperation between the government and local farmers, but being able to implement practices such as irrigation or water storage systems would greatly improve food security. Drought creates a sense of desperation all around, and being able to create an environment where this desperation wasn’t imperative to survive, allowing for collaboration among community members, thus eliminating civil disputes regarding whose land is whose, and who has the rights to certain water access. Over a quarter of a million people have died since the beginning of the famine in 2010, according to a CNN news article from May of 2013. Future deaths could be decreased dramatically if water conservation methods and techniques were used properly. Another important factor to consider is the fact that maize is a grain that takes up a lot of water in order to become a mature plant. Knowing this, farmers need to take into consideration growing a crop that is better suited for a dry climate. Some beneficial crops for this climate farmers could look into are boma rhodes grass, oats, rye, and wheat. As these are all cereal grain plants, this would provide families enough food year round because of the longer shelf life if harvested at the right period of time. These fodders would potentially increase trade, and allow for families to be able to build up more equity, as livestock farmers could purchase both the fodder and grain to help feed animals when pasture runs out.

In order for Somalia to reach a sustainable annual food supply, potential drought and flood measures need

to be taken into consideration. Being able to collect flood waters and later use it for irrigation systems is a start. If the Somalian government would provide funds to create several more reservoirs along the Juba and Shabelle rivers, it could create year round access to water. This would allow for flood waters to be captured, thus decreasing the land degradation as it would not continually sweep soil away year after year. Irrigation systems consisting of lined canals, which would reduce the amount of water lost by the soil absorbing it, and a series of pipes to irrigate in different locations would be very beneficial to crop producers. As for nomadics, by creating these reservoirs along the river, it would not take away from their current access to gravity fed springs. This would give the livestock herders the means to keep livestock hydrated. Not only will constructing these reservoirs lead to better irrigation year round, but the projects themselves will take manpower to install, thus, creating more jobs and those who are hired will be able to stimulate the economy.

Education will be key in the case that Somalia adopts these practices. Knowledge on general plant science and maintenance of irrigation systems will be crucial in maintaining higher yields. In order to make irrigation systems work, the farmers need to learn proper irrigation timing. For example, irrigation in the heat of the day is inefficient as the water will evaporate at a very high rate and is unavailable for the plant to utilize. Also, to make irrigation practices as effective as possible, education regarding inputs, like manure or other sources of nutrients to help make crops more productive, would be vital in terms of diminishing the famine once and for all.

If the Somali government along with other relief organizations and foreign aid could come together and provide the funds to invest in community irrigation, this would create a more stable environment for all. Organizations such as World Food Programme are in the process of educating farmers on how to better care for crops, but only are present in certain regions. No doubt, this project will take time and resources; however, it will provide for years and decades to come. As most farmers currently do not have the means to buy any equipment for their farms, it would be wise for small government loans to be given out and repaid by the farmers after a more bountiful harvest in years to come.

Management of this community type irrigation or a reservoir will be key. Suggestions could be made, such as appointing a board or local chairperson to administer water use. In order for regulational laws to apply, these people would need to be backed by the national government, as well as supported by the locals who will be under these regulations. Regulations could include how much water per day you are allotted and times you are allowed to irrigate.

If Somalia implemented this idea of creating reservoirs along the Juba and Shabelle rivers, it would provide the means of installing year-round irrigation systems that would allow farmers to access water when in need during dry seasons. Seasonal monsoons in what we would call the spring and fall would provide the water needed to fill reservoirs and irrigation systems, and limit the amount of flooding that takes place. Combining these practices along with educating farmers about how to best utilize resources would create a higher yielding food supply, stable family income, and eliminate food scarcity. Although it may sound like a simple or quick solution, many complicated factors come into play such as training civil engineers, willingness of Somali people to accept foreign aid and new ideas. A potential way to help the Somali citizens to see the practical use of irrigation/reservoirs would be to use neighboring countries as models of current projects. If large reservoirs are not the answer to the current situation, another

possibility would be to design systems of irrigation that would serve only a single farm or small community ("Small Scale Irrigation Boosts Income"). This might also be more cost efficient, and most likely easier to adapt to Somalia.

There is no doubt when you look at Somalia's statistics in the World Factbook, they are quite astonishing. Food security is affected by many factors. From the measly education one receives in a lifetime, to the ongoing civil dispute mostly caused by access to fresh water, it is hard to tackle only one problem, but, when you look closer, water scarcity has contributed to limited food security and many of the other problems in one way or another. Research and local and national government involvement is key in finding a long term solution, but an answer to a solution means nothing without us being brave enough to step up to the challenge. The dream is out there for so many in Somalia to know they will have a meal the next day and access to a safe water supply. As Norman Borlaug quoted in his Nobel Prize speech, "If you desire peace, cultivate justice. But at the same time, cultivate the fields to produce more bread; otherwise there will be no peace." It is time we help them grasp that dream.

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