

Rhea Rajvansh
Eastview High School
Apple Valley, MN
Burkina Faso, Climate Volatility

Examining the Impact of Hazardous Climate in Burkina Faso

Originally known as the Upper Volta, Burkina Faso means “Land of the Honourable People”. Burkinabes are considered to be the most honest and uncorrupt people in the continent of Africa. While the impression a country gives you through its nuance and characteristics helps form your views of them. Unfortunately, most people look through a more narrow lense, noticing the egregious conditions in countries. In Burkina Faso, that would be the unpredictable climate -- varying from major flooding to tragic droughts.

Burkina Faso is a landlocked country located in the Western part of Africa. It has a total land area of 274,200 square miles and is bordered by - Mali, Niger, Benin, Togo, Ghana, and Ivory Coast (CIA 2018). Burkina Faso has a population of about 20.3 million people (CIA 2018). Although a majority of Burkanians practice Islam in tandem with African traditional religions, there are a plethora of religions practiced in Burkina Faso.

To get a comprehensive understanding of how Burkina Faso's unpredictable climate has disadvantaged them, it is important to get an insight on the typical Burkinabe family. Most families in Burkina Faso, live in an extended family setting. Meaning, oftentimes, families live in a multi-generational household. The average household consists of about 7 people (World Bank, 2016). The way that these families are structured is that the eldest man in the household is the head of the family. The head of the family is at the helm for providing the family with necessities such as - food, clothing, and shelter. Other men in the family do various tasks such as farm work and construction projects, about 80% of Burkinabe men are farmers (World Bank, 2016). The women are in charge of taking care of their children and cooking for the family. As for the children, they help with tiny yet significant things such as - collecting water, cleaning and cooking. In Burkinabe society, there is a sense of cohesiveness and mutual respect within families. Essentially, members in the typical Burkinabe household often have roles that compliment the other. However, the position of elders is the most valuable and seen with utmost distinction. The eldest member is the foundation of the family, and is essentially the ruler of the family.

In Burkina Faso diets are pretty simple. Due to the adequate number of farmers in Burkina Faso, they depend on foods such as sorghum, millet, rice and other items that grow in their farms. A common meal they can find right in their backyards is tô (Global Table Adventure, 2010). Tô is a dish that consists of - cooked millet, corn, or sorghum and is stirred over and over again up until it is created into an effortless smooth paste. It is a staple in several Burkinabe households diets. Not only is it considered healthy and nutritious, it is cheap and easy to find.

With respect to healthcare, most hospitals in Burkina Faso are located in urban areas. Hence, not giving the average Burkinabe family access to healthcare. Due to lack of access to healthcare, rural Burkinabes

face several problems such as: child mortality, maternal mortality, and sanitation (USAID, 2017). However, the government is working on improving healthcare access by creating more village clinics.

As for Burkina Faso's economy, about 80% of it depends primarily on subsistence farming and livestock raising (World Bank, 2011). They are most known for their cotton exports, which represent about 60% of their total exports (World Bank, 2017). In addition to that, they also export unique cash crops such as mangoes, tomatoes and potatoes which gives them an advantage in the agricultural sector.

In Burkina Faso, the economy and climate go hand-in-hand, as one is dependent on the other. The context behind Burkina Faso's climate is that they typically have a wet season, which consists of rainfall from June to September. And the rest of the year the climate is typically dry and parched. However, studies find that since the mid 20th century there has been a decreased amount of total rainfall. Hence, resulting in the conservative amounts of water, leading to droughts.

Drought season, which lasts over half the year in Burkina Faso has served as an imminent threat to their agricultural sector. Popular products such as - cotton, potatoes, onions, and mangos are put at direct risk due to droughts. Considering over 80% of the Burkinabe people are farmers and depend on these cash crops as a source for income and food, droughts are catastrophic for Burkinabes (World Bank, 2016). What makes Burkinabes more vulnerable to drought season is that they are not familiar with modern water saving techniques such as newly developed irrigation technologies. So they are solely dependent on rainfall, to reinforce the growth of their plants. Due to the limited amount of rainfall in Burkina Faso, deficient supplies of water will have negative ramifications on farmers hoping to grow crops. In addition to this, a research done by Leslie Gray through Santa Clara University finds that Burkina Faso's soil has below par water retention rates because of degradation (Gray, 1999). Soil quality is only supposed to go downhill from here, resulting in infertile soil and a decrease in agricultural productivity. After examining these facts, it is no surprise that Burkina Faso's agricultural sector is susceptible to droughts. However, the unraveling of climate complications doesn't stop there. While unpredictable climate does impact everyone in Burkina Faso, those who are most vulnerable to it are those living in rural communities.

Burkinabes who live in rural areas are most impuissant to repercussions of droughts. This is due to their huge reliance on farming. When droughts occur, for people living in rural areas, a chain reaction is in effect. First, during droughts the soil becomes more infertile and yields start collapsing. Second, when farmers are not able to produce cash crops they are not able to sell anything, hence, no source of income. Another impact of cash crops not growing is that farmers don't have food to feed their family. Now with no money or food, the people of Burkina Faso are left to fend themselves with no food. In 2019 alone, about 20% of the population which equates to 3.5 million people were food insecure (USAID, 2019).

Unfortunately, food insecurity has led to several physical and mental health problems. When families are facing food insecurity, oftentimes members of the family face stress and uncertainty. Eventually this stress and uncertainty can turn into a case of depression. Having high rates of depression in a country can lead to an increased demand for hospitals and clinics. Hence, putting more economic strains on Burkina Faso. Food insecurity also impacts your physical health, leading to more physical tolls. For example, the human body is recommended to have about 2,200-2,800 calories a day (Web MD, 2019). However, in

Burkina Faso the average person is consuming just under $\frac{2}{3}$ of recommended food size (US AID, 2019). In fact a study done by the National Nutrition Survey in 2017 found that 21% of children under 5 are stunted (US AID, 2017). Meaning they are not growing or developing properly. In addition to that, a study done by the same group finds that 16% of children under the age of 5 are underweight (US AID, 2017). Early cases of being underweight, stunted growth, and malnutrition can lead to immune instabilities in the long run. In fact, those who suffer 'nutritionally acquired immunodeficiency syndrome' lead to 53% of childhood deaths in Burkina Faso (World Bank, 2010). These jaw-dropping statistics display the physical tolls that can take place due to food scarcity.

Another problem that has been hurting the agricultural sector in Burkina Faso is floods. As said earlier, Burkina Faso's climate is unpredictable. One month they are lacking water, the next they are being affected by heavy raining and flooding. When there are extreme floods in Burkina Faso, such as the one seen in 2009, food reserves and farms are in deep need of assistance (OECD, 2009). This is because during floods, erosion occurs when soil is carried away from flood water. Leading to gaps in the field, resulting in loss of soil. Flooding also weakens mechanical defenses in plants, resulting in the suffering of crops. Without crops and farming, the agricultural sector in Burkina Faso is left to suffer. In addition to that, in the 2009 floods alone, 150,000 people were left homeless and 24,489 houses were ruined (OECD, 2009). This displays the enormous impact that the floods in Burkina Faso had on their people.

Both floods and droughts hurt crops by not letting them nurture and survive. This not only hurts farmers and families in Burkina Faso, but leads to food scarcity and a collapse in their agricultural sector. It is important that Burkina Faso's government take extra steps to prevent further problems.

Luckily, some groundwork to improve climate volatility has been laid. The Agricultural Diversification and Market Development Project, is a plan designed to increase competitiveness in certain agricultural subsectors. This not only promotes businesses in Burkina Faso, but is vital to attract enterprises to invest in them. In addition to that, this plan funds irrigation techniques that help with the growth of crops. This plan benefited over 385,00 people, 30% of which were women (World Bank, 2017). Another advantage to this plan is it also yields more natural cash crops such as mangoes and onions. There has also been an increase in orchards due to the abundant amount of new irrigated land. Overall, this plan has had an enormous impact on the wellbeing of Burkina Faso. However, once this plan is taken out of place, extra measures will have to be taken to ensure the safety of Burkinabes. The main thing Burkina Faso needs to focus on is water saving techniques, since droughts are the root cause of most agricultural problems in Burkina Faso. Ways to address problems regarding droughts can be approached in a plethora of ways. The first one, which has been done in the past, is getting bank group contributions. In 2017, the World Bank Group funded 33 projects, some of which were working on water irrigation techniques (World Bank, 2017). Getting funding from banks is key to solving problems with water scarcity.

Another solution would be to educate farmers more on water saving techniques. As mentioned earlier several burkinabe farmers are not familiar with irrigation techniques. If farmers are able to have a sufficient understanding of how to save water, they will be able to grow their crops in a more healthy environment, thus, profiting them more. Some irrigation techniques farmers can work on understanding are the four main types of irrigation: surface irrigation, sprinkler irrigation, drip irrigation, and subsurface

irrigation (DW, 2013). Depending on what part of Burkina Faso they live in, they can implement their specific type of irrigation technique.

A more sustainable way for Burkina Faso to overcome the challenges they face regarding climate change, is by following in the footsteps of Morocco. Morocco faced similar problems to Burkina Faso, as they were highly susceptible to long periods of drought. Morocco's agricultural sector was in deep trouble because of the droughts, in fact 70% of their farmers were impacted by the frequent droughts (UN, 2013). Later, Morocco implemented the use of a network to detect droughts earlier, known as SMAS. SMAS's main objective is to help prevent environmental degradation that happens because of droughts. The two ways it works is by - identifying zones that are most prone to droughts, and examining information authorizing crisis situations. The results of the SMAS project have been highly successful. In fact, it has set up essential groundwork to foresee problems regarding droughts (Morocco World News, 2015). If Burkina Faso is able to have a plan similar to SMAS, it can have tremendous impacts on their country. However, an essential question is posed. *Is using advanced technology appropriate for a developing and rural country?* The answer would be yes, as integrating technology to developing countries is the key way they can become more successful and advanced. The SMAS technology specifically is more reasonable than other detection technologies as it is: easier to implement, it has been tried in similar countries before, and the pricing is feasible. Although it will require some funding, and cooperation with other countries, it is most definitely an achievable plan. To attain funding for this project, Burkina Faso can ask The World Bank, or the United Nations Development Assistance Framework. Both these organizations are interested in seeing climate progress, and have also helped other African countries, consisting of: Kenya, Mozambique, Morocco, and Zambia (CIO, 2018). Some other organizations that are doing similar work in Burkina Faso include the Gate Foundation, the Shell Foundation, and Aarhus United. These other organizations can also help the SMAS plan to succeed. By having a plan like SMAS, farmers can be warned earlier in the case of a drought and prepare for what to do. Projects like SMAS can also help with other climate problems Burkina Faso faces such as flooding. Creating a system to detect flooding earlier, can mitigate the impact of floods. Finding technologies that can identify zones that are most affected by floods will also be extremely beneficial for Burkina Faso. Other ventures such as finding ways to preserve water from floods, to later use during drought season would also be advantageous.

In the end, Burkina Faso must take a rigorous and thorough approach in order to address issues that are in place due to climate volatility. By receiving funding from banks, focusing on educating farmers, and working on targeted plans similar to SMAS, Burkina Faso can continue to depend on their agricultural industry as their source of survival. Hopefully, in later years, Burkina Faso won't be looked as the country that is poor and has major climate issues, but rather as the "Land of the Honourable People".

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