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Assessing the Impact of Flooding on Food Security in Ahoada East/Ahoada West Government Area of Rivers State, Nigeria

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Abstract

This study investigates the impact of flooding on food security and agricultural livelihoods in Ahoada East and Ahoada West Local Government Areas (LGAs) of Rivers State, Nigeria. Employing a mixed-methods approach, data was collected through structured questionnaires administered to 400 farming households (200 per LGA) and analyzed using descriptive statistics. The findings reveal that flooding significantly reduces crop yields, disrupts livestock farming, hinders market access, and exacerbates food shortages, thereby undermining the livelihoods of agrarian communities. The interview data indicated that farmers face challenges related to increased livestock diseases, contamination of feed and water, and high transportation costs due to damaged infrastructure. Additionally, the study reveals limited access to effective coping strategies and widespread dissatisfaction with institutional support and government assistance. These results underscore the urgent need for integrated flood management strategies that encompass infrastructural development, agricultural adaptation, enhanced early warning systems, and strengthened social protection mechanisms. Implementing these recommendations requires coordinated efforts among government agencies, NGOs, and local communities to build resilience and ensure sustainable food security in the flood-prone areas of Ahoada East and Ahoada West. The study concludes by advocating for holistic, multi-sectorial approaches that integrate climate adaptation, sustainable agriculture, and robust governance to safeguard the well-being of farming communities in the Niger Delta.

Keywords: flooding, food security, livelihoods, agriculture, Ahoada East, Ahoada West, disaster management

Introduction

In Nigeria, flooding has become a persistent environmental problem with significant effects

on food security and the standard of living for both rural and urban populations. Because of their position, high rainfall patterns, and closeness to important river systems, Rivers State's Ahoada East and Ahoada West Local Government Areas (LGAs) are especially susceptible to frequent flood disasters (Olunwa & Lawal, 2021). Flooding in these places has a significant influence on household food access, food supply systems, and agricultural output in addition to disrupting the environment (Kwararafa Security Review, 2024). Because Nigeria depends so heavily on agriculture, floods frequently result in lower crop yields, the loss of arable land, and the destruction of food supplies that have been stored, further impoverishing vulnerable populations (Food and Agriculture Organisation [FAO], 2024).

One of the most destructive natural disasters impacting Nigeria's food security is flooding, especially in the Niger Delta, which is home to the Ahoada East and Ahoada West Local Government Areas. Examining the conceptual frameworks, theoretical foundations, and empirical data associated with this important topic, this review looks at the connection between flooding and food security.

According to recent estimates, floods have devastated more than 558,000 hectares of crops across the country, endangering 31.8 million Nigerians' ability to eat (FAO, 2024). 70% of farmlands in Ahoada West were impacted by the 2012 flood disaster, which disrupted the supply of staple foods and caused acute food shortages for 73.8% of families (Olunwa & Lawal, 2021). Similar trends are seen in Ahoada East, where food insecurity is made worse by animal diseases, decaying cassava tubers, and early harvests (Nwankwo et al., 2021). Communities become unprepared for frequent disasters as a result of these effects, which are exacerbated by inadequate drainage systems, poor waste management, and a lack of early warning systems (Adaku et al., 2019).

The effects of flooding on society and the economy are equally dire. Food costs rise and access to nutrient-dense food is restricted due to damage to market enclosures, storage facilities, and transportation networks, which disproportionately affects low-income households, pregnant women, and children (Ogunbameru & Okeowo, 2019). People who have been displaced frequently depend on insufficient government support, which exacerbates poverty and malnutrition (International Journal of Integrative Sciences, 2024). Although still common, traditional coping mechanisms like sandbagging and elevated architecture are insufficient to withstand increasingly severe floods brought on by climate change (Academia.edu, 2020).

To overcome these obstacles, a multifaceted strategy is needed. To reduce hazards, it is essential to use climate-resilient farming methods, better land use planning, and strong disaster response systems (Chiemela et al., 2024). While moving high-risk neighbourhoods and enforcing zoning regulations may lessen exposure, improved infrastructure, community education, and institutional cooperation can increase resilience (Global Scientific Journal, 2019). Using contemporary empirical data to guide policy and adaptation measures, this conference essay evaluates the relationship between floods and food security in Ahoada East and Ahoada West.

Impact of Flooding on Farmers

Impact of Flooding on the Livelihoods of Farming Households in Ahoada East and Ahoada West.

Flooding has had profound and multifaceted effects on the livelihoods of farming households in Ahoada East and Ahoada West Local Government Areas of Rivers State, Nigeria.

Destruction of Farmlands and Crop Losses

Over 70% of the farmlands in the study areas were submerged by flood events, especially the large flood in 2012, which resulted in extensive crop devastation and a sharp decline in agricultural production. Significant post-harvest losses and the rotting of tubers before maturity resulted from many farmers being compelled to harvest crops like cassava and yams too soon, frequently while standing in knee-deep water (Tunde, 2011; Ogunbameru & Okeowo, 2019). In addition to reducing immediate food supply, crop loss also made it more difficult for households to make money from excess sales (Tunde, 2011; Eze & Nwankwo, 2020).

Farmers' livelihoods in Ahoada East and Ahoada West have been severely disrupted by flooding, leading to numerous socioeconomic and food security issues. Floodwaters have destroyed farmlands and crops, resulting in lower agricultural output and productivity. This has increased food insecurity and reduced the

region's availability of food goods (Tunde, 2011). The resilience of rural economies has been further weakened by floods, which have also resulted in the loss of cash crops, the deterioration of agricultural land, and the spread of illnesses and pests (Eze & Nwankwo, 2020).

Livestock and Fisheries Disruption

Fisheries and cattle were also impacted by floodwaters. As the nutritional value of the available feed decreased, livestock experienced a rise in disease incidence, including foot rot in other animals and brooder pneumonia in poultry. As floodwaters merged with rivers, fishermen encountered difficulties that made fishing more challenging and further reduced the amount of protein available for the local diet (Eze & Nwankwo, 2020; Ogunbameru & Okeowo, 2019).

Home and Asset Loss

Numerous farming households were forced to seek refuge in makeshift camps with subpar amenities after flooding destroyed their homes and belongings. Farmhouses and storage facilities were also destroyed, which led to the loss of stored produce and necessary farming equipment (Adaku, Oduduabasi, & Francis, 2019; Ogunbameru & Okeowo, 2019).

Disruption of Livelihoods and Food Security

Farming is the main—and frequently only—source of income for the majority of impacted families. For months, flooding prevented agricultural operations, depriving households of their income and food supplies. Many were unable to immediately return to farming after floodwaters subsided because of the substantial damage to infrastructure and land, which resulted in protracted periods of food scarcity and financial hardship (Tunde, 2011; Ogunbameru & Okeowo, 2019).

Socioeconomic Repercussions

Severe food shortages, greater poverty, and increased vulnerability among rural communities were the results of these disturbances taken together. Following flood occurrences, a significant drop in household welfare and extreme food insecurity were reported by several participants in local research (Tunde, 2011; Adaku, Oduduabasi, & Francis, 2019). Food shortages in neighbouring urban centres were also a result of the suffering, which went beyond rural areas (Ogunbameru & Okeowo, 2019).

Psychological Impacts

The psychological and social impacts are equally significant. Many farming households experience heightened stress and uncertainty due to the loss of their primary source of livelihood and the slow pace of recovery (Onuoha, 2022). The absence of effective early warning systems and limited government support further compound these challenges, leaving communities ill-prepared to cope with recurrent flood events (Uchegbu, 2021).

The Difficulties of Coping and Recovery

Flood victims in Ahoada East and West frequently lacked proper disaster preparedness and early warnings, which made losses worse. Authorities' tardy and inadequate response made recovery efforts even more difficult, depriving many households of the assistance they required to resume their livelihoods (Tunde, 2011; Eze & Nwankwo, 2020).

Generally speaking, flooding in Ahoada East and Ahoada West has resulted in agricultural destruction, animal and crop losses, household displacement, and a sharp drop in the economic stability and food security of farming communities. Long-term and short-term effects are present, impacting rural populations' general resilience and wellbeing in addition to their capacity to produce food (Tunde, 2011; Eze & Nwankwo, 2020; Ogunbameru & Okeowo, 2019; Oduduabasi, Adaku, & Francis, 2019).

Flooding also causes post-harvest losses and lower farmer revenue by impeding access to transportation networks, which upsets local markets (Adaku, Oduduabasi, & Francis, 2019). While the lack of staple foods raises prices and increases malnutrition among impacted populations, the inability to transport and sell crops causes economic hardship (Akinbile, 2019).

More resilient adaptation techniques are required because traditional coping strategies, such erecting raised structures and using sandbags, have not been able to keep up with the growing severity of floods (Adaku et al., 2019). These disruptions have led to a continuous threat to food security in Ahoada East and West, deterioration in household welfare, and an increase in poverty (Ishaya & Abaje, 2008).

Understanding Food Security in Flood-Prone

Areas

According to Olunwa and Lawal (2021), there are four essential components of food security: availability, access, utilisation, and stability. Flooding sometimes compromises these dimensions in flood-prone places such as Ahoada East and West. Food availability is immediately affected by the loss of crops and farmlands, and access is impeded by market disruptions and destroyed transportation infrastructure. Food use is negatively impacted by tainted water supplies and rising rates of illness, and stability is threatened by the frequency of floods.

Flood Vulnerability and Resilience

In agricultural communities, exposure, sensitivity, and adaptation capability are considered to be factors that determine vulnerability to floods (Nwankwo et al., 2021). Ahoada East and West farming households are particularly vulnerable because of their close proximity to bodies of water, their reliance on rain-fed agriculture, and their limited ability to adapt as a result of socioeconomic limitations and a lack of institutional support.

Sustainable Livelihoods Approach

A useful framework for comprehending the effects of flooding on agricultural households in Ahoada East and West is offered by the Sustainable Livelihoods Approach. This strategy acknowledges that livelihoods are sustainable when they can withstand and bounce back from shocks and strains without compromising natural resources. Livelihoods are defined as the skills, resources, and activities necessary for survival (Ogunbameru & Okeowo, 2019). Farming households rely on five capital assets: financial, natural, social, and human. Flooding is a major shock that depletes these assets.

Climate Change Adaptation Theory

According to Adaku et al. (2019), the Climate Change Adaptation Theory highlights the necessity for systems to adapt to real or anticipated climate stimuli and their consequences. This idea aids in explaining the different adaptation tactics used by farming households in Ahoada East and West to lessen the effects of flooding, including shifting planting dates, implementing crop types resistant to flooding, and adding different sources of income.

Extent and Severity of Flood Impacts

The detrimental effects of floods on Ahoada West's food security have been shown by empirical research. According to research by Olunwa and Lawal (2021), 73.8% of respondents said that there were significant food shortages as a result of the 2012 flood, which damaged over 70% of the region's farmlands and crop production. This result emphasises how serious the issue is and how it affects access to and availability of food.

Socioeconomic Consequences

Flooding has socioeconomic repercussions that go beyond short-term agricultural losses. According to research done in the Niger Delta, floods raise food costs, lower household incomes, and increase the risk of malnutrition (Ogunbameru & Okeowo, 2019). These effects were made worse in Ahoada West by the delayed and insufficient response to flooding, since flood victims frequently lacked timely warnings and were ill-prepared for emergencies.

Coping Strategies and Adaptation Mechanisms

Farming families in flood-prone regions have adapted a number of coping mechanisms to lessen the effects of flooding on their means of subsistence. According to Adaku et al. (2019), these include the building of higher storage facilities, early crop harvesting, temporary migration, and income source diversification. Nevertheless, resource limitations and the growing frequency and severity of flood disasters frequently restrict the efficacy of these tactics.

Institutional Response and Support Systems

Several studies have looked at the role of institutions in resolving food insecurity caused by floods. The necessity of government action in moving flood-affected populations and putting awareness campaigns into place was emphasised by research conducted in Kogi State, Nigeria (Academia.edu, 2024). Likewise, research conducted in Ahoada West has underscored the necessity of government support in the form of grants, seeds, and contemporary storage facilities to improve the recuperation and adaptability of impacted farmers.

Interconnected Challenges

Food security, flooding, and more general development issues are intertwined, according to recent studies. Severe floods in Nigeria have had catastrophic effects on livelihood assets,

food inventories, and yield prospects, according to the Food and Agriculture Organisation (FAO, 2022). This could potentially worsen food security circumstances in the months after harvest seasons. This interdependence highlights the necessity of tackling flood-related food poverty through coordinated strategies.

Flooding has significant and complex effects on food security in Ahoada East and West Local Government Areas, according to a further analysis of the literature. The intensity and regularity of flood episodes, the susceptibility and ability of agricultural households to adapt, and the efficiency of institutional responses are some of the variables that mediate these effects. Food insecurity brought on by floods necessitates a multifaceted strategy that includes both short-term relief efforts and long-term plans to increase impacted populations' resilience and adaptability.

Methodology

Data for this work is drawn from farming household in Ahoada East and West Local Government Areas (LGA) of Rivers State of Nigeria. It was assumed that agriculture engage 70% of the populations of the two local governments, as insulated by Adejuwon, (2010) who stated that agriculture engaged 70% of Nigeria population.

To determine the sample size of farmers in Ahoada East and Ahoada West using the Taro Yamane formula, based on the 70% of the population engaged in agriculture.

Given:

Step 1: Determine total population for the study areas (N)

Ahoada East population (2025 projection): 277,105(NPC, 2024).

Ahoada West population (2025 projection): 415,725 (NPC, 2024).

N = 277,105 = 415,725 = 692,830

Step 2: Apply Taro Yamane Formula

$N = 692,830/1+692,830*(0.005)^2 = 692,830/1+692,830*0.0025 = 692,830/1+1,732.075 = 692,830/1,733.075 \approx 400$

This work will use tables and simple percentage (%) for analysis.

200 respondents for each LGA were used to answer the questions.

The study uses structured questionnaire targeted to sample opinion on flood effect on food security related issues. Five Likert scales is use in this work to address diverse opinions. Alexander (2022), Budnukaeku & Onyejiri (2022), Budnukaeku (2024) has used same in their works. The questionnaire is divided into six groups with sub-questions targeted to ease the work. The main questions are based on Impact on Crop Production, Effect on Livestock Farming, Influence on Food Security, Access to Markets and Transportation, Coping Strategies and Adaptation Measures, and Institutional Support and Government Assistance.

Ahoada East (n = 200)

1) Impact on Crop Production

Statement	SA	A	UD	D	SD
Flooding has significantly reduced my crop yields.	60 (30%)	80 (40%)	20 (10%)	30 (15%)	10 (5%)
Floodwaters damage crops, making them unsuitable	70 (35%)	70 (35%)	10 (5%)	30 (15%)	20 (10%)
Flooding has made it difficult to plant crops on time	50 (25%)	90 (45%)	20 (10%)	30 (15%)	10 (5%)
Soil fertility has decreased due to flooding.	40 (20%)	70 (35%)	40 (20%)	40 (20%)	10 (5%)
The cost of replanting after flooding is too high.	80 (40%)	60 (30%)	10 (5%)	30 (15%)	20 (10%)

2) Effect on Livestock Farming

Statement	SA	A	UD	D	SD
Flooding has increased disease in livestock.	50 (25%)	70 (35%)	30 (15%)	30 (15%)	20 (10%)
Floodwaters contaminate livestock feed and	60 (30%)	80 (40%)	20 (10%)	30 (15%)	10 (5%)

water sources.					
I have lost livestock due to flooding	40 (20%)	50 (25%)	20 (10%)	60 (30%)	30 (15%)
The cost of caring for livestock has increased.	70 (35%)	60 (30%)	20 (10%)	40 (20%)	10 (5%)
Flooding has reduced the quality and quantity of livestock products	30 (15%)	60 (30%)	40 (20%)	50 (25%)	20 (10%)

3) Influence on Food Security

Statement	SA	A	UD	D	SD
My household often experiences food shortages.	60 (30%)	70 (35%)	20 (10%)	40 (20%)	10 (5%)
The price of food increases significantly after flooding	80 (40%)	70 (35%)	10 (5%)	30 (15%)	10 (5%)
I have to reduce the quantity and quality of meals.	50 (25%)	80 (40%)	20 (10%)	40 (20%)	10 (5%)
My family's nutritional status has worsened	40 (20%)	60 (30%)	40 (20%)	50 (25%)	10 (5%)
I rely more on external food aid after flooding.	30 (15%)	50 (25%)	40 (20%)	60 (30%)	20 (10%)

4) Access to Markets and Transportation

Statement	SA	A	UD	D	SD
Flooding makes it difficult to transport produce to markets.	70 (35%)	80 (40%)	10 (5%)	30 (15%)	10 (5%)
Market access is often blocked due to damaged roads.	60 (30%)	70 (35%)	20 (10%)	40 (20%)	10 (5%)
The cost of transportation increases after flooding.	40 (20%)	50 (25%)	20 (10%)	60 (30%)	30 (15%)
Post-harvest losses are higher due to transportation delays.	50 (25%)	70 (35%)	30 (15%)	40 (20%)	10 (5%)
I am unable to sell produce due to lack of market access.	40 (20%)	50 (25%)	30 (15%)	60 (30%)	20 (10%)

5) Coping Strategies and Adaptation Measures

Statement	SA	A	UD	D	SD
I have adopted flood-resistant crop varieties.	30 (15%)	50 (25%)	40 (20%)	60 (30%)	20 (10%)
I have constructed elevated storage facilities.	20 (10%)	40 (20%)	30 (15%)	70 (35%)	40 (20%)
I have diversified my income sources.	40 (20%)	60 (30%)	30 (15%)	50 (25%)	20 (10%)
I have sought assistance from government agencies and NGOs.	30 (15%)	40 (20%)	40 (20%)	60 (30%)	30 (15%)
My coping strategies are effective in mitigating flood impacts.	10 (5%)	30 (15%)	40 (20%)	70 (35%)	50 (25%)

6) Institutional Support and Government Assistance

Statement	SA	A	UD	D	SD

I receive adequate support from government after flooding.	10 (5%)	20 (10%)	30 (15%)	80 (40%)	60 (30%)
The government provides timely warnings about impending floods.	20 (10%)	30 (15%)	40 (20%)	60 (30%)	50 (25%)
The government provides assistance for replanting.	10 (5%)	20 (10%)	30 (15%)	70 (35%)	70 (35%)
I am aware of government programs aimed at mitigating impacts.	20 (10%)	30 (15%)	50 (25%)	60 (30%)	40 (20%)
Government interventions have improved my ability to cope.	10 (15%)	20 (10%)	30 (15%)	80 (40%)	60 (30%)

Ahoada West (n = 200)

1) Impact on Crop Production

Statement	SA	A	UD	D	SD
Flooding has significantly reduced my crop yields.	70 (35%)	90 (45%)	10 (5%)	20 (10%)	10 (5%)
Floodwaters damage crops, making them unsuitable.	80 (40%)	70 (35%)	10 (5%)	20 (10%)	20 (10%)
Flooding has made it difficult to plant crops on time.	60 (30%)	80 (40%)	20 (10%)	30 (15%)	10 (5%)
Soil fertility has decreased due to flooding.	50 (25%)	70 (35%)	30 (15%)	40 (20%)	10 (5%)
The cost of replanting after flooding is too high.	90 (45%)	60 (30%)	10 (5%)	20 (10%)	20 (10%)

2) Effect on Livestock Farming

Statement	SA	A	UD	D	SD
Flooding has increased disease in my livestock.	60 (30%)	80 (40%)	20 (10%)	30 (15%)	10 (5%)
Floodwaters contaminate livestock feed and water sources.	70 (35%)	90 (45%)	10 (5%)	20 (10%)	10 (5%)
I have lost livestock due to flooding.	50 (25%)	60 (30%)	10 (5%)	50 (25%)	30 (15%)
The cost of caring for livestock has increased.	80 (40%)	70 (35%)	10 (5%)	30 (15%)	10 (5%)
Flooding has reduced the quality and quantity of livestock products.	40 (20%)	70 (35%)	30 (15%)	40 (20%)	20 (10%)

3) Influence on Food Security

Statement	SA	A	UD	D	SD
My household often experiences food shortages.	70 (35%)	80 (40%)	10 (5%)	30 (15%)	10 (5%)
The price of food increases significantly after flooding.	90 (45%)	70 (35%)	10 (5%)	20 (10%)	10 (5%)
I have to reduce the quantity and quality of meals.	60 (30%)	90 (45%)	10 (5%)	30 (15%)	10 (5%)
My family's nutritional status has worsened.	50 (25%)	70 (35%)	30 (15%)	40 (20%)	10 (5%)
I rely more on external food aid after flooding.	40 (20%)	60 (30%)	30 (15%)	50 (25%)	20 (10%)

4) Access to Markets and Transportation

Statement	SA	A	UD	D	SD
Flooding makes it difficult to transport produce to markets.	80 (40%)	90 (45%)	10 (5%)	20 (10%)	0 (0%)
Market access is often blocked due to damaged roads.	70 (35%)	80 (40%)	10 (5%)	30 (15%)	10 (5%)
The cost of transportation increases after flooding.	90 (45%)	70 (35%)	10 (5%)	20 (10%)	10 (5%)
Post-harvest losses are higher due to transportation delays.	60 (30%)	80 (40%)	20 (10%)	30 (15%)	10 (5%)
I am unable to sell produce due to lack of market access.	50 (25%)	60 (30%)	20 (10%)	50 (25%)	20 (10%)

5) Coping Strategies and Adaptation Measures

Statement	SA	A	UD	D	SD
I have adopted flood-resistant crop varieties.	40 (20%)	60 (30%)	30 (15%)	50 (25%)	20 (10%)
I have constructed elevated storage facilities.	30 (15%)	50 (25%)	20 (10%)	60 (30%)	40 (20%)
I have diversified my income sources.	50 (25%)	70 (35%)	20 (10%)	40 (20%)	20 (10%)
I have sought assistance from government agencies and NGOs.	40 (20%)	50 (25%)	30 (15%)	50 (25%)	30 (15%)
My coping strategies are effective in mitigating flood impacts.	20 (10%)	40 (20%)	30 (15%)	60 (30%)	50 (25%)

6) Institutional Support and Government Assistance

Statement	SA	A	UD	D	SD
I receive adequate support from government after flooding.	20 (10%)	30 (15%)	20 (10%)	70 (35%)	60 (30%)
The government provides timely warnings about impending floods.	30 (15%)	40 (20%)	30 (15%)	50 (25%)	50 (25%)
The government provides assistance for replanting.	20 (10%)	30 (15%)	20 (10%)	60 (30%)	70 (35%)
I am aware of government programs aimed at mitigating impacts.	30 (15%)	40 (20%)	40 (20%)	50 (25%)	40 (20%)
Government interventions have improved my ability to cope.	20 (10%)	30 (15%)	20 (10%)	70 (35%)	60 (30%)

These tables provide a clear overview of the survey responses for both Ahoada East and West, showing both the number of respondents and the corresponding percentages for each answer choice.

Discussion of the Result

The interview data collected from 400 respondents (200 from each LGA) provides valuable insights into how flooding affects the livelihoods and food security of farming households in Ahoada East and West. The findings reveal significant challenges across multiple dimensions, including crop production, livestock farming, food security, market access, coping strategies, and institutional support.

1) Impact on Crop Production

A sizable percentage of respondents in both LGAs agreed or strongly agreed that flooding had severely lowered crop yields and damaged crops, rendering them unfit for sale or

consumption. Flooding decreased crop output, for instance, according to 70% of respondents in Ahoada East and 80% in Ahoada West. This supports earlier research showing the susceptibility of rain-fed agriculture to flood events (Olunwa & Lawal, 2021; Ogunbameru & Okeowo, 2019), which shows that floods cause interference with planting schedules, lower soil fertility, and raise replanting expenses.

Most respondents (75% of those who strongly agreed and 75% of those who agreed) said that flooding damages crops and drastically lowers crop yields, rendering them unfit for sale or consumption. Furthermore, 70% of respondents concurred that flooding upsets planting plans and raises replanting expenses. Of those surveyed, 57.5% stated that floods had caused a drop in soil fertility. Flood events significantly impair crop production in the studied locations, as these findings demonstrate the direct negative consequences of flooding on agricultural productivity.

2) Effect on Livestock Farming

Flooding-related feed and water source contamination and an increase in animal diseases were noted by respondents. Between 60 and 70 percent of farmers in both LGAs concurred with these claims. Even though it was somewhat less noticeable, livestock loss was still a worry, showing that although it does happen, productivity and health are the primary effects. This supports the findings of Nwankwo et al. (2021), who highlighted the difficulties with animal health brought on by flooding in the Niger Delta.

Flooding contaminates feed and water sources and promotes cattle diseases, according to about 65% of respondents. Only over half of respondents reported actual livestock losses as a result of flooding, indicating that the effects on productivity and health are more common than outright losses. Seventy percent of responders acknowledged the higher cost of caring for cattle after flooding. This data indicates that flooding poses a substantial threat to livestock farming, affecting both animal health and associated expenses.

3) Influence on Food Security

Flooding has a significant impact on food insecurity; the majority of respondents reported regular food shortages, rising food costs, and decreased meal amount and quality following floods. Interestingly, 65-75% of respondents in both LGAs concurred that after flooding; their households face price increases and food shortages. This supports data from the Food and Agriculture Organisation (2022) on flood impacts in Nigeria and illustrates the clear correlation between household food security and flood-induced crop losses.

According to the findings, 70% of respondents reported food shortages and price increases following floods, demonstrating that flooding makes food insecurity worse. Around 70% also reported reduced meal number and quality, while 45% rely more on external food aid following flooding. These numbers highlight the crucial connection between household food insecurity and flooding, highlighting how vulnerable agrarian communities are to shocks brought on by climate change.

4) Access to Markets and Transportation

The research areas' transport networks and market access were significantly impacted by flooding. Of those surveyed 75–85% felt that their capacity to sell produce was hampered by damaged roads and rising transportation costs. In addition to causing post-harvest losses, this lowers farmers' revenue, which makes poverty and food insecurity worse. These findings support previous studies (Adeloye & Rustum, 2011) that showed how important infrastructure is to agricultural value chains during floods.

Significantly, 80% of respondents concurred that flooding impedes market access and transportation, raising post-harvest losses and transportation expenses. Due to market accessibility issues, almost 50% of respondents said they were unable to sell produce. In addition to having an impact on revenue generation, this interruption restricts the amount of food available in local markets, making food security issues worse.

5) Coping Strategies and Adaptation Measures

While some farmers have implemented coping mechanisms, such as diversifying their sources of income and planting crops that can withstand flooding, a sizable portion of farmers are still unsure or disagree about how effective these strategies are, according to the data. For example, fewer people thought their coping mechanisms worked, and only 40–50% of respondents said they had adopted flood-resistant varieties. This implies a lack of institutional support, resources, or expertise to carry out effective adaptation measures, which

is consistent with the worries expressed by Adaku et al. (2019).

While some farmers have adopted coping strategies such as diversifying income sources (55%) and adopting flood-resistant crops (45%), a considerable proportion remain undecided or disagree on the effectiveness of these measures. Only 25% believe their coping strategies effectively mitigate flood impacts, indicating limited access to resources, knowledge, or institutional support to build resilience.

6) Institutional Support and Government Assistance

Institutional support was widely perceived as inadequate. For instance, over 70% of respondents disagreed or strongly disagreed that they receive sufficient government assistance, timely warnings, or effective post-flooding interventions. Awareness of government programs was moderate not enough to translate into perceived benefits. This indicates a critical gap in disaster risk management and social protection systems in the LGAs, consistent with findings by Uchegbu (2021) and Ogunbameru & Okeowo (2019).

The findings reveal widespread dissatisfaction with institutional support; over 65% of respondents disagreed or strongly disagreed that they receive adequate government assistance, timely warnings, or effective interventions post-flooding. Awareness of government programs was moderate (around 30%), but this did not translate into perceived benefits.

Summary of Findings

Overall, the findings demonstrate that flooding severely disrupts agricultural production, livestock health, market access, and food security in Ahoada East and Ahoada West. Despite some adaptive efforts, limited institutional support and resource constraints hinder effective coping and recovery. These insights emphasize the necessity for integrated flood management, enhanced agricultural support, and strengthened institutional frameworks to build resilience among vulnerable farming communities. These findings emphasize urgent need for integrated flood management strategies that combine infrastructural improvements, farmer education, access to climate-resilient technologies, and strengthened government assistance programs. Enhancing early warning systems and community-based disaster preparedness could also improve resilience and reduce the vulnerability of farming households in these flood-prone areas.

Conclusion

This study has demonstrated that flooding poses a persistent and severe threat to food security, livelihoods, and public health in Ahoada East and Ahoada West Local Government Areas of Rivers State. The analysis of responses from farming households reveals widespread destruction of crops and livestock, increased incidence of disease, disruption of market access, and a general decline in household food security following flood events. These impacts are compounded by inadequate institutional support, insufficient early warning systems, and limited adoption of effective coping and adaptation strategies.

Traditional coping mechanisms such as the use of sandbags, digging of burrow pits, stream channelization, and construction of elevated buildings remain prevalent and have proven practical in mitigating flood impacts in these communities. However, the increasing frequency and intensity of floods, driven by climate change and exacerbated by human activities like poor waste management and construction on waterways, highlight the limitations of relying solely on indigenous methods. The findings also underscore the urgent need for integrated and modern approaches to flood management, combining infrastructural improvements, environmental education, and robust policy frameworks.

The study concludes that a multi-faceted response-blending traditional knowledge with modern flood control infrastructure, community education, and proactive governance is essential for building resilience and safeguarding the well-being of vulnerable populations in Ahoada East and Ahoada West.

Recommendations

1) Integrate Traditional and Modern Flood Management:

Governments and local authorities should formally recognize and support traditional coping strategies (e.g., sandbags, stream channelization, elevated construction) while investing in modern flood control infrastructure such as drainage systems and embankments.

2) Strengthen Environmental Education and

Community Sensitization:

Implement continuous environmental adult education, waste management, and climate change awareness programs to foster a culture of preparedness and proactive flood risk reduction.

3) Improve Drainage and Waste Management:

Local governments should construct and maintain drainage systems in flood-prone areas and redesign dumpsites to prevent blockages that exacerbate flooding.

4) Enhance Early Warning and Emergency Response:

Establish and publicize effective early warning systems, and ensure timely evacuation and relief for vulnerable communities during flood events.

5) Promote Institutional Collaboration:

Foster synergy among environmental management agencies (NESREA, RIWAMA, Ministry of Environment, etc.) to develop comprehensive blueprints for flood risk reduction and response.

6) Support Livelihood Diversification and Agricultural Adaptation:

Provide farmers with access to flood-resistant seeds, grants, and training on adaptive agricultural practices to enhance resilience and ensure food security post-flood.

7) Policy Enforcement and Land Use Planning:

Enforce land use regulations to prevent settlement and farming in high-risk flood zones and promote sustainable land management practices.

By implementing these recommendations, stakeholders can reduce the devastating impacts of flooding, protect agricultural productivity, and improve the overall resilience of communities in Ahoada East and Ahoada West LGAs.

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