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Flood and Food Security in the Benue Valley: Stylized Facts

Dominic IORTYER[1]
W. Benjamin YIO[2]

Abstract

The scientific consensus is that global climatic change is caused by human activities. Global climate variation has altered the pattern of annual rainfall in most parts of the world, resulting in annual flooding with devastating effects on humanity. With many rivers that crisscross the Nigerian landscape, the country has experienced a number of flood incidents along the river basins (valleys) with varying degrees of devastation. This paper, thus, focuses on the effects of flood on food security in the Benue Valley. The specific objectives of the study include: to examine the effects of flood on food supply; prices of agricultural output; and the level of public and private aids to flood victims within the study area. A sample of households and market leaders were interviewed for the purpose of data collection. Data was equally sourced from Non-governmental Organizations, State Emergency Management Agencies, and other written sources. The data was analyzed and presented using simple bar charts. Findings revealed that there is always a gross inadequacy of food supply during the years of devastating floods compared to years of normal annual rainfall. Prices of agricultural products increased by almost 200% and household income declined significantly during the flood disaster years. Findings also revealed that private organizations sometimes render more aids to flood victims than the public sector. To arrest the danger of annual devastating floods in the Benue Valley, the paper recommends better water infrastructure management strategies like the construction of more dams and dredging of River Benue.

Keywords: Climate Change, Flood, Food Security, Benue Valley, Nigeria, #SDG2, #SDG13.

Introduction

Flooding has become a serious threat to global sustainable food production. This has created the problem of food security in many parts of the world. In Nigeria, the most devastating floods find their way into the country through Rivers Niger

[1] Department of Economics, Federal University Lokoja, Kogi State, Nigeria.
Corresponding author's e-mail: iortyerdominic@gmail.com

[2] Department of History and International Studies, Federal University Lokoja, Kogi State, Nigeria.

and Benue, which take their sources from outside the country. Unlike many other rivers, the Benue flows through a valley that supports a large agrarian population. In the last two decades, Benue Valley has experienced cases of severe floods, which have posed a serious threat to food security in the region and Nigeria at large. The concept of food security presupposes availability, access, utilization and stability of food supply for human consumption at all times (Ardo, 2019). The fertile and swampy nature of Benue Valley region makes the region good for cultivation of large-scale rice, cassava, yam, tomatoes and pepper, soya-beans, among many others. The Valley is also a very good place for grazing of animals considering its lush vegetation and availability of water throughout the year. This explains the escalating conflict between the herdsmen and farmers within the region in the last few decades.

It is common knowledge that Nigeria is one of the countries with the fastest growing population in the world today. In fact, there are predictions that if proper control measures are not adopted, Nigeria will become the third most populous country in the world by 2050 (National Population Commission, 2021). This implies that the country has to step up its food production capacities in order to be able to cater for this huge population growth if the projections turn out to be real. Thus, this study on the impact of flood on food security in the Benue Valley is very timely as it is aimed at putting forward new strategies for mitigating flood in the region and boosting food production in the country.

Despite the huge agricultural potentials of the Benue Valley region (which runs from Adamawa State, North Eastern Nigeria down to Kogi State, North Central Nigeria), there is the need to ensure that the huge agricultural potentials of the Valley are protected in order to guarantee their sustainable exploitation for future generations. It is against this background that the study identifies flooding as a major threat to food security in the Benue Valley. Aside from the threats posed by flooding to food security in the study area, there are other potent threats such as herdsmen attacks on farmers and lack of sufficient agricultural inputs (Sadiq, 2019). However, in this paper, the primary concern is flood and its impacts on food security in the area.

Anytime there is flood in the Benue Valley, which has become almost a yearly occurrence, many food-producing communities along the banks of the River Benue are affected. Many villages, shops, schools are submerged. Several cultivated fields like yam, rice, cassava, tomatoes, pepper, and plantain, among others are washed away. Large numbers of people are displaced and livestock lost. Thousands of displaced persons move to different Internally Displaced Persons (IDPs) camps in different states across the region. After spending several weeks in IDP camps, the water would recede and the IDPs would go back to their houses without anything to fall back on. Efforts by Federal, State, Local Governments, and NGOs to reduce the sufferings of these farmers and other victims through the sharing of

fertilizers and improved seedlings as a form of rehabilitation and resuscitation of their farms are usually not enough to reset their lives. Thus, the incessant occurrence of this flood in the Benue Valley over the years has become a very serious threat to food security in the area and by implication, the entire country.

The general objective of the study is to examine the effect of flood experience on food security in the Benue Valley. The specific objectives are to examine the impact of flood on household's income, prices of agricultural products, and to determine the level of assistance rendered by public and private sectors to flood victims in the Benue Valley.

Conceptual Clarifications

In this paper, a number of concepts, which are central to the understanding of the discourse in the paper, are clarified. These are flood, food security and Benue Valley.

Flood

One of the common environmental hazards in the world today is flooding. It occurs in both developed and developing countries of the world. However, developing countries of the world are more prone to frequent flooding (Abdulrahi, 2021). In Nigeria, a wide range of natural and anthropogenic factors influence flood incidences. Flood is simply an overflow of water from the river or other water bodies due to excessive rainfall or other inputs of water. Flooding is a general temporal state of partial or fully submersed inundation from overflows of inland or tidal waters or from infrequent and rapid accumulation of runoff (Jed and Aggarwal, 2008). It is a temporary inundation that happens when surface water runoff moves on surface flows, gutters etc. Flooding is an inundation that occurs because of excess water within a water body, which causes it to exceed drainage channel capacity and overflow its bounds.

Flood occurs due to several conditions. These conditions are natural or man-made. Heavy rainfall is one of the major natural causes of flood in Nigeria. Elsewhere, ocean waves, melting snow, among others are also among natural causes of flood. Man-made causes of flood are embedded in human activities on the environment. Floods become a hazard when they negatively affect human activities such as infrastructures and farmlands (Cirella and Iyalomhe, 2018). Flood devastations create socio-economic and psychological conditions of stress that affect victims in complex ways for a long time.

Other causes of flooding in Nigeria include poor infiltration and percolation of rain water; deforestation and removal of vegetation from river banks; climate change; poor waste disposal; availability of numerous rivers including trans-boundary Rivers like Niger and Benue; poor water infrastructure development

such as dams; and poor land use policy, planning and management (Sadiq, 2021). The causes listed above have contributed in one way or the other to the severity of the flood that has been ravaging the Benue Valley region in the last two decades.

In the Benue Valley, which is the focus of this study, the worst devastating floods took place in 2012 and 2022. Apart from the 2012 and 2022 floods, there have been other floods with damaging effects on the inhabitants of the region, but just not as severe as the two incidents mentioned above. The leading factors that have accounted for the yearly occurrence of flood in the Benue Valley are excessive rainfall coupled with the release of excess water from the Lagdo Dam in Cameroun and insufficient provision of buffer dams by the Nigeria government over the years. This menace has become a recurring incidence in the Valley leading to a serious threat to food security in the region. This is why the timing of this research is apt as the study seeks to unravel the causes of the flood and recommend appropriate solutions to stop the flood hazard.

Food Security

Food security became a topical issue globally at the 1974 World Food Conference, which took place in Rome from November 5-16. It is a flexible concept as shown in the many attempts at definition in research and policy usage. The continuing evolution of food security as an operational concept in public policy has reflected the wider recognition of the complexities of the technical and policy issues involved in dealing with the concept (Food and Agricultural Organisation, 2002). According to the United Nations Committee on World Food Security,

> food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food, which meets their dietary needs and food preferences for an active and healthy life. Thus, household food security is the application of this concept to the family level, with individuals within households as the focus of concern (FAO, 2002, p. 12)

Food insecurity, on the other hand, is defined as a situation of limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways (United Nations Agricultural Development Programme, 2000). This clearly shows that the issue of food security is a serious matter that is expected to have applicability right at the family, community, national, regional and global levels. Food security therefore includes a measure of resilience to future disruption or non-availability of necessary food supply as a result of some risk factors such as droughts, fuel shortages, economic instability, shipping disruptions, and wars (Abdulahi, 2021).

The issue of food security has been continuously given attention by the global community as reflected at many instances. In the year 2000, during the

agenda setting on the Millennium Development Goals, the eradication of extreme poverty and hunger in the world by the year 2015 emerged as the first Goal. This clearly shows that the issue of food security was embedded in it for the global community to be able to eradicate extreme hunger in the world and everything must be done to ensure the availability of food for all by all countries of the world (Adesuyi, 2021).

Similarly, during the adoption of the Sustainable Development Goals in 2015 by the United Nations, 'Zero Hunger' became Goal 2 and this suggests a consensus among members of the international community to guarantee food security and zero hunger by the year 2030. To ensure a hunger free world, there is the need to sustain food production and its availability to all. Thus, the main global policy to combat hunger and poverty is in the Sustainable Development Goals, particularly Goal 2, which sets globally agreed targets to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture by 2030 (Boro, 2021).

In the year 2009, the World Food Summit on Food Security stated that the four pillars of food security are availability, access, utilization, and stability. The High-Level Panel of Experts for the Committee on World Food Security recommended two additional pillars of food security in 2020. These are agency and sustainability (FAO, 2020). The six pillars of food security are briefly discussed below.

a. ***Availability***: Food availability refers to the supply of food via production, distribution and exchange. All three factors listed above can determine the extent to which food can be available in a particular location at a particular time.

b. ***Access:*** Food access refers to the affordability and distribution of food, as well as the choices of individuals and households. It is an established fact that the causes of hunger and malnutrition are most often not due to scarcity of food but the inability to access available food due to poverty.

c. ***Utilization***: This pillar of food security refers to the metabolism of food by individuals. To achieve food security, the food consumed must be safe and must be enough to meet the physiological requirements of each individual in the family. Food safety therefore affects food utilization and can be affected by the preparation, processing, and cooking of food in the community and household.

d. ***Stability***: Food stability is the ability to access food over time. Food insecurity can be transitory, seasonal, or chronic. Factors such as natural disasters, civil conflicts, loss of employment, among others can create instability in food supply and thus bring food insecurity in the household.

e. ***Agency***: This refers to the capacity of groups or individuals to make their choices about what foods they consume, what food they produce, and how that food is produced, processed and distributed within food systems. In addition, it has to do with their ability to participate in stages that determine food system and governance.

f. ***Sustainability***: This implies the long-term capacity of food systems to provide food security and nutrition in a manner that does not negate the social, economic and environmental bases that generate food security and nutrition for posterity (Food and Agricultural Organisation, 2020; Adesuyi, 2021; Eze, 2012; World Health Organisation, 2013).

The six pillars of food security enumerated above signify that all countries of the world must work very hard at individual and group levels to be able to actualize the global dream toward food security by the year 2030.

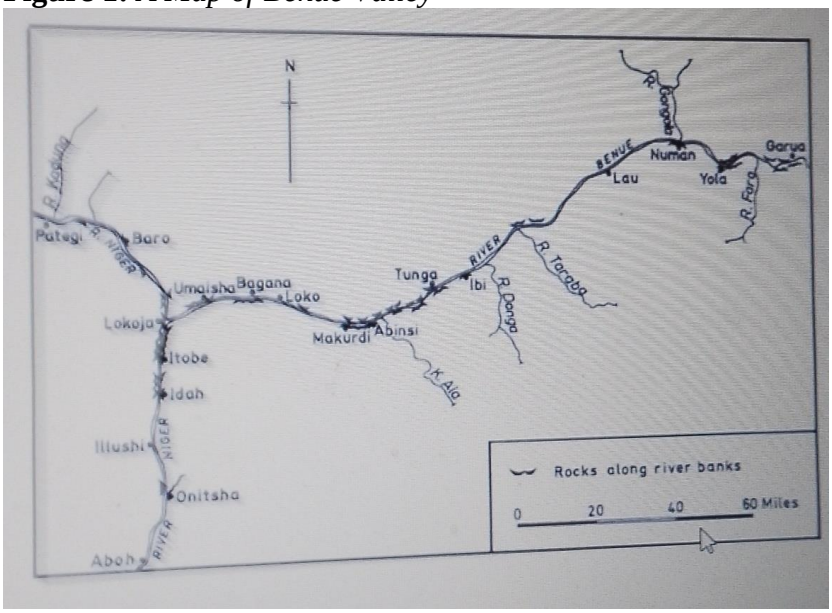
Benue Valley

River Benue is West Africa's second longest river flowing from the Cameroon highlands for approximately 750 miles before joining the Niger at Lokoja, Kogi State, Nigeria (Ochefu, 2002). Unlike other major African rivers including the Niger River, the Benue flows through a valley, which is free from rapid waterfalls. River Benue rises from the Adamawa Highlands in the western Cameroons and it is the largest tributary of the Niger, which it meets at Lokoja. It enters Nigeria a few miles east of Yola, after meandering through a vast but sparsely cultivated flood plain, which opens out from a width of two miles at Garuato six miles at the Faro confluence (Udo, 1970).

From Adamawa, North Eastern Nigeria down to Lokoja, Kogi State, North Central Nigeria, the River Benue meanders its way in a valley that is also known as the Benue trough. Benue Valley has fertile plains and low lands areas that are habitable and support a wide range of farming communities across Adamawa, Taraba, Benue, Nasarawa, and Kogi States. These communities engage in both commercial and subsistence agriculture, which provide sufficient food for their household consumption and for commercial purposes. The food that is produced in this region also goes into the larger Nigerian market to cater for some urban food needs.

In the past two decades, the Benue Valley and its huge agricultural potentials have come under a serious threat due to recurring floods in the area, which has taken a heavy toll on the inhabitants of the region leading to a serious threat to food security in the area. Considering the strategic position the Benue Valley region occupies in the food production economy of Nigeria, there is the need to research into this menace of the annual flood that has become a threat.

Figure 1: *A Map of Benue Valley*



Source: River Benue in Map (1980).

The Strategy Framework of Food Security

The World Bank Group and partners in 2010 developed the strategy framework of food security to build food systems that can feed everyone, everywhere, and every day by improving food security, promoting nutrition-sensitive agriculture and improving food safety. The Bank is a leading financier of food systems. In the fiscal year 2020, there was US$9.6 billion in new IBRD/IDA commitments to agriculture and related sectors (Ardo, 2021). The activities of the group include:

a. Strengthening safety nets to ensure that vulnerable families have access to food and water, and money in their pockets to make vital purchases;

b. Delivering expedited emergency support by fast-tracking financing through existing projects to respond to crisis situations;

c. Engaging with countries and development partners to address food security challenges. Instruments include rapid country diagnostics and data-based monitoring instruments and partnerships such as the Famine Action Mechanism and the Agriculture Observatory;

d. Promoting farming systems that use climate-smart techniques, and produce a more diverse mix of foods, to improve food systems' resilience, increase farm incomes and enable greater availability and affordability of nutrient-dense foods;

e. Improving supply chains to reduce post-harvest food losses, improving hygiene in food distribution channels, and better link production and consumption centers;

f. Applying an integrated "One Health" approach to managing risks associated with animal, human and environmental health;

g. Supporting investments in research and development that enable increasing the micronutrient content of foods and raw materials;

h. Advocating for policy and regulatory reforms to improve the efficiency and integration of domestic food markets and reduce barriers to food trade;

i. Working with the private sector, government, scientists, and others to strengthen capacities to assess and manage food safety risks in low and middle-income countries;

j. Supporting long-term global food security programs. The Bank houses the Global Agriculture and Food Security Programme (GAFSP), a global financing instrument that pools donor funds and targets additional, complementary financing to agricultural development across the entire value chain. Since its launch in 2010 by the G20 in response to the 2007-2008 food price crisis, GAFSP has reached over 13 million smallholder farmers and their families with over $1.3 billion in grant funding to 64 projects in 39 countries, $330 million to 66 agribusiness investment projects in 27 countries, and $13.2 million in small-scale grants to support producer organizations. Most recently, in response to the ongoing COVID-19 pandemic, GAFSP allocated over $55 million of additional grant funding to on-going public sector and producer organization-led projects to support COVID-19 response and recovery; and

k. The Bank also supports advances in agriculture science and innovation to boost food and nutrition security globally (Athur, 2021).

Empirical Review

According to Obeta (2009), flood disasters accounted for about 38% of all the federally declared natural disasters between 1995 and 2005 in Nigeria. It is reported by the Nigeria Hydrological Services Agency *Annual Flood Outlook* (NIHSA-AFO) that during recent years, there has been an alarming rise in economic losses due to flooding in the country. In 2012 alone, Nigeria recorded a total estimated loss of 2.29 Trillion Naira (National Emergency Management Agency, NEMA, 2013 in NIHSA- AFO, 2016). Food Agriculture Organization (FAO) (2007) has stated that the croplands, pasture and forests, which occupy 60% of the earth's surface are progressively being exposed to threats from increased climatic variability and, in the long run, they become vulnerable to climate change. Abnormal changes in air temperature and heavy rainfalls have increased the frequency and the intensity of flood disasters.

Rainfalls of high intensity seal soil spores resulting in surface runoff. Runoff starts if the intensity of rainfall is more than the infiltration capacity of soil. When the rainfall continues for longer periods, the runoff increases and causes floods. When the catchment areas of rivers receive very high rainfall, rivers cannot carry the entire runoff; they overflow and submerge the neighbouring fields. Due to higher rainfall, tank bands are breached. Floods cause considerable damage to crops, livestock and human life (Chakraverty, 2004). It is observed that flooding along the River Benue plains of Yola north is a direct consequence of intensive rainfall and river overflows experienced in the year 2018 coupled with poor planning, development and utilization of agricultural and non-agricultural lands respectively. Thus, urbanization influences all phases of hydrological cycle from precipitation to infiltration rates and the hydraulics of overland flow (Sadiq, 2021).

The principal flood problem in the River Benue Basin is damage to agricultural land and crops. During the months of July, August and September (flood predicted months), floodwaters overflow the banks of low-capacity channels such as Mayo Chuchi, Mayo Malkuhi and the tributaries such as river Faro-inundated thousands of hectares of adjacent farmlands in the study area. Similarly, intensive precipitation and long duration recorded in the year 2018 also produced stream flows in excess of channel capacities that caused sheet water flooding in the area. These floods result in serious reduction in agricultural production, which in turn have a depressing effect on the economy of the farmers in the flood plains of the study area. Therefore, there is a need to assess the damage inflicted by flood and to develop a plan to reduce flood damages in the area that will take into account the conflicting interests of all concerned.

Effects of Flood on Farmlands

Flooding of agricultural land that occurs after seeding can be as costly as flooding before seeding, and possibly more costly to the individual who has incurred production expenditures (Jay and Donald, 1977). The ability of plant roots to tolerate long periods of being submerged in flood water depends on the period of year the flood event occurs, the duration of the flood event, species sensitivity to flooding, and the type of soil the plants grow on (dormant growing plants are more tolerant to flooding than actively growing plants). Flood pragmatic frequencies rejuvenate erosion indices of soil in most places where it occurs and the consequences on farmland productivity can be measurable *in situ*.

According to Sadiq and Tekwa (2018), soil erosion by water or wind agents selectively damages the soil by removing organic matter (OM) soil particles, plant nutrients, and reducing soil chemical capacity to retain added nutrients. Hence, erosion removes soil particles that are necessary for water storage and denies root exploration for plant nutrients. Erosion is therefore a two-way problem: loss of soil fertility and thickness of the eroding soil (on-site problems) and the addition of

unwanted sediments in the depositional sites (off-site problem). Similarly, the removal of topsoil is always a loss to agricultural productivity as topsoil is the part of the soil horizon with higher level of organic matter and nutrients and generally better structure (United State Department of Agriculture, USDA, 1993). In West Africa, soil erosion gulps about 10-21 tons of top soils (Serageldin, 1987). In Nigeria, it has been reported that over 25 million tons of valuable top soils are lost annually to erosion (Ezedinma, 2020).

Previous studies have shown that citing flooding as the most rampant hazard will not be wrong especially in Africa (Adegoke, 2021). It is easily blamed for the deaths of tens of thousands, while adversely affecting millions of other people worldwide in terms of livelihood and well-being (Smith, 2019). Natural tragedies such as quake, floods, typhoon, and hurricanes inflict serious damage and so seem to be bad for the economy. For firms, natural calamity destroys tangible assets such as building and equipment – as well as human capital – thereby making nonsense of production capabilities and projections. International organisations have deployed the use of data and statistics to estimate the economic cost and effects of floods and other disasters (Smith, 2019). The systematic collation of data has helped to determine the impact of floods and other natural disasters across the globe, especially in Third World countries.

Recently, Nigeria has continued to experience myriad challenges ranging from economic recession, political strives, and social conflicts. In the face of all these challenges is the silent problem of climate change, which has tilted the nation towards hunger and volatility (El-Lada, 2014). According to Etuonovbe (2011), despite the fact that flood and other natural disasters are not the leading causes of deaths; they affect and displace more people than other emergencies. He further claimed that not less than 20% of the total population of the country are exposed and at the mercy of a form of flood or another. Floods, which have been experienced in Ogun and Lagos States, have destroyed homes, affected business activities, and exposed the people to communicable diseases such as cholera, diarrhea, and other water-borne epidemics. The pattern of flooding in Nigeria is similar with that experienced in other parts of the world. Thousands of acres of cultivated arable lands have been washed off, dam bursts are rampant causing deaths and destruction of property in both urban and rural settlements.

Etuonovbe (2011) observed that Kagara Village in the Northern state of Sokoto suffered an immense loss as the entire village including their homes, crops in the field, and all in their storage were completely flooded. A report put the death toll at about 50 in about 50 villages, while about 150,000 persons were internally displaced (Adesuyi, 2021). Women and school children are also seriously affected. Awosika (2001) noted that essential services such as communication, transportation, and hospital services are usually interrupted while businesses are also paralyzed. The problem of over-dependence on rain-fed systems of agriculture

in Kogi State erratic precipitations often results in devastating impacts on provision of food to Kogi residents, individuals, economies and livelihoods. According to Devereux (2007), food insecurity in contemporary societies can be attributed to "new famine". He described it as thinking, which reallocates the tasks of clarifying production failures as well as entitlement failures so as to comprehend response failures.

Floods triggered by weather situations culminate in harvest failures as well as to shocks on the economies of local communities. These also affect intervention, which could have mitigated the upset by safeguarding production shocks from escalating into full-blown food insecurity. However, the region continues to rely mostly on unreliable early-warning mechanism and emergency response systems. A farmer whose production fails is forced to resort to other casual sources of income to augment family members' welfare (Devereux, 2007). Devereux indicated off-farm jobs to generate income or food that will cover part or the entire gap between the household crop production and household food needs. Therefore, food production rate determines probability of food security.

Three main points have been advanced for why Sahara, sub-Saharan Africa, and other tropical countries are likely to be significantly affected by fluctuations in precipitation and temperature patterns. In the Southern Africa as a case study, warmer and drier environments have been predicted through various climatic assessments (Hulme, 2016, Scholes and Biggs, 2017). Also indicated extreme events such as droughts and inundations will be more frequent and intense. Secondly, due to the over-reliance on agriculture and natural mineral resources by Third World economies, the impact of climate change will be more profound with poverty levels worsened as well as exposing their fragile ecosystems. Thirdly, crop productivity will be hampered just as its supply will be negatively impacted because people of poorer countries lack the coping mechanism to sustain their farming methods and their primary food sources (Hulme, 2016, Scholes and Biggs, 2017).

Due to the seriousness of the crisis which flood can create, stakeholders, especially political leaders take drastic political measures. The Kogi State House of Assembly is in the process of amending the state's environmental and town planning laws to adequately address flood issues. The flood of 2012 that devastated some states, including Kogi State, became a blessing in disguise as it served as a springboard for possibility thinking, involving the inputs of local and international experts assembled by the Minister of Agriculture to think through on how to produce massively to make up for whatever food shortage was occasioned by the flood. This statement was made during a visit to flash flood disaster areas in Lokoja to assess the level of devastation in the town. The speaker identified the building of structures on waterways as one of the major causes of flooding in the area. There is a dire need to enforce town planning and environmental laws to address the perennial flooding (Eze, 2019).

At present, human beings are predisposed to flood risk due to their encroaching on flood plains as well as inadequate flood response plan. Flood events are complex and they occur due to diverse individual vulnerabilities, unsuitable development plan and unpredictable climate. To a considerable extent, flooding can be predicted, excluding flash floods whose magnitude and nature are not predictable (Agricultural Development Project Committee, 2010). When considering disaster magnitude, it is not determined by only floodwater but the vulnerability pattern as well needs to be considered. Flood not only has an impact on peoples' lives but the sources of revenue of the less privileged are equally affected. The individuals who are already susceptible to disasters and health challenges, including famine, cyclones, food insecurity, and ethno-religious conflicts, unwillingly reside in risky places and cultivate food on floodplains.

In the study area, the floods have removed a significant amount of topsoil on farmlands as shown in the pictures.

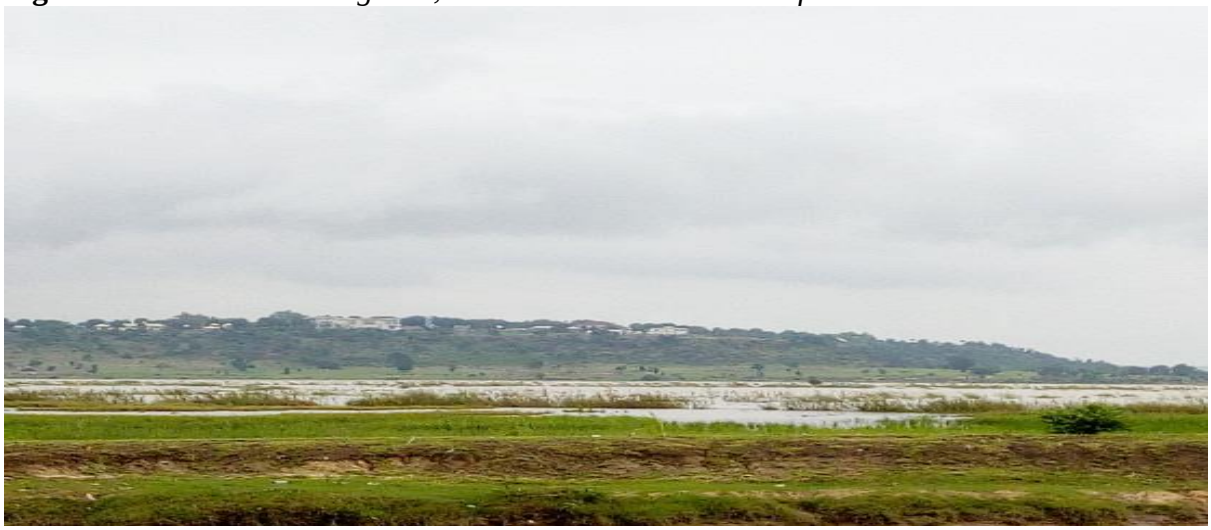
Figure 2: *Flood Scene in Gulum Demsa Local Government of Adamawa State*

Source: Sadiq (2021)

Figure 3: *Flood Scene in Ibi Ibi Local Government of Taraba State*

Source: Sadiq (2021)

Figure 4: *Flood Scene in Agasha, Guma Local Government of Benue State*



Source: National Emergency Management Agency, NEMA (2020)

Figure 5: *Food Scene in Asaiko, Nassarawa State*

Source: NEMA (2020)

Figure 6: *Flood Scene in Koton-Karfe in Kogi Local Government of Kogi State.*

Source: NEMA (2020)

Evidences gathered show that flood has negative influence on food security as it impedes food availability, accessibility, as well as utilization. Food security entails individuals at every point in time having social, physical, and economic access to adequate, harmless, and healthy food, which supplies the needed nutritional requirements as well as food preferences to live happily and healthily (FAO, 1996).

Methodology

The study employed the use of primary data generated through face-to-face interviews with post-flood victims of 2020 and 2022. A total of 300 hundred farmers in the study area (Benue Valley) were randomly sampled. Fifty (50) farmers were randomly selected from the six (6) states that constitute the Benue valley: Adamawa, Taraba, Plateau, Nassarawa, Benue, and Kogi States. Farmers were randomly selected from Gulum village, Ibi in Taraba State, Yelwa in Plateau State, Asaiko in Nassarawa State, Agasha in Benue State, and Koton-Karfe in Kogi State. The data collected was presented using the descriptive statistical tool of simple bar charts.

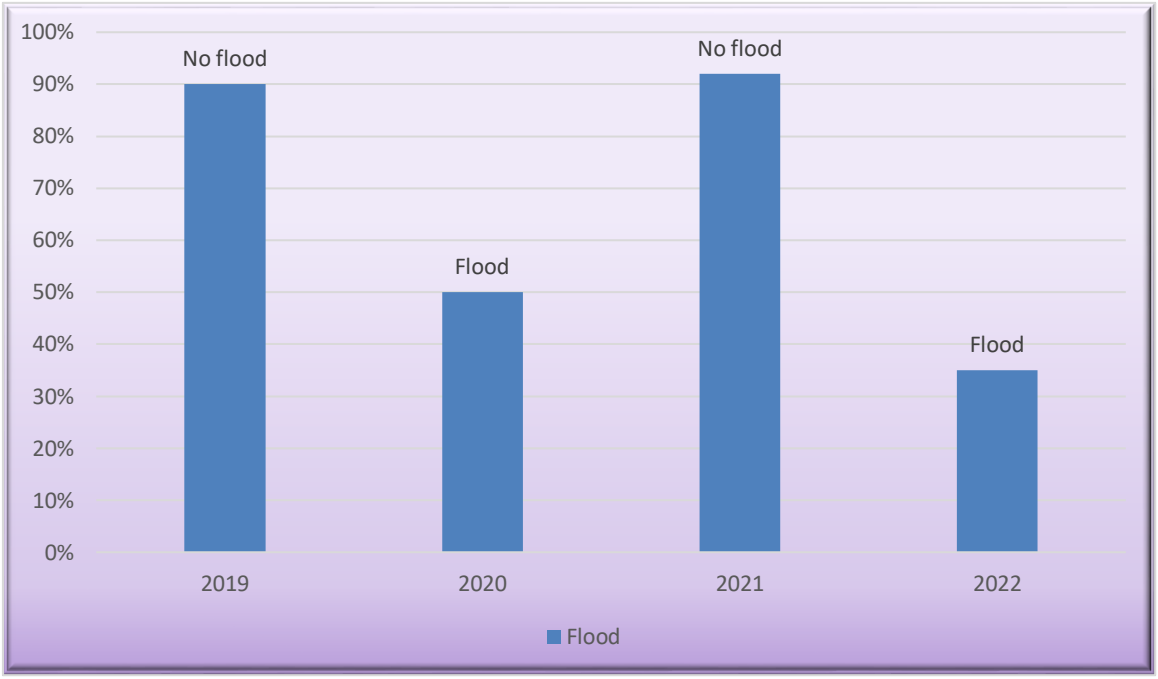
Results and Discussions

Table 1: *The Demographic Profile and Socio-Economic Status of Respondents*

VARIABLES	CATEGORY	FFREQUENCY (n=300)	PERCENT % (p=100)
Age	≤ 20	4	1.1
	21-30	46	13.0
	31-40	71	20.3
	41-50	107	30.5
	51-60	81	23.1
	61-70	34	9.0
	≥70	10	3.
Level of Education	Never been in school	60	17.0
	Religious school	67	19.0
	Primary school	95	27.0
	Secondary school	75	21.5
	Tertiary school	54	15.5
Occupational Status	Civil servant	67	19.0
	Private servant	30	8.5
	Business	82	23.5
	Pensioner	39	11.0
	Farmer	133	38.0
Monthly Income Level (Naira)	≤ 5,000	74	21.0
	6,000-10,000	105	30.0
	11,000-15,000	71	20.2
	16,000-20,000	69	19.8
	≥21,000	32	9.0

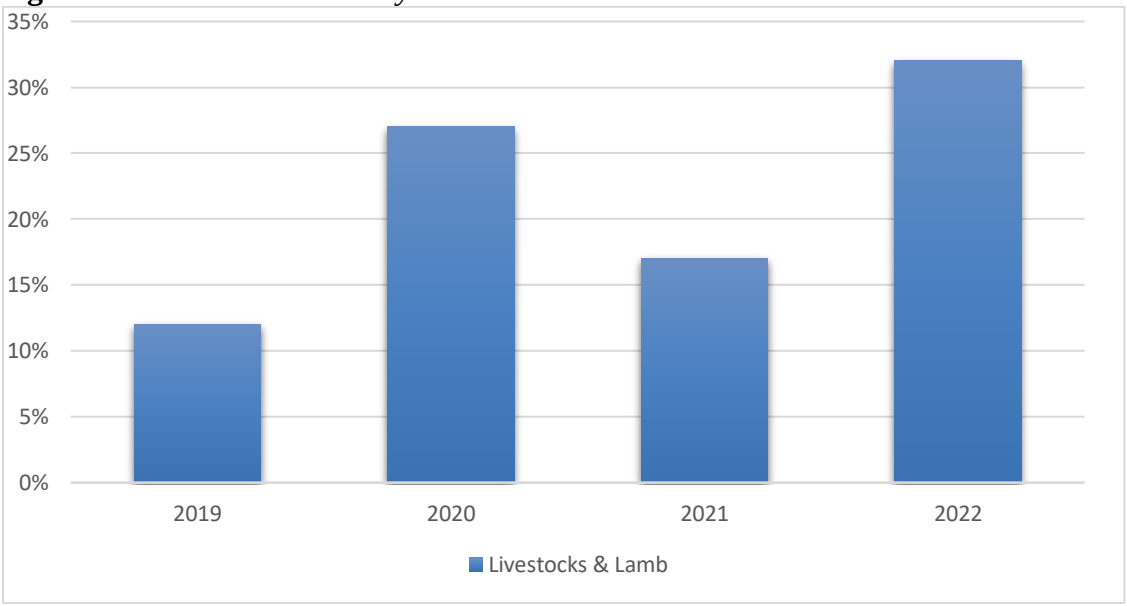
Source: Field Survey (2023)

Figure 7: *Diagram Showing Food Availability*



Source: Field Survey (2023)

Figure 8: *Livestock Availability*



Source: Field Survey (2023)

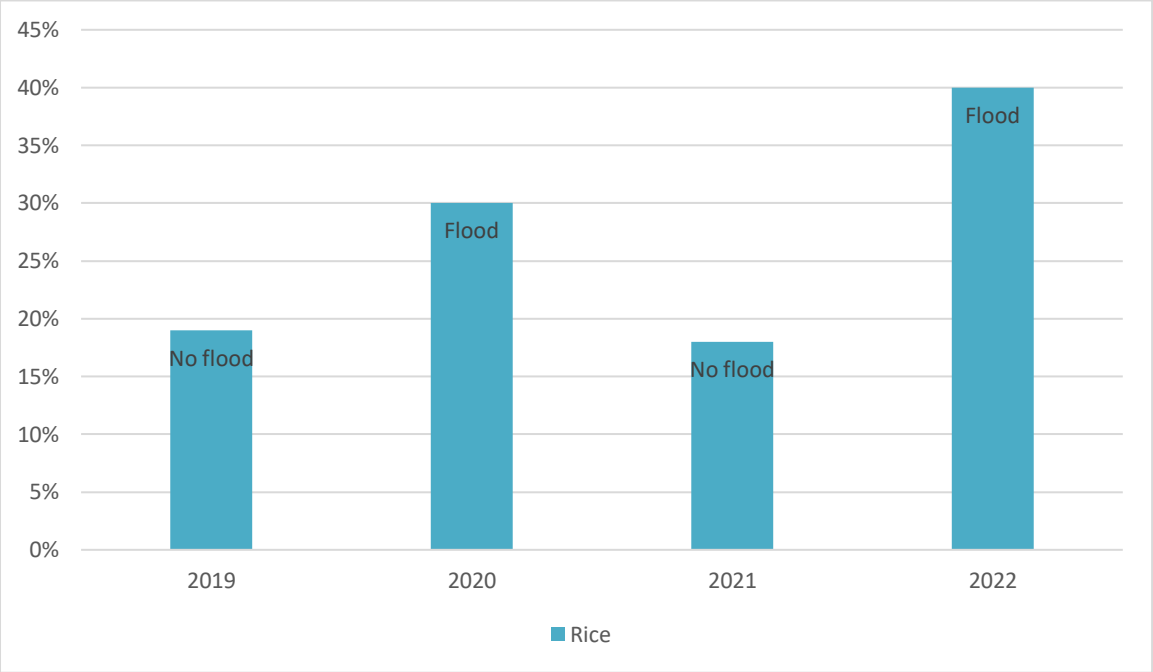
Table 2: *Differences in the Yield of Farm Produce in Benue Valley*

S/N	Areas	Standard (100) %	Before the flood (%)	After the flood (%)	Percentage of Depression in the Yield. (%)
1.	Gulum	100	85	30	25.5
2.	Ibi	100	80	40	32
3.	Yelwa	100	70	35	24.5

4.	Asaikyo	100	75	40	30
5.	Agasha	100	80	40	32
6.	Koton-karfe	100	75	55	41.25

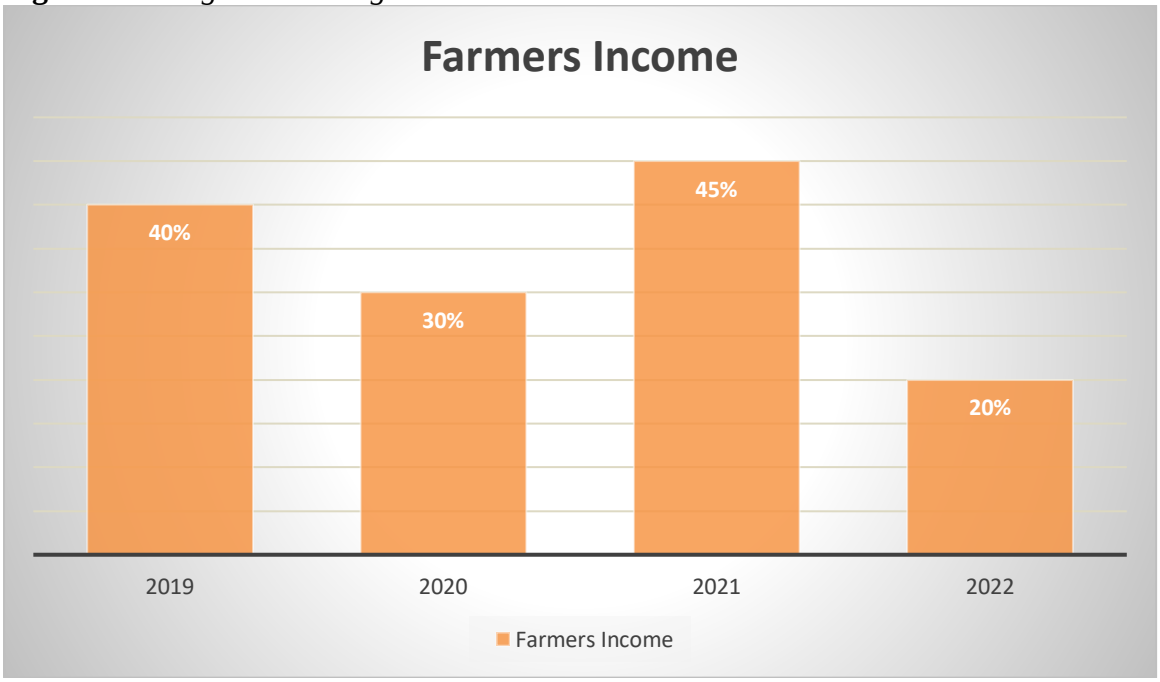
Source: Field Survey (2023)

Figure 9: *Diagram Showing Price Fluctuations*



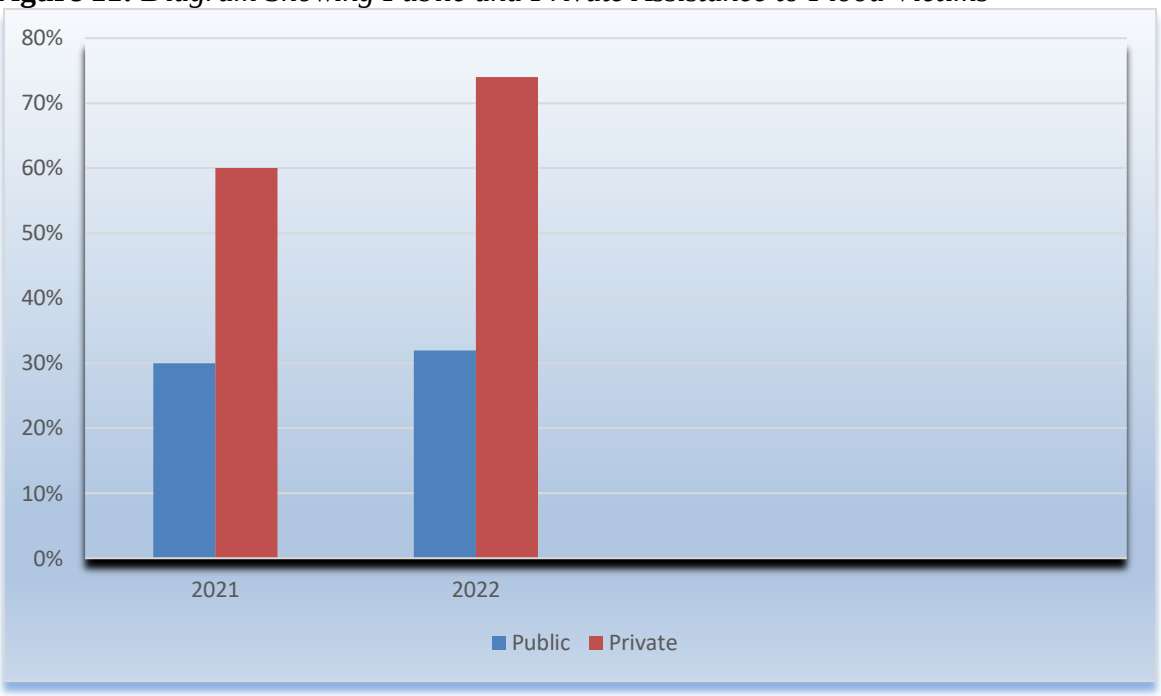
Source: Field Survey (2023)

Figure 10: *Diagram Showing Farmers' Income*



Source: Field Survey (2023)

Figure 11: *Diagram Showing Public and Private Assistance to Flood Victims*



Source: Field Survey (2023)

Findings

The result of flood and food security in the Benue Valley revealed that food security in the valley is occasioned by abnormal rainfall and the intermittent release of water from the Lagdo Dam in Cameroon. This has spillover effects on food supply within the Benue Valley and beyond. As revealed by the respondents, flood has always reduced their yields and made life very difficult for their families. Farmers usually have difficulty accessing their farmlands because of flooding. The implication is that these farmers have nothing to sell in the market. Other findings include fall in farmer's income and outrageous increase in prices of goods and services, especially agricultural oriented products. In addition, the result indicates that private organizations and individuals respond more in terms of aids and assistance to flood victims than government. The descriptive presentation (bar charts) and tables respectively buttress these. These findings are consistent with Sadiq (2021) and Danjo (2020) who claimed that flood would always destroy the means of livelihood of the people, pose a serious threat to food security, and aggravate poverty.

Conclusion and Recommendations

The study has examined the effects of flood on food security in the Benue Valley. The farmers in the Benue Valley depend entirely on agricultural economy. Erratic rainfall has always caused floods, with devastating implications for human lives, livelihoods, and food security. The inhabitants always watch helplessly as human lives and sources of livelihood are lost to floods. The self-help strategies of the

inhabitants to cope with the adverse effects of floods and other external interventionist measures are always inadequate. The paper thus concluded that severity of flood and food security are negatively related. The paper, thus, recommends that there should be:

a. Strategic water infrastructure management through the construction of drainage system along the River Benue to control the degree of flood along the Benue River;

b. Agricultural extension and other agricultural oriented agencies to intensify awareness on dry farming and render the necessary support to farmers for sustainable dry season farming; and

c. Construction of more dams on the Benue River to accommodate the excess water from the Lagdo Dam of northern Cameroon and increase assistance to flood victims

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