



THE NECESSITY OF TACKLING FLOOD AS A MEANS FOR ACHIEVING GREATER FOOD SECURITY IN NIGERIA

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Abstract

Nigeria's agricultural sector, which remains the mainstay of food production and rural livelihoods, is increasingly threatened by the recurring incidence of flood disasters across the country. This article examines the extent to which flooding undermines national food security and argues for more deliberate, proactive flood management as a precondition for sustainable food sufficiency. Adopting a documentary research design that draws on institutional reports, government assessments, and published empirical studies on flood occurrence and impact in Nigeria, the article is anchored on Ludwig von Bertalanffy's Systems Theory, which conceives of the nation as an interdependent system in which a shock to one sub-system, agriculture, reverberates through the wider socio-economic system, including food security. Evidence shows that major flood episodes, such as the catastrophic 2012 flood that affected over 7 million people across 32 states and the 1989 Cross River flood that submerged about 130,000 hectares of agricultural land, have repeatedly destroyed farmlands, crops, livestock and stored agricultural commodities, leaving hundreds of thousands of farming families homeless and food-insecure. The consequences extend beyond immediate losses to include falling agricultural productivity, dwindling food production, reduced revenue from agriculture, low contribution of the agricultural sector to Gross Domestic Product (GDP), diminished foreign reserves from export crops, and a widening gap between domestic food demand and supply. The article contends that these recurring losses constitute a direct threat to Nigeria's food security and that tackling flood through effective early warning systems, watershed and dam management, land-use planning, and coordinated inter-agency disaster risk reduction is therefore not merely an environmental or humanitarian necessity but an agricultural and economic imperative. It concludes that strengthening institutional flood management capacity, particularly through agencies such as the National Emergency Management Agency (NEMA) and the Nigerian Meteorological Agency (NiMet), working in synergy with the agricultural sector, offers Nigeria a viable pathway toward greater food security and sustainable national development.

Keywords: Flood, food security, disaster management, agriculture, Nigeria, NEMA

1. Introduction

Food security, understood broadly as the availability, accessibility, and sustainability of adequate food for a nation's population, is fundamentally tied to the health and stability of the agricultural sector. In Nigeria, where a substantial proportion of the population depends directly or indirectly on farming for livelihood and where agriculture contributes significantly to the national economy, any recurring threat to farmlands, crops and rural livelihoods is, by extension, a threat to national food security. Among the most persistent of these threats is flooding, a natural hazard whose frequency and severity in Nigeria have increased markedly over the past two decades due to a combination of intense rainfall events, poor land-use practices, inadequate drainage infrastructure, upstream dam releases such as from the Lagdo Dam in Cameroon, and the broader effects of climate change.

Historical records demonstrate the scale of the problem. The 2012 flood, described as Nigeria's worst in over forty years, affected 32 states, 24 of them severely, displacing more than 7 million people and creating over 2 million Internally Displaced Persons, with more than 5,000 people physically injured and over 5,900 houses destroyed. Earlier, the 1989 Cross River flood submerged an estimated 130,000 hectares of agricultural land, leaving roughly 150,000 farming families homeless and destroying food crops and economic trees worth millions of naira. More recent assessments continue to show that flood-prone states such as Benue, Niger, Kogi, Anambra and communities along the Niger and Benue river basins repeatedly suffer the washing away of farmlands, loss of stored agricultural commodities, and destruction of livestock, tools and equipment used for farming.

Despite the frequency and scale of these losses, flood management in Nigeria has historically been organized around emergency response and post-disaster relief rather than around its longer-term implications for agricultural productivity and national food supply. This article contributes to closing that gap by making explicit the nexus between flood occurrence,

farmland destruction, and food insecurity in Nigeria, and by arguing that proactive, well-coordinated flood management should be treated as a central pillar of the nation's food security strategy rather than a peripheral disaster-response function.

Accordingly, the article pursues three objectives: first, to review the nature and causes of flood disasters in Nigeria; second, to establish, from documented evidence, the pathways through which flooding undermines agricultural productivity and food security; and third, to examine the role of institutional flood management, particularly the National Emergency Management Agency (NEMA), in safeguarding the nation's food supply chain, before concluding with recommendations for a more food-security-conscious approach to flood management in Nigeria.

1.2 Conceptual and Literature Review

The Concept of Flood and Flood Disaster

Flood is generally understood as the overflowing of water beyond the normal confines of a river, stream, lake, or other body of water, or the accumulation of water over areas that are not normally submerged, such that it affects human settlements, infrastructure, and livelihoods. Flood disaster management, adopting the definition applied to institutional practice in Nigeria, encompasses all aspects of managing flood risk, including proactive mitigation, prevention, preparedness to respond, and recovery whenever floods occur. Scholars generally classify floods into three main types: flash floods, arising from rapid and excessive rainfall that quickly overtakes rivers, streams, channels or roads; river floods, occurring when a river exceeds its capacity due to sustained rainfall or snowmelt; and coastal floods, caused by storm surges associated with tropical cyclones and tsunamis.

Causes of Flood in Nigeria

The causes of flood are broadly categorized as natural and anthropogenic. Natural causes include excessively heavy or prolonged rainfall, high tides associated with storm surges, and the inability of saturated soil and vegetation to absorb further precipitation. Anthropogenic causes, which scholars increasingly regard as intensifying the frequency and severity of flooding in Nigeria, include unplanned urbanization, deforestation, blockage of waterways and drainage channels by waste, encroachment of buildings on floodplains, poor town planning, and the operation of dams along international borders, notably the Lagdo Dam in Cameroon, whose release of excess water was a major contributor to the 2012 flood disaster. Rapid population growth, inadequate preparedness, and a documented lack of political will to enforce land-use regulations further compound flood risk in many Nigerian cities and rural farming communities alike.

Flood and Its Impact on the Agricultural Sector

The agricultural sector suffers disproportionately from flood events. In most cases, very large expanses of farmland, crops, livestock, and stored agricultural commodities are affected, with floodwaters washing away hectares of farmland and damaging crops, equipment, tools, and other property. The massive flooding of 2012 submerged hundreds of communities and washed off thousands of hectares of farmland in states bordering Cameroon and along the Niger and Benue rivers and the Niger Delta estuaries. A similar pattern was recorded in Cross River and Akwa Ibom States in 1989, when overflow of the Cross River flooded about 130,000 hectares of agricultural land, leaving an estimated 150,000 farming families homeless and destroying food crops and economic trees worth millions of naira. Related studies have found comparable effects on farmlands and rural livelihoods in Niger State and on business and economic activity more broadly in flood-affected communities, while global assessments estimate flood-related economic losses in the tens of billions of dollars over recent decades.

Cumulatively, these losses translate into falling agricultural productivity, dwindling food production, loss of revenue from agriculture, low contribution of the agricultural sector to Gross Domestic Product, low foreign reserves from agricultural exports, and a widening shortfall in food available for both domestic consumption and export, which together constitute increased food insecurity. This body of evidence underlines the necessity of proactive measures to address flood as a matter of agricultural and economic policy, not merely disaster response.

1.3. Theoretical Framework

This article is anchored on Ludwig von Bertalanffy's Systems Theory (1968), which conceives of an organization, or by extension a nation, as an open system composed of interdependent sub-systems that interact through a continuous process of input, throughput, and output, and that are mutually influenced by their environment. Applied to the Nigerian context, the nation's socio-economic system comprises interlinked sub-systems, including agriculture, health, education, infrastructure, and the economy, such that a disturbance in one sub-system reverberates through the others. When flood disaster strikes the agricultural sub-system, destroying farmlands, crops and livestock, the effect is not contained within agriculture alone; it propagates into reduced food supply, rising food prices, loss of rural income and, cumulatively, diminished national food security. This systems perspective supports the article's central argument that flood management cannot be treated in isolation from food security policy, since the two are functionally interdependent parts of the same national system, and that addressing flood risk is, in systems terms, a necessary input for stabilizing the food security output of the system.

1.4. Methodology

Research Design

The article adopts a qualitative documentary (desk review) research design. This design is appropriate for a study of this nature because the objective is not to generate new primary data but to synthesize, interrogate and build an evidence-based conceptual argument from existing institutional records and empirical scholarship on flood occurrence and its socio-economic consequences in Nigeria. The documentary design allows for the triangulation of government reports, statutory instruments and peer-reviewed studies to establish patterns that individual sources, taken alone, may not fully reveal.

Sources and Types of Data

The article relies exclusively on secondary data. These were drawn from three broad categories of sources: (i) official institutional reports and government documents, including reports of the National Emergency Management Agency (NEMA) on flood disasters, the Report of the Presidential Technical Committee set up to assess the impact of the 2012 flood disaster in Nigeria, and the National Emergency Management Agency (Establishment) Act and the National Disaster Management Framework; (ii) peer-reviewed empirical studies and journal articles on the occurrence, causes, and socio-economic and agricultural impacts of flooding in Nigeria and comparable developing-country contexts; and (iii) theoretical and conceptual literature on systems theory and disaster risk reduction frameworks, including publications of the United Nations Office for Disaster Risk Reduction. Where available, figures on affected population, hectares of farmland lost, and displaced persons were drawn directly from these documented sources.

Method of Data Collection

Data collection followed a purposive, theme-driven search strategy rather than an exhaustive systematic review. Sources were selected on the basis of their direct relevance to three organizing themes: the causes and typology of flood in Nigeria; the documented impact of flood on farmlands, crops, livestock and agricultural productivity; and the institutional and statutory framework for flood disaster management in Nigeria. Priority was given to sources reporting quantifiable impacts, such as hectares of farmland affected, numbers of displaced farming families, and estimated economic losses, since these figures anchor the article's argument in verifiable evidence rather than general assertion.

Method of Data Analysis

The reviewed material was analysed using qualitative thematic content analysis. Extracted content was coded and organized around the causal pathway linking flood occurrence to farmland and crop destruction, and, in turn, to reduced agricultural productivity and food insecurity. This thematic structure was then interpreted through the lens of Systems Theory, allowing the discussion to move beyond a descriptive account of flood impacts toward an explanation of why flood risk and food security are functionally interdependent components of the same national system.

Justification and Limitation of the Method

A documentary design is justified for this article because the phenomenon under study, the cumulative national impact of flood on food security over more than three decades, cannot be adequately captured through a single primary survey or case study; it requires synthesis across multiple flood events, locations and time periods, for which institutional and published records offer the most comprehensive available evidence. The principal limitation of the method is that it relies on the accuracy and completeness of the secondary sources consulted, some of which

report estimates rather than verified figures; this limitation is mitigated by drawing, wherever possible, on official government and institutional reports alongside independently published empirical studies.

1.5 Presentation and Discussion of Data

This section presents, in tabular form, the quantitative evidence extracted from the documentary sources reviewed for this article. Table 1 collates figures on major documented flood disasters in Nigeria and their agricultural impact. Tables 2 to 4 present findings from a 500-respondent field survey on the role of NEMA and NiMet in flood management in Nigeria (Faskari, 2023), reproduced here as secondary data because they offer direct empirical corroboration, from stakeholders and affected communities, of the flood–food security nexus argued for in this article.

Table 1: Selected Major Flood Disasters in Nigeria and Their Documented Agricultural/Food-Related Impact

Year / Event	Area(s) Affected	Agricultural / Food-Related Impact	Source
1989	Cross River & Akwa Ibom States	About 130,000 hectares of agricultural land submerged; about 150,000 farming families rendered homeless; food crops and economic trees worth millions of naira destroyed	Agbonkhese et al. (2014)

Year / Event	Area(s) Affected	Agricultural / Food-Related Impact	Source
2012	32 states affected, 24 severely (national disaster)	Thousands of hectares of farmland washed away in states bordering Cameroon and along the Niger and Benue rivers; over 7 million people affected; over 2 million Internally Displaced Persons	FGN (2013); NEMA (2013); Umar & Gray (2022)
Recurrent (2014– 2022)	Niger State	Repeated flooding of farmlands with documented impact on rural livelihoods and household vulnerability	Eze et al. (2018)
Two-decade trend	Global	Estimated US\$63 billion in flood-related economic losses over two decades, with agriculture among the worst-hit sectors	Kreimer, Arnold & Carlin (2013)

Source: Compiled by the author from reviewed literature, 2024.

Table 1 shows that agricultural land loss in single flood events in Nigeria has run into hundreds of thousands of hectares, with the attendant displacement of farming families numbering in the hundreds of thousands. The recurrence of such losses across decades, from 1989 to the present, indicates that flood-related agricultural loss in Nigeria is not an isolated shock but a structural, recurring feature of the nation's food production environment.

Table 2: Respondents' Perceived Impact of Flood in Nigeria (n = 500)

Impact of Flood	Frequency	Percentage (%)
Destruction of houses	130	26
Destruction of farmlands	100	20
Contamination of drinking water	50	10
Effect on businesses	80	16
Spread of diseases	20	4
Destruction of public utilities/infrastructure	120	24
Total	500	100

Source: Adapted from Faskari (2023), Field Survey, May 2023.

Table 2 shows that destruction of farmlands was identified by one-fifth of respondents (20%) as a principal impact of flood in Nigeria, ranking second only to destruction of houses (26%) and ahead of contamination of drinking water, effects on business, and spread of disease. This places agricultural loss among the two most visible consequences of flood disaster as perceived by stakeholders, reinforcing the case for treating farmland protection as central, rather than incidental, to flood management planning.

Table 3: Respondents' Opinion on Flood's Precipitation of Poverty and Hunger (n = 500)

Opinion	Frequency	Percentage (%)
Flood precipitates poverty and hunger	330	66
Flood does not precipitate poverty and hunger	150	30
Not sure	20	4
Total	500	100

Source: Adapted from Faskari (2023), Field Survey, May 2023.

Table 3 provides the most direct empirical support in the reviewed data for the article's central argument: two-thirds of respondents (66%) affirmed that flood directly precipitates poverty and hunger in affected communities, against only 30% who disagreed. This finding lends stakeholder-level corroboration to the food-insecurity pathway traced in Table 1 and Section 2.3, connecting farmland destruction to household-level hunger rather than leaving the link as a matter of inference alone.

Table 4: Respondents' Opinion on Flood's Hindrance to Economic Growth (n = 500)

Opinion	Frequency	Percentage (%)
Flood hindered economic growth	430	86
Flood did not hinder economic growth	0	0
Not sure	70	14
Total	500	100

Source: Adapted from Faskari (2023), Field Survey, May 2023.

Table 4 shows an even more decisive result: 86% of respondents held that flood hinders economic growth, with no respondent disagreeing outright. Read alongside Tables 2 and 3, this indicates a broad convergence of stakeholder opinion around three linked propositions, that flood destroys farmland, that this precipitates hunger and poverty, and that it hinders broader economic growth, which together substantiate, from field-level evidence, the systemic flood–food security nexus this article advances on theoretical and documentary grounds.

1.6 Discussion: The Flood–Food Security Nexus in Nigeria

Institutional Response and the Role of NEMA

The National Emergency Management Agency (NEMA) was established in 1999 following recurrent national emergencies, with a statutory mandate to provide national coordination and leadership for emergency management in Nigeria, including flood disasters. Among its primary functions, NEMA is charged with collating data to enhance forecasting, planning and field operations; educating the public on disaster prevention and control; coordinating the activities of stakeholder agencies and voluntary organizations engaged in relief operations; and

distributing emergency relief materials to disaster victims. NEMA operates under the National Disaster Management Framework (NDMF), which defines coordinating structures and roles for stakeholders, promotes a shift from reactive response toward disaster risk reduction, and explicitly incorporates food and nutrition among the humanitarian response sectors that must be addressed following a disaster.

This institutional architecture demonstrates that food security concerns are, at least implicitly, already embedded within Nigeria's disaster management framework through the relief and rehabilitation functions of NEMA. However, the evidence reviewed suggests that this engagement remains predominantly reactive, oriented toward post-disaster relief distribution, rather than proactive in protecting agricultural productivity before flood events occur. Strengthening the synergy between NEMA, the Nigerian Meteorological Agency (NiMet), River Basin Development Authorities, and the Ministry of Agriculture, particularly around early warning, seasonal flood forecasting, and pre-emptive protection of farmlands, represents an underutilized opportunity to shift flood management from disaster relief toward genuine food security safeguarding.

Implications for Food Security Policy

The recurring destruction of farmlands, crops, livestock and agricultural infrastructure documented across multiple flood episodes in Nigeria demonstrates that food insecurity is, in part, a downstream consequence of unmanaged flood risk. This has direct implications for national food security policy: agricultural investment, input subsidies, and rural development programmes are unlikely to yield sustainable food security gains if the farmlands and communities they target remain exposed, year after year, to preventable or mitigable flood losses. Treating flood risk reduction as integral to agricultural and food security planning, rather than as a separate emergency management function, would allow scarce public resources

to be directed toward pre-emptive protection of the food production base rather than repeated post-disaster reconstruction.

1.7 Conclusion

The evidence reviewed makes clear that flooding is not merely an environmental or humanitarian challenge in Nigeria but a direct and recurring threat to the nation's food security. Repeated episodes of severe flooding, from the 1989 Cross River disaster to the catastrophic floods of 2012 and subsequent annual occurrences, have consistently destroyed vast expanses of farmland, wiped out crops and livestock, displaced farming families, and eroded the productive capacity of the agricultural sector. The resulting decline in agricultural output, loss of revenue from farming, reduced contribution of agriculture to national GDP, and shrinking availability of food for both domestic consumption and export together constitute a systemic risk to food security that cannot be addressed through reactive, post-disaster relief alone. Viewed through a systems lens, agriculture and food security are inseparable sub-systems of the same national whole as flood risk management, such that neglecting one inevitably destabilizes the other.

Achieving greater food security in Nigeria therefore requires that flood management be elevated from an emergency-response afterthought to a proactive, well-resourced, and continuously monitored component of national agricultural and development policy. Tackling flood decisively is not incidental to Nigeria's food security agenda; it is a necessary foundation upon which sustainable agricultural productivity, rural livelihoods, and national food sufficiency must be built.

1.8. Recommendations

1. Strengthen early warning and seasonal flood forecasting through closer institutional synergy between NEMA and the Nigerian Meteorological Agency, with forecasts communicated directly to farming communities ahead of planting and harvest seasons.
2. Prioritize watershed, dam and river basin management, including regional cooperation with upstream neighbours such as Cameroon over dam-release schedules that affect Nigerian farmlands.
3. Enforce land-use and settlement planning that discourages farming and habitation on known floodplains, while investing in drainage infrastructure in flood-prone agricultural zones.
4. Integrate flood risk reduction explicitly into national agricultural and food security policy and budgeting, rather than treating it solely as an emergency management concern.
5. Support flood-resilient agricultural practices, including flood-tolerant crop varieties, raised storage facilities, and crop and livestock insurance schemes for farmers in high-risk areas.
6. Enhance the capacity of State Emergency Management Committees and local government structures to deliver targeted, timely support to farming communities before and after flood events, in line with the National Disaster Management Framework.

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