



The 2022 Floods in Nigeria: Causes, Socio-Economic Impact and Mitigation Measures

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ARTICLE DETAILS

Research Paper

Keywords:

Floods, hazards, mitigate, Nigeria.

DOI:

10.5281/zenodo.14106896

ABSTRACT

Flood hazards have translated into socio-economic challenges in the Nigerian environment that need to be checked. This paper assessed the causes, environmental, and the socio-economic effects of flood in Nigeria as well as the strategies that can help to minimize its public hazards. Eight states that were badly affected by the 2022 flood were selected for the study. The results show that the causes of flood in Nigeria was due to climate change, Lagdo dam water release, heavy rainfall, poor drainage channels and poor solid waste management. The effects of the year 2022 flood on the lives and properties were many and so devastating. It was also discovered that adequate measures to palliate its effects were not sufficient. It was recommended that the authority of the frontline states should enforce the measures to minimize future flood hazard

1. Introduction

Flood is an overflow of water onto the normally dry ground. Water rises higher than normal levels causing the dry land, lives, and properties to be submerged by the overflow of water. The phenomenon

often results into environmental damages, loss of human lives, economic, and social infrastructure (Mensahm & Ahadzie, 2020. Olagunju, O.E, Ariyo, O.C., Fadele, O.K., Alabi, O.F & Olagunju, O.S 2021, Samsuddin, A, Kaman, Z. K & Husin, N. M. 2021, Mhache, 2022, Mfon, I. E, Oguike, M. C, Eteng, S. U. & Etim, N. M. 2022, Lawanson, et al. 2022, Asaad A. M. A., Younes, H. Salem, B., Soumaya, H, Awad, M. A., & Wafik, H. 2023). The occurrence of floods is increasing every year in damages it causes and duration representing a major challenge in the world today. While the rate of floods occurrence cannot be avoided, this study critically examines its impact on both the people and the economy as well as suggests ways to considerably reduce the devastating effects. The objectives of this research is to examine what caused year 2022 floods in Nigeria, assess socio-economic impacts and suggest mitigation measures.

2. Literature Review

A flood is a particular type of land flooding, usually caused by water (Mhache, 2022). Flooding is a serious problem worldwide because it frequently causes environmental damage, loss of life, and damage to the economy and social infrastructure (Munich, 2002; Mensahm & Ahadzie, 2020, Olagunju et al, 2021; Samsuddin, et al 2021; Mfon, et al 2022; Lawanson, et al. 2022, Asaad et al, 2023). The annual increase in floods' intensity and length

Nigeria experienced a noticeable flood in 1948, when Ibadan, the Oyo state capital was flooded. Since then there have been reoccurrences sometimes yearly in many other states with varying intensity and effects. In year 2022, Nigeria saw its deadliest floods in ten years that affected 27 of Nigeria's 36 States and the capital city. The Nigerian States that were mostly affected includes: Benue, River, Borno, Delta, Ebonyi, Lagos, Anambra, Federal Capital Territory, Jigawa, Adamawa, and Yobe States. Pollutants and vegetation transported by floodwaters affected the ecosystems, flora, and fauna as well as water quality. Although, it may play a beneficial role in natural habitats (NEMA) While the occurrence and frequency of floods cannot be avoided, this study seek to suggest additional ways by which their adverse impacts can be considerably reduced and managed (Manzoor, et al 2022, Danhassan, et al 2023).

3. Materials and Methods

This study used secondary data sourced from the Federal Ministry of Humanitarian Affairs, Nigerian printed media and Nigerian Emergency Management Agency.

4. Results and Discussion

4.1 Causes of the 2022 flood in Nigeria

The causes of the 2022 flood in Nigeria and its surrounding regions, such as Niger and Chad, are believed to be heavy rainfall, climate change, and the September 13, 2022, release of water from the Lagdo Dam in neighboring Cameroon. This information is based on available data and careful environmental analysis. The country's rainfall patterns have changed, with an increase in extreme occurrences and a strong rainfall in 2022 causing the runoff to overflow the river channels. The rate of percolation was impacted by the overland flow, resulting in flooding. From August to October of 2022, there was a noticeable increase in the intensity of rainfall.

Climate change is described by the International Panel on Climate Change (IPCC) as variations in the average annual temperature of the atmosphere over a longer time period. It might be the result of natural processes or human activity that has been going on for more than 200 years, such as burning fossil fuels and producing greenhouse gas emissions, which trap heat and raise the temperature of the planet (Lattana et al, 2021). The frequency and intensity of extreme weather and climate events have changed significantly since the 1950s, increasing (and introducing new) dangers to human and environmental systems. Regional hydro-meteorological patterns are impacted by climate change, which increases the likelihood of hazards like flooding. worried about the possibility of flooding in areas with a dense population. Cities are particularly concerned about flood risk when there is high population density.

In September, 2022, excess water released from Lagdo dam in Cameroon affected 14 Nigerian states displacing over 100,000 people. A major bridge connecting the Yobe state capital and several local government districts and highways were submerged. It is about twelve Local Government Areas in Taraba and Adamawa states experienced flooding as a result of the water released from the Kiri and Lagdo dams. Farmland and homes were flooded, and people were forced to flee (NEMA, 2022).

According to the Federal Ministry of Humanitarian Affairs, the post-disaster assessment of the 2022 flooding showed that drainage systems were frequently exploited as trash sites, obstructing the flow of water, One of the key factors contributing to the flooding was found to be inadequate solid waste management.

This 2022 flood is a significant flooding that Nigeria experienced due to human activity. In Nigeria, the majority of residential areas rely on naturally occurring drainage channels instead of drainage systems.

A large portion of Nigeria's ground surfaces are concreted due to the nation's increasing urbanization; this suggests that water cannot percolate through the ground and that there are insufficient drains to handle surface runoff. The lack of drainage channels is one of the main causes of the flooding that is expected in Nigeria in 2022. In order to address this issue, drainage systems must be built urgently during road construction or when building houses, especially in urban centers.

4.2 Impact of the 2022 flood in Nigeria:

No matter what causes flood, its hazards unfold adverse consequences on the environment, human lives and health, cultural heritage and economic activity, they may have devastating effects on humans and properties. In this section, most common 2022 flood effects are stated below.

Loss of human lives and livelihood:

The 2022 floods killed at least 320 people and affecting more than half a million people, (NEMA, 2022). Thousands of hectares of agricultural products were damaged, leaving Nigeria with an inadequate supply of food

Property damage:

. Pictures of cars floating away in flood waters were seen, damage to buildings by causing windows to blow out, doors to sweep away, walls and foundations to corrode, and debris to quickly enter infrastructure. Other property includes items inside homes and offices. Floods also damage property by depositing mud and debris after the floodwaters have abated and by the tremendous force of the moving water (Nwiyii, et al 2022, Nura and Alison, 2023).

Cholera pandemic:

Flooding decreases availability to potable water and pollutes water bodies (Olanrewaju et al. 2019). Water-borne illnesses and mental health conditions are typically the public health risks both during and after the flood occurrence (Abdulhakim, et al., 2023). The effectiveness of the natural water filtration process is diminished by the rising groundwater level, which also raises the danger of diseases and chemical effluent. There was not enough drinking water because the wells were flooded during floods. Families use contaminated water for drinking and household needs (Islam, 2017). In northeastern Nigeria's Borno, Adamawa, and Yobe states, there was a second cholera outbreak the year 2022, with over 1,500 probable cases and 64 fatalities, according to a UN report dated September 20, 2022.

Approximately 17 local government units in the three states are experiencing incidences of water source contamination due to flooding during the height of the rainy season in August 2022. 36 people died and over 900 instances of cholera were suspected in Yobe State, where over 60,000 people were impacted by

flooding. In September, 2022 Adamawa, Borno and Yobe states officially declared cholera outbreak due to flooding. 2022 flooding increased the number of people that contracted water-borne diseases such as diarrhea and cholera due to poor sanitation infrastructure (Aliyu, et al .2023).

Psychosocial effects:

Floods that cause damage cause people to experience trauma or psychological discomfort. The flood of 2022 had numerous socio-economic effects, including the loss of life, properties, social amenities, and infrastructure worth billions of naira, as well as a reduction in economically productive time. The emotional and psychological anguish that results from being uprooted and cut off from one's family and ancestral homes can be internalized.

Education:

Children's education and the provision of education in the flooded areas are disrupted by the floods of 2022. For concern that their kids would be swept away by the floods on their way to school, parents were reluctant to send them. If there is a need for evacuation or floods, they would rather have them at home where they can better oversee their safety. Due to flooding issues at their homes, schools, or emergency shelters, the teachers were also in poor enough condition to teach. At this time, parents are unable to significantly impact their children's education or assist with at-home instruction. No replacements were found for the destroyed educational materials.

In areas where access to education is already insufficient, the consequences of flooding catastrophes on the education sector became much more detrimental. The academic year is lost for these kids for several months. Additionally, the extreme hardship experienced by impoverished families compelled them to pull their kids out of school entirely and force them into the workforce in order to assist pay for their basic necessities.

4.3 Mitigating effects of 2022 flood in Nigeria:

Preparation against the flood hazard would enhance understanding of the physical processes at play (Tramblay et al 2021). Forecasting, impact mitigation, and quick and accurate warning systems can all help to lower vulnerability. The annual flooding that occurs in Nigeria is getting worse because of the negative consequences of climate change, making farmers more vulnerable. It has been noted that farmers in the states of Akwa Ibom, Ondo, and Rivers employ mounds as part of their land management techniques to lessen the effects of flooding. According to Umoh (2013), this approach is used by 39% of female farmers and 30% of male farmers. Farmers cultivate flood-tolerant or flood-resistant crop types in the wetland areas of Ondo state. To deal with environmental risks, farmers have also broadened the sources of their revenue. Fishing villages in Akwa Ibom, Ondo, and Rivers state carry deep freezers to

preserve their catch for the extended period they would be at sea, and they fish farther from shore than they used to in order to adapt to flooding and sea level rise (Umoh, 2013).

4.3.1 Government agencies and Institutions effort to mitigate flood:

The recommended approaches for reducing the impact of flooding include installing appropriate drainage systems, erecting buffer dams in key locations, designing homes to avoid obstructing natural drainages and waterways, preventing siltation of creeks, rivers, and other water bodies through dredging, and establishing a well-thought-out community flood preparedness, awareness, and management program that will be implemented throughout the state. The government has tried to move residents in areas that are vulnerable to flooding. Government officials moved forty communities in South Eastern Benue to safer areas. Following a notification that water would be released from the Kainji and Jebba Dams, the Kogi state administration encouraged those living along the riverbanks to migrate. In order to prevent floods and to allow for free water flow, the state's residents were also urged by the authorities to empty their drainage systems. Communities at risk of flooding received training and basic supplies to facilitate a prompt evacuation.

4.3.2 Other mitigation approaches

Even though the government took some action in response to the flood tragedy, several organizations and people still think that more needs to be done by the government. Researchers recommended that the federal government switch from short-term flood response strategies to long-term ones in a paper published by Lasisi (2013). They also recommended against permanent relocation centers due to the sociopolitical concerns they frequently bring up. Owie (2012) expressed a similar opinion and questioned why, in the wake of the 2012 floods, the main cause of the flooding was not brought up, but instead the government spent a great deal of time procuring and allocating the 17.6-billion-naira bailout fund it had been given to address ecological issues.

He also bemoaned Nigeria's lack of a clear environmental regulation policy. In order to generate money for flood victims, the Presidential Committee for Flood Relief and Rehabilitation hosted a fundraiser dinner in November 2012. Although promises totaling US\$ 70 million were fulfilled, it is still unclear how these money will affect the lives of the victims (Odeh, 2014). According to PM News Nigeria (2012), although the 2012 floods were caused by the Lagdo dam, Lake Nyos in Cameroun is a tragedy waiting to happen. Okoye (2019) evaluated Nigeria's integrated flood risk management approach and recurrent flooding. He noted that the fact that flooding in Nigeria has caused losses in terms of lives lost, property, livelihoods, and socio-economic infrastructure makes flood hazards in need of management. He held a discussion to find methods and potential remedies for managing flooding in order to control

the risk of flooding. He noted that in order to enable run-offs, proper channelization had to be developed. Additionally, he advocated for the beneficial uses of water, including irrigation of farms, transportation, the production of hydroelectric power, mining for minerals, leisure, and tourism.

5.0 Conclusion and Recommendations

The Nigerian flood of 2022 was caused by reservoirs overflowing, a lot of rain, and the outflow of excess water from the nearby Lagdo dam, which damaged property, lives, and the economy. The administrations of the frontline states in Nigeria were instructed by the country's disaster management organization to move residents of areas that were vulnerable to flooding to drier, safer areas and to provide them with security and food. Many regions of the nation were impacted by the floods. According to data from the Federal Government, the floods caused over 1.4 million people to be displaced and over 2,400 people to be injured. 332,327 hectares of land were impacted, and about 82,035 dwellings suffered damage. Even after the waters subsided, educational materials remained damaged. Cholera and diarrhea outbreak. Since 2022 floods has a devastating effect, government should provide adequate mitigating measures to prevent the future occurrence such as construction of drainage system, by redirecting excess water to purposeful use, built canal and construction of dams for flood control. Implementation of environmental guidelines and adequate infrastructure development.

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