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The Struggle to Improve Water Usage in Mozambique

Introduction

Antes pouco do que nada. This Portuguese phrase means *half a loaf is better than none*. That simple passage so eloquently describes the mind-set that millions of Mozambicans had been forced to adopt during the drought and famine conditions of the 1980s and early 1990s. In 1993, the rainfall averages began to regulate, but agriculture in Mozambique remained unstable, and food insecurity persisted. Slowly the country began to revive itself, but the efforts to improve the status of struggling sectors are hindered by HIV/AIDS, which affects nearly 20 percent of the economically active population according to Mozambique's Ministry of Health. Mozambique grew economically and agriculturally, and by the end of the 1990s agricultural production had increased 5.5% from 1989-91 (Encyclopedia of the Nations).

Although Mozambique has gone through harsh trials in the past, the country is prospering agriculturally and working to repair the insufficiency of its current economic status. In fact, Mozambique has one of the fastest growing economies in southern Africa. The country has recovered substantially from its economic low-point at the end of a civil war in 1992. At that time Mozambique was regarded as one of the poorest nations in the world. The Mozambican economy steadily continues to improve, and the field of agriculture is benefiting from the economic reform. According to the U.S. Department of State, Agricultural pursuits account for 21% of Mozambique's GDP, with an annual growth of 7.9%.

Only four percent of Mozambique is cultivated at any one time, and most of the nation's arable land is not used at all, which leaves an abundance of potential for agricultural growth and expansion in more commercial fields such as biofuels that would benefit the economy. One of Mozambique's most influential prospects in agriculture is the further development of biofuels. Mozambique has the capacity to produce biofuels at a rate that would accommodate for its own energy needs and also for the international market without posing a threat to economic growth and food security because the country has an abundance of available land.

Eighty percent of the population of Mozambique is involved in agriculture. Of these people, ninety percent are active on small family farms. These farmers are the ones that face a constant struggle with unavoidable and unbearably harsh weather conditions which threaten their crop yields, and thus endanger the well-being and livelihood of their families. The annual rainfall in Mozambique varies greatly depending on the region. In the arid environment near the center of the country, the annual rainfall can be as low as 15 inches, while in the wetter highlands near the Zimbabwe border, rainfall totals may reach 60 inches annually. If crops are planted in the extremely fertile low-lying regions along rivers such as the Zambezi, there is a significant risk of crop loss due to frequent flooding. On the other hand, if the farmers decide to plant on the drought-stricken higher terrain; they face the possibility of crop failure as a result of extremely dry conditions. Most of the Mozambican rivers have a seasonal flow pattern with high water flowing torrentially for three to four months out of the year, and extremely low flows for the

remaining portion, which creates two very distinct seasons: one wet and one terribly dry. Irrigation is the key component that is remarkably not existent in most Mozambican farm situations. Small farmers in the region rely primarily on rainfall to nourish their crops, because diminutive family incomes prevent them from affording a system that would provide the necessary irrigation. In most of the country, relying on rainfall to provide water to crops results in pitiful yields, leaving families hungry and without a source of income.

A Mozambican Life and Education

The dietary foundation of the rural residence of Mozambique is the Cassava root, or in the Mozambican tongue of Portuguese, *mandioca*. Mandioca is translated to English as “the all-sufficient”, which is appropriate because the root of the cassava plant provides nourishment to Mozambicans of all social classes. Another staple in the diet of Mozambicans is corn, which was introduced to this African nation by the Portuguese, who discovered the usefulness of the crop in the Americas.

Eighty percent of the population of Mozambique is involved in agriculture or in fishing operations. Of this eighty percent, ninety percent work primarily on family farms. Usually, the family farms produce just enough to provide the family with food, and sometimes enough to provide the family with a decent income as a result of small-scale sales operations. These farms are worked by the entire family, and very rarely incorporate labor from outside the home. Tractors and ploughs are virtually nonexistent in the family farm setting. Women are often responsible for preparing the farmland, maintaining and weeding, and harvesting the crops. Also they assist in marketing surplus produce, although the men in the family commonly are responsible for managing finances. The children on the farm are often responsible for sowing, and for assisting the women with weeding and harvesting. The income of many subsistence farm families is based on the marketing of extra crops. Lack of transportation as well as a poor road system prevents many families from obtaining the maximum amount of income for their produce.

Women in a traditional Mozambican family play an important part in ensuring the well-being of the household. Cooking, childcare, and the collection of drinking water and firewood are chores that are often the female’s responsibility.

The urban population has been growing steadily since the civil war, during which the cities were flooded with refugees. The nation has attempted and failed to accommodate for the growing population by erecting inexpensive apartment buildings. The refugees that could not obtain apartments settled in “shantytowns” on the outskirts of the larger cities, and due to poor sanitation the rundown colonies now combat plagues of harsh diseases.

Poverty in Mozambique is a major issue taking its toll on approximately 54% of the country’s population (2008). Comparatively this figure is a great improvement from the astonishing 70% in the year 2001. Efforts to fight poverty are currently taking effect, and by the end of 2009 Planning and Development Minister Aiuba Quereneia stated in an interview that the poverty level will hopefully be cut to 45%. In order to eliminate some of the poverty in Mozambique, Quereneia and the Mozambican government are planning to use the capabilities of the subsistence farmers to make advances in the expanding commercial agricultural sector. This way, the farmers would earn a larger income to support

their families. One downfall, however, is ensuring that the crops produced by the workers would have buyers. If the crops cannot be bought, the new jobs will not be able to maintain themselves.

Mozambique's devastating civil war crippled the education system of the country, leaving 50% of all primary schools in ruins. The illiteracy rate in the country remains a 55.5% (2000). Most of the people who are illiterate are female; statistically over seventy percent of women in Mozambique lack the ability to read. However, education in Mozambique has become more of a priority in recent years and the school systems are slowly beginning to reintroduce themselves to the population. Students in the country are required to attend school for at least seven years, but, sadly, the majority of students that enroll in the schools do not complete their seven year period of obligatory studies. According to the Encyclopedia of Nations, it is a governmental objective in Mozambique to promote the spread of education at all levels through democratization.

A precise agricultural cycle occurs on most subsistence farms. The seeds are produced by the family, planted by the family, tended, grown, as well as harvested by the family, and then these skills are passed down by parents to their children and then to their children's children and so on. Although Mozambique is not exceptionally arable, the crops grown on small family farms are able to produce at least a minimal yield even in the often unfavorable climate because they are specially adapted to grow well in poor conditions.

Flood and drought have devastating effects on the income and livelihood of many subsistence farmers. Perhaps one of the most influential enemies of the Mozambican family farm, however, is HIV/AIDS. Sixty percent of the households in Mozambique that are affected by the disease reported a significant decrease in crop production (FAO). Knowledge of farming is expected to continue to dwindle as the effects of the disease persist in Mozambique. Some familiarity with traditional means and methods of raising crops on family farms will be lost with the passing of elders from HIV.

HIV/AIDS is a problem that affects approximately 1,500,000 people in Mozambique. Men and especially women and children in the country deal with the disease in their everyday lives. As more and more families are losing their ill, wage-earning relatives to HIV/AIDS, the problems at the homes of subsistence farming families increase as farming know-how begins to dwindle. However, Mozambique has continued its efforts to rid its people of HIV/AIDS. Throughout the years, several governmental programs have been introduced to the country to spread awareness, give treatment, and educate the people of Mozambique about the effects of the awful epidemic.

Mozambique has approximately 20,000 healthcare workers to tend to a growing population of over twenty million. The small number of trained health care workers in the country (about half of the total number) is not distributed evenly throughout the country. In fact, half of all of the districts in Mozambique have no access to doctors or nurses at all. Most families that reside in the rural parts of the country have absolutely no means of receiving testing or treatment for HIV/AIDS.

The Climate's Affect on the Family Farm

During the rainy season that takes place in the months of October through March, farmers in Mozambique have the opportunity to make the best of the unpredictable climatic conditions that occur in the country annually. Notably, however, the increase in the number of irrigation systems being used by

commercial agriculture employees in the country and the increased consumption of water by the growing urban population have nearly managed to revoke the benefits brought to subsistence farmers by a steadily increasing rainfall percentage, especially in the southern part of the country.

By the year 2050, studies say that the availability of water will have experienced an astounding decrease of sixty-four percent, despite the more robust rainfall totals. With such high water consumption rates, it is very probable that several agriculturally important rivers in the country that are vital for the irrigation of subsistence farms may remain completely dehydrated or nearly dry for most of the year. The rate of water flow of the Zambezi River that cuts through the central region of Mozambique is also expected to decline, primarily due to a decrease in total rainfall expected in the countries of Zimbabwe and Zambia which share borders with Mozambique and also help to nourish the river with their rains. Since there is a significant possibility that water shortages will plague the country, the government should educate subsistence farmers about the importance of careful water usage practices.

The rainfall differences amount to only a part of the substantial climate change which has been occurring in Mozambique for, according to a detailed study conducted by the National Disasters Management Institute, up to forty-five years. The study indicated that between the years 1960 and 2005, the average temperature of the country showed an increase of as much as 1.6 degrees centigrade.

As well as an epidemic of HIV/AIDS, Mozambique also is still dealing with the aftermath of a civil war that pummeled the country's progress in field of agriculture from the mid 1970s until the year 1992. After the sixteen-year war, most irrigation systems in the country were either destroyed or abandoned, and although Mozambique has recovered substantially from the agricultural catastrophe, the use of irrigation in Mozambique is still not living up to its potential. Gradually the public funds for irrigation of the country's farmlands are being depleted, and if the government would take actions to implement a plan for increased money usage toward small-scale irrigation systems, Mozambique would potentially be several steps closer to total food security.

A dam and reservoir system such as the one used by the middle-eastern nation of Pakistan could be very useful in Mozambique. In Pakistan, the climate shifts into wet and dry seasons similar to the seasons of Mozambique. To take advantage of river water during the dry season in Pakistan, there are dams on major rivers that form vast reservoirs used to fulfill the drinking water needs of the country as well as provide water for irrigation during the driest parts of the year. Mozambique could benefit greatly if a system like this was put to use on central rivers such as the Zambezi. Countries such as Brazil that work closely with Mozambique to further develop the biofuel and commercial agriculture industry would likely provide some assistance for funding such a project, because it would give the Mozambican economy a much needed boost.

Subsistence, by definition, is the ability to continue existence. In order for Mozambican farmers to subsist, the agricultural knowledge passed down through generations chronologically is of vital importance. In retrospect, the common farm family in Mozambique cannot survive without these essential crops, which provide a figurative safety net for prevention of wide-spread hunger in an unfortunately impoverished nation.

Conclusion

Mozambique's spectrum of struggle stretches from severe drought or flood conditions to a lack of available health care. Education is perhaps the key to the future success of agriculture in Mozambique. Better education systems in the country would provide the population with the ability to take the farm knowledge that was passed down to them and expand upon it to create more efficient crops, and it would provide the children with the esteem and skill needed to pursue a career that would benefit their society either on the farms or in the cities. Mozambique's recent attempts to strengthen the school systems in the country have given more students an opportunity to attend schools, and in the year 2001, the number of students in Mozambique had increased by over a million from the year 1997. Education of health care employees in Mozambique is vital for the government's attempts to purge the country of its continuing struggle with HIV/AIDS.

Gender discrimination amongst the population of Mozambique limits the number of children being enrolled in schools, and is partially responsible for the spread of HIV/AIDS. Statistically, women are more prone to infection, and combined with the fact that some women are forced into sexual relationships at young ages makes them especially susceptible. Young girls are often not welcomed in schools in Mozambique. Every day girls face the possibility of being sexually assaulted on their way to and from school, as well as once they are in school. Families with more traditional values believe that girl's education is not important. Some families in Mozambique are too impoverished to afford formal schooling. Children (especially girls) in these families often work to provide the family with extra income.

With more HIV/AIDS treatment facilities available in rural areas and a more abundant population of health care workers, Mozambique's subsistence agriculturalists who are especially suffering from the disease would benefit immensely. When families rid themselves of the hassles brought upon by HIV, focus on bettering the agricultural sector can be more adequately put to use.

Irrigation is a factor that has the potential to benefit the family farm to an extent that can't even be imagined by many of today's subsistence farmers who are struggling to make a satisfactory income. Rebuilding the damaged and poorly functioning irrigation systems in the country, as well as utilizing the abundance of available land will create a world of change in the economy of Mozambique as well as in the lives of common Mozambican families.

Subsistence agriculture is part of the country's history and culture, and the efforts to improve society and the family farm are beginning to benefit the poor country. Tribulations that challenge the people of Mozambique are many, but with the necessary education and without the horrible detriment brought upon by HIV/AIDS, agriculturalists will flourish for years to come.

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