

FOOD INSECURITY IN NIGERIA: AN ANALYSIS OF THE IMPACT OF CLIMATE CHANGE, ECONOMIC DEVELOPMENT AND CONFLICT ON FOOD SECURITY

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ABSTRACT

Food insecurity is a major problem in Nigeria. The Food and Agriculture Organization (FAO) estimates that Nigeria's food security has worsened in the past 15 years. This paper examines the impacts of different factors that jeopardize the Nigerian food security situation. According to previous literature, there are mostly three factors that affect food security; climate change, economic development and violent conflict. Nigeria is the chosen case study because all the above mentioned factors play a key role in the country; it is affected by climate change, the economy is fluctuating and there has been the Boko Haram insurgency going on since 2009. This paper aims, with the help of the concept of food security, to analyze these factors to see whether and to what extent they influence food insecurity in Nigeria. This paper uses a mixed-methods approach. Quantitative data are retrieved from several data-bases that give measurements on food security, climate change, economy, and conflict. Qualitative data are reports and interviews that were conducted with Nigerian NGOs. Cautious findings show that all three factors can lead to food insecurity and, therefore, can explain why there is food insecurity in Nigeria. Finally, this paper concludes and confirms the results of existing research in the case of Nigeria.

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Key Words: *Food Security and Insecurity, Climate change, Economic development, Violent conflict, Nigeria*

1. INTRODUCTION

When food security issues were first highlighted in the 1970s, the question was whether a nation or a region could command enough food to meet the aggregate requirements of its people. Special attention was paid to fluctuations in aggregate food supply and food security interventions were primarily concerned with providing effective buffer mechanisms against such fluctuations. In this context, food security measures came to be identified with macro-level instruments such as national and international storage of food and balance-of-payments support for countries facing temporary food shortages (see Waldes, 2011).

Food security is a basic human need and fighting hunger is one of the greatest challenges of this country (Ojo and Adebayo, 2012: 204). Although the number of people living in hunger has declined for many years, in 2015 it has started to increase again (FAO

et al. 2019). Today, two billion people in the world are still living in moderate or severe food insecurity, because they do not have regular access to food, not a necessary variety of nutritional value, or there is not enough food for the whole population available. 820 million of these two billion facing insecurity are living in hunger (FAO et al., 2019: 22). Particularly in developing countries, people cannot meet their nutritional needs (Oyinloye et al., 2018: 69).

It is an immensely discussed issue in our society and many scholars have studied the factors leading to food security with their direct and indirect impacts on food security (e.g. Berhanu and Wolde, 2019; Martin-Shields and Stojetz, 2019; Musenwa et al., 2015). Amongst others, Misselhorn (2005) has compared different drivers and three key factors causing food insecurity: conflict, climate change, and economic development. As many scholars analyzed, these drivers often co-exist and influence each other. Only assessing a single factor influencing food insecurity is almost impossible and it is important to take confounding drivers into account.

The decline in the production of some of Nigeria's leading agricultural export commodities was most worrisome. For instance, Nigeria that was ranked as the world's leading producer and exporter of palm oil in the 1960s had become a net importer of this commodity in the mid-1970s. Similarly, Nigeria's cocoa production which ranked a peak of 305,000 tons in 1970 fell drastically to 160,000 tons in 1985 (CBN, 2004). The sharp down-turn in the gross value terms of trade in agriculture was equally serious. The ratio of agricultural exports to food imports which stood at 147 per cent in 1970-1975 suffered significant deterioration and reached the lowest trough at 38 per cent by 1976-1982.

Today, Food security ranks the top most among the development problem facing Nigeria. The level of food insecurity has continued to rise steadily since 1986 to about 41% in 2004 (Sanusi, et al 2006). According to Barrett (2002), the lack of food excludes people to practice what other people are doing every time. However, large amount of food production in the world does not ensure any country's food security. Moreover, huge production in food at national level does not guarantee for the household food security. This may be due to unfair distribution of resources, variation in production functions, and motives for productivity. That is why even if the production increases through time, food insecurity, malnutrition and hunger remain the main agenda and much more serious problems in the world (Akume and Bakporhe, 2013).

1.1 Research Problem

A strong argument that encourages analyzing food security issues is the importance of food in our lives. There is evidence that climate change, economic development, and conflict affect food security negatively. For example, the Food and Agriculture Organization (FAO), International Fund for Agricultural Development, United Nations Children's Emergency Fund (UNICEF), World Food Program, and the World Health Organization have for the last three years published the report 'The State of Food Security and Nutrition in the World' that focused on conflict (FAO et al., 2017), climate change (FAO et al., 2018), and the

economy as a driver of food insecurity (FAO et al., 2019). This shows that these factors are a global concern in today's world.

Nigeria is one of the most food insecure countries and highly affected by all three drivers. For one, the country is vulnerable to climate change and successively hit by environmental disasters, that impact people's livelihoods (Nkechi et al., 2017: 301). Furthermore, its economy is thriving, but around 48% of its population lives below the poverty line (World Bank, 2020; World Poverty Clock, 2020). In addition to that, since 2009 north-eastern Nigeria is struck by conflict, with the terrorist group Boko Haram involved. Due to that, Nigeria is suitable to use as a case study.

1.2 Aim and Research Question

Research that has been done on food security, has mostly focused on one driver, acknowledging others as compounding variables. Furthermore, many scholars have done a quantitative analysis. This paper analyzes different drivers for food insecurity in a single country analysis. It focuses on Nigeria, because as mentioned above, it is a food-deficit country and all three key drivers exists in the said country and can be analyzed. This leads to the following research questions:

- What factors impact food insecurity and jeopardize the food security situation in Nigeria?

The impact these drivers have on the food security situation in Nigeria is assessed in the paper. The analysis can be examined with the help of deductive research and a case study research design. To answer the research question, there are three sub-questions to be answered:

- What impact does climate change have on food security in Nigeria?
- What impact does Nigeria's economy have on its food security situation?
- What impact does the Boko Haram Insurgency have on food security in Nigeria?

1.3 Organization of the Study

After this introductory section, the next section elaborates on the literature review comprising of background information on climate change in Nigeria, Nigeria's economy, and Boko Haram terrorist group ant a review of previous literature which shows what scholars found on the different drivers impacting food security. This section also illustrates the concept of food security as used in this paper. The next section describes the research design and also analyzed the data collected from the field. Finally, a conclusion, recommendations and a roadmap for further research in related area were highlighted.

2.0 LITERATURE REVIEW

2.1 Background

The Federal Government of Nigeria is a culturally and religiously multifaceted country located in West Africa. It consists of 36 states and a capital territory. With approximately

201 Million, it is the most populated country in Africa, and its population is growing rapidly (World Poverty Clock, 2019). Nigeria declared its independence from Great Britain in 1960. After going through years of military junta, the country held its first democratic elections in 1999. Since then it has been on stable democracy with a lot of corruption and struggles to fight terrorism (Kah, 2017; World Bank, 2016). This section gives a background on Nigeria's economic sector, climate change in Nigeria, and the Boko Haram insurgency.

2.1.1 Economic Development

Today, Nigeria has a key role in Africa's economy with a large natural resource reservoir. It is a founding member of the African Union and an important, influential member of the Economic Community of West African States (ECOWAS).

Nigeria's biggest economic sector is the oil industry. With exporting, these natural resources, its economic growth depends largely on the world market and world oil prices (World Bank, 2020). Another important, but smaller sector, that has been contributing to Nigeria's economic growth is agriculture. Agriculture is the income for many Nigerians. The Nigerian Government operates on an agriculture strategy to achieve the first two goals of the sustainable development goals, reducing hunger and poverty, by for example bringing private sectors to invest in agriculture, building institutions in rural areas and developing the infrastructure all over the country (Obi et al., 2020: 208; World Bank, 2020). The Nigerian government has started with its intense oil trade under British rule and as a result, neglected agriculture as an important economic sector when the oil industry got bigger and they invested more in oil exploration, however at the moment they are working on reinvesting in this sector (Ojo & Adebayo, 2012: 205; Babu, 2018: 113-114).

Despite being an overall rich country with oil assets, Nigeria's economy has not created many more job opportunities and only a few people benefit from the GDP growth (World Bank, 2019: 20). About 96 million people, 48% of the population suffered from extreme poverty (Otekunrin et al., 2019: 4-5; World Poverty Clock, 2020). Since the population is growing rapidly and the percentage of people living in poverty is only slightly changing, the absolute number of people living in poverty is increasing as well, which causes even more people to suffer from food insecurity (Ugwoke et al., 2020: 1).

While poverty in the South has been decreasing over the years, it has been increasing in the North, especially the North East, because the region is developing less than the South (Ugwoke et al., 2020: 1). The poverty level is more than 50% higher in the North than in the South. Oil reserves are in the South and the economy in the Northeast and the cultivation of land is mostly done in rural areas in the North (Otekunrin et al., 2019: 6).

2.1.2 Climate Change in Nigeria

Climate change is a global issue that affects every country. Nigeria is amongst most sub-Saharan states vulnerable to the impacts of environmental problems. Throughout the years, environmental disasters have become more frequent. In 2012, for example, there was one of the worst floods in Nigeria in 40 years. This led to the loss of many lives, displacement

of people, and farmlands being washed away (Nkechi et al., 2017: 301). Nevertheless, climate change does not affect all states the same. Nigeria has four semi-arid savannah climate in the middle belt and parts of the southwest' (Akande et al., 2017).

Desertification as well as too much rainfall can lead to changes in cultivation and displacement of people. Therefore, the whole country is hit by climatic change. All in all, there is evidence that climate change will worsen Nigeria's environment in the future (World Bank, 2016: 49; Abdulkadir, 2017; FAO, 2017).

2.1.3 Development of the Boko Haram terrorist organization

Jama' atu Ahlis Suma Lidda 'awati Wal,Jihad, commonly known as Boko Haram and in this study referred to as Boko Haram is an Islamic territorial terrorist organization in Nigeria. They do not only aim for territories but also want to destroy the current Nigerian political system in said area to establish their political and religious ideology. They do this through attacks on humans and public facilities as well as the destruction of infrastructure and economic development (ICC, 2014: 4; Adelaja and George, 2019: 185-186).

The group was established between 2002 and 2003 in northeastern Nigeria, where contrary to the south, most of the population is Muslim. Boko Haram has surfaced in 2003 when they attacked police stations and public buildings in the northeastern Yobe State. The buildings were occupied for some days and the group demonstrated its sympathy with Afghanistan's Taliban (Pham, 2016: 3).

Until Nigerian authorities captured and killed their leader Mohammed Yusuf in 2009 they were quite unknown, their attacks were small and simple. Yusuf wanted an Islamic government but achieving that politically in a nonviolent way (ICC, 2014: 9). They turned to the Al-Qaeda in the Islamic Maghreb (AQIM) terrorist group, got support mainly with financial aid, by AQIM'S leader and became a jihadist terrorist group. One attack, that gave Boko Haram international attention, was suicide attack on a United Nations (UN) compound in Abuja in 2011 (Pham, 2016: 6).

Since the summer of 2009, northeastern Nigeria has struggled with numerous terrorist attacks, many of them suicide attacks, regularly, aiming against the Nigerian government and its democracy. The three northeastern states, Adamawa, Borno, and Yobe have a majority of Muslims and were targeted most. Other states were also hit, but they also dealt with people fleeing from the conflict, that they took local government resources and budgets away (Adelaja and George, 2019: 3).

Boko Haram aims to destruct selectively. They destroy assets, infrastructure, and agriculture. At the same time, they attack government storage facilities, fertilizer factories, agricultural input, transport systems and farms' (Adelaja and George, 2019: 185), which they attack for their use and survival.

In 2012 the group got more power and became internationally recognized as a militant group that can build and use bombs. Boko Haram built an international network

with other African Islamic groups and was able to expand to the neighboring countries, Niger and Cameroon. The militants attacked prisons to release the prisoners, destroyed government buildings, hospitals, and burned down schools, forcing students out of education. By mid-2013 Boko Haram has controlled several local governments, having de facto authorities in these regions. In 2014 the Boko Haram insurgency hit its height. In the first half of the year, they killed at least 2053 civilians in numerous locations, almost daily attacks on marketplaces, churches, and residential areas. One of the most infamous attack was the kidnapping of 2776 girls (Chibok girls) in a school in Borno state (Human Rights Watch, 2014). In mid-2014, the fighters had enough money and resources to go into offense, executing people in public and expand successively. By then they were able to occupy approximately 26-27 local governments. Most of the occupied regions were in a rural area, where agriculture is the livelihood of the population, hereby agricultural land was destroyed (Pham, 2016: 9-10; Adelaja and George, 2019: 186).

In 2015 Boko Haram showed weakness and the Nigerian army and government reclaimed the zones that were taken over. Nigeria declared victory over Boko Haram quickly. The group has had internal struggles and split into two factions. One faction pledged allegiance to the Islamic State (IS), turning into the Islamic West Africa Province (BBC, 2015; Anao, 2020). The number of attacks and fatalities has dropped, but in 2017, now being two groups, attacks have gone up again and the Nigerian government is continuously challenged (ACLED, 2019a; Anao, 2020: 7).

2.2 Conceptual and Empirical Framework

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2.2.1 Climate change as a driver of food insecurity

Climate change is defined as any change in climate over time, whether due to natural variability or as a result of human activity' (IPCC 2001: 2). Climate change has turned into a global issue and has worsened in recent times. It is now considered a climate crisis and threatens the agricultural production due to higher and more inconsistent temperatures as well as the variation in rainfall patterns and extreme events, such as droughts and floods, occurring more often (Ojo and Adebayo, 2012: 211; Ogbo et al., 2013: 221). With this change, researchers decided to study the relationship between climate change and food security. Studies were done concerning one single country, several countries, or simply regions. Most of the research has been conducted through surveys, direct observation, and weather data. They often use a modeling approach, because they often predicted future scenarios (Zewdie, 2014; Berhanu and Wolde, 2019; Wossen et al., 2018; Fadjumdjum et al. 2019). Researchers agree upon several impacts that climate change already has or will have on food security: on the cultivation and crop yields, as well as on biodiversity.

Climate change affects the first aspect of the food supply chain most. Food production starts with crop growth and cultivation. These are strongly affected by climate variability and therefore especially the agricultural sector is hit by climate change (Jung and Kunstmann, 2007; Wossen and Berger, 2015). In Iran for example impacts, the decline of water resources and precipitation, warmer temperature, and higher CO₂ emissions will have

on crop growth and food production. Their findings were similar to the majority of research on food security that: food production depends on a steady climate and enough clean water resources.

Aside from food production, climate change also restrains people from having food available and access to it. Extreme weather events can damage food storage. When it gets warmer, air conditioning and refrigeration is needed, which can get expensive, and sometimes there are problems with electricity. If it does not work, the harvested food get expensive, and sometimes there get ruined or no longer be healthy to eat (FAO, 2008; James, 2010). Even though most researchers argue that climate change negatively affects agriculture, some studies have found a positive correlation between global warming and agriculture. This research focused on industrial countries and less on developing countries.

Climate change also forces people to leave their homes, which makes them vulnerable to food insecurity. Internally displaced persons (IDPs) are often forced to leave because of climate change and conflict, two of the three drivers reviewed here. McGregor (1994) addressed the nexus of climate change, forced migration, and food insecurity because already in 1994 there have been many involuntary population displacements due to climate change. Food is one of the most vital needs in displacement camps, where a lot of the IDPs have to live in for many years. They have limited access to it and because they mostly depend on aid that is not always given and most likely they are not able to consume the amount and diversity needed. Thus, they increase food insecurity in a country (McGregor, 1994; Mooney, 2015).

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As this section shows, climate change affects food security in various ways. It mostly affects people's livelihoods through food production, people live food insecure because there is less food available or the available food does not have enough nutrients. This leads to people not being able to access food. Most researchers asserted that climate change led to food insecurity. Therefore, it is worth it to explore how climate change has led to food insecurity in Nigeria.

2.2.2 Economic development as a driver of food insecurity

Previous literature suggests that the economy influences food security. Economic growth is one of the highest variables to measure the economy and can be closely connected to food security. Studies by several scholars provide proof that the better the economic growth is, the more people are likely to be food secure (Warr, 2014). Hence a weak economy or an economic crisis can lead to food insecurity in a country (Tawodzera, 2011; Musenwa, 2015; FAO et al., 2019). Most research has been conducted in developing countries in Africa because especially developing countries might have thriving economic growth, but at the same time are vulnerable to an economic crisis, because they are often low-income countries, countries in conflict and the countries that are hit most by climate change. All this increases the vulnerability of a population (FAO, 2019: 59).

For the food security status of a household, the economic situation of the individual is significant as well. Many researchers analyzed factors in the field of economic

development and food security. Being unemployed puts people into poverty and poor people usually depend on the market to obtain food. They spend a higher percentage of their income on food and consequently suffer more likely from food insecurity (Etana and Tolossa, 2017: 64). A lot of other literature argues that unemployment, in particular long-term unemployment, does not only result in people spending less money on food but also causes people to change their diet. Evidence showed that they bought cheaper and less healthy food, which in turn impacted the quality of the daily calorie intake. Other studies also found that consumption pattern change when one gets unemployed (Leichchenko and Silva, 2014: 540). Therefore, unemployment can lead to food insecurity on the individual level.

Food prices are another indicator leading to insecurity (Herte et al., 2010; Smith et al, 2017). Global food price drops or rises hit especially countries with an uneven trade balance. When a country depends on exporting agricultural goods or minerals, they are more vulnerable to global price volatility (FAO, 2019: 66).

As mentioned above, most scholars argue that often developing countries are affected by economic crisis. However, all countries can be affected by a sudden global economic shock. Especially the 2008 financial crisis and the recession that followed negatively impacted several countries in the Global North. Davis and Geiger (2017) analyzed the demand for food aid in Europe after 2008. They argue that the need for more food aid represents higher food insecurity. They found that a rise in food aid led to a more food insecurity after 2008. Griffith et al. (2013) have, on the other hand, examined the food expenditure of people in the UK and concluded that after 2008 there was a significant change in what people bought. Further studies have also shown identical results in studies covering developing countries (Browning and Crossley, 2009; Huang et al. 2016). The economic situation of people affects their state of food security. Hence it does not matter whether a country is in the Global North or Global South, an economic crisis can hit every country.

2.2.3 Violent conflict as a driver of food insecurity

The FAO (2017) has asserted that conflict-affected countries have on average higher rates of food insecure people than countries not affected by conflicts. Violent conflicts can have short-livelihoods. There are several ways where violent conflicts affects food security. However at first, it has to be mentioned that the effect conflict has on food security depends on what kind of conflict it is, considering that 'measuring and categorizing conflict is not straightforward' (Martin-Shields and Stojetz, 2019: 151). Studies showed that the outcome depends on the type of conflict.

Literature shows that conflict often occurs in rural areas, areas that have a lot of agriculture (FAO, 2017: 44). Consequently, violent conflict can especially impact agricultural production. On the other hand, food production can decrease. Cultivation is interrupted, where people depend on agriculture. Often fields were ruined by bombs, or it was simply unsafe to work on them (Baumann and Kuemmerle, 2016). Other times farmers

abandoned their lands because farmers or workers were killed, people were forced to leave, fled voluntarily, or were involved in the fighting. This can lead to a labor shortage and therefore fewer people harvesting which then can lead to crop yield loss and food insecurity (Suthakar and Bur, 2008; Eklund, et al., 2016; Adelaja et al., 2019: 184). On the other hand, agricultural productivity can increase and have a positive impact on the food security situation in conflict areas. Agriculture can be an important income source for the militants. Jaafar and Woerz (2016) analyzed the agricultural productivity of the Islamic State in their controlled area until 2016. Their findings were that it is an important source of domestic food security.

Whereas the scholars above agreed that conflict impacts food security, Adelaja and George (2019) came to different findings. Their focus was also not on food security at all. They collected data from household surveys and the Armed Conflict Location & Event Data Project (ACLED). When analyzing the data, they found that the amount of land that can be harvested does not decrease when the number of attacks goes up. Although at the same time they did find that a higher intensity of the conflict harms the output of agriculture (Adelaja and George, 2019).

Food access to households and individual food consumption has also been researched by people. A reduced production can lead to a decline in food availability which can cause a reduction in market access to buyers. An example of long-term impacts of food insecurity due to a conflict are studies that focused on the long-term effect of children that were exposed to conflict at an early age (Martin-Shields and Stojetz, 2019; George et al., 2020). The researchers often used the differences-in-differences approach. They analyzed one region where conflict occurred and one where there was no conflict and compared the results. Bundervoet et al. (2007), for example, studied the impact of the civil war in Burundi on children's nutritional status over time. They used data from household surveys in civil war affected and non-affected areas. According to their study, children that were born in regions that at the time of birth experienced violence and had no access to food, due to the disruption of the agricultural production, had lower height-for-age z-score (HAZ) and were therefore not developing the same way as other children. Minoiu and Shemyakina (2014), as well as Arcand et al. (2015), based their research on Bundervoet et al. and did similar studies in Cote d' Ivoire and Angola. With the same approach, their findings are similar: Children who were exposed to these conflicts while born or in their early childhood had a lower HAZ than others.

Lastly, other scholars focused on the impact on IDPs. As above mentioned, conflict can lead to people fleeing and as noted, they are especially vulnerable to food insecurity. The outcomes are the same as when there are IDPs due to climate change. However, these scholars show that not only climate change can lead to internal displacements, also conflict can be a reason (Tasime et al., 2013).

As this section demonstrates, violent conflict can impact food security directly and indirectly. Direct impacts are mostly on the national level and indirect impacts mainly on the individual level. For example, as the prior section of economic development on food

security shows, unemployment, and reduced household expenditure can impact the household at individual level, although not every scholar supports this, it can be said that conflict can have an impact on all different levels of food security.

The literature review shows that these different drivers can lead to food insecurity but are also intertwined. Despite the wealth of literature and the diversity of studies, there is rarely literature disagreeing with the fact that these drivers impact food security in some way. Most scholars argue that the drivers they analyzed lead to food insecurity, but they also state that other drivers have to be acknowledged as interfering variables. They overall agree that each of the drivers can lead to food insecurity, in different parts more than in others. Therefore, when all the drivers are occurring in one country, this country's population is more likely to be severely food insecure.

3. Methodology

This study adopted a mixed-methods approach, that is qualitative and quantitative methods approach. Quantitative data were retrieved from several data-bases that give measurements on food security, climate change, economy and conflict. Qualitative data were drawn from reports and interviews that were conducted with Nigerian NGOs.

The statistical data on the climate is retrieved from the Climate Change Knowledge Portal, which is part of the World Bank Group. Even though they do offer metadata information, it is not exactly clear where data come from. As per economic development, the secondary data is taken from two different sources: The World Bank and UN Contrade Database. The World Bank shows a pool of statistics covering several areas from many different sources. This database is publicly accessible and is updated regularly. The indicators itself do not only come from the World Bank. The metadata with its source for every single indicator can be downloaded on their website. Concerning violent conflict, the primary data utilized is interview method. Other methods of data analysis include the ACLED database, and IDMC sources.

4. Analysis

The following chapter shows the analysis of the study. With the help of all the data described in the previous sections, this section analyzes the said data. Previous scholars mostly approached their articles by first conceptualizing and analyzing food security (e.g. Martin-Shields and Stojetz, 2019). Here it also seems appropriate to analyze the food security situation using the three drivers as already stated.

4.1 Food security situation in Nigeria

As shown and explained in previous sections, food security in Nigeria is analyzed through data from FAO database, the Nigerian GHS as well as interviews. This section shows evidence that there is a significant amount of people facing food insecurity in Nigeria. All conducted interviews with the NGOs have agreed that food insecurity is visible all over the

country. According to all of them, the food security situation worsened over the past years. They mentioned that since the Covid-19 outbreak it has gotten even worse and it will not get better in the next few years, but there are no evidential facts about it yet.

Using both figure 1.1 1.2 and a graph, figure 1.1 shows how food security has changed over time. Each measuring period has been conducting its data in the same way and can therefore, be compared. It indicates that there has been quite a change since around 2008. As shown in the figure from 2008-2010 the percentage of undernourishment has been constantly on the rise. At first, it is slowly rising, but looking at the years from 2014-2016 and 2015-2017, there was a drastic rise, with an increase of almost two percent from 9.6% in 2014-2016 to 11.5% in 2015-2017 and after this again another two percent to 13.4% in 2016-2018. Due to the fact that these numbers are always only a three-year average, it can be said that 2014-2016 was another significant turning point in the Nigerian food security situation.

4.1.1 Climate Change data

As much of the literature shows, climate change is one of the causes of food insecurity, and is therefore an independent variable to analyze. To answer the sub-question on what impact climate change has on food security in Nigeria, data that shows the trend in climate variability seems appropriate. This can be the trend of rainfall, the occurrence of rain and drought days, or mean temperatures. Descriptive data that is available on trends in climate variability is the trend of yearly mean temperature and rainfall pattern. Further data that can help get to the connection to food insecurity is data on internal displacement which shows how many people fled due to climate change. Further indicators used in the analysis are the interviews. Interviewees were asked about the experience of monthly rainfall change and droughts affecting cultivation. Secondly, the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) publishes situation reports that give information about certain strong floods and its impact on people's livelihoods in the areas hit.

4.1.2 Economic Development Data

Previous literature argues that whether somebody lives in food security is often also influenced by the countries' current economic performance. Thus, economic development can be a catalyzer for food insecurity and is one of the three independent variables in this study. To analyze the economic development as a cause for food security situation, data has to provide information about the economy in Nigeria and must be compatible with the given food security data.

The economy can be measured through multiple indicators. In general, the GDP can be a relevant summary of the overall economic performance (FAO, 2019). Therefore, GDP and economic growth are the first indicators to use in the analysis. Further indicators to understand the economic situation in Nigeria and how it has evolved across time are the trade balance and products that are predominantly exported. Moreover, food inflation and the unemployment rate are used as secondary data, qualitative data and primary source, that contributes to the analysis are the interviews.

4.1.3 Violent Conflict Data

According to existing literature, the presence of conflict plays an important role in how food insecure somebody is. Thus, a third independent variable chosen to analyze in this study is the Boko Haram conflict in Northeast Nigeria. To measure the food security situation in Nigeria and its relation to the northeastern conflict, especially interviews are good as a primary source. To get statistical data that can be compared to the FAO and Nigerian GHS data is data about the number of conflict and the fatalities that happened over the years since the Boko Haram insurgency began. As Adelaja and George (2019) state in their study that longitudinal data for comparison is limited. I found that this is true and it was difficult to get the right data for this analysis.

However, there are several databases available that measure conflicts. Previous literature that used quantitative data usually either worked with the UCDP or ACLED. After consideration of what database is best to the Boko Haram Insurgency, ACLED was chosen. This database offers information on different kinds of violence in real time, broken down into the date and place of the event, the type of violence and the actors involved (ACLED, 2019). Including the exact source for each for each event and even quotes the source to show that it was precisely taken from there.

According to ACLED, their data is collected by experienced researchers. However, it is primarily taken from secondary sources, but to make sure that the data is accurate and not biased, ACLED uses a variety of sources and does not only trust one source.

5. Conclusion

The study aimed to answer the question: What factors impact food insecurity and jeopardize the food security situation in Nigeria? To answer this, the whole study was focusing on the three factors that, according to previous literature, seemed to influence food security the most: climate change, economic development, and violent conflict. The concept of food security with its four dimensions was the concept often used in the existing literature and previous research showed that each of the drivers influences the different dimensions in some way. The findings demonstrated that these factors can in fact, lead to food insecurity.

The analysis of this study examined these determinants to see how they influence food security and whether they lead to food insecurity in Nigeria. Data was taken from several sources, statistical databases as secondary sources and interviews with NGOs as primary sources. Since the data was rare, the conclusions had to be drawn cautiously. The results of this analysis, however, do confirm the findings in previous research.

According to previous literature, the drivers are intertwined and do not only affect food security, but also impact each other. This study has also found that it cannot be said that either of the drivers alone could have led to food insecurity in Nigeria. In this case It is also more likely that they all influence each other. Climate change and the Boko Haram conflict for example can lead to a lack of food production, which can lead to fewer labor needs, that on the one hand leads to unemployment, then again makes it hard for people to

buy food, then facing a food shortage. On the other hand, less food production can lead to more dependence on food imports. A bad economy again can lead to more conflict and so on. It can be said that Nigeria is currently in a vicious circle and it is hard to achieve stable food security. Because Nigeria is affected by all three drivers, it is likely that food insecurity occurs, with what the literature review agrees.

Therefore, the research question can be answered by saying that all three different determinants can jeopardize the food security situation in Nigeria. Furthermore, they all impact people's livelihoods in different years, keeping some people continuously in a state of food insecurity. Moreover, the study found that even though all drivers impact all dimensions of the food security concept, they do influence each of them in other ways. While, according to this study's findings, climate change and the Boko Haram insurgency primarily impact food availability, the economy affects the food access dimension foremost. Especially the interviews have brought the focus on food production in general, meaning that the food availability dimension is often the first dimension that is hit. When there is less food available, and a country depends on food imports, it can lead to a lack of the other dimensions, meaning to many people not having access to food or not having enough food diversity. Because all drivers impact the different dimensions, the last dimension of food security is not met. There is no food stability, and it takes time to achieve the dimensions.

This study also shows that food security depends not only on how a country, specifically Nigeria performs, but also how other countries deal with issues that can reflect back to a country like Nigeria. Globalization has made it hard for such a country to achieve food security by itself.

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