IMPACT OF FLOODING ON HUMAN SECURITY IN NORTHERN NIGERIA

DUBE PHILEMON ABRAK
philemondube1@gmail.com

ADELAKUN RASHEED ADEYINKA
adeyinkaadelakun@yahoo.com

ISHAKU AISHA YUSUF
ieshaku@yahoo.com

UBON UDOH HUMAPWA
ubon.udoh@asrafrica.org

MUKHTAR BELLO MUHAMMAD
mukhtarbello@yahoo.com

CHUKWUEDO N. HENRY
hchukwuedo@gmail.com

OGBUKE KINGSLEY NNAMDI
kingsley.ogbuke@gmail.com

DEPARTMENT OF SECURITY AND STRATEGIC STUDIES, NASARAWA STATE UNIVERSITY, KEFFI

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ABSTRACT
The study provides insights into how flooding exacerbates health issues and the direct and indirect effects on physical and food security in northern Nigeria through the increased prevalence of waterborne diseases such as cholera and malaria, displacement of people, leading to overcrowded and unsanitary living conditions in temporary shelters and the disruption of agricultural activities, resulting in food shortages and increased prices, undermining food security in the region. Relying on secondary sources of data collection and utilising content analysis, the study investigates the impact of flooding on health, physical and food security in Northern Nigeria, Using the Human Security Theory (HST) developed by Mahbub ul Haq and Amartya Sen in 1994 to emphasise the protection of individuals and communities from various threats, including environmental disasters like flooding. Findings revealed that flooding causes outbreaks of infectious diseases, inadequate sanitation, and making people vulnerable to infection, affecting mental, social, and physical health. It also causes internal displacement, homelessness, economic hardship, psychological violence, and flooding affects agricultural

productivity, destroying crops and farmland, which threatens food security. This study recommended that the Nigerian government overhaul emergency response services to ensure hygienic conditions, that people have access to clean water and sanitation, and that infectious diseases are prevented after flooding. Immediate assistance should be provided to displaced persons, including food, shelter, and healthcare, as well as to relocate affected communities to construct and maintain effective drainage systems to prevent flooding and engage local communities in flood risk management and adaptation measures. Land use planning and enforcement should be improved to mitigate flood risks. It should establish reliable early warning systems to alert communities of potential floods, promote water conservation and efficient irrigation practices, and encourage crop cultivation on soils with high water-holding capacity.

1.1 Introduction

Flooding is a pressing global issue threatening human security, particularly in vulnerable areas. Every year, millions of people are affected, with severe consequences in regions such as Asia, Europe, North America, and Africa. In Africa, over 5 million people have been impacted, especially in West and Central Africa, including Chad, Niger, Nigeria, and the Democratic Republic of the Congo (World Economic Forum [WEF] 2022).

Nigeria is among the worst-hit countries, with devastating floods affecting over 1.2 million people and causing widespread displacement and destruction (United Nations Office for the Coordination of Humanitarian Affairs [OCHA], 2024). The 2022 floods were especially severe, displacing 1.3 million people and causing 600 deaths. Heavy rains and poor urban planning have increased flood risks (WEF, 2022). Several states in Nigeria are to flooding, such as Adamawa, Bayelsa, Benue, Borno, Delta, Kogi, Kwara, Niger, River, Lagos and Sokoto states, and causes of Flooding vary from, Heavy rainfall, Poor urban planning, Climate change, Deforestation and land degradation. Inadequate flood control measures:

Annual flooding in Nigeria results from non-compliance with environmental guidelines and inadequate infrastructure. The 2022 floods were the worst in a decade, causing over 600 deaths and 1 million displacements. The collapse of the Lagdo Dam in Cameroon triggered catastrophic flooding in Borno State, while the 2024 floods severely affected Adamawa, Bauchi, Zamfara Sokoto, and Jigawa States, claiming several lives (Asadu, 2024; Shibayan, 2024).

Flooding in Northern Nigeria severely impacts food Security as millions are displaced, homes are destroyed, and farmlands are submerged, leading to acute food shortages and heightened food insecurity (Chemam, 2024). It has also impacted health security, causing overcrowded camps with limited access to clean water and sanitation to increase the risk of waterborne diseases like cholera and malaria (Goodyear, 2024). It has impacted physical security, causing the destruction of infrastructure, hindering access to essential services, and exacerbating health crises (United Nations International Children's Emergency Fund [UNICEF], 2022).

Flooding in 2024 has also severely affected Nigeria's northwestern states, including Borno, Bauchi, Sokoto, Zamfara, Kebbi and Jigawa. These states were among the hardest hit, significantly impacting communities and infrastructure. Farmland destruction in these regions has threatened food security, exacerbating malnutrition and economic challenges. (The National Emergency Management Agency [NEMA], 2024). Tens of thousands of hectares of farmland have been destroyed, jeopardising the upcoming harvest and deepening food insecurity amidst Nigeria’s ongoing inflation crisis (Cadre Harmonisé, 2024). In response, humanitarian organisations are working with state and national agencies to provide urgent assistance, including food,

shelter, clean water and protection for vulnerable groups (OCHA, 2024). Although the government has implemented emergency response plans and invested in infrastructure, the absence of long-term flood prevention strategies remains a critical issue (NEMA, 2023).

Flooding in Northern Nigeria has severely compromised food security, displacing millions, destroying homes, and submerging farmlands, leading to acute food shortages (Chemam, 2024). Additionally, health security has been threatened, as overcrowded camps and limited access to clean water and sanitation have created conditions conducive to outbreaks of waterborne diseases like cholera and malaria (Goodyear, 2024). Physical security has also been undermined due to the destruction of infrastructure, which has hindered access to essential services, worsening the health crisis (UNICEF, 2022).

Northern Nigeria's vulnerability to flooding is shaped by several factors, including its geographical, economic, and socio-political context. The region's proximity to major rivers and reliance on agriculture makes it susceptible to floods. Poverty, poor governance, and weak infrastructure further exacerbate the situation (Benson & Clay, 2018). Ongoing conflicts with groups like Boko Haram, Bandits, and farmers-herders conflict have added another layer of complexity, straining the region's ability to manage environmental disasters and resulting in a human security crisis (Bamidele, 2020).

The Nigerian government has implemented emergency relief programs and initiatives like the Great Green Wall to combat desertification in response to these challenges. However, the persistent nature of flooding calls for more integrated strategies that address environmental and human security dimensions (Federal Ministry of Environment, 2023). In Northern Nigeria, flooding has become a frequent and destructive occurrence that results in a large number of fatalities, displaced people, and destruction of livelihoods and infrastructure. This is becoming more frequent and intense due to several factors, including deforestation, climate change, and inadequate urban design. Beyond just causing immediate physical harm, these floods influence the region's human security, which includes food, health, and physical security, among other things.

There is an invested pyramid of literature on the impacts of flooding, such as Tawari-Fufeyin et al. (2015), Shokri et al. (2019), Olanrewaju (2018), Othman (2022) Kakinuma et al. (2020), Echendu (2020), Yigzaw and Abitew (2019), Idoko (2016) Pratiwi et al. (2020). However, to the researcher's knowledge, these studies are limited to the immediate physical impacts of flooding, which have explored government-led initiatives and have overlooked the impact of poor land use practices on flooding, such as deforestation and floodplain construction. To fill these gaps, this study will be guided by the following objectives:

i. Investigate how flooding affects health security in Northern Nigeria.

ii. Analyse the impact of flooding on physical security in Northern Nigeria.

iii. Examine how flooding affects food security in affected communities in Northern Nigeria.

2.1 Conceptual Clarification

2.1.1 Concept of Flooding

There are many meanings of flooding, most of which are associated with the unusual overflow of water in an area or place, causing devastating consequences for the health and physical and food security of the affected persons in the communities. According to the World Health Organization [WHO], 2024), floods are the most frequent type of natural disaster, which occur when an overflow of water submerges land that is usually dry. This supposes that flooding occurs across different world regions, majorly caused by heavy rainfall, poor urban planning, indiscriminate constructions on natural flood plains, and inadequate government planning. This definition is particularly relevant to Northern Nigeria, where flooding is primarily driven by heavy rainfall, often exacerbated by insufficient infrastructure to manage the excess water.

From a different angle, Glago (2020) stated that floods are like other disasters but do not qualify to be labelled 'disasters' by their happenstances. This definition is true; however, flooding becomes a disaster when it causes damage or adverse effects to human lives, livelihoods, and properties. By extension, this kind of flooding is probably the widest spread among the various disaster events in most countries. It causes the most health conditions, displacement, and deaths, such as the 2012

flooding in Nigeria and the 2024 flooding in Borno State. This explanation is especially true in Northern Nigeria, where Sokoto, Borno, and Adamawa are frequently impacted by heavy rainfall, leading to annual flooding. These regions are particularly vulnerable due to poor infrastructure and inadequate flood management systems (NEMA, 2023).

Adding to this perspective, the *Encyclopedia of Engineering Geology* (2016) defines flooding as a natural process when water rises and overflows its natural or artificial boundaries, submerging normally dry areas. The definition highlights that flooding often occurs along watercourses, where excess water cannot be contained within the riverbanks or levees, causing it to spread into surrounding areas. In Northern Nigeria, where rivers like the Sokoto, Adamawa, Kogi, Kwara, Niger, Hadejia, and Benue flow through densely populated areas, this phenomenon is common during the rainy season, with disastrous effects due to weak infrastructure and inadequate flood-prevention measures (Echendu, 2020).

Flooding could be adjudged to be more prevalent in northern Nigeria and other developing countries due to poor environmental management and insufficient infrastructure. To validate this assertion, Mfon et al. (2022) argue that weak institutional frameworks and poor enforcement of environmental regulations exacerbate flood risks in developing nations. In Nigeria, for instance, developers often build in flood-prone zones without proper consideration for floodplain management, leading to increased vulnerability. This lack of planning, inadequate funding for drainage systems and poor infrastructure maintenance further heightens the risk of flooding, particularly in northern region (Mfon et al., 2022). In this region, urban planning challenges are compounded by economic constraints, poor governance, and population growth, contributing to frequent floods during the rainy season.

This study, therefore, aligns with Mfon et al. (2022), as heavy rainfall in the region is particularly problematic because the infrastructure is often ill-equipped to handle large volumes of water. This is also in line with NEMA's 2023 report that floodwaters often overwhelm drainage systems during the rainy season, leading to widespread flooding. In places like Sokoto, Borno, and Adamawa, the situation is made worse by poorly maintained flood defences and drainage channels, displacing thousands of people and destroying farmlands and homes. In addition to the direct effects on human lives and livelihoods, the frequent flooding in these states exacerbates food insecurity by destroying crops and farmlands (Chemam, 2024).

2.1.2 Human Security

Human security originates from broader ideas about security, which can be understood through two primary philosophies: state-centric and human-centric approaches, also referred to as human security. According to Williams and McDonald (2018), the first philosophy views security as synonymous with the accumulation of power. From this perspective, security is treated as a commodity, wherein actors must possess certain things, such as property, money, weapons, armies, and territory, to be secure. In particular, power, especially military power, is seen as the route to security. The more power actors accumulate, the more secure they are believed to be.

The second philosophy emphasises emancipation-based security, focusing on justice and human rights provision. Adding acceptance to the human-centric approach, the *Human Development Report* (1994) explains human security in two aspects: first, safety from chronic threats such as hunger, disease, and repression, and second, protection from sudden and harmful disruptions in daily life, whether in homes, jobs, or communities. Such threats can exist at all levels of national income and development. The report highlights categories of human security as economic security, food security, health security, environmental security, personal security, community security, and political security.

The former United Nations Secretary-General Kofi Annan (2000) expanded on this, defining human security in its broadest sense, far beyond the absence of violent conflict. It encompasses human rights, good governance, access to education and health care, and ensuring that individuals have opportunities to fulfil their potential. In his view, human security is essential to reducing poverty, achieving economic growth, and preventing conflict. Annan emphasises that "freedom from want, freedom from fear, and the freedom of future generations to inherit a healthy natural environment" are the building blocks of both human and national security.

This study, therefore, aligns with the human security approach put forward by Williams and McDonald (2018), which is primarily the emancipation of the people in providing for their basic needs and taking available measures to protect them against hazards. The discussion on human security is crucial to understanding how flooding threatens human security in Northern Nigeria. Flooding not only causes the immediate loss of lives and property but also disrupts the livelihoods and well-being of the affected communities. The chronic and sudden disruptions caused by recurrent floods, particularly in northern Nigeria, are in consonance with the *Human Development Report*'s (1994) conceptualisation of human security threats. Flooding undermines food security by destroying farmlands and livelihoods, health security by spreading waterborne diseases, and physical security by causing loss of lives and property (NEMA, 2023).

2.2 Empirical Review

2.2.1 Flooding Affects Health Security in Northern Nigeria

Tawari-Fufeyin et al. (2015) investigated historic flooding in Nigeria's Niger Delta, focusing on Bayelsa and Delta communities. The methodology adopted was the examination of floodwater effects. The findings revealed that floodwaters were slightly acidic (pH 5.4-6.9) with high dissolved oxygen (3.9-6.9 mg/l), High levels of heavy metal Chromium, and physical and chemical parameters exceeded those in boreholes and river water, and the study indicates that the flooding caused the loss of houses, farmlands, livelihoods, and traditional grounds, as well as the destruction of herbs, vegetation, and wildlife and exposure to wild animals. The study recommended providing wholesome drinking water sources, enhancing emergency response services, implementing proper town planning with drainage systems, constructing additional dams, and fostering intergovernmental collaboration and knowledge sharing. The study is relevant, but its geographical focus differs from the current study, which investigates flooding's impact on human security in Northern Nigeria. This study will address the research gap with a region-specific study on flooding's impact in Northern Nigeria and updated information on flooding's effects on human security

Shokri et al. (2019) investigated the impact of floods on the health of the Iranian population. The study adopted Secondary data analysis using publications from 2000 to 2019. the key Findings revealed that Flooding displaces people, leading to inadequate sanitation, crowded shelters, and inaccessible healthcare. Flooding in Iran (March-April 2019) affected 31 provinces, 140 rivers, and southwestern Iran. Risk factors for infectious diseases after flooding include overcrowding, poor hygiene, and negligible sanitation. The study concluded that Flooding increases the incidence of infectious diseases and causes epidemics due to various risk factors. It further recommends the Provision of hygienic situations for people after natural disasters, including floods. The study is relevant to this study even though it was conducted in Iran; its findings resonate with the health security challenges faced by flood-affected areas in Northern Nigeria, particularly in Sokoto, Adamawa, Kogi and Borno states. Therefore, this study will assess the gaps by highlighting the need for region-specific research on flooding's impact on health security in Northern Nigeria and investigate the unique conditions and challenges.

Olanrewaju's (2018) study on the impacts of flood disasters in Nigeria and provides valuable insights into the health implications and management of such disasters. Through a mixed-methods approach, combining both quantitative and qualitative data, the study explored the effects of flood disasters on the people of Ajegunle. The study's findings revealed significant gaps in health reforms, particularly in the absence of coordinated institutional structures to respond to flood emergencies. Furthermore, the study identified diarrhoea outbreaks as the predominant waterborne disease associated with flood disasters. These findings underscore the need for effective disaster management planning and response strategies. The study recommended a holistic approach involving stakeholders' active participation, particularly in disaster management planning in the health sector. This recommendation is particularly relevant to this research work, which aims to investigate the impacts of flooding on human security in Northern Nigeria. Even though the study was conducted in Ajegunle, Lagos state, in 2019. This research aims to fill the knowledge gap by providing recent and context-specific insights into the impacts of flooding on human security in Northern Nigeria.

Othman (2022) investigated the mental, social, and health effects of flood disasters,

focusing on a major flood that hit most of the states in Malaysia towards the end of 2021. The study employed a quantitative approach, surveying 46 students directly affected by the disaster. Data analysis using SPSS revealed that flooding significantly affects students' mental, social, and health conditions, with physical exhaustion from cleaning and repairing homes being a notable consequence. The study recommended strong social support from relevant parties to manage and prevent the effects of natural disasters, which is particularly relevant. However, it is essential to note that the study was conducted in Malaysia, whereas this research focuses on the Nigerian context. Despite this geographical difference, Othman's (2022) findings on the mental, social, and health impacts of flooding are valuable. They can inform this study's investigation into the effects of flooding on human security in Nigeria.

2.2.2 Impact of Flooding on Physical Security in Northern Nigeria

Kakinuma et al. (2020) interrogated flood-induced population force-displacement worldwide. The study revealed that extreme weather events often lead to sudden and rapid population displacement, compromising human security. The researchers analysed flood exposure data by relaying global population data with modelled flooded areas. The findings indicated that African countries are highly vulnerable to floods, experiencing high displacement rates even at low to moderate flood exposure levels. The study emphasised that low-income countries, particularly in Africa, must develop adaptation measures to mitigate the risks associated with flooding. Furthermore, the researchers projected that extreme weather events will increase, substantially impacting population displacement and human security globally. While the study provides valuable insights into flood-induced displacement worldwide, this research focuses specifically on the impact of flooding on human security in Northern Nigeria. By narrowing down the scope to this region, this study aims to provide context-specific insights into the challenges faced by communities in Northern Nigeria and to identify effective strategies for mitigating the effects of flooding in this region.

Echendu (2020) studied the impact of flooding on Nigeria's Sustainable Development Goals (SDGs). The research identified man-made factors as the primary causes of Nigeria's flooding problem, including inadequate drainage systems, unregulated urbanisation, poor waste management, weak law enforcement, and corruption. The study advocated for spatial planning as a suitable Flood Risk Management (FRM) strategy for Nigeria, emphasising the need for stakeholders to address the flooding issue and support Nigeria's progress toward achieving the United Nations (UN) 2030 SDGs. The study emphasized the crucial role of government and stakeholders in controlling flooding through infrastructure development. However, this study expands on Echendu's findings by exploring solutions beyond government intervention, exploring the possibilities for individuals and communities to also play a vital role in mitigating the impact of flooding on physical security. By examining the complex relationships between flooding, physical security, and community resilience, this study aims to provide a more comprehensive understanding of the flooding challenge in Nigeria.

Yigzaw and Abitew (2019) examined the causes and impact of internal displacement in Ethiopia using a qualitative research approach. Using a qualitative research approach, the study analysed secondary data from various sources, including international and national organisational reports, newspapers, and journal articles. The findings highlighted the severity of internal displacement in Ethiopia, resulting in significant human suffering and displacement. The study identified two primary factors contributing to internal displacement in Ethiopia: development-driven causes, resettlement and relocation policies, and poor governing capacity. The researchers also examined the far-reaching consequences of internal displacement, including disrupted social intimacy, economic hardship, homelessness, psychological violence, and even death. Furthermore, the study revealed that internal displacement leads to food insecurity, malnutrition, family breakdown, and the decline of social infrastructures. While Yigzaw and Abitew's (2019) study provides valuable insights into the impact of internal displacement on physical security in Ethiopia, it does not offer solutions to address this issue. This study aims to fill this knowledge gap by providing solutions to mitigate the effects of flooding on physical security. By building on Yigzaw and Abitew's findings, this research seeks to contribute to the development of effective strategies for addressing internal displacement and promoting physical security in vulnerable communities.

2.2.3 Impact of Flooding on Food Security in affected communities in Northern Nigeria

Idoko (2016) assessed the impact of flooding on food security among rural farmers in Dagiri Community, Abuja, Nigeria. The methodology adopted is a random sampling of 112 farmer households along River Usman with data analysis using descriptive statistics and confidence intervals (95% confidence level). The findings revealed that the Dagiri Community is vulnerable to flood disasters due to Land use planning violations, Population explosion, and Poor-quality construction materials. The study revealed that flooding causes the destruction of farmhouses, stored produce, and household properties, as well as crop and farmland loss, leading to food insecurity. The study concluded that Flooding devastates food security, agricultural productivity, and sustainable development in the Dagiri Community. The study recommended improving land use planning and enforcement, removing structures from river floodplains, encouraging farming and living close to rivers, intensifying environmental education and community participation, establishing community-based flood risk management initiatives, constructing drainage networks, and providing early warning systems and flood mitigation measures. The study is relevant to the Current Study, but its timeliness is limited. This 2024 study aims to bridge the knowledge gap by updating the findings with recent data, Focusing on Northern Nigeria's unique context, and providing insights into the current impact of flooding on food security. This study addresses the need for Up-to-date information on flooding's impact on food security, Context-specific research in Northern Nigeria, and a comprehensive analysis of flooding's effects on rural farmers.

Pratiwi et al. (2020) investigated the impact of floods and droughts on food security in Central Java, Indonesia. The study found that water-related disasters significantly affect agricultural areas and crop production, threatening food security. The study methodology is desk research using historical documents and reports and quantitative analysis with statistics and geographic information system tools. The Key Findings are that the 2014 flood event affected 94,306 hectares of paddy fields, the 2015 drought affected 82,324 hectares of paddy fields, and Pearson's correlation analysis showed a significant correlation between annual rainfall and drought impact ($r = -0.865$, $p = 0.058$). The study recommended establishing a small water reservoirs program, preparing temporary pump irrigation, providing agricultural insurance, conducting comprehensive climate change scenario assessments, improving data collection and reporting on disaster damage and losses in agriculture, promoting water conservation and efficient irrigation practices, Encouraging crop cultivation on soils with high water-holding capacity. The relevance to Northern Nigeria is that while the study provides valuable insights, its geographical focus on Central Java, Indonesia, limits its direct applicability to Northern Nigeria. However, the flooding experience on food security in Northern Nigeria is unique and requires context-specific research. This study aims to address the knowledge gap by investigating the impact of flooding on food security in Northern Nigeria, considering regional specifics and recent data.

3.1 Theoretical Framework

3.1.1 Human Security Theory

This theory was developed by Mahbub ul Haq and Amartya Sen in 1994 to emphasis the protection of individuals and communities from various threats, including environmental disasters like flooding. (UNDP, 1994). The theory emphasizes individual and community well-being, encompasses various security dimensions (economic, food, health, environmental, personal, community, and political) and recognizes the interconnectedness of human and environmental systems. The basic assumptions of human security are:

i. The theory prioritises individual well-being over state interests, recognising that security policies should focus on protecting people, not just territories (UNDP, 1994).

ii. The theory expands the definition of security beyond military threats to economic, environmental, food, health, personal, community, and political threats (Haq, 1996) and

iii. The Theory posits that development and security are interwoven and that poverty, inequality, and underdevelopment can exacerbate insecurity (Sen, 2000).

The Human Security Theory (HST) posits that true security involves protecting individuals and

communities from threats beyond military concerns. It emphasises that security encompasses various dimensions, including economic, food, health, environmental, personal, community, and political security (UNDP, 1994). This theory asserts that human development is deeply intertwined with security and that the well-being of individuals is crucial for the stability of nations. Environmental disasters, such as flooding, exemplify this connection, as they not only threaten the physical safety of individuals but also disrupt access to essential resources like food, water, health services, and economic opportunities (Sen, 2000).

3.1.2 Criticism of the Theory

Although widely influential, Human Security Theory has faced criticism for its vague definitions and broad scope. Some scholars argue that it lacks precise boundaries, making it difficult to implement effectively in policy or practice (Paris, 2001). Critics also note that the theory's focus on individual security over state sovereignty may undermine the state's role in maintaining order and managing security threats (Chandler, 2008).

3.1.3 Relevance of the Theory

The theory is particularly useful for examining the impact of flooding on human security in Northern Nigeria. By adopting this theory, the study examine how flooding disrupts not only the physical safety of individuals but also key aspects of their livelihood, such as food availability, health, and economic stability. For example, in Northern Nigeria, recurring floods have destroyed farmlands, leading to significant food shortages while also contributing to the spread of waterborne diseases like cholera and malaria due to poor sanitation conditions (WHO, 2019).

Moreover, the theory's emphasis on the interconnectedness of security dimensions aligns with the cascading effects of flooding on health, personal safety, and economic well-being in affected communities. This holistic approach helps illuminate Northern Nigeria's broader human security crisis, where environmental degradation, compounded by climate change, threatens food security and overall human survival (Echendu, 2020).

Methodology

This study will employ a **secondary data collection method**, utilising **content analysis** to investigate how flooding impacts various aspects of security in Northern Nigeria. Data will be sourced from relevant literature, such as academic journals, official government reports, media publications, and other reliable secondary sources. The content analysis will focus on **health security, physical and food security** in which sources will include reports and studies on waterborne diseases, access to clean water, the spread of infectious diseases, and the strain on healthcare systems in flood-affected communities, displacement, damage to infrastructure and how the resulting instability may exacerbate conflicts or criminal activities in flood-prone regions and agricultural disruption, loss of livestock, destruction of farmland, and its ripple effects on food availability, accessibility, and nutrition in the region.

5.1 Conclusion

This study has demonstrated the significant impact of flooding on human security in Northern Nigeria. The findings underscore the multifaceted nature of this challenge, affecting health, physical security, and food security.

Health Security: The study revealed that flooding can lead to outbreaks of infectious diseases, poor sanitation, and mental health issues. These findings are consistent with previous studies by Tawari-Fufeyin et al. (2015; Othman (2022), Olanrewaju (2018) and Shokri et al. (2019).

Physical Security: The research highlighted how flooding can cause displacement, homelessness, and economic hardship. Additionally, it can exacerbate existing social and political tensions, leading to violence and conflict. These findings align with the work of Echendu (2020), Kakinuma et al. (2020), and Yigzaw and Abitew (2019).

Food Security: The study showed that flooding can significantly impact agricultural productivity, leading to food shortages and malnutrition. Poor land use practices and unsustainable agricultural practices further exacerbate these challenges, as Idoko (2016) and Pratiwi et al. (2020) highlighted.

5.1 Recommendations

Based on the findings of this study, the following recommendations are proposed to mitigate the impact of flooding on human security in Northern Nigeria:

i. **Enhance Long-term Emergency Response:** The Nigerian government should overhaul emergency response services to provide hygienic conditions, clean water, and sanitation and involve workers in disaster management planning to prevent flood-related infectious diseases.

ii. **Support Displaced Persons and Prevent Future Flooding:** The Nigerian government should Provide immediate assistance (food, shelter, healthcare) to displaced persons, relocate affected communities and construct/maintain effective drainage systems, and engage local communities in flood risk management through risk assessments, mapping, and enforcing land use policies.

iii. **Improve Land Use Planning and Early Warning Systems:** The Nigerian government should enhance land use planning and enforcement to mitigate flood risks. It should also establish reliable early warning systems for potential floods, promote water conservation, efficient irrigation, and crop cultivation on suitable soils, and establish community-based flood risk management initiatives with training and equipment for an emergency response.

References

Asadu, C. (2024). Floods in Nigeria have killed scores and washed away farmland, raising food security concerns. APNews. Accessed on 12th Oct. 2024. https://apnews.com/article/nigeria-floods-nema-rainfall-ac43d75837c6a990e5ad524089c9292f.

Bamidele, O. (2020). The Impact of Boko Haram on Environmental Disasters and Human Security in Northern Nigeria. Journal of Conflict Studies, 20(3), 125–145. Accessed on 24th October, 2024.

Benson, C., & Clay, M. (2018). The Impact of Floods on Rural Livelihoods in Northern Nigeria. Journal of Sustainable Development, 10(2), 123A140. Accessed on 24th October, 2024.

Cadre Harmonisé. (March to August 2024). Nigeria: Food Security Outlook. Rome: Cadre Harmonisé Secretariat. Accessed on 24th October, 2024. https://www.ipcinfo.org/cadre-harmonise.

Chandler, D. (2008). Human Security: The Dog That Did not Bark. Security DialogueVol. 39, No. 4 (AUGUST 2008), pp. 427–438 (12 pages). Published By: Sage Publications, Ltd https://www.jstor.org/stable/26299801.

Chemam, M. (Sept 15th, 2024). Severe flooding in northeast Nigeria impacts one million, sparks disease, food shortage fears. Accessed on 12th Oct. 2024. rfi. https://www.rfi.fr/en/africa/20240917-severe-flooding-in-northeast-nigeria-impacts-one-million-sparks-fear-of-disease.

Echendu, A.J. (2020). The impact of flooding on Nigeria's sustainable development goals (SDGs).Ecosystem Health and Sustainability. Volume 6, 2020 - Issue 1 https://doi.org/10.1080/20964129.2020.1791735.

Encyclopedia of Engineering Geology (12 December, 2016). Floods. Accessed on 9th Oct, 2024). https://link.springer.com/referenceworkentry/10.1007/978-3-319-12127-7_126-1.

Federal Ministry of Environment. (2023). Nigeria's Response to Climate Change and Environmental Challenges. Abuja: Federal Ministry of Environment.

Glago, F.J. (2020). Flood Disaster Hazards; Causes, Impacts and Management: A State-of-the-Art Review. Accessed on 9th Oct. 2024. DOI: 10.5772/intechopen.95048.

Goodyear, S. (Sept 16th, 2024). The worst flooding in decades hit northeastern Nigeria, making a desperate situation worse; the Country was already facing

Boko Haram insurgency and skyrocketing food prices before the floods. CBC Radio. Accessed on 12th Oct. 2024. https://www.cbc.ca/radio/asithappens/nigeria-flooding-response-1.7324651.

Haq, M. (1996). Reflections on Human Development. Oxford University Press. https://academic.oup.com/book/51844.

Human Development Report (UNDP) (1st January 1994). New Dimensions of Human Security. https://hdr.undp.org/content/human-development-report-1994.

Idoko, I. D. (2026). An Impact Assessment of Flooding on Food Security among Rural Farmers in Dagiri Community, Gwagwalada Area Council, Abuja, Nigeria. Agricultural Development Vol. 1, pp. 6–13, ISSN: 2576–6740. Accessed on 13th October 2024. DOI: 10.20448/journal.523/2016.1.1/523.1.6.13.

Inter-Agency Standing Committee (IASC). (2019). Protection of Civilians in Armed. Conflict.https://main.un.org/securitycouncil/sites/default/files/part_i_2019_poc.pdf

Intergovernmental Panel on Climate on Climate Change (IPCC (2019). Special Report on the Ocean and Cryosphere in a Changing Climate. https://www.ipcc.ch/srocc/

International Labour Organization (ILO) (2019). https://www.ilo.org/publications/annual-report-2019.

Kakinuma, K., Michael J Puma, M.J., Tanoue, H. M., Baptista, E.A., Kanae, S. (2020). Flood-induced population displacements in the world. Environ. Res. Lett. 15124029. Accessed on 7th Oct. 2024. IOP Publishing. https://doi.org/10.1088/1748-9326/abc586.

Khalid, I., & Maishman, E. (16 October 2022). Floods: 'Overwhelming' disaster leaves more than 600 people dead. BBC News, Abuja & London, Nigeria. Accessed on 12 October 2024) https://www.bbc.com/news/world-africa-63280518.

Kofi Annan. "Secretary-General Salutes International Workshop on Human Security in Mongolia." Two-Day Session in Ulaanbaatar, May 8-10, 2000. Press Release SG/SM/7382.

MFon, I. E., Oguike, M.C., Eteng, S. U., Etim, N.M. (2022). Causes and Effects of Flooding in Nigeria: A Review. International Journal of Social Science and Human Research. Vol 05 Issue (10), ISSN: 2644-0695 Page No: 4526–4533. Accessed on 9th Oct. 2024. DOI: 10.47191/ijsshr/v5-i10-16.

National Emergency Management Agency (NEMA) (2024). Flood Disaster in Northern Nigeria: Impact Assessment and Response Efforts. Abuja: NEMA. Accessed on 24th October, 2024.

Office for the Coordination of Humanitarian Affairs (OCHA) (17th Sept. 2024). West and Central Africa: Flooding Situation Overview. Accessed on 10th Oct. 2024). https://www.unocha.org/publications/report/chad/west-and-central-africa-flooding-situation-overview-5-october-2024

Olanrewaju, C.C., Chitakira, M., Olanrewaju, O.A, & Louw, E. (2018). Impacts of flood disasters in Nigeria: A critical evaluation of health implications and management. National Library of Medicine, National Centre of Biotechnology. 11(1):557. Accessed on 4th Oc. 2024. doi: 10.4102/jamba.v11i1.557. eCollection 2019.

Othman F., Sharip, S.M., Kasim, S., Kamdari, N.M., & Farrah Nadia Baharuddin, N.B. (2022). Flooding: The Mental, Social and Health Effects of Flood Disasters. International Journal of Academic Research in Business & Social Science. Vol. 12, No. 10, 2022, Pg. 2569 – 2582 ISSN: 2222-6990: http://dx.doi.org/10.6007/IJARBSS/v12-i10/15492.

Paris, R. (2001). Human Security: Paradigm Shift or Hot Air? Harvard Kennedy School, Belfer Centre for science and international affairs. https://www.belfercenter.org/publication/human-security-paradigm-shift-or-hot-air

Pratiwi, E.P.A, Ramadhani, E.L., Nurrochmad, F., Legono. D. (2020).The Impacts of Flood and Drought on Food Security in Central Java. Journal of Civil Engineering Forum. 6(1): pp. 69-78 Accessed on 13th October, 2024. DOI 10.22146/jcef.51782. Available online at https://jurnal.ugm.ac.id/jcef/issue/archive.

Sen, A. (2000). Development as Freedom. New York: Alfred A. Knopf. https://archive.org/details/amartya-kumar-sen-development-as-freedom-alfred-a.-knopf-inc.-2000

Shibayan, D. (2024). Flooding in northeastern Nigeria has left 30 people dead and over a million displaced. Accessed on 12th Oct. 2024. APNews. https://apnews.com/article/flooding-northern-nigeria-borno-dam-collapse-60ed5b7bddfc4a5b65c0a0573d735d2b.

Shokri, A., Sabzevari, S., & Hashemi, S.A. (2020). Impacts of flood on health of Iranian population: Infectious diseases with an emphasis on parasitic infections. Parasite Epidemiology and Control Volume 9 e000144. Accessed on 4th Oct. 2024. https://doi.org/10.1016/j.parepi.2020.e00144.

Tawari-Fufeyin, P., Paul, M. & Godleads, A.O. (2015). Some Aspects of a Historic Flooding in Nigeria and Its Effects on Some Niger-Delta Communities. American Journal of Water Resources, Vol. 3, No. 1, 7–16. Access on 4th Oct. 2024. Available online at http://pubs.sciepub.com/ajwr/3/1/2. DOI: 10.12691/ajwr-3-1-2.

United Nations Children Emergency Fund (UNICEF) (21 Oct. 2022). More than 1.5 million children are at risk as devastating floods hit Nigeria. Accessed on 12th Oct. 2024. https://www.unicef.org/press-releases/more-15-million-children-risk-devastating-floods-hit-nigeria.

United Nations Development Programme (UNDP). Human Development Report 1994. New York: Oxford University Press, 23. http://www.undp.org/hdro/1994/94.htm > 08/02/01.

United Nations Development Programme UNDP. (December 09, 2019). Human Development Report 2019.https://hdr.undp.org/content/human-development-report-2019

United Nations Office for Disaster Risk Management (UNDRR. (2019). Global Assessment Report on Disaster Risk Reduction. https://www.undrr.org/publication/global-assessment-report-disaster-risk-reduction-2019

Williams, P.D., & M. McDonald (2018). Security Studies: An Introduction, 3rd edition. Published by Routledge 2 Park Square, Milton Park, Abingdon, Oxon, OX14 4RN and by Routledge 711 Third Avenue, New York, NY 10017.

World Economic Forum (9th September 2022). Flood risk affects over a billion people. Climate change could make it worse. Accessed on 12th October, 2024. https://www.weforum.org/agenda/2022/09/flood-risk-billion-people-climate-change-worsen/.

World Health Organisation (WHO) (17 November 2020). WHO Global water, sanitation and hygiene annual report 2019. https://www.who.int/publications/i/item/9789240013391

World Health Organization (WHO) (2019). Water, Sanitation, Hygiene, and Health. https://www.who.int/publications/i/item/9789240013391

World Health Organization (WHO) (2024). Flood. Accessed on 9th Oct. 2024. https://www.who.int/health-topics/floods/#tab=tab_1.

Yigzaw, G. S. & Abitew, E. B. (2019). Causes and impact of internal displacement in Ethiopia African Journal of Social Work (AJSW), Volume 9 Number 2 ISSN Online 2409-5605. National Association of Social Workers-Zimbabwe/Author(s). https://www.ajol.info/index.php/ajsw/article/download/192…