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The Importance of Water in Ethiopia

Hunger affects one out of every seven people in our world today. Hunger and malnutrition are in fact the number one risk to the health of individuals worldwide- even greater than the risk of AIDS, malaria, and tuberculosis combined. The reason that hunger is so wide spread is because of the number of countries that have an insecure food supply. The cause for this insecurity varies from country to country, meaning that insufficient water supplies, poor soil quality, and many other factors lead to this problem. For many countries in Africa however the main reason for having an insecure food supply results from the lack of water and severe drought, this is especially apparent along the "horn" of Africa. The typical poor farm family of Ethiopia is faced with the consequences of not having enough water every day. The lack of safe water affects not only their health but their lively hood as well because without proper irrigation many farmers do not have sufficient water to grow crops meaning that their family will starve. The help of many organizations such as the Managing Environmental Resources to Enable Transition to more sustainable livelihoods through Partnerships and Land Users Solidarity (MERET-PLUS) are slowly easing the pain of the situation however they are not the solution. The solution to this problem must come from a combined effort between the government and the community in order to create a plan that will work in the long run.

Ethiopia is one such country that has suffered for many years from food insecurity in the past; however they are now just beginning to improve this problem. The number of food insecure people in Ethiopia has declined from 5.2 to 3.2 million within the last year. Innovative programs such as MERET Land Rehabilitation and Purchase for Progress are building long term resilience to food security. Despite these achievements however Ethiopia is one of the least developed countries in the world and is ranked 157 out of a list of 169 in the 2010 UNDP Human Development Index.

The Geography of Ethiopia is partially responsible for the growing food insecurity gap. The hot desert location is not particularly great for growing conditions. The west part of the country gets rain during the summer, but the east is mostly hot and dry. The Climate conditions of sporadic rain fall and infertile soil quality contribute to Ethiopia not being the ideal agricultural location.

Despite the fact that Ethiopia is not an ideal place for growing crops agriculture is the foundation of the Ethiopian economy, employing 80 percent of the country's 77 million people. The well being of Ethiopia largely depends on external factors such as rain, climate change, and the global market. Southern and eastern Areas of the country are currently experiencing a drought affecting much of the horn of Africa. Which is why the effects of managing water security and adapting farming practices for reduced water supplies with improved irrigation technologies and conservation practices in Ethiopia is so very important. The result of agriculture being the number one source of employment in Ethiopia is that 44 percent of the population lives below the poverty line. Currently more than 12 million people are food insecure and according to World Food Programme (WFP).

The average rural Ethiopian farm family is often large and severely poor. The average gross national annual income per capita in Ethiopia is $280 US which makes Ethiopia one of the poorest nations on earth. This breaks down to the family living on less than $1 US per day. The fact of the matter is that rural families live on less than $0.50 US per person per day. The average number of children that an Ethiopian family will give birth to is 6.8, however, not all of the children will survive in most cases making the average household consist of a mother and father with four to five existing children all living on as little

as $4 to $5 American dollars per day. The education provided to these families would be limited and only available to children until they are 13 years of age.

More than half of Ethiopia's small farmers have less than one hector of land, where they would typically grow grains. Grains are a staple food in the Ethiopian diet; other staple foods include tubers and root crops such as potatoes and sweet potatoes, lentils, and oil seeds like sunflower seeds. The consumption of meat in rural areas is very low because of the high cost of meat. This contributes to the vital success of crops which is another reason why water is so important. There are two separate growing seasons for rain fed crops in Ethiopia. The first season is a short spring one that ranges from March to May called the Belg. The second and longer of the seasons is the summer one that ranges from June to September and is called the Kirmet. With efficient irrigation these growing seasons could be extended, possibly making it possible to farm almost all year round. This would increase the food supply, farmer's wages, and decrease the amount of hunger among rural populations.

Drought in Ethiopia in accentuated not because the country as a whole lacks water, in fact Ethiopia has Africa's second largest water source in Africa. The cause of the drought in Ethiopia is the distribution of water within the country. The sources of water are concentrated in particular regions and not shared throughout the country. For example the Great Rift Valley region in the southwest of Ethiopia gets over 2,000mm of rainfall every year, however the dry northeast region of Ogaden gets less than 200mm of rainfall every year. The lack of sufficient irrigation systems in Ethiopia add to the problem of unequal water distribution. The percent of irrigated farmland out of total amount of arable land is less than 1 percent.

The epidemic of malnourishment is caused by poor agricultural production in Ethiopia has resulted from the lack of irrigation, soil erosion, and deforestation. The children of Ethiopia are severely undernourished because of these problems. Statistics show that 38 percent of children under five were moderately to severely underweight and 51 percent of children fewer than five were suffering from stunted growth as a result. 15 percent of the population of Ethiopia are considered food insecure and have a high reliance on food aid. Many of these problems could be helped by the development of new water practices and technologies such as irrigation. The seriousness of the situation in Ethiopia demands that both the government and nongovernment organizations combine efforts to solve this issue.

The Managing Environmental Resources to Enable Transitions to move sustainable livelihoods through Partnerships and Land Users Solidarity (MERET-PLUS) program in Ethiopia has improved many aspects of the agricultural crisis. This is a program which is co- run by the Ethiopian government and the United Nations. Since 1980 the World Food Programme (WFP) has supported rural land rehabilitation in Ethiopia through the MERET project addressing the root causes of land degradation that results in food insecurity. The primary focus of the MERET is to find local solutions for national strengths. These local solution include natural resource rehabilitation and development of stabilization of hillsides, construction of farm land terraces and gully erosion control and rehabilitation, reforestation, water harvesting for small scale irrigation, construction and maintenance of feeder roads, productivity enhancement, among many other contributions

To lessen the problems of land degradation and food insecurity, WFP has been supporting the Ministry of Agriculture and Rural Development through MERET project and considerable achievement have been made in land rehabilitation practices, protection, and development. Shocks such as the severe drought which has struck the horn of Africa since 1983, poor farming practices, and tremendous population growth have all contributions to the monstrosity of the problem with food insecurity.

As a result of the MERET program the situation in Ethiopia is slowly being improved. The communities involved in this program are involved in all the decision making processes and have demonstrated strong

success in improving food security, and poor household food gaps have been reduced considerably. The main sources of intervention for the program are soil and water conservation, soil fertility management, water harvesting for small scale irrigation activities. The major water related achievements of MERET are the construction of over 800 water springs, 211 water ponds, and 1,000 shallow wells. As well as the production of more than 20 farm dams and 50 overflow dams, and the creation of over 1,000 Kilometers of gully check dams.

Water supply services in Ethiopia are among the lowest in Africa. The strong urban cities of the country since the 1970's have kept the investments in rural areas quite low. In the 1990's only 19 percent of the country's population had access to safe water, however the rural population only had 11.5 percent access to safe water. According to the Ministry of Water Resources a study conducted in 2004 showed that 19 percent of the rural and 80 percent of the urban population have access to safe water, and the total coverage for the country is estimated to be 26 percent. Therefore we come to the conclusion that the great majority of rural Ethiopians use unsafe and polluted water. As a result of this the majority of people are commonly exposed to large varieties of water borne diseases. This is very serious within the rural population because they have virtually no sanitation facilities, while in the country as a whole only 8 percent have access to sanitation. When compared to other countries in Sub- Saharan Africa the accessibility to health services of the country is in the worst possible situation. With this being said even the households that have access to safe water do not sufficient quantities of it in order to live a healthy lifestyle.

Rural water supply services started in the late 1950's under the Imperial regime. However it wasn't until 1971 that the Water Resources Commission was established to hold responsibility for all aspects of water use and development. The Commission was responsible for planning and utilizing the countries water resources. The main reliance for water schemes had been motor driven boreholes, hand dug wells, spring protection, and every once in a while artificial ponds. The drawback to water drilling was the process was only carried out in rural communities close to the main road network and inaccessible communities were ignored. The extension of the area of coverage by the transport network increased the area of coverage of the Commission.

In order to resolve this issue by the year 2015 I would recommend that investments in small scale irrigation be made. In past years Ethiopia has not utilized its water resources adequately or wisely, and because of this they are lagging behind the progress made by other African countries in the development of irrigation systems and secure water supply.

In the past few decades, rain water harvesting techniques have been used in arid and semi-arid parts of the world and promising results have been achieved by increasing yields under low rainfall conditions. Various techniques available for increasing runoff catchment involve clearing or altering vegetation cover, increasing the land slopes with artificial ground cover, reducing soil permeability by soil compaction, and application of chemicals. The channels for storing the rain runoff normally are line with cement or made of compacted earth to prevent the channel from being eroded by the flowing water. Roof rainwater harvesting is a popular method in Africa. This method works because the water that runs off the roof is caught in a catch basin and stored for use in household and crop needs. However despite the potential for the technology to improve agricultural productivity, the adoption of this technology by farmers has been insufficient.

The emphasis in the past has always been on large scale irrigation investments. The problem with these water systems is that they were poorly designed and constructed and had various consequences to the environment. The largest issue with the large scale irrigation plans was that the policies were only discussed with the government and the local communities were kept out of all decision making. The loss of traditional farming and grazing land, population displacement and relocation, and the irreversible long

term damage to the environment are a few of the costs that communities had to pay for the failure of the water projects. In Ethiopia for example four costly dams that were constructed in the 1980's had to be abandoned and several irrigation schemes became unusable due to poor characteristic of the government of the time. One could conclude that even if a few of these small scale irrigation systems don't work they are small failures in the grand scheme of the country. This is why small scale irrigation may be the best solution to the crisis.

Small scale irrigation can be defined as irrigation in which farmers have the controlling influence. These systems are usually on small plots of land and are maintained by the farmer. Part of the reason why these systems are so efficient is that they are based on using a level of technology that the farmer can operate, handle and maintain effectively. Although some small scale irrigation systems serve an individual farming household, most serve a group of farms, usually consisting of 5 to 50 households. Crops require large amounts of water for irrigation, and it is very important to calculate the water requirements accurately to have a successful harvest. The amount of needed water is dependent on the local environment, climate, the crop and its growth stage, and the degree to which the crop has been stressed. For this reason large scale irrigation typically doesn't work because the amount of needed water for all areas is different throughout the country.

Large scale irrigation systems are completely different from the ideology of small scale irrigation. Whereas small scale operations have the local farmer in mind, large scale has the country has a whole as a target. These Large scale projects may include dams and basins. The reality of the situation is that small scale irrigation is more effective on a local level because it caters to the local farmers.

Within the past few years small scale and peasant based irrigation has received more attention. Small scale irrigation systems are found throughout the Sub- Saharan region of Africa and out of 34 countries small scale irrigation covers 74 percent of the total irrigated land in 17 of them. Within Ethiopia it is shown that small scale irrigation serves almost half of the total irrigated area in the country. It is therefore clear that because of this small scale irrigation is widespread and has a vital role to play. Not only have small scale schemes succeeded while large scale movements have ultimately failed, they are also less expensive due to the fact that they are self managed. It has been found that the cost for large scale operation is approximately US$17,000 per hectare, whereas the cost of a small scale scheme ranged from US$3,000 to US$3,500 per hectare. The reality of the situation is that the cost to the federal government is very low because most of the necessary work will be done by the beneficiaries themselves. The reason that small scale operation seem to work is due to the fact that they are dedicated to the needs of the local communities. Many of the small scale irrigation systems in place today have been in place for well over a century. The main advantages of small scale irrigation are they have lower investment costs, don't involve dams or storage reservoirs which means that population displacement doesn't occur, less demanding of management and maintenance, have no serious environmental impact, and they allow the farmer to learn irrigation practices in their own way at their own pace.

The first step to implementing small scale irrigation should be to enhance and improve the efficiency and productivity of traditional irrigation. The second step would be to ensure that peasants have access to simple, cheap, and environmentally friendly water technologies. These technologies could include but are not limited to hand pumps and shallow tube wells which are widely used in other countries of Asia and West Africa. The third step would be to improve the marketability of irrigated produce by constructing access roads, offering better prices for goods, and improving product quality. These and similar measures will help to ensure that a plan of action be made in Ethiopia.

Managing of water scarcity and adapting farming practices to reduce water supplies with improved irrigation technologies and conservation practices is a very important issue in the country of Ethiopia. In the past large scale solutions were used to try and find solutions to community problems without success.

With the implementation of small scale irrigation schemes that fit the needs of the farmer and are less expensive to the government farmers are able to better utilize their irrigation opportunities. With improved irrigation the distribution of water throughout the country will become more equal. The amount of people that are left hungry and poor because of poor water supply will be reduced because of the new systems. The issue of water scarcity will continue to be a problem in years to come which is why solutions to this problem need to continue to be implemented. However, the issue of water scarcity will only be a growing problem with the factor of a growing population creating more mouths to feed. The condition of the water is also a big contributing factor to the problem in Ethiopia. If the water becomes polluted then the water that they do have will become unusable. Therefore water scarcity may contribute to food insecurity however other factors affecting the amount of water available are just as important in trying to combat the problem. Seeing that the trend in water scarcity is decreasing there is hope for the people of Ethiopia and their situation will continue to improve in years to come with the continued support from organizations.

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