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Ethiopia, Climate Volatility

Establishing Ethiopia: Reforming the Ethiopian Approach to Agriculture

The Federal Democratic Republic of Ethiopia is located in the Horn of Africa (Overview about Ethiopia Embassy of Ethiopia, 2019). With a population of more than 116 million, it ranks as the second most populous country in Africa and thirteenth worldwide (Ethiopia, 2024). Ethiopia is one of the oldest nations in the world, with its history dating back four millennia and being united for a thousand years (Overview about Ethiopia - Embassy of Ethiopia, 2019). Today, Ethiopia suffers from food and water shortages due to unpredictable rainfall, soil erosion, overgrazing, and poor farming practices. Food security in Ethiopia continues to decline as crops fail and soil becomes unsuitable for agriculture (Ethiopia, 2024). The failure of agriculture and water distribution has led to malnutrition, starvation, and dehydration among the Ethiopians (Daniel Gashaneh Belay et al., 2023).

The Ethiopian emperors throughout history have long isolated Ethiopia and its people from the outside world. It was not until the Italian invasions in 1895 and 1935 that Ethiopia was forced to open up and pursue relations with foreign nations (Ethiopia - Countries - Office of the Historian, 2024). Due to population growth, Ethiopian food production can no longer support its entire population. The people now rely on imports of wheat and other foods from foreign nations to meet their shortages; this has resulted in approximately two billion dollars of food products being imported per annum (Food and Agricultural Import Regulations, 2020). The Ethiopian economy is also heavily dependent on agriculture as it accounts for 46% of the gross domestic product and 85% of the workforce. It is known for its exports of coffee, spices, vegetables, and oil seeds to various countries worldwide (Ethiopia: Economy, n.d.).

The average family in Ethiopia consists of five members: two parents and three children (Estimating the Needs of Workers and Their Families in Ethiopia, 2021). Families live in circular huts with walls built of wood, mud, and thatched roofs of straw. These homes are often deteriorating and poorly built with dirt floors, cracked walls, and leaking roofs. A majority of homes do not have access to electricity and most people have inadequate sanitation facilities or none at all (Ethiopia | Habitat for Humanity, n.d.). Despite Ethiopia's economy being one of the strongest and fastest growing in the region, it remains one of the poorest countries with a per capita gross national income of \$1,020 U.S. dollars (World Bank, 2023). The country continues to struggle with malnutrition as it remains a prominent issue among the population, specifically the children. Child malnutrition worsened and became more challenging to counter with the outbreak of the COVID-19 pandemic; household income declined, resulting in food security weakening, and nutrition became a luxury most families could not afford. Malnutrition accounts for 45% of child mortality under the age of five in Ethiopia; although malnutrition is a problem across the world in other developing countries and is not unique to Ethiopia, it is a serious issue that must be addressed for the country to grow and prosper (UNICEF, n.d.).

With the Ethiopian economy being so dependent on agriculture and crop exports, being able to counter and adapt to climate change is a high priority for Ethiopia and its people. 85% of the workforce works in agriculture, and most rely on the food they produce to feed themselves and their families (Ethiopia: Economy, n.d.). The decline of agriculture not only decreases the amount of food available but also the money people earn by farming; with less money and less food as the years pass, the country continues to decline in food security.

With a majority of the population being rural, the landscape and climate of the region are very important to people's way of life (Ethiopia, 2024). Droughts have devastating effects on the land and its people; they

deprive people of water and stunt the growth and yield of crops, sometimes wiping them out completely (Holupchinski et al., n.d.). With climate change rising, droughts become more prolonged, frequent, and severe (United States Geological Survey, n.d.). Ethiopia struggles to combat these droughts; poor management and farming practices only worsen the effects (Ethiopia, 2024).

The challenge that comes with reforming the system of farming and adapting to more extreme climate change is the cost and the time. Ethiopia is a poor nation on a global scale; when it comes to household income and the wealth of the country as a whole, the government cannot compete with larger, more developed nations (Ethiopia: Economy, n.d.). This makes the cost of reforming the farming system almost impossible for the Ethiopian government alone. Also, the time it would take to reform this system and continue the production of crops and food regularly could leave the people of Ethiopia starving and unwilling to receive aid, even if it does have better long-term effects.

I propose the United Nations: Food and Agricultural Organization lead a fundraising effort, deliver aid, and assist Ethiopian farmers struggling with climate volatility. This project would fund and teach farmers to enact no-till farming and prescribed grazing throughout their land while also funding the construction of aqueducts and pipelines to distribute water throughout the country. This would allow crops to grow resilient to the changing climate and make water available throughout the country for farming or drinking. To start this organization, fundraising should be heavily directed towards the Italian government as a form of reparation; this will compensate the nation for the actions and war crimes committed towards the Ethiopians in the First Italo-Ethiopian War and WWII (Pankhurst, 1999). The donation from Italy will likely set a precedent of holding former colonial powers responsible for helping to reconstruct and support the nations they once exploited, allowing underdeveloped nations across the world to modernize and progress.

Soil erosion is the geological process in which the top layer of soil is worn away and transported over time by natural forces such as water or wind (Mulvihill, 2021). A farming practice known as no-till farming involves not tilling the land before planting new crops. No-till farming has been used for thousands of years and was the leading farming practice used until the eighteenth and nineteenth centuries; in these years, people began tilling the land because it allowed them to plant more seeds and do less work. Tilling removes the plant matter covering the soil and disrupts the microbes and insects living in the soil, which are needed to ensure healthy soil biology. Without them, soil begins to loosen and is less able to absorb nutrients and water, harming the crops and plants that grow (Spears, 2018). Tilling is a temporary solution to gain food and shorten labor, but over time, the soil becomes bare, and the land becomes incapable of growing anything and starts to erode. No-till farming has many benefits, one of them being less soil erosion. With no tilling, the soil continues to have a healthy biology and in turn, continues to maintain the nutrients it needs to grow plants. Without tilling, soil also remains at a regular density. When soil is tilled, it loses its structure and is more vulnerable to compaction; compaction restricts the growth of plants, and as a result, water and nutrients are not absorbed correctly. Furthermore, No-till farming leaves plant residue on the ground, allowing the soil to retain its moisture, which is especially important to Ethiopia as it can counter the effects of droughts that often occur (Exapta Solutions, Inc, 2016).

Prescribed grazing is the practice of organizing and creating a planned schedule of livestock grazing. Selective grazing is used as a more straightforward solution to not having to control or watch the animals while they graze, but this results in more desirable plants being eaten and allows unwanted plants to grow and multiply. If selective grazing is used for too long, the area becomes overused and dies, a process known as pasture deterioration. Prescribed grazing combines animals from several pastures and moves them evenly between areas so high-quality plants have a chance to multiply and grow, and low-quality plants are kept from becoming too popular. This results in improved grass conditions and, as a result, increases livestock production, reduces soil erosion, and conserves water (United States Department of

Agriculture, 2022). Prescribed grazing promotes a healthier, more diverse environment; rotating animals regularly creates food, cover, and shelter for animals while also helping the soil maintain its nutrients and water infiltration (Natural Resources Conservation Service, 2012). This farming practice can be used in Ethiopia to combat soil erosion and prevent crops and plants from drying out by retaining water moisture during droughts.

Ethiopia is the base of the Nile and has access to abundant water in basins in the western country (Winrock International, n.d.). Droughts plague the east and southern lands of the country regularly, but with no way of transporting the water, people are forced instead to look to their immediate surroundings. This can be of little help when many people and farms depend on the limited water supply in that area. The situation in Ethiopia continues to worsen with climate change following five consecutive failed rainy seasons. This requires Ethiopia to take action and rely less on the immediate surroundings and instead distribute the country's resources evenly throughout the nation so no one is without water (Ethiopia: Drought Situation, 2023). The construction of aqueducts and pipelines from the west to the east would allow eastern and southern people access to water, preventing dehydration. This would also help lessen the effects of droughts on the economy and food production, as water would still be available to grow crops and plants. With water distribution, droughts could be completely harmless when water is distributed from places with less need for water to areas with high need for water. One could argue droughts are eastern Ethiopia's most significant challenge regarding farming and water use; with the construction of water infrastructure, Ethiopia could maintain steady yields across the nation, allowing families to make a stable income and afford basic needs they could not before, such as nutritious foods.

Adaptability is crucial in a country like Ethiopia; it is subject to extreme weather conditions and continues to be affected by droughts in the eastern region that only worsen with climate change. Ethiopia suffers from a multitude of issues and problems that need to be addressed, but the top priority must always be the survival and well-being of the people. By reforming farming practices and constructing water infrastructure in Ethiopia, it will equip and prepare the country to adapt to the various challenges it faces in the form of climatic events and population growth. By making these changes, Ethiopia opens itself up to a future of growth and development that is free of limitations.

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