

EFFECT OF THE 2022 FLOODING ON FOOD SECURITY IN OGBARU LOCAL GOVERNMENT AREA, ANAMBRA STATE, NIGERIA

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Abstract

Flood disasters hamper sustainable development, food security and growth in the society. The losses from natural disasters like flood are increasing and have a disproportionate impact on the less developed countries as they are known to destroy the standard of living and overall development prospects of the people (Abbade, 2017). This paper intends to bring to the fore, the economic effects of the 2022 flood disasters on food security and market activities in Ogbaru Local Government Area, Anambra State, and the extent food insecurity has affected the economic development of the state. The methodology of this paper is based on descriptive and qualitative analysis of available data, using primary and secondary sources. The findings of the paper indicate that flooding causes the soil to be infertile as the topsoil is lost due to erosion; it reduces the habitat for tropical organisms and restricts the use of the land for other purposes; and causes the destruction of food and fodder crops which in turn leads to acute food shortage. The study recommends among other things, that there should be a legislation against the indiscriminate dumping of refuse and the erection of buildings in swampy areas, the depth and width of the river bed should be increased in its capacity to carry larger loads of flood plain, and proper care should be taken in the design and construction of network of canals.

Keywords: Ogbaru, food security, flooding, market activities, Anambra state.

Introduction

Flood is a great flowing or overflowing of water, especially over land not usually submerged (Dictionary.com, 2024). Flood could also be seen as the inundation of a normally dry area caused by rising water in an existing waterway, such as a river, stream, or drainage ditch (weather.gov, 2024). Floods can happen during heavy rains, when ocean waves come on shore, when snow melts quickly, or when dams or levees break. Damaging flooding may happen with only a few inches of water, or it may cover a house to the rooftop.

Flooding as noted by Odufuwa (2019), are the most frequent disaster and widespread natural hazards of the world and the United Nations (2020), noted that, flooding have caused 84% disaster deaths in the world with an average of 20,000 deaths per year, which makes only a few countries immune to flooding. The growing flood scenarios in different parts of the world have resulted in loss of human lives, displacement of people, loss in properties and general damage to the environment. Developing countries have been identified to be the most vulnerable to the impact of flooding due to their low adaptive capacity.

While Nigeria regularly experienced seasonal flooding, the flood incidence of the year 2022 has been the worst recorded since the 2012 floods that occurred in Nigeria (Maclean, (2022). The 2022 flooding occurred between April and November, 2022 (BBC, 2022) and sixteen states out of the 36 states in Nigeria were said to have suffered major losses as a result of the flood disaster. The states include the following: Adamawa, Anambra, Bayelsa, Benue, Cross River, Delta, Jigawa, Kogi, Nasarawa, Sokoto, Katsina, Zamfara, Niger, Kano, Yobe, and Rivers states. Over two million people were said to be affected by the flooding and the outbreak of cholera in the

northeast within the period was attributed to the contamination of water sources by flooding and was responsible for the death of about 100 people (Davies, 2022). As of October, 2022, over 600 people have been killed and over 2,400 have been injured (Maclean, 2022). By August there had been 372 deaths (Ogune, 2022).

The floods were said to have completely or partially destroyed over 200,000 homes (Maclean, 2022). Also, the flood was noted to have destroyed an estimated 110,000 hectares of agricultural land and the prices of food have been known to be inflated by 23 per cent (Ope, 2022). According to the United Nation's Food and Agriculture Organization and World Food Programme (2022), "Nigeria faces a high risk of catastrophic hunger levels which is as a result of flood disaster ravaging the country. In a briefing on 13 October 2022, UN Humanitarian Coordinator for Nigeria Matthias Schmale indicated that 19 million people in Nigeria were food insecure and 14.7 million children were at risk of malnutrition. Some 400,000 children in the north and northeast of the country and another 500,000 in the northwestern states of Sokoto, Zamfara, and Katsina were at risk of severe acute malnutrition (United Nation, 2022). Also, according to the UNICEF report of 2022, more than 2.5 million people in Nigeria are in need of humanitarian assistance – 60 per cent of which are children – and are at increased risk of waterborne diseases, drowning and malnutrition due to the most severe flooding in the past decade, (UNICEF, 2022).

Flooding in Anambra state is caused majorly by overflow of water from major rivers. The situation is exacerbated by climate change with increased and irregular rainfall. Some of the major rivers include the River Niger, whose overflow causes flooding in Ogbaru, Onitsha South and Onitsha North local governments; and the Omambala River, whose overflow causes flooding in Anambra East and West local governments respectively. The extent of damage caused by the flood disaster of 2022 on food security and the search for plausible ways to avert incurring major losses from flood disaster has spurred the interest for this research.

Conceptual clarification

For proper understanding of this paper, the concepts "food security" and "flooding" will be clarified. The concept of food security is used to refer to the state of having considerable access to a large amount of healthy food available in large and affordable quantity for people of all class, irrespective of gender or religion (Wikipedia, 2024). Similarly, household food security is considered to exist when all the members of a family, at all times, have access to enough food for an active, healthy life. Individuals who are food-secure do not live in hunger or fear of starvation. Food security includes resilience to future disruptions of food supply, which could occur as a result of various risk factors such as droughts and floods, shipping disruptions, fuel shortages, economic instability, and wars (FAO, 2018). The concept of food security has evolved over time and the pillars of food security include food availability, food access, and food utilization, food stability, food agency and food sustainability (FAO, 2009). Food availability, in a nutshell, relates to the supply of food through production, distribution, and exchange; Food access refers to the affordability and allocation of food, as well as the preferences of individuals and households; food utilization entails the metabolism of food by individuals; food stability on its part, refers to the ability to obtain food over time; food agency refers to the capacity of individuals or groups to make their own decisions about what foods they eat, produced, and how that food is produced, processed, and distributed within food system, and their ability to engage in processes that shape food system policies and governance and; food sustainability refers to the long-term ability of food systems to provide food security and nutrition in a way that does not compromise the economic, social, and environmental bases that generate food security and nutrition for future generations.

Flooding on the other hand, is the over flowing of water either as a result of torrential rainfall, a broken dam, a high rise in the volume of water in rivers, ocean or seas as a result of melting ice caps or prolong rainfall, thereby flooding its neighbouring environment and beyond. Flooding can be very dangerous depending on the nature and level of water volume involved. Often, when flowing water is termed “flood”, danger or disaster is implied. Indeed flooding have been associated with huge economic loses, disruption and loss of lives. Wisner (2019) submits that flooding accounted for the largest share of economic loses and fatalities from all natural hazards experience in the late 1980s and throughout the 1990s. According to Smith (2019), more than any other environmental hazard, flooding brings benefits as well as loses. Emetuo (2021), argues that they “are a natural phenomena that have always existed, and people have tried to use them to advantage to the extent possible.” Along the flooding river and downstream delta wetlands, such as those created by the River Niger, flooding is critical for maintaining and restoring many of the important services provided to humans by wetlands ecosystems.

Classifications of flooding

In the views of Wisner (2019), flooding can be classified into three categories namely:

River flood: this is a type of flooding which occur as a result of riverbanks overflowing due to heavy rainfall over a large catchment area, or by melting of snow or sometimes both, especially in the mountainous tracts. River flooding takes place in river systems, with tributaries that may drain into a large geographic area and encompass many independent river basins. The amount of flooding depends on moisture in the soil, vegetation cover, and depth of snow and size of catchments basin.

Coastal flood: This type of flooding is associated with tropical cyclones (harsh winds arising at the ocean surface). Coastal floods are often aggravated by wind induced storm surges along the coastline. Sea and ocean water floods the inland coasts affecting kilometres of tracts. Prolonged and indefinite rains in the rainy season marked from June-September results in extreme flood in coastal river basins.

Flash flood: Flash floods occur within six hours of the beginning of rainfall and are characterized with rising clouds, thunderstorms and [tropical cyclones](#). This results from surface runoff from a torrential downpour, particularly if the catchments slope is not able to absorb and hold a significant amount of water. Other causes of flash flooding include dam failure, sudden break up of glaciers etc. These offer potential threats in the areas where the terrain is steep, surface runoff is high, water flows through canyons and where severe rainstorms are likely.

The types of Flooding prevalent in Ogbaru Local Government Area

Basically, flooding is a complex issue because of its types, causes and impact on the society. In Ogbaru, the major types of flooding experienced are the fluvial and pluvial flooding. Fluvial flooding occurs when rivers and streams break their banks and water flows out onto the adjacent low-lying areas (the natural floodplains). This can arise where the runoff from heavy rain exceeds the natural capacity of the river channel, and can be exacerbated where a channel is blocked or constrained or, in estuarine areas, where high tide levels impede the flow of the river out into the sea (floodinfo.ie, 2024). Pluvial flooding on the other hand, occur when the amount of rainfall exceeds the capacity of urban storm water drainage systems or the ground to absorb it. This excess water flow overland, ponding in natural or man-made hollows and low-lying areas or behind obstructions. This occurs as a rapid response to intense rainfall before the flood waters eventually enter a piped or natural drainage system (floodinfo.ie, 2024).

Causes of flooding in Ogbaru Local Government Area

Flooding in Ogbaru is majorly caused by the following factors:

Heavy Precipitation

Heavy precipitation is a form of climatic change which refers to instances during which the amount of rain or snow experienced in a location substantially exceeds what is normal (www.epa.gov, 2024). Climate change is a global phenomenon, but the developing countries of the world are disproportionately suffering from the impact (Akeh and Mshelia, 2016). The weather pattern in many parts of the globe has changed and, in Nigeria, climate-related events are manifesting in disasters such as flooding and droughts. Climate change will steadily and continuously increase flood risk in the coming years by inducing changes in sea levels, an increase in river flows, and heavier, prolonged rainfall durations (Akeh and Mshelia, 2016).

Major flooding incidents in Ogbaru have particularly been witnessed after high rainfall events. Climate change effects manifest according to the region; for instance, the dry northern arid areas are becoming drier while the wet southern areas are experiencing increasingly wetter conditions (Olaniyi *et al*, 2019). The river basins of Niger-Benue, Anambra, and Sokoto-Rima are also exposed to flooding due to the bursting of river banks (Nenime, 2015). The impact of climate-induced flooding is usually enormous, particularly in the coastal areas where rising sea levels and precipitation are expected to be higher. Climate induced flooding is considered a serious challenge because many parts of Nigeria, including Ogbaru Local Government Area, lack the needed infrastructure to conduct and channel rainwater and surface run-off water, which exacerbates the risk of flooding.

Poor Physical Planning and Implementation of Planning Regulations:

The state of urban planning in Nigeria leaves a lot to be desired. Poor urban planning practices and implementation are a leading cause of flooding in Nigeria. Lack of adherence to planning regulations has seen the construction of buildings on floodplains and drainage pathways that cause flooding. According to Aliyu and Amadu (2017), the rate of urbanization in Nigeria is high (at over 50%) and is set to increase in the coming years. Unfortunately, the high rate of urbanisation in Nigeria as a whole and Anambra state in particular, is not accompanied by appropriate urban planning and infrastructural development to cater to the growing population (Adekola and Lamond, 2018). Good planning practices incorporate sustainable drainage management to cater to the needs of the population, and this is lacking in the Ogbaru Local Government Area (Adedeji *et al*, 2012). In most states in Nigeria (Anambra state inclusive), urban planning laws and policies compare to international standards only on paper. The actual implementation of these laws and policies has left a lot to be desired (Echendu, 2019). Development control and zoning are not being enforced. Along with this, infrastructural decay, the indiscriminate construction of buildings, and informal settlements that characterize the urban planning sphere, all contribute to flooding in Nigeria (Ezeh, 2021).

Poor Drainage Infrastructure and Waste Management:

Salami *et al* (2017), attributes lack of adequate waste management and drainage infrastructure as one of the leading causes of flooding in Ogbaru. Poorly constructed and managed drainages are the hallmark of Nigerian cities, where drainages in many places are open and small (Echendu and Georgeou, 2021). Their small size makes them unable to support large volumes of water during heavy rainfall. The absence of covers makes them easy dumping sites by undisciplined citizens. Most of the drains are also characterized by their poor or absent connectivity to adequate discharge points (Frimpong, 2013). It is not uncommon to see drains flood settlements due to poor connectivity and sub-optimization whereby drains from a community can discharge into another community and cause flooding. The poor conditions of existing drains make them likely to cause, rather than prevent, flooding. As a result, the existing drainage is not completely adequate to discharge run-off, thereby increasing the risk of flooding (Cirella and Iyalomhe,

2018).

Effects of Flooding

Meyer and Auriacombe, 2019) stated the effects of flood as follows:

1. Damage to residential and commercial building as a result of rising flood water.
2. They are dangerous for villages lying in the coastal areas as it sweeps away everything, which comes into its path. In mountainous areas flood is the chief cause of landslides.
3. Flooding carry pollutants from the land or urban areas into the rivers and streams that are used by human communities, thereby, resulting in water borne diseases.
4. Flooding also make soil infertile, as the topsoil is lost due to erosion,
5. Flooding causes serious damage to cropland by eroding soil and washing away seeds or ruining crops every year hence making it difficult for farmers to provide food for its growing population.
6. Fisherman, local people, cattle, animals and vegetation suffer a great loss of life and property. Most of the deaths are reported to be from drowning.
7. Fresh water supplies by all sources are nearly destroyed and contaminated hence the areas falling under the impact of flooding is exposed to water borne diseases.
8. The destruction of food and fodder crops lead to acute food shortage.

Effect of Flooding on Food Security

As mentioned earlier, the concept of food security encompasses the availability, access, utilization, and stability of food. Flooding impacts all these different aspects. However, the majority of food security programs and policies have focused on food availability by seeking to increase production while neglecting other areas (Firdaus *et al*, 2019). This approach is evident in Nigeria's current applications, where production alone formed the focus of the policy. The other concepts of food security are however, discussed below.

Flooding and Food Availability:

Food availability refers to the availability of sufficient amounts of food. Regular availability is dependent on sufficient production levels that only a healthy, disaster-free environment can ensure (Gil *et al*, 2019). Food production levels in Nigeria are below demand despite agriculture being the second most important economic activity after crude oil. The perennial nature of flooding disasters further impact production levels on both the aquatic and terrestrial ecosystems, the two main food production interfaces. Flooding degrades the environment, destroys crops, farm settlements, livestock, and seedling stores (Echendu, 2020). This reduces harvest and affects the next planting season, culminating in a food shortage crisis. Human production capital is also affected as, during flooding, people are at risk of physical injuries and ill-health. Flooding, therefore, have a chain reaction effect and represent a threat to food security by affecting the production of food (Armah *et al*, 2010).

Flooding and Food Access:

Flooding impact on access to food, which is the ability to secure or obtain food as determined by purchasing power and affordability. It is the capacity to obtain sufficient nutritious food. Shocks on the food system due to flooding directly affect accessibility. High prices of food due to limited supply after flood disasters deny the majority of the population who live in abject poverty access to food (Hallegatte *et al*, 2020). As a result, food scarcity ensues and the forces of demand and supply come into play, increasing food prices beyond that which the poor can afford. Small

holder rural farmers like Ogbaru, who cultivate, process, and eat directly from their farms are the worst affected by flooding disasters

Flooding and Food Utilization:

Food utilization is the most important but least researched aspect of food security due to its complexity (Zewdie, 2014). It is the ability of the body to absorb the needed nutrients from food. It is having the necessary nutritional intake and encompasses food safety and quality issues. According to FAO (2008), it is the nutritional worth of food, makeup and ways of food preparation, the social values attached to food that determine the type of food consumed at different times and events, and the safety and quality of food supply which can result in nutrient loss and food-borne diseases if the standards are poor. Food availability and access are the precursors to food utilization. (Hwalla *et al*, 2016). The high prices and unavailability of certain types of food force consumers to limit their consumption and opt for less nutritious but more filling food, which impacts food utilization.

Flooding and Food Stability:

Food stability is ensuring that there is food availability, access, and utilization at all times (Hwalla *et al*, 2016). Vulnerabilities and shocks on the food system due to flooding seriously affect food stability. This is because of the impact on other aspects of the food system. A decline in agricultural productivity because of flooding impacts the availability of food. Subsequent shortfalls in supply increase prices of food, making it inaccessible to a large section of Nigeria's population. Inaccessibility of food affects its utilization which in turn affects food stability. Flooding thus present a severe shock to the entire food system in Nigeria.

Ways to Address Flooding to Improve Food Security in Ogbaru

As the causes of flooding in Ogbaru have been identified, measures that can help address them and mitigate the impact on food security are highlighted below:

Improved Physical Planning:

Urban planning has a role to play in reducing the impact of flooding on food security. The unregulated or poorly regulated nature of urban development in Nigeria has contributed majorly to flooding incidences due to developments on floodplains and natural drain paths (Idoko, 2016). The urban growth pattern, therefore, deserves closer attention, with good regulations and effective implementation put in place.

As much as possible, agricultural lands should be sited further away from flood-prone areas and restricting the building of impervious surfaces near water bodies will help manage flooding. Planning for, and construction of flood control infrastructure should be factored in during the planning process. This is to enable a flood-free environment in which farming can thrive and cater to the food needs of the population.

Waste management is a core part of urban governance and citizen waste management sensitization is needed to discourage the indiscriminate dumping of refuse which blocks drainages and causes flooding. Adequate waste collection and treatment facilities need to form a core part of urban management and governance (The Lancet Public Health, 2020). Newly constructed residential as well as commercial buildings should have foundations that are strong enough to withstand flood conditions.

Improved Farming Practices

More support, effort, and investment in research and development to develop flood-resistant, high yield, and a quick-maturing variety of crops will help in improving food security. This is

necessary because, despite the best efforts to manage and control flooding, flood disaster still occur from time to time. Early maturing varieties, as was introduced in Bayelsa state in the aftermath of the 2012 flooding disaster in Nigeria (Nenime, 2015), should be made widely available in Ogbaru, so that many farmers could have access to such varieties. Improved varieties of crops make it possible for the plants to mature before the onset of heavy rains associated flooding.

Indigenous Practices

Undocumented local meteorological knowledge based on traditional beliefs, practices, and observation has been known to help locals predict flooding on a long-term and seasonal basis (Nemine, 2015). Curating and documenting such knowledge, which could be transferable, can help in calculating the best farming periods and strategies and help in managing flooding. This knowledge could be applied during research for the development of new crop varieties to factor in the flooding window. Infusion of scientific and indigenous knowledge and practices could further enrich practices.

Grey and Green Infrastructure

Grey infrastructure consists of structures like dams, dykes, and drains. They have traditionally been used in managing flood risks with good performance (Alves *et al*, 2018). Green infrastructure on the other hand, refers to multipurpose natural solutions that also provide ecosystem services such as recreation while also providing flood protection (Dipeolu and Ibem, 2020). A combination of grey and green infrastructure in managing flood risks is advocated as a better way to improve resiliency (Alves *et al*, 2018). The construction and improvement of the drainage system; the construction of buffer dams in needed areas and dredging of rivers to increase its capacity to carry larger loads; establishment of networks of canals from river systems; and the construction of artificial dams and canals along flood areas, are measures that can help control flooding. Dams can serve a dual purpose of providing electricity and a source of water for irrigation, thereby boosting agriculture.

Conclusion and recommendation

Flooding is the most common and recurring natural disaster in Ogbaru Local Government Area, Anambra State, Nigeria. The 2022 flood disaster was however, recorded to be the most devastating after the 2012 flood disaster. The damage and losses recorded during the 2012 flood disaster were severe; however, the 2022 floods, which were on a multidimensional scale, had more devastating effects on food security in Ogbaru. The floods disrupted agricultural activities, resulting in poor crop yields, food scarcity, increased food prices and diminished access to nutritious food. For many households, the floods caused food insecurity, with 60 percent reported to have experienced hunger; 69.2 percent – a food shortage and 84.9 percent unable to eat a healthy nutritious meal due to the impact of the floods (NFIRMAR, 2023). The above indices is a clear pointer to the fact that the 2022 flood disaster had adversely affected food security in Ogbaru, and if no decisive effort is channeled into avoiding a recurrence, the aftermath of future recurrence will be more devastating.

It is against this backdrop that this paper makes the following recommendation:

- that there should be a legislation against the indiscriminate dumping of refuse and the erection of buildings in swampy areas by the authorities;
- the depth and width of the river bed should be increased in its capacity to carry larger loads of flood plain, and proper care should be taken in the design and construction of network of canals;
- More support, effort, and investment in research and development to develop flood-resistant, high yield, and a quick-maturing variety of crops for flood prone areas

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