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Dealing with Climate Variability in Ethiopia: Agricultural and Societal Challenges

Ethiopia's range of agro-ecological zones has brought about a remarkable diversity of micro-climates and corresponding weather patterns (Regassi, Givey, 4). This variability in climate virtually defines Ethiopia's landscapes. Unfortunately, Ethiopia negatively suffers from climate change, most notably the droughts that have contributed to hunger and famine in the past and continue to devastate the people today. In fact, in the last two decades, East Africa's droughts have been more severe and frequent ("Drought"). Furthermore, this inconsistency in the climate means families and communities cannot predict the weather as accurately. Small subsistence farmers are more likely to bear the brunt of the negative consequences of climate change in Ethiopia, which include increased poverty, water scarcity, removal of children from school, and gender discrimination ("Climate Change").

Responding to this climate change is an immense challenge to Ethiopia's food security. Reports delineating details of how climate variability continues to impact the lives of the poorest farmers show a seemingly irremediable future for the nation. "It's getting harder for families to bounce back from inconsistent weather affecting their livelihoods, and many have been forced to sell livestock or remove children from school-coping mechanisms that only increase the cycle of vulnerability" ("Climate Change"). Only one percent of Ethiopia's land is irrigated and long-term sustainable agricultural practices are virtually non-existent ("Drought"). It's obvious that this nation is in dire need of a long-term, effective solution.

The average farm size measures just less than 2 hectares (Lacroix). The size of the land is regulated by the government and is notably small. The average family size is 5.3-7.5 persons, which includes extended family (Hengsdijk, Vernagen, 16). About half of the children are under age ten. Education is difficult to access. Students must travel great distances, and a comprehensive education isn't realistic for many people ("Supporting Education"). The literacy rates are below 50%, and the average school enrollment figures have never topped 70%. Many families remove children from school to search for fuel.

In addition to the lack of education, there is a lack of efficacy in health care access. The health care system in Ethiopia is among the least developed in Sub-Saharan Africa and struggles to cope with its multitude of problems ("Health System"). In most rural areas, there is lack of physical access to even basic health care facilities. It is especially hard to deliver health care to groups such as women and children because they live far away from health care facilities, towns, or even roads. ("Work in Ethiopia"). Many of these rural subsistence farm families are hard to reach. Thus, health care access is virtually nonexistent or extremely deficient.

Typical Ethiopian cuisine consists of engera, a flat, sourdough bread, and wot, a stew made with spices, meats, and lentils. The most common cereal crop used to make engera is called teff. In Ethiopia sorghum, coffee, wheat, barley are grown (Lacroix). The agricultural practices used in Ethiopia are outdated ("Ethiopia"). In some areas, farmers only plant one or two crops a year. They cultivate crops in the valleys and leave the mountainsides bare. Trees are cut down, and soil erosion is widespread. These poor agricultural practices combined with the climate change result in a perilous state for the nation of Ethiopia (Maden).

Besides poor crop rotation, there are major barriers to improving agricultural productivity. Farmers are vulnerable to seasons of drought and other natural disasters. Seasons with lack of rainfall are key factors in rural poverty. “Limited coping mechanisms and inadequate planning for drought mitigation make farmers more vulnerable to its devastating effects”(“Rural”). For these subsistence farm families, gaining access to food markets and adequate nutrition is tough. They earn a very low living wage, 85% of subsistence farms live on less than 1 USD a day (“Drought”). Many times if their crops fail, they have nowhere to turn to for food, other than dropping their farm altogether and pursuing a career in the more urban cities.

Ethiopia’s ecological resilience to erratic weather slowly decreases as global warming takes its toll. The rising temperatures and persistent drought make farmers extremely vulnerable to poverty with its resulting food insecurity. These rising climates do not allow for rural farmers to produce enough food. Neither do they allow for them to generate enough income to purchase this food. The income of these rural farmers is predicted to drastically decline as this sector increases in population (“Ethiopia”). Thus, responding to this climate change by adapting proper agricultural practices is vital in these families’ ability to produce enough food and earn sufficient income.

The impact of climate variability is also shown in crop production revenues. For example, the coffee berry has developed a plant disease in certain areas of Ethiopia (Regassa, Givey, 34). High temperatures aggravate the problem of coffee berry disease during long dry “spells.” According to coffee farmers, the longer dry months reduce coffee production. Furthermore, the climate affects the pest population. For example, another threat to coffee is a pest called the coffee berry borer (35). This pest population destroys more plants as the temperature rises. There are some changes in agricultural practices and policies that attempt to minimize the harmful effects. Growing coffee under the shade of trees can help because the heat is less extreme. However, many farmers do not follow this practice and continue to chop down trees and practice poor agricultural techniques. It is important that the farmers be educated and aware if they are to benefit from outside help, but more importantly, they have to be willing to implement advice.

The environment has also been impacted greatly and degraded. Some places once covered with evergreen forests have become deforested due to the agricultural expansion of crops. There are fewer trees and less good soil. These factors all contribute to the problem of dealing with the erratic weather. There are trends that indicate the temperature is predicted to increase. The situation is worsening as the temperatures continue to rise, and farmers continue their poor agricultural practices. The trends in this factor are measured by the amount of annual precipitation. There is a link to warming in the Indian Ocean and precipitation declining which is likely to intensify (Regassa, Givey, 5). If this happens, there will be a devastating impact on farmers and poverty will escalate.

Because gender roles tend to change during hardships, there is also a significant impact on women. Men leave to look for work in construction, while women stay on the farm. This male migration puts more responsibility on women’s shoulders, and quarrels and divorces are very common during times of drought. During times of drought, some women also look for off-farm activities such as working for better-off people in urban areas. In times of crisis, other women tend to stay home with their children, while men move away to look for alternative means of survival. Women have fewer options to find other ways of making a living. They’re usually not given a say in household decisions and are frequently without cash savings to buy food.

There are ways to improve and, perhaps, resolve this problem that could increase the amount and quality of food and income to rural families. One suggestion to preserve the environment and reduce the carbon footprint is carbon sequestration (Wanamaker). It is the process of placing carbon dioxide in the liquid state from the atmosphere into underground reservoirs. However, there are many downsides to this process including “storage security, increased energy consumption, and large-scale practicality”

(Wanamaker). Another solution is implementing research to find new breeds of crop that will be more resilient to climate change. With some assistance from non-governmental organizations and the Ethiopian government, small-scale farmers can adopt crops that are more drought-tolerant. This would prove effective in the long run and poverty reduction.

Unfortunately, there are few short-term solutions to Ethiopia's problem. Many other factors and issues will affect the dire need to improve food security in Ethiopia. Population growth, water scarcity, urbanization, energy demand and pollution are said to be increasing. Climate change is likely to intensify and precipitation to decline; as a result, poor farmers will be devastatingly impacted. Population is bound to increase and the subsequent need for expansion of agriculture will continue to make this factor a challenge. "As the size of a country's population continuously increases, the per capita income from this economic sector will decline" (Crawley). This prediction means that the income generated for these farmers in Ethiopia is steadily declining in a direct correlation with the population. Of course, this will only make problems worse in the country's responses to climate change. The future is bleak if urgent remedial steps to curb the birthrate are not taken.

In addition, water scarcity will escalate. A severe water crisis exists in many rural areas of Ethiopia. Many farmers say that their water supplies from traditional water sources such as ponds and shallow ground water have been declining in the past twenty years and are projected to decline further in the future. Many attribute this water scarcity to drought and floods, which results from the climate change. People now travel long distances in search of water for domestic consumption, and time is taken away from engaging in productive activities such as improving agricultural practices. It sometimes even means that children are taken out of school to look for water instead of studying. The energy demand for the future also is a factor that will affect the severity of this problem. The availability of fuel sources such as firewood and cattle dung fluctuates with rainfall. When rainfall is less predictable, fuel sources can be less reliable (Regassa, Gilvey, 21).

With some assistance from non-governmental organizations and the government, small-scale farmers are adopting a variety of coping mechanisms. In the farming areas, farmers can be taught to shift to more drought tolerant crops and varieties. On a larger scale, the international community and Ethiopian government need to invest in social protection mechanisms to give vulnerable communities quick support in times of crisis. The National Adaptation Program of Action is a program already existing to implement a national framework for guiding climate change adaptation and mitigation.

Also, economic activities should be put in place to make the nation more resilient to greater climate variability and change. A primary project done by the UN is the Ethiopian Commodity Exchange. This project is under a MDG that wishes to provide technical expertise in hopes of "bringing together farmers, farming co-operatives, domestic traders, agro-industrial processors, commodity exporters and institutional buyers to meet and trade through a secure, low-cost platform" ("We Can End Poverty"). Already about 850,000 Ethiopian farmers are involved in the Exchange System, which facilitates approximately US\$5 million to 10 million per day. This would be a project worth scaling up as it builds the farmers' resilience to shocks. More importantly, it allows their voice to be heard, their rights to be addressed, and their livelihood options to be expanded. Investing in those sectors of Ethiopia greatly support expansion of health, education, and infrastructure as well.

First are the recommendations at the national level. A national framework for guiding climate change adaptation and mitigation could be built on the NAPA. Also Ethiopia government can support agricultural research on developing new drought tolerant crop varieties. The national level should be responsible for promoting civil society and community participation, especially women, to change policies and address the gender discrimination that is a result of the climate change. There needs to be a way that international organizations guarantee a return to the communities that manage resources so that the investment can be genuinely secured in only the Ethiopian farmers. Recommendations at the community level include improving the agricultural services and enhancing the best practices that already exist. It is essential to build on what farmers are already doing to combat their vulnerability to climate variability. Perhaps, the community needs to investigate agricultural practices even further and find the potential areas for enhancement. For the environmental aspect, new forestation programs need to be implemented. All in all, there needs to be strength and cooperation among “policymakers, nongovernmental organizations, research institutions, and the media” in combating this problem (“Climate Change”).

Today the farmer in Ethiopia lives with insufficient resources to combat the problems of his environment. Consistent help from the international community is much needed. Farmers’ lives truly dependent on their ability to bounce back from erratic weather and seasons where there is a lack in rainfall. The little that these Ethiopian farmers have goes to dealing with the current unpredictable weather because their livelihoods are so dependent on it. Often this exposes them to a whole range of other shocks, such as illness, which makes them even more vulnerable (Regassi, Gilvey 5). Ethiopian farmers are still scraping through life with backward agricultural practices dependent on nature. Holistic approaches are needed to build up the resilience of the farmers. Right now people are vulnerable to a variety of shocks, and climate is at the forefront (Regassi, Gilvey, 39). Programs need to be developed on a community as well as a national level, and the voice of the population itself needs to be included. There is little time left to plan for the future and start the process of building the farmers’ resistance to climate change’s effects.

Rural Ethiopian subsistence farmers are hindered by poor agricultural practices and limited access to health and education. These constraints are shaped beyond the farm and the household by the policy and institutional arrangements fashioned by international development agencies, but more importantly the government of Ethiopia. In other words, most man made hindrances to solving these problems can be overcome. As Emerson said, “As long as a man stands in his own way, everything seems to be in his way.” The struggle of food insecurity in Ethiopia can be won. However, Ethiopia and the international community’s willingness to collaborate is key to a better future for its people.

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