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Kenya, Factor 5: Climate Volatility

Kenya: Large-Scale Plan to use Climate Volatility to Help Food Security

Every hour, 300 children are lost to malnutrition. That's 7,200 a day, 216,000 a month, and 78,840,000 a year. Almost all of these people live in developing countries and make up 15% of our world population, making this a rapidly growing concern. Hunger is a worldwide epidemic, but it is heavily centered in Asia and Africa. Asia's problem, however, is decreasing as in the past few years, the number of hungry people has decreased 30%, "...largely due to socio-economic progress in many countries in the region," (World Hunger). However, Africa is not experiencing the same progress as Asia. "The number of hungry grew in Africa over the period, from 175 million to 239 million, with nearly 20 million added in the last few years," and is growing 2% each year. Rising food prices, drought, and poverty are negatively affecting the malnutrition in Africa and more specifically Kenya, a country on the eastern coast of Africa, where "... some areas now have the highest malnutrition rate recorded in a decade," (OCHA).

Only 580,367 square feet in size, Kenya has more issues relating to food than some of the biggest countries in the world. Of the 45,010,056 people living in the country, 385,000 children under five are malnourished. As the low plains grow to central highlands, the temperature stays mild year round with light rain, averaging around 53.15 mm annually. Having this in mind--along with the large youth population and fertile land in the west--it may seem like prime farming conditions. For many countries, it is. But in Kenya, harvests are failing, leading to soaring food prices, which, in turn, create malnutrition mayhem. Crop mortality rates have reached anywhere from 15-60%, depending on region. "With conditions already critical for millions of people, and with dire forecasts for the remainder of this year—crippled harvests, quickly depleting sources of water and pasture land, the continuation of high prices for food, water and fuel—this massive humanitarian crisis will only grow in scale and severity unless immediate measures are taken to scale up relief efforts" (Action Against Hunger).

The archetypal family in Kenya is typically composed of four children, a mother, and a father. They also routinely have tight-knit relationships with their extended family with many shared meals. A meal that is likely to be served includes traditional cuisine, such as ugali; a stiff dough, uji; porridge made from ugali, red bean stew, mandazi; donut-like bread, githeri; corn and beans, or chapatti; a flat bread.

Family composition is a large factor in production rates and talent-centered work on farms, but to know what you need to do, agricultural education is necessary. Approximately six years of school has led to the literacy rate of 91% of males and 84% of females. But, increasing the education expenditure from 6.7% of GDP to 7.5% of GDP could solve multiple problems. Starting with focus, agricultural classes could be an elective course for kids preparing for life on the farms. This could also be beneficial by creating supplementary funds for families that cannot afford secondary school for all of their children. In terms of classes, optional medical courses should also be available for the older, more intelligent student to increase the doctor density from 0.18 per 1000 people for their generation. The need for medical knowledge is great, as they will research medicines, cures for HIV/ Malaria, and helping the wounded to increase the survival rate of the Kenyan farmers.

Family Composition and Education will greatly affect the work and production out on the land, however, what happens when you contract an illness or hurt yourself? The current health expenditure is 4.5% of GDP and access to sanitation facilities is also lacking at 29.6% of Kenyans. As said before with education, to improve health and extend healthcare in Kenya, it is necessary that the health expenditure be increased to at least 6%. Kenya's economy is relying heavily on these two aspects and would greatly

benefit by putting a little extra money into them. Another place the money would end up is in hospital repair and construction. Throughout Kenya, people avoid hospitals at all costs because of their lack of medical supplies, and patients must provide their own meals and medicine. But with the growing HIV rate and already prevalent malaria issue, the cost of Kenyans not receiving medical attention is likely fatal. If the nation's farmers are contracting illnesses during their work, but are too afraid to attend the hospital, then they will be out of work for months, and possibly die. Leaving this untended to work for less people, which will lower production, increase goods' prices, and creates an overwhelming amount of malnutrition- the problem they are dealing with now. If we know what caused the hunger epidemic, then the solution becomes clear.

75% of Kenyans live in rural areas, and therefore farm either on the side or as their occupation. "The bulk (98%) of the farm holdings in Kenya are small (<10 ha) and lie mainly in high potential areas" (A Kenyan Experience). The women in Kenyan work on the family farms: "...because it's a mother's responsibility or extension of feeding her family" (Monsanto). A typical Kenyan farm family will grow tea, coffee, cabbages, onions, mangoes, corn, wheat, and/or rice. Most Kenyan farmers practice 'mixed farming' because they raise crops and sustain livestock. However, only 40% of families can provide for themselves year round (weADAPT). Also, according to the Monsanto website, Kenyans are suffering from: "lack of fertilizer, poor quality seeds, inconsistent water availability and rudimentary knowledge of agronomic practices" (Monsanto). And, with the percentage of arable land at 20% while only 9.7% is actually being farmed, it is clear why Kenya's standing in the Global Food Security Index is only 40/100. In addition, only 10% of the Kenyan GDP is earned through agricultural income, making farming not a high priority in this region.

The Green Revolution 'revolutionized' the farms and economy in Asian regions. But, unfortunately, this revolution never seemed to work in Africa, let alone Kenya. So, without the help of international organizations, Kenya and areas surrounding have struggled in the improvements that Asia successfully completed. Currently, MFarm is working towards direct contact between the buyer and Kenyan farmer via text message. Today, "many farmers only have the produce, but don't have the means to market their produce themselves...They have to rely on middlemen who show up and give them both the price and the buyer. They have no information and no alternative market" (Solon). The goal of MFarm is to eliminate the middleman and increase profit to the farmer. It is also stated that farmers are seeing significantly less consumers the past few years, meaning families are not receiving the proper nutrients (Solon). According to Scaling Up Nutrition, in a 2008-09 Kenya Demographic and Health Survey: "35% of children under age of five years are stunted, 16% are underweight and 7% are wasted (Scaling Up Nutrition). Another barrier to agriculture in Kenya is the growing unpredictability of the climate. Agriculture and the growth of crops are highly dependent on a consistent water supply; which can be distributed by the farmers, but the crops also need a sufficient annual rainfall. With the erratic rain, consisting of droughts and floods, it is difficult to grow an ample amount for the country as a whole, making Kenya reliant on its imports. However, it is necessary to make improvements on the farms themselves before changing current agricultural practices to cope with the weather.

Although there are many factors affecting the ever-growing malnutrition rate in Kenya, a manageable cause, through adaptation, is the erratic African weather. From increasing temperatures to a consistent 30, or more, degrees Celsius, to an expanding rainy season, "Farmers, people in cities, local scientists and governments all tell a remarkably similar story – that there is evidence of more extreme and unseasonal weather taking place outside the natural variability and cycles of African climate, and that the poorest communities are the least able to adapt" (The Guardian, Videl). This climate variability is impacting the production of coffee beans, a specialty of Kenyans. "Intermittent rainfall in the 2007/08 crop year... caused a terrible bout of the Coffee Berry Disease that cut Kenyan output 23 percent" (Nyambura-Mwaura). Not only is the encroaching rainy season affecting the productivity and pest infestations of agriculture, its increasing the need for hired labor throughout the year. According to Reuters writer, Helen

Nyambura-Mwaura, “Because of the unpredictable weather, bushes are flowering when they should not and have coffee berries at different stages of maturity. This means farmers have to hire labor through most of the year to pick very few kilos of coffee.” In turn, more Kenyan Shillings are being spent than originally needed. To help this problem, we will need to come up more shillings to pay for this expensive work.

The problem of unpredictable weather effects more than what meets the eye. Further, inadequate food supply is reaching the plates of the Kenyan people. Because of the climate change’s ability to decrease crop production, rural folks are unable to provide enough for their large families. Climate volatility has been common in Kenyan weather the past few decades, and has no end in sight. Climate Change Action Plan states, “Kenya is most vulnerable to climate change since the key drivers of the economy (agriculture, livestock, tourism, forestry, and fisheries) are climate-sensitive. Coupled with the country’s low adaptive capacity to climate change, the country experiences a high level of vulnerability” (KCCAP). As said in the quote, the vulnerability of the Kenyan economy and agriculture is due to the inability to cope with climate change. And since weather is not something that can be changed in humanly measures, we can begin to take a more realistic view of what Kenya can do.

In addition, it is clear that if we can devise a solution that deals with the current weather situation, Kenya’s economy will stabilize. If we can find ways to better irrigate the land and store excess rain in the rainy season to provide more during the droughts, more crops being grown will be adequate for the Kenyan and World markets. Also, if a solution to unpredictable weather is implemented in a quick fashion, Kenyan farmers will be better equipped to spray their crops to prepare them for rain and protect them from Diseases, like the Coffee Berry Disease that was so devastating. And finally, my theory for improving the economy can be stated as before except in reverse: by finding solutions to these ongoing problems in Kenya, farmers will be able to produce more higher quality crops, leading to an increased profit to provide a higher standard of living for families across Kenya. We are one step away from creating these much needed solutions that have the capacity of fixing the Kenyan, and maybe even African, economy.

Although climate change is a major factor affecting the production of crops in the farms of Kenya, there are a few other issues that impact or are a result of climate change. Water scarcity is a problem that Kenyans have only more recently started worrying about. In the past few decades, “Kenya’s natural water resources... do not provide an equitable delivery of water to the various regions of the country and the country’s water basins do not reach an equitable area of the country” (Snyder). The lack of water naturally and in water basins is an effect of the increasing decline in annual rainfall that will continue for decades to come. According to A Climate Trend Analysis of Kenya, “Extending the observed 1960–2009 changes out until 2025, we find that large parts of Kenya will have experienced more than a 100 millimeter (mm) decline in long-season rainfall by that date.” The effects of the change in annual rainfall are affecting coffee bean productions and other plants growth in a negative manner.

The rate of urbanization in Kenya has increased to a higher percentage than most other countries around the world. The rate of 4.36% is almost the same as Chad and Central Africa Republic combined (World Factbook). This fast-growing city population is likely to cause more pollution than the country has ever experienced, contributing to the pollution being created by major urban areas around the world, further affecting the drastically changing African climate. Stated by Numbeo, a collaborative online database that shares information on the cost of living in different countries, another factor impacting the lack of water is water pollution. ‘Drinking Water Pollution and Inaccessibility’ is rated as high on their charts, along with ‘Dissatisfaction with Garbage Disposal’, ‘Dirty and Untidy’, and ‘Water Pollution.’ If the pollution is affecting the quality of the water being given to crops on the Kenyan farms, then it is going to affect the production, sales, and profit percentages as well. And if not detected soon enough, even more diseases could devastate families and friends.

Another factor affecting the amount of pollution in the atmosphere is the increasing energy consumption in Kenya. Although total production of oil in Kenya has reached zero, the use has increased dramatically in the past few years (U.S. Energy Information Administration). To supply the growing demand, Kenyans are looking for ways to drill their own oil for cheaper price. However, the increase in oil supply will hurt the Earth and affect the climate volatility even more than it already has.

Though climate change has been a major factor affecting the crop yields in Kenya for the past few years, not many resolutions have been put in place for the country to adapt. To get the country back up on its feet, some ideas need to be planned out and implemented immediately. The Green Revolution, "... originally described developments for rice and wheat, high-yielding varieties (HYVs) have since been developed for other major food crops important to developing countries..." (International Food Policy Research Institute) in Asia and India, has a proposal that Kenya should consider. First, in response to chronic droughts and malnutrition, Rockefeller and Ford industries, the financiers behind The Green Revolution, established an international agriculture research system to help developing countries adapt. The research conducted was on cash crops being produced in each region. Next, the Revolution bred improved variations of these crops, along with the use of fertilizers and other chemicals, and an irrigation system (The Green Revolution). For Kenya specifically, the irrigation could prolong the rainy seasons through the dry months.

In previous years, The Green Revolution has tried and failed to help sub-Saharan African countries, but why? The Revolution reached out to Africa back in the 1960s, and while they had prosperous ideas that had worked for south and East Asia, Africans were reluctant to participate. The Green Revolution emphasizes the use of fertilizers, an irrigation system, and breeding seeds to make crops stronger, while Africans couldn't afford the expensive fertilizers that make the whole project work (Rural 21). At the time, everyone just decided to give up. But, that is hardly an excuse to not come back around now and try again. Although African government and locals are not a more financially stable than they were then, The Green Revolution has a section of their website dedicated to raising money for developing countries; for Kenya, these donations reach 10,361,402 U.S. dollars. This money along with loans from the UN to governments that apply for financial aid, and affordable fortified food supported by PepsiCo and other corporations (Unilever), allows countries to use the resources, repay their loans, and eventually prosper. Not only should Kenya receive help and loans from international programs, but the Kenyan Government also needs to take responsibility and help with the problem. An organization that intends to supplement national governments for countries around the world is the World Food Program. This group has an interesting take on improving the malnutrition rates in hurting countries: "WFP works to help build resilience to droughts through programs that use food as a means to build assets, spread knowledge, and nurture stronger, more dynamic communities" (World Food Program 1). Their first step, along side the national government, is use rain assessments of the rainy seasons to determine the population needing food assistance. After their studies of Kenyan rainfall, WFP discovered, "...that 1.5 million people will be in need of food assistance through early 2015, an increase of about 15 percent..."(World Food Program 2). As a result, 700,000 Kenyan people have benefitted from the work of WFP, along with 770,000 students, who received meals from their school. This led to the Ministry of Education feeding another 750,000 students, daily, through the national Home Grown School Feeding Program, "a Framework to Link School Feeding with Local Agricultural Production" (WFP). Not only did this improve the education experience in Kenya, which will affect the crop production and quality in the future, but it also promotes the consumption of locally grown foods. With the ideas of providing meals for a couple million people to improve education and encouraging the sales of locally grown foods, the World Food Program's plan has great potential.

Although the government and national organizations should help with the means and overall planning portion of the solution, locals also need to participate to reach the end goal. According to the Kenyan National Climate Change Response Strategy (KNCCRS), Kenyans need to adapt to pursue short term,

medium term, and even long term projects. They need to, “Focus on increasing vegetation cover, expand carbon sinks, and bridge the gap between the dry spells” (KNCCRS). In order to do this, Kenyans can apply other organizations and government help, such as the irrigation system of the Green Revolution and the improved education resulting from the World Food Program and government’s plan, to reach these goals.

This paper has briefly analyzed the complex and complicated issues that are currently facing the country of Kenya, and, more broadly, the entire continent of Africa. Such problems will need attention from not only the Kenyan government, but also the local population, charities, and international organizations. All of these sources of help will support the long-term project that these people are facing. It will all start with the increased education and health expenditures from the government, which will enable Kenyans to support themselves and receive the medical attention that they need. Having more agricultural and medical knowledge will lead to increased life expectancies, productivity, and quality of their harvests. One individual, or even a community, cannot implement these plans or, in the end, solve this problem on their own; it will take the engagement and an advanced technological knowledge of multiple generations. And that is what will bring about the change our world needs.

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