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Kenya, Factor 5: Climate Volatility

Kenya Can Change in Response to Climate Change

Here in Kentucky, water has not been an issue for professional farmers or avid gardeners this summer as most of the Bluegrass state remains chloroplast-green during a time of the year it has typically already started to fade into the dry tan of late summer. Personal, community, and commercial gardens have flourished in Kentucky as most of the state has received an uncharacteristic amount of rain, a stark contrast to the news coming from California, where farmers would relish a few mere centimeters of rain. Making these two observations, it seems clear that our climate is changing. Average temperatures and levels of precipitation are no longer consistent with past data, and nowhere is this more true than in the East African state of Kenya, and the people of Kenya are suffering because of it.

Officially known as the Republic of Kenya, this country is known for having one of the strongest economies in the region. Yet despite this, millions of Kenyans, 45.9% of the 45.55 million in the population, live below the poverty line (World Bank). The gross net income per capita is only \$790, and the country ranks 145th over 187 based on United Nations Human Development Index (“Rural Poverty in Kenya”). Moreover, 9.9 million people, one in five, are undernourished in Kenya, with 1.8 million children being chronically undernourished (“Millennium Indicators-Kenya Series Data”).

Three-quarters of the population lives in a rural setting, making the average family a rural one. On average, a woman has three children, although family size is often significantly larger in rural areas (“CIA World Factbook-Kenya”). Most families rely on cereal grains, especially maize, for most of their diet, which contributes to undernourishment and malnourishment. Excluding pastoralists in the northern regions, who raise livestock for a living, meat is rarely affordable. In spite of this, education rates are significantly better in Kenya than neighboring countries, with a school life expectancy of 11 years and an enrollment rate of around 80%, although this percentage shrinks drastically in northern arid regions to around 40% (“Millennium Development Indicators-Kenya Series Data”).

Kenyans also have many difficulties regarding healthcare. The physician to civilian ratio is .2 per 1000, and in rural areas mothers will often have to walk dozens of miles to reach a clinic which they cannot afford (“CIA World Factbook-Kenya”). Drinking water remains unimproved for 44.9% of the population, making waterborne illness a daily concern (“CIA World Factbook-Kenya”). Additionally, the country has the fourth largest population of AIDS victims in the world with 1.6 million patients (“CIA World Factbook-Kenya”).

The average rural family is also involved in agriculture—either subsistence or commercial—and Kenya’s high gross domestic product depends on that. The agricultural sector employs 80% of the population (“CIA World Factbook-Kenya”). Furthermore, smallholders who rely on rain as the sole source of irrigation produce 75% of the total agricultural output. This makes for a country that is extremely dependent upon the climate for success.

The typical farm size is .86 hectares, although, by definition a smallholder farm can be anywhere from .1 to 10 hectares (“Agricultural Development Economics: Country Details.”). The most popular crops in Kenya include corn, wheat, millet, and beans for subsistence production while the main exported agricultural products include tea, coffee, and horticulture products, mostly flowers (“CIA World Factbook-Kenya”). Tools and practices are generally rudimentary and unmechanized. The families that work these small farms do not depend on heavy machinery, but rather their family unit and a few crude

tools to tend their land. Most farmers do not have the ability nor the knowledge to implement drought resistant varieties of crops.

It is millions of these very types of farmers that are today food insecure and fall into the 9.9 million that are undernourished in Kenya. Several barriers cause this to remain so. The farmers that cultivate products—usually tea, coffee, or flowers—for commercial export are receiving less money for the crops as prices fall (Hunan). With this reduced revenue, it follows that they can therefore buy less food and other necessities for their family, but this is especially so because of inflated food prices in Kenya due to reduced output (Reuters). This inflation also adversely affects subsistence farmers who might trade some of their products to get a more varied diet.

Although the Kenyan government is now investing in infrastructure—mainly roads—, poor infrastructure, some of the worst in the region, is also a major barrier for Kenyans who try to sell their products (“Rural Poverty in Kenya”). Without the infrastructure in place to allow for safe and efficient travel, farmers cannot take their goods to larger markets where they would hope to earn a higher price.

Many Kenyans are also not farming in the most efficient way, often for lack of knowledge. For example, many farmers choose to grow maize, a crop which, without modification, is intolerant to droughts in unsuitable regions because they do not “feel like they have eaten a meal unless it includes maize” (Omanga qtd. in Roberts 153). This results in an underutilization of land and an even greater chance for crop failure even with the slightest change in precipitation. Even when farmers do grow crops suitable to their region, they are often not provided with information regarding soil or water conservation in order to maximize yield.

Water availability is one of the most significant challenges small rural farmers face. Only 1032 square km of Kenya’s 580,367 is irrigated (“CIA World Factbook-Kenya”). Kenya’s farmers truly are reliant on rain, and in the last several decades and especially the last several years, these rains are unreliable, leaving farmers helpless and with a severely reduced or nonexistent output at the end of the season.

This lack of weather reliability—rising temperatures and reduced rainfall—is a direct result of climate change. There have been several severe droughts in the last five years, and already this year less rain than expected was received during the short rains season. For farmers that rely on rainfall, this means less or no food on the table because they are “still never more than a season away from disaster” (Roberts 145).

Take, for example, climate change’s effect on tea, one of Kenya’s most profitable exports, mainly reliant on cultivation by small-scale growers. According to a Bloomberg Business article, “hot, dry weather cuts deliveries by more than half” and 27% less tea was sold at the world’s largest tea auction in Kenya in March of 2015 (Ombok). On a small scale, this effects individual farmers because without any or reduced amounts tea, coffee, flowers, or other export crops to sell at the end of a season, they have lost income, and likely have become food insecure. On a large scale, reduced tea sales means reduced taxes to the government in order to fund projects.

Climate change has also hit subsistence farmers and pastoralists as well. In the northern county of Turkana, individuals like Samuel Aboto have lost their entire herd due to lack of water, and now have nothing to call their own (Hatcher). Families of smallholder farms, especially women, find themselves walking greater distances simply to get water not even for their crops or livestock, but simply for their own consumption. After the short rains this season, reports indicate that food assistance will be vital for 1.5 million more Kenyans, which is an “increase of about 15% from February [of 2015]” (World Food Programme). A similar story also unfolded two years ago in 2013 as a greater number of Kenyans needed assistance due to drought (World Food Programme).

Nevertheless, climate volatility is not the only cause of food insecurity. A significant issue in the country is the population explosion. Currently there are over 500,000 refugees in Kenya from neighboring South Sudan, Somalia and Ethiopia, and this is a particular stressor for those people living in the North around the camps. So many resources are being poured into helping the refugees that locals can be overlooked. Moreover, another issue of concern, especially to the 45.9% of the population that is poor, is that the lower quantile of the population is only responsible for 4.8% of the country's income and consumption ("Millennium Indicators-Kenya Series Data"). This disparity must be focused on in order to help bring the millions who are food insecure into the middle class.

Addressing climate change must be a priority, however, in order for a significant improvement in undernourishment to be seen because otherwise all other attempts at improvement will be undermined by the effects of climate volatility. Various ministries of the Kenyan Government, such as the Ministry of Environment, Water, and Natural Resources, and non-governmental organizations are working to try to mitigate the effects of climate change, and change on a small scale is being seen, but it remains true that 9.9 million people are food insecure and thousands of acres of arable land is not being used effectively. Diminishing the effects of climate change would allow for smallholder farms to produce a more stable output, and would, overtime, dramatically reduce the amount of people that need food assistance. With a more stable source of food and income, a greater number of children could attend school, food inflation would likely decrease as a result of a greater supply of food on the market, would allow families to focus more on healthcare, and a greater profit from agricultural exports such as tea and coffee would return. In order for Kenya to continue to be one of the strongest economies in East Africa a cohesive commitment must be made to tackle climate change.

To effectively address climate volatility in Kenya, a united approach must be taken that aims to fulfill Kenya's Vision 2030 (Kenya's enactment of the Millennium Development Goals) as well as the Climate Change Action Plan. To accomplish this, the government and non-governmental organizations—such as the United Nation's World Food Programme and Farm Africa—need to work together to disseminate knowledge and ensure improvements in all parts of the country. To facilitate this by the year 2017—in line with the median goals on Kenya's path to Vision 2030—the government should require each of the 47 counties to partner with at least one non-governmental organization or government ministry to design and enact a plan that works to mitigate climate change and ensure greater food security. This should be accomplished through reforestation or reallocation of water resources via the construction of irrigation canals, dams, and water pans, and the sharing of knowledge concerning conservation and agricultural techniques that are relevant to the changes in weather patterns that each region will see in the coming decades through an increase in the number and distribution of extension workers. This plan would work towards fulfilling the first Millennium Development Goal of eliminating poverty and hunger, as well as target nine of the seventh goal, which is to integrate sustainable policies into governmental ones.

Addressing deforestation, which is a major issue in Kenya that directly effects climate change through decreasing the amount of trees that can sequester carbon, would begin to help alleviate the stress climate volatility is placing on smallholders. Deforestation has reduced the water catchment capacity which most directly effects agricultural lands around deforested regions such as the Mau forest,—which has seen a loss of one-fourth of its tree cover (Sawa)— but also contributes to more extreme weather conditions, like floods and droughts, throughout Kenya ("Rural Poverty in Kenya"). Some work is already being done to promote reforestation. For example, the Kenya Tea Development Agency (KTDA) is working with 560,000 small tea farmers to plant indigenous trees to sequester carbon and exotic tree varieties such as eucalyptus to use as fuel (Oirere). This project aligns with Kenya's Vision 2030 to increase total forest cover to 10%, currently 2%, and their goal to have at least 1% of each household's property planted with trees. Projects such as KTDA's should be taken as an example that each county's government can use and modify to allow their region to fulfill Vision 2030.

Ensuring a source of fresh water for irrigation would immediately combat issues associated with droughts, especially in northern counties, allowing for a much greater and less volatile yield each season. In 2012, the Food and Agricultural Organization of the United Nations partnered with the Kenya government to build irrigation canals off of the Turkwei River in the Turkana region which now supplies 130 hectares of small farms (*Kenya and FAO*). Projects like this can and should be taken on by more counties across the country to combat low agricultural outputs. Even in regions where rivers are not available for use, other successful examples exist. The non-governmental organization Farm Africa has worked in Eastern Kenya in the Kitui region to teach the community how to build zai pits and ridges for their crops to help conserve as much water as possible for plant use (Farm Africa). As demonstrated here, each county has a distinct need and can develop a unique way to solve its problems, if required to make a plan, every part of Kenya can prosper.

Arguably most importantly, knowledge and resources concerning climate-smart agricultural practices must be disseminated to every single small farmer in every county in order to give each individual the best chance at success. Organizations such as Farm Africa and Water Efficient Maize for Africa (“Water Efficient Maize for Africa”) are working to distribute drought-tolerant seeds to farmers at no cost to them. Moreover, Farm Africa is also teaching at Maluma Farmer Field School to show farmers how to be successful with less rainfall (Farm Africa). Armed with proper techniques, farmers can become one step closer to being food secure.

In order for all of these initiatives to be successful, however, it must be ensured that any positive step taken is not easily reversed. Kenya is notoriously corrupt, and some have already seen how quickly progressive action can be reversed. In one example concerning reforestation, the Kenya Forest Service noted that in the past conservation plans have failed “because forests were converted ‘into farmlands, urban centers, and settlements, reducing their ability to supply forest products and serve as water catchments . . . and carbon sinks’” (Oirere). In a legitimate effort to ensure honest intentions, the Kenyan government might consider having an independent organization monitor progress.

In a country with so much potential already known as the most successful economy in East Africa, implanting this plan would ensure that all parts of Kenya achieves Vision 2030 and mitigates the effects of climate volatility. Focusing on reforestation, water reallocation, and agricultural knowledge, Kenyans can start on the road towards food security and wean themselves off of food aid from the United Nations and other organizations. Requiring each county to develop and enact a plan would make certain that every Kenyan, not just those in certain regions, has the opportunity to succeed. With enough courage from leaders, enough determination from everyday smallholders, and enough faith from non-governmental organizations Kenya can have not only an exemplary economy, but an exemplary standard of living.

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