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Mozambique: Water Insecurity Continues to Impact Rural Areas

The nation of Mozambique is composed of coastal lowlands, high plateaus in the northwest corner, and mountains in the west (Central Intelligence Agency). More than half of the population does not have access to safe drinking water. For sixteen years the country was stricken by a civil war, leaving most of the rural infrastructure damaged or destroyed and large portions of arable land infested with landmines. Moving into the southern parts of the country the climate becomes drier, the soils are poor and natural disasters such as flooding and drought are regular occurrences. Desertification and pollution of inland and coastal waters have become common in certain areas throughout the nation. The coastal communities suffer extreme isolation and they are the poorest areas in the country (International Fund for Agricultural Development). There is limited access to raw water supplies and roughly 50 percent of its surface population water comes from upstream neighbors. There is approximately 75 percent of the population that relies on groundwater sources (US Aid from the American People).

The average family size is five people (Food and Agriculture Organization). Most rural women work in agriculture and are primarily responsible for growing food crops. Farming is their main source of food and income, but agricultural productivity is very low. Mozambique has a variety of crops that they plant such as cotton, cashew nuts, sugarcane, tea, cassava (tapioca), and corn (Central Intelligence Agency). Farmers and fishers generally produce enough food to meet their households' basic food requirements, leaving them with little surplus products for sale. Wheat and rice are consumed mainly in the urban areas, where as the maize and cassava are the staple foods for the rural poor (Food and Agricultural Organization of the United Nations).

According to the International Fund for Agricultural Development, "Health care is inadequate and the number of women who die in child birth is high." Two thirds of rural people have to walk more than an hour to reach the closest health unit. Across the country the life expectancy is low and child mortality is high. Many preventable water related illnesses become killers with diarrhea alone causing 10 percent of deaths in children under the age of five (Water Aid). According to Central Intelligence Agency, "Maternal mortality rate was at 550 deaths/100,000 live births and infant mortality rate was at 76.85 deaths/1,000 live births." The prevalence of HIV and the AIDS Virus is another point of vulnerability for the poor rural households aggravating malnutrition levels. The rate of people infected by AIDS and HIV stabilized in 2010, there was approximately a total of 16 percent of the population living with AIDS and HIV (International Fund for Agricultural Development). The country is still dealing with problems from their civil war. They also have a lot of political unrest from having had a civil war. The land civil war left the country infested with landmines. Social services and the health sector are struggling to deal with the magnitude of the situation.

Mozambique's main source of water is surface water. Only 60 percent of people have access to safe water. Many of the locations in Mozambique that have stable water source systems are not able to care for them due to lack of education about how to maintain the systems. Ground water is utilized on a large scale in urban centers for drinking water supplies. Hand pumps, mounted boreholes and shallow wells are used as the main source of drinking water in rural areas. Mozambique shares nine river basins such as the Buzi and the Pungue basins with Zimbabwe and the Rovuma river basin with Tanzania. Since Mozambique shares so many river basins it has many international water issues such as poor water conditions, not only in Mozambique but with the countries that surround it geographically. The country has irrigation potential and the southern provinces have the highest need for irrigation. The prevalence of

water communicable diseases tend to be worsened through irrigation and include malaria, diarrhea, and cholera and to a lesser extent bilharzia, which is caused by parasitic worms called Schistosomes (Aquastat).

Increasing access to safe, potable water supplies and education on proper sanitation and hygiene and food preparation techniques to reduce the transmission of food and water borne disease are needed in Mozambique, especially in the rural areas. Flooding and droughts are factors that affect the amount of food produced and a sufficient income to purchase food. According to Aquastat, "The precipitation widely varies from the coastal and inland regions and from the north to the south. The average rainfall ranges from 800 to 1000 mm along the coast. In the northern and central part of the country rainfall ranges from 1000 to over 2000 mm due to the fact that there are high mountains and the northeast monsoon." (Aquastat) In Mozambique the genetic traits of the crops have not been altered to have a better survival rate in their growing conditions. Locally, farmers are only able to produce enough from crops to provide for their immediate families if conditions are good. This limits the opportunity to sell produce which could potentially provide a higher standard of living.

Women in Mozambique have a very important role in agriculture in their country and with proper training could provide the mechanism for economic improvement. According to the International Fund for Agricultural Development, "Mozambique women have fewer skills than men because they aren't provided the opportunity to be educated or allowed to participate in education."

A significant number of women who work in agriculture live in the rural parts of the country, and they are primarily responsible for food crops. With heavy workloads, they generally play a crucial role in generating food and income for the family. They have little access to or control over productive resources that are required to develop a higher production standards for their limited land areas.

The International Fund for Agricultural Development has found that many women are unaware of the 1997 Land Act which affirms that women should enjoy equal access to land, however; these rights are not enforced. Many women have become the heads of households due to the impact of years of civil war within the country. They have less land to farm and less food security and are more vulnerable to the natural disasters that affect the country.

If Mozambique continues on its current path without changes they will not reach their Millennium Development Goals (MDG's) by 2015. To advance economic growth within their society there will be a need to increase the role that agriculture and fisheries production will provide.

To accomplish this task based on the issues identified within this paper, I believe that addressing the concerns will require a multiple approach.

First and foremost, a review and implementation of water quality standards through defined educational training will provide the first level of improvement to the entire society of Mozambique. Emphasis on providing a clean, safe and healthy drinking water system will provide all citizens with equal access to this life giving benefit. This can be accomplished through the continual development of their agricultural extension service and educational training system they have in place similar to the cooperative extension service program that was developed in the United States in the early 20th century. Mozambique has had a public extension program since 1987 created by the Ministry of Agriculture (MINAG), but it was not effectively implemented until 1992. Mozambique's extension service is focused improving crop production, livestock and natural resource management. There long term goals for the country include improving food security and reducing poverty (Mozambique).

Extension services are training program that establishes outreach centers in every corner of the country with a support system to reinforce individual needs based on water limitations. This will require competing international governments that have access to the same body of water to develop partnerships for regional economic benefits. With the help of Mozambique's government, local and international organizations supporting the improvement of education and extension programs will help to ensure its success.

The second component of an economic improvement plan will require a change in the selection and management of a larger genetic diversification of plant materials that are adaptable to the challenges of the Mozambique climate for food production on land. This will require identifying those international companies that have access to the appropriate genetic material and establishing partnership for future development and research. International organizations and companies that would help play a role in the diversification of crops would be International Fund for Agricultural Development (IFAD) and DuPont. Drawbacks of relying on companies rather than non-profit organizations would be companies might only provide one service, while non-profit organizations might provide more services and help. One way that smallholder farmers could help with crop diversity would be planting test plots to see which types of crops work best in their environment. There are many barriers that large and small scale farmers in Mozambique have to overcome, which include being able to adapt to new agricultural practices and overcoming the climate changes. Once they have learned the different agricultural practices and have crops suitable for the climate, it will be a step towards the improvement of their country.

The use of new production techniques from within the aquaculture industry may provide additional support for protein sources where water management is crucial.

The third issue that needs to be improved is the quality of life in Mozambique. To accomplish this issue will require addressing all of the factors that impact health. It starts with better diets and adequate nutrition to stabilize the country and reduce the stress between those who have a reasonable food supply and those who are malnourished.

There is a need to provide more direct access to general health care to confront the impact of AIDS/HIV. A program similar to a Certified Nurse's Aide (CNA) where individuals are trained should be considered to address basic health care in the more remote areas of the country.

The implementation of one and/or all of the recommendations will lead to a more stable, healthier society that can focus of economic development rather than just surviving.

In order for Mozambique to meet the Millennium Development Goals (MDGs) by 2015 changes have to be made. The people of Mozambique need to be better educated on how to build their infrastructure. While progress is being made to have sanitized drinking water, by using water pumps or wells, the people need to be taught about well building and water pumps and how to properly maintain them. If we educate the rural people on how to maintain these pumps then it will help to decrease death and disease in Mozambique. Educating the Mozambique people about these things will help them to become independent producers in their country.

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