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Chad, Factor 5: Climate Volatility

Chad: Viable Solutions to Combat Climate Volatility and Food Insecurity in Chad

The Republic of Chad, located in central Africa, has notoriously been regarded as one of the most malnourished and underdeveloped countries in the world in terms of food and water availability, agricultural practices, household income, healthcare, education, and a plethora of other necessities. This country is ranked only two spots below the most disadvantaged countries in the world, those being Burundi and Sierra Leone, according to the 2015 Global Food Security Index in which Chad was placed 111 out of the 113 most food deprived countries in the world (“Chad”). Poverty affects nearly 87 percent of the Chadian population and is especially noticeable within rural families located in the central and southern areas of the country. The average family size in rural areas of Chad is six to eight people, including at least one parent guardian, usually a mother. Around eighty percent of the Chadian population depends on herding and agriculture as their primary means of bringing food and currency into the household (“Chad”). The food most commonly grown and relied on by the population are subsistence crops such as millet, sorghum, rice, and maize (“Chad Economy”). These crops are continually damaged by Chad’s sporadic and unpredictable climate often plagued by recurring floods, droughts, and locust infestations throughout the region damaging land and increasing Chadian exposure to food insecurity (“Chad”). Chad is also experiencing a refugee crisis that has brought over 90,000 refugees from the Central African Republic and 350,000 refugees from Sudan, displacing over 90,000 Chadians and exhausting Chad's already extremely scarce resources more than ever (“Chad in Crisis”). Political tensions and governmental corruption coupled with large amounts of refugees, limited healthcare, and educational resources also negatively affects Chad’s potential chances of becoming a food secure nation with plentiful jobs, sufficient income for families, and open markets. There are many ways to improve food security in Chad primarily revolving around addressing new agricultural solutions to combat climate volatility and increasing positive governmental intervention.

Food, although a necessity to human life, is always scarce in Chadian households, directly resulting in the extreme malnutrition and irreversible stunting of infants and young children that lasts throughout adulthood. Reportedly, a little over eight percent of newborns do not survive their first year of life and twenty children out of every one-hundred children do not live to reach the age of five (“Poverty & Healthcare”). Additionally, 11.7 percent of the surviving children in Chad remain stunted as a result of extreme malnutrition that oftentimes begins in the womb of a severely malnourished mother (“Chad”). Health professionals have concluded that nutritional availability in the first 1,000 days of a child’s existence are crucial to preventing lifelong stunting that has a detrimental effect on the developing minds and bodies of young children. Long-term malnutrition causes serious developmental problems including an averaged lower IQ score, a weaker immune system, and an increased possibility of developing terminal illness later in life. Various economists have also deduced that stunting, as a prevalent nationwide problem, can lower a country's GDP by as much as 12 percent (“Stunting”). Humanitarian organizations such as the World Food Program have taken actions to prevent stunting in young children by providing assistance to approximately 1.4 million people in Chad, including providing nutritional support to children from infancy until the age of two (“Chad”). As a result of the numerous efforts currently being made to drastically decrease the effects of malnutrition and stunting on young children, the worldwide frequency of stunted children decreased from 255 million to 159 million since the year 1990 (“Stunting”).

The majority of health problems currently being encountered in Chad are a result of either long-term malnutrition or easily preventable viral and bacterial conditions; problems which are not easily dealt with because of the insufficient Chadian healthcare system. Health care availability in Chad is minimal because hospitals are only prevalent in large cities and towns, and the hospitals that are available are in poor condition and have inadequate medical staffing. According to the World Health Organization, only 345 licensed physicians were working in Chad from the years of 2000-2010 equating to an overall 0.4 physicians for every 10,000 people ("Poverty & Healthcare"). As a result, one out of every three children within the ages of twelve to twenty-three months are not vaccinated against common childhood illnesses. All of these factors being the primary cause of mortality in children. The government is not allocating many of its resources to improving healthcare in Chad spending only three percent of their annual budget on healthcare. Working conditions are also poor and hospital instruments and materials are not sterile. It was reported from one of the few health centers outside of Bokoro that the, "town has no running water, hospital waste is dumped in a shallow pit and cow dung litters the surrounding area. The delivery room has rusty beds and vials and syringes are left exposed." The nurse in charge also stated that, "We don't have adequate equipment. Even basic hygiene equipment. We use borehole water" (Chad's Health). Humanitarian organizations, such as Doctors without Borders, have been aiding Chad in their healthcare crisis. They have regularly responded to disease outbreaks by funding vaccination clinics, and they have provided programs and feeding centers for malnourished women and children; treating an overall 4400 malnourished children at the feeding center ("Chad"). It is imperative that the healthcare system in Chad improve, so that the citizens of this country will be able to seek out treatment for malnutrition as well as various other health issues.

Due to the alarming rates of poverty and food insecurity in Chad, education is often not a priority. According to the WFP, school enrollment in Chad was as low as thirty-five percent in 2004 and the adult literacy rates were as low as twenty-six percent for the entire population ("Chad"). Out of the children that do attend school regularly only 33 percent are estimated to actually finish primary education (Moreno). Furthermore, the Chadian government, as similarly mentioned above, provides only minimal support in encouraging and aiding Chadian children to attend school. In the year 2012, the Chadian government only spent approximately 2 percent of its national GDP on school education and only 10.4 percent of their general budget on primary education (Rachel). Due to the negative trends accompanying Chadian education, the president, Idriss Deby, announced in 2012 that he would aim to increase the teaching budget to 150 billion FCFA (300 million United States dollars) and an additional 150 billion FCFA in the following year, amounting to an overall twenty percent of the national budget. Progress in the education system resulted in the overall school enrollment to increase by 18 percent through the years 1999-2004. Despite these efforts being made to have an immense positive effect on the education system, the teaching environments remain exceptionally subpar, lacking basic resources. It is estimated that 80 percent of the schools constructed were placed in rural areas, and only reached around 67 percent of the overall student population in Chad. These schools lack vital resources such as supplies, books, and qualified teachers resulting in a poor quality of education for students. The rural schools are severely crowded with as many as 100-200 students per class (Rachel). In response to these conditions humanitarian organizations, such as the United Nations Children's Fund (UNICEF), are aiding the country nationwide and attempting to partner with the government to improve education. Similar organizations such as the Global Partnership for Education (GPE) are aiding UNICEF in their goal and together they have begun construction on 1600 insulated classrooms equipped with functional boreholes and latrines. These organizations are also training teachers and providing books for students (Moreno). Educational improvements in Chad would allow new generations of adults to have effective means to combat poverty and food insecurity. They would also allow for the new generations of adults to learn effective methods on how to combat climate volatility.

Climate volatility, in all cases, has a negative impact on the economic and agricultural progression of developing countries. For decades, the atmospheric conditions in Africa have been changing as a direct result of increasing greenhouse gas emissions and global warming. Due to this, the African continent warmed 0.7 percent in the twentieth century, amounting to just about .05 percent per decade (Osman-Elasha). In response, many central African countries, including Chad, have experienced extreme and unpredictable variations in climate, ranging from flooding to severe drought that both destroy crops and decrease agricultural production. The Chadian people and their communities are not equipped to cope with the extreme sub-Saharan climate in an effective way, which as a result increases their exposure to poverty and food insecurity. Ongoing conflict and governmental corruption coupled with environmental stressors such as deforestation, land degradation, and a strong dependency on biomass for fuel all have a negative effect on the ability of Chad to cope with climate change (Osman-Elasha). Non-climatic factors such as national debt, a rising population due to refugees, and a lack of technology resources also affect Chad's vulnerability to poverty and food insecurity (Osman-Elasha). This can also be considered an equity issue because Chad and other poor African countries are being forced to deal with environmental problems created primarily by first world nations. All of these factors have a strong negative effect on rural Chadian households that are primarily led by women due to the reported high mortality rate and migration of the male population. This makes these households even more susceptible to poverty because the women in Chad are, in some perspectives, seen as second-class citizens that hold a subjugated role in society that restricts their access to education, information, land, and rural influence ("Poverty"). The situation in Chad remains dire despite the aid of humanitarian groups such as the WFP (World Food Program) and the WHO (World Health Organization).

Currently, sixty percent of Chad's economy is supported by the export of oil and forty percent is supported by the sale of agricultural goods such as gum arabic, cotton, cattle, and livestock, providing jobs for eighty-five percent of the Chadian population ("Chad Economy"). Subsistence agricultural production in Chad is extremely low compared to other nations around the world, in less fertile years production can be as low as 330,000 tons per year and in somewhat fruitful years production can be as great as 1.35 million tons ("Rural"), all of which is required to feed the 14.04 million Chadian population for an entire year, the main reason why outside food sources are heavily relied upon. If rural farmers in Chad could combat the arid climate by developing means to recuperate after a long droughts or heavy rainfall, agricultural production would increase. This would give the economy a greater chance of developing further and creating more jobs for economically disadvantaged individuals. New innovations and sharing of farming technology coupled with access to pertinent information would be the best ways to help farmers combat the volatile climate of their region ("Farming"). This information could possibly be learned through word-of-mouth, and farming equipment could be distributed by humanitarian groups that are already prevalent in many areas of the country. Economic progression is necessary in Chad and multiple other poverty-stricken countries throughout Africa because if trends continue conditions will proceed to worsen and many people will be negatively as a result.

There are multiple ways to improve the ongoing agricultural and economic problems currently being encountered in Chad. As mentioned before, the Chadian rural population needs an effective method to combat the arid climate of their region. To do so, they should adopt a method of farming known as "dryland agriculture" used in areas such as sub-Saharan Africa with infertile soil lacking in essential nutrients needed to promote crop growth. Dry farming is designed to help resistant crops grow by using the water from the bank of the soil created during the rainy season. Methods include spacing seeds further apart to allow for adequate water consumption, effectively killing off weeds so they don't use up water intended for crops, and prevention of losing ground water through capillary flow (Goodier). Crop yields would be heavily multiplied if rural Chadians learned these new and innovative farming techniques, as well as being provided and properly trained in using pesticides to prevent insect infestations and

fertilizers to provide nutrients. Methods to prevent soil erosion should be utilized on farms through the implementation of furrows that trap water near plants (Goodier). The most vital step in assuring the success of dryland agriculture in arid regions of Chad would be to guarantee sufficient water retention from the rainy season. Methods to allow access to water would come from the utilization of boreholes that tap into groundwater, simple rock dams that prevent water runoff, and organic mulch to prevent water evaporation (Goodier). Farmers in this region should also take into consideration that their crop yields would increase if they used seeds such as millet, wheat, beans, and sorghum that are drought-resistant and thrive in conditions lacking in water. This would not be possible without aid and funding from humanitarian organizations that are already prevalent in many regions of Chad.

Farming methods, perfected especially for crop production during the rainy season, have also been proven to have a positive effect on crop yields. During the rainy season crops are damaged through excess water that drowns the crops and subsequently causes waterlogging that deprives the roots of oxygen. This commonly leads to either immediate plant death or underdeveloped root systems. Excessive rain water also causes soil erosion that strips the land of its topsoil; infiltration problems that affect the soils ability to absorb water; crusting that lowers the ability of water and air infiltration and the capability of seedlings to break through the surface; and lastly excessive fungal and weed problems that absorb the existing soil nutrients away from crops (“Meaning”). Chadians could use farming methods made especially for a wet climate to combat the problems associated with water saturated soils, for example Best Management Practices (BMP’s). BMP’s are scientifically approved ways to prevent nutrient runoff and soil-erosion of farmland during the rainy season. There are multiple BMP methods such as using cover crops, conservation tillage, and contour farming (“Managing”). The most vital of the solutions mentioned being cover crops that effectively combat many problems related to the rainy season. Cover crops provide erosion control by protecting soil vulnerable to water and wind erosion; Infiltration control by creating pathways for water through root channels; crusting control by creating an increase in organic matter content and aggregate stability; and lastly cover crops prevent competition from weeds (“Meaning”). There are various species of cover crops such as legumes and pulses that work in many ways to improve soil nutrients through their respective means (“Meaning”). The choice of cover crop should be chosen carefully in order to improve the soil to its best quality. Humanitarian groups and the Chadian government could easily help rural farmers accomplish these new and innovative farming techniques by spreading information and supplies to the rural Chadian farmers in need of new techniques.

Food instability and climate volatility in Chad would be extremely difficult for the Chadian people to cope with without the aid of an organized and progressive governmental system that seeks the well-being of their citizens. At the moment, the Chadian government participates in a large variety of corrupt actions such as using oil revenue to build up military influence instead of feeding the country and allowing the bribery of governmental and business officials to continue (“Chad Corruption”). Corruption penetrates all levels of Chadian economy and government including their police force, judicial system, legislation, and their civil society. The unregulated police force in Chad is known to abuse its influence and currently participates in a large variety of criminal activities such as unnecessary violence and extortion. The Chadian Judicial system is broken and not trusted by the majority of Chadian citizens for its profound indulgence in bribery that sways judicial decisions. The system is not well-funded and is overall not present in many areas of the country. The Legislative system in Chad is also inefficient and fails in enforcing laws and regulations against previously mentioned corrupt actions. The corrupt government in Chad has also been known to interfere with the awareness political corruption within the people by severely punishing journalists and religious leaders that speak out against the government. The Chadian people cannot rise up out of poverty without the help of a strong and stable government to enforce certain laws and policies, and by investing in the people. In recent years, certain parts of the Chadian government have tried to ban together against corruption by passing new laws and regulations. The anti-corruption

law was put into action to, “criminalize active and passive bribery and stipulate harsh penalties” (“Chad Corruption”). Also, the police force made an effort to minimize illegal hiring and promotion processes and favoritism that eventually led to the dismissal of two ministers. A reform in Chadian government through the means of flushing out bribery should be the first step in addressing food insecurity and poverty in this country.

Food insecurity, poverty, and governmental corruption will not all miraculously vanish overnight. It will take many long and hard years, maybe even decades, to establish Chad as a developed, food secure nation, but it can definitely be done. Through the work of humanitarian groups such as Action Against Hunger, Doctors Without Borders, the previously mentioned World Food Program and World Health Organization and many others, unnecessary death due to food deprivation can and will be prevented. The dedication and collaboration of these humanitarian organizations, the Chadian population, and their government will allow education and healthcare to thrive. The harsh conditions in which children attend school will subside and they will be allowed the same opportunity to be as successful as billions of other children around the globe. New healthcare technology and skilled workers will increase with more investment from the government, and the people of Chad will be able to receive treatment for easily curable illness and diseases. When living conditions in Chad improve and child malnutrition decreases further development will be allowed to begin in the country that will address climate volatility. When dryland agriculture, that allows farmers to grow crops during droughts, and BMP methods, that allow farmers to grow during floods, are successfully perfected on Chadian farms crop production will increase immensely and the people will overall have better qualities of life. Positively affecting the economy and creating more jobs for people that as a result, will generate more household income and reach the overall goal of eliminating poverty. The Chadian government will one day eradicate corruption on all levels and govern the people with respect while simultaneously enforcing important laws that will ensure the contentment of everyone. A reformed political system that aims to serve the people will be extremely effective in combating poverty, food insecurity, and numerous other misfortunes that plague this country. These are definitely attainable goals and they will work to increase and maintain food stability and quality of life in Chad.

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