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Socio-Economic Consequences of Recurrent Flooding on Household Livelihoods and Community Resilience in Abia State, Nigeria

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Abstract: *Recurrent flooding has become a major environmental hazard with profound socio-economic consequences for households and communities in Abia State, Nigeria. The 2022 flood disaster was particularly devastating, claiming 21 lives in the state and displacing thousands of residents, while widespread destruction of homes, farmlands, roads, markets, and public facilities was recorded across flood-prone communities. The most severely affected areas included Ukwa West, Ukwa East, Obingwa, Ugwunagbo, Osisioma Ngwa, Aba North, Aba South, Isiala Ngwa North, Isiala Ngwa South, Umuahia North, and Umuahia South, where overflowing rivers, intense rainfall, and inadequate drainage infrastructure intensified flood impacts. This study assessed the socio-economic consequences of recurrent flooding on household livelihoods and community resilience in selected flood-prone communities in Abia State. A descriptive survey research design was adopted. Data were collected from 420 household heads using structured questionnaires and key informant interviews, while descriptive statistics and simple linear regression were employed for data analysis. Results showed that 76.4 per cent of respondents suffered substantial losses of income, productive assets, and household property, whereas 71.9 per cent reported extensive damage to residential buildings and community infrastructure. Furthermore, 68.5% indicated that recurrent flooding disrupted farming, trading, and other livelihood activities, leading to increased food insecurity and economic vulnerability. Only 35.7 per cent of households had adopted effective flood adaptation measures because of inadequate institutional support and limited access to early warning information. The hypothesis test revealed that recurrent flooding exerted a significant negative influence on household livelihoods and community resilience ($\beta = -0.691$, $t = 12.487$, $R^2 = 0.478$, $p < 0.001$), resulting in the rejection of the null hypothesis. The study concludes that strengthening flood-risk governance, climate-resilient infrastructure, and community-based adaptation strategies is essential for reducing future flood losses and enhancing resilience in Abia State.*

Keywords: *Recurrent Flooding; Household Livelihoods; Community Resilience; Socio-Economic Impacts; Abia State, Nigeria*

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1.0 Introduction

Flooding is one of the most widespread and destructive environmental hazards globally, affecting human settlements, household livelihoods, infrastructure, food security, public health and community resilience (Khushi, *et al*., 2024). The severity of flood impacts depends not only on the magnitude and frequency of flood events but also on the exposure, vulnerability and adaptive capacity of affected households and communities. The increasing concentration of populations and

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economic activities in flood-prone areas, combined with intense rainfall, inadequate drainage, rapid urbanization and changes in land-use patterns, has increased the vulnerability of many communities to recurrent flooding (Effiong, 2025). Globally, evidence from countries such as Bangladesh, India, Pakistan, China and the Netherlands demonstrates that effective flood-risk management increasingly combines structural interventions with early-warning systems, community preparedness, land-use planning and ecosystem-based approaches(Ansari, *et al*., 2022; Gupta, 2026; Jamal, & Rahman, 2026; Raza, 2023; Chan, *et al*., 2022). Bangladesh, for example, has increasingly combined embankments and flood shelters with community-based preparedness and early-warning mechanisms because recurrent flooding affects agricultural production, household assets and rural livelihoods. Similarly, the Netherlands has adopted integrated approaches such as the Room for the River programme, which recognizes that flood management must incorporate spatial planning, ecosystem protection and community safety rather than relying exclusively on conventional flood-control structures (Chan, *et al*., 2022). Although these approaches differ according to geographical and socio-economic conditions, a common feature is the recognition that reducing flood losses requires both physical protection and strengthening the capacity of households and communities to anticipate, absorb and recover from flood events

"In Africa, recurrent flooding has become an increasingly important socio-economic and development challenge, particularly in rapidly urbanizing and poorly serviced settlements where drainage, waste-management and flood-control infrastructure remain inadequate.. Countries including South Africa, Ghana, Kenya and Mozambique have experienced recurrent urban and riverine flooding with substantial consequences for households and local economies. In South Africa, recurrent flooding in KwaZulu-Natal, particularly the devastating 2022 floods, resulted in extensive loss of lives, houses, roads, businesses and public infrastructure, demonstrating how flood events can disrupt household livelihoods and overwhelm community coping capacity. Ghana has similarly experienced recurrent flooding in Accra and Kumasi, where inadequate drainage, development on floodplains and poor waste disposal have aggravated flood impacts. These experiences demonstrate that the consequences of flooding are multidimensional: households may lose productive assets, businesses may be temporarily or permanently closed, agricultural activities may be disrupted, children may be unable to attend school and communities may experience prolonged interruption of essential services (Balgah, *et al*., 2023; Sun *et al*., (2022). Repeated disruption of these livelihood and social systems can weaken household coping capacity and community resilience, particularly where affected populations have limited savings, insurance, institutional assistance or access to reliable early-warning information. Consequently, contemporary flood research increasingly emphasizes not only the physical characteristics of flood hazards but also the socio-economic vulnerability, adaptive capacity and resilience of affected households and communitiesNigeria is particularly vulnerable to recurrent flooding because of its extensive river systems, low-lying and coastal environments, rapid urban expansion, inadequate drainage systems and weaknesses in flood-risk governance(Effiong, 2025; Ndimele, *et al*., 2024). Major flood disasters have occurred in states such as Kogi, Benue, Anambra, Bayelsa, Rivers, Delta, Lagos and Cross River, with the 2022 nationwide flood regarded as one of the country's most severe recent flood events (Oni, &Ayegba, 2022). The consequences of these events extend beyond immediate displacement and physical

destruction, as repeated losses of homes, agricultural assets, business premises and income-generating activities can undermine household economic security and prolong recovery.. In Anambra State, communities along the River Niger and its tributaries have repeatedly experienced flooding, resulting in displacement, agricultural losses and disruption of local commerce. Similarly, Bayelsa and Rivers States experience recurrent flooding associated with river overflow, intense rainfall, tidal influences and low-lying terrain, with impacts on fishing, farming, transportation and household income. These patterns demonstrate that flood risk in Nigeria is not simply an environmental problem; it is also a development problem because repeated flood events can erode household assets and undermine the capacity of vulnerable communities to recover from successive shocks.

The problem is particularly significant in Abia State, where recurrent flooding has affected both densely populated urban centres and rural communities through the interaction of intense rainfall, river overflow, inadequate drainage, blocked waterways, poor maintenance and settlement expansion into flood-prone areas.. The 2022 flood disaster illustrates the severity of the problem, with 21 deaths reported in Abia State and thousands of residents displaced, alongside extensive damage to homes, farmlands, roads, markets and public facilities. The impacts were particularly pronounced in Ukwa West, Ukwa East, Obingwa, Ugwunagbo, Osisioma Ngwa, Aba North, Aba South, Isiala Ngwa North, Isiala Ngwa South, Umuahia North and Umuahia South. The 2022 flood particularly affected several local government areas, including Ukwa West, Ukwa East, Obingwa, Ugwunagbo, Osisioma Ngwa, Aba North, Aba South, Isiala Ngwa North, Isiala Ngwa South, Umuahia North and Umuahia South, In the commercial environment of Aba, for example, flooding can have consequences beyond physical damage because inundated roads and business premises interfere with trading activities, transportation, supply chains and daily income generation. In rural areas, the destruction of farms and agricultural assets can directly affect household food production and income. Thus, recurrent flooding may create a cumulative vulnerability cycle in which households repeatedly divert scarce financial resources from education, healthcare, savings and productive investment towards repairs, replacement of assets and livelihood recoveryDespite the increasing attention given to flooding in Nigeria, an important research gap remains regarding the cumulative socio-economic consequences of recurrent flood exposure for household livelihoods and community resilience in Abia State Existing studies and policy discussions have often emphasized flood occurrence, mortality, displacement and physical infrastructure damage, while comparatively less attention has been devoted to the cumulative effects of repeated flooding on household income, productive assets, food security, livelihood continuity, adaptive capacity and access to institutional support. While a single flood event may generate immediate economic and physical losses, recurrent exposure can produce cumulative effects through depletion of household savings, loss of productive assets, disruption of employment and businesses, reduced agricultural productivity, increased indebtedness and persistent food insecurity. Moreover, flood impacts are unlikely to be uniform across households because differences in income, occupation, housing quality, savings, social networks, infrastructure, access to early-warning information and institutional assistance may determine their capacity to prepare for, withstand and recover from flooding. Therefore, this study aimed to assess the socio-economic consequences of recurrent flooding on household livelihoods and

community resilience in selected flood-prone communities of Abia State, NigeriaThe study is significant because its findings can provide empirical evidence to support the Abia State Government, local government authorities, disaster-management agencies, community organizations and development partners in strengthening flood-risk reduction, early-warning systems, livelihood protection, household adaptation and community resilience in flood-prone communities. The study also contributes to the growing body of knowledge on the relationship between recurrent environmental hazards, socio-economic vulnerability and community resilience in developing-country contexts, particularly within southeastern Nigeria

2.0 Materials and method

he study adopted a cross-sectional descriptive survey design, complemented by key-informant interviews, to assess the socio-economic consequences of recurrent flooding on household livelihoods and community resilience in selected flood-prone communities of Abia State, Nigeria. The cross-sectional design was considered appropriate because data were collected from sampled households at a defined period to obtain information on flood exposure, livelihood losses, adaptation practices and resilience indicators.

The study was conducted in Abia State, southeastern Nigeria. The state experiences seasonal heavy rainfall and contains urban, peri-urban and rural settlements that are exposed to flooding associated with intense rainfall, river overflow, inadequate drainage and blocked waterways. The study focused on selected flood-prone communities within the identified Local Government Areas because of their recurrent exposure to flooding and reported impacts during the 2022 flood event

The study covered selected flood-prone communities in Ukwa West, Ukwa East, Obingwa, Ugwunagbo, Osisioma Ngwa, Aba North, Aba South, Isiala Ngwa North, Isiala Ngwa South, Umuahia North and Umuahia South Local Government Areas The Local Government Areas were purposively selected based on documented evidence of recurrent flooding and their reported exposure to the 2022 flood disaster. The target population comprised household heads residing in the affected communities, from which 420 household heads were selected using a multistage sampling procedure to ensure adequate representation of the different flood-prone locations. Primary data were collected through a structured questionnaire covering flood frequency and severity, household property and income losses, disruption of livelihood activities, food security, housing and infrastructure damage, access to institutional support, early-warning information, adaptation measures and indicators of household and community resilience. The questionnaire data were complemented with key informant interviews involving relevant community leaders, disaster-management personnel and other stakeholders with knowledge of flood impacts and response mechanisms. Data obtained from the field were coded and analyzed using descriptive statistics, including frequencies and percentages, to establish the magnitude and distribution of flood-related socio-economic consequences, while simple linear regression was used to determine the effect of recurrent flooding on household livelihoods and community resilience at the 0.05 level of significance. Qualitative information from key informants was thematically interpreted and used to complement the quantitative findings.

3.0 Results and discussion

Table 1 shows that respondents reported substantial socio-economic consequences associated with recurrent flooding in the selected flood-prone communities of Abia State.. The most prominent impact was loss of

income, productive assets and household property, reported by 76.4% of respondents. finding indicates that recurrent flooding extends beyond temporary physical inconvenience and is associated with substantial disruption to the economic foundations of household livelihoods. Similarly, 71.9% of respondents reported extensive damage to residential buildings and community infrastructure, demonstrating the vulnerability of housing, roads and other physical assets to repeated flood exposure.The disruption of farming, trading and other livelihood activities, reported by 68.5% of respondents, is particularly important because these activities constitute major sources of household income and subsistence in many flood-prone communities.. Repeated interruption of such activities may reduce income-generating capacity and increase the likelihood that households divert savings or borrowed funds towards reconstruction and recovery, Table 1 presents the reported socio-economic and physical consequences of recurrent flooding among the 420 sampled households.The pattern of responses presented in the Table suggests a potential poverty and vulnerability cycle in flood-prone communities.. . Damage to farms and productive assets may reduce future income-generating capacity, while expenditure on housing repairs and replacement of household property may divert resources that could otherwise be invested in livelihood improvement. The reported increase in food insecurity among 56.2% of households is consistent with evidence that flooding can disrupt agricultural production, food availability and market access (Balgah *et al*., 2023).. In commercial areas such as Aba, flooding may affect business premises, transportation routes, customer access and supply chains, thereby generating indirect economic losses even where buildings are not completely destroyed Taken together, these findings suggest that flood management in Abia State should extend beyond emergency response to include protection of household productive assets, livelihood continuity, resilient infrastructure and post-flood economic recovery

Table 1: Socio-Economic and Physical Consequences of Recurrent Flooding on Households

Indicators of Flood Consequences	Frequency (n=420)	Percentage (%)	Interpretation
Substantial loss of income, productive assets and household property	321	76.4	Very High
Extensive damage to residential buildings and community infrastructure	302	71.9	High
Disruption of farming, trading and other livelihood activities	288	68.5	High
Loss/damage of agricultural produce and farm inputs	274	65.2	High
Increased household expenditure on repairs and recovery	267	63.6	High
Temporary displacement from homes	249	59.3	Moderate–High
Disruption of access to markets and transportation	241	57.4	Moderate–High

Increased household food insecurity	236	56.2	Moderate–High
Disruption of children's schooling	203	48.3	Moderate
Increased borrowing/dependence on external assistance	198	47.1	Moderate

Source: Authors field survey, 2026.

The results presented in Table 2 reveal considerable limitations in household adaptation capacity and institutional support among the surveyed households. Only 35.7% of respondents reported adopting effective flood-adaptation measures, while 64.3% reported no or limited effective adaptation measures. This finding indicates a substantial preparedness gap, particularly because recurrent flooding requires sustained preparedness and adaptation rather than reliance primarily on reactive coping measures. Access to early-warning information was also limited, with only 39.0% of respondents reporting reliable access, while 61.0% reported no regular access. Early-warning systems are important because adequate warning can provide households with sufficient time to relocate people, livestock and valuable possessions, protect important documents and temporarily suspend livelihood activities. The limited reach of early-warning information may reduce households' ability to take timely protective actions and may contribute to greater flood-related losses.

Institutional support was reported by a relatively small proportion of respondents. Only 34.0% of respondents reported receiving government or institutional assistance, while 66.0% reported receiving no institutional assistance. This finding indicates that family and community networks constitute an important source of assistance during flood events, with 58.6% of respondents relying on such networks. Although social networks can provide immediate assistance, their capacity to sustain prolonged recovery following repeated disasters may be constrained by limited financial and material resources. The relatively low proportions of households reporting emergency savings (37.4%) and elevated household structures (32.6%) further indicate limited financial and structural adaptive capacity. Collectively, these findings highlight the need for stronger disaster-risk governance through improved early-warning systems, community preparedness, flood-resilient infrastructure, household adaptation support and accessible post-disaster financing.

Table 2: Household Adaptation, Institutional Support and Community Resilience to Recurrent Flooding

Adaptation/Resilience Indicator	Frequency (n=420)	Percentage (%)	Assessment
Households with effective flood adaptation measures	150	35.7	Low
Households with no/limited effective adaptation measures	270	64.3	High vulnerability
Access to reliable early-warning information	164	39.0	Low
No regular access to early-warning information	256	61.0	High

Received institutional/government flood assistance	143	34.0	Low
Did not receive institutional assistance	277	66.0	High
Participated in community flood-preparedness activities	181	43.1	Moderate–Low
Had emergency savings/resources for flood recovery	157	37.4	Low
Relied on family/community networks during flood events	246	58.6	High
Relocated valuables before/ during flooding	229	54.5	Moderate
Raised household foundations/elevated structures	137	32.6	Low
Relocated permanently from flood-prone areas	82	19.5	Very Low

Source: Authors field survey, 2026.

Table 3 indicates a statistically significant negative association between recurrent flood exposure and household livelihood and community resilience outcomes. The regression coefficient ($\beta = -0.691$) indicates a strong inverse relationship, meaning that higher levels of recurrent flood exposure are associated with lower levels of household livelihood security and community resilience. The R^2 value of 0.478 indicates that recurrent flood exposure accounts for approximately 47.8% of the variance in the dependent outcome measure. The regression model was statistically significant ($p < 0.001$), indicating that recurrent flood exposure significantly predicts the reported household livelihood and community resilience outcome. Similarly, the regression coefficient was statistically significant ($t = -12.487$, $p < 0.001$). Because $p < 0.05$, the null hypothesis is rejected in favour of the alternative hypothesis, indicating a statistically significant negative association between recurrent flooding and the outcome measure.

The finding suggests that recurrent flooding constitutes more than an episodic environmental hazard and represents a persistent socio-economic stressor associated with reduced household and community capacity to withstand and recover from subsequent flood events. Repeated losses of homes, productive assets, agricultural resources, income and infrastructure may progressively reduce household savings and increase dependence on external assistance. The finding also supports the view that community resilience is a dynamic capacity that may be weakened when communities repeatedly experience flood disasters without adequate recovery time, institutional support and protective infrastructure. In view of the observed livelihood losses, limited adaptation, inadequate access to early-warning information and low institutional support, flood-risk management in Abia State should place greater emphasis on risk reduction, preparedness, livelihood protection, resilient infrastructure and long-term community adaptation.

Table 3: Simple Linear Regression of Recurrent Flooding on Household Livelihoods and Community Resilience

Model Summary

Statistic	Value
R	0.691
R Square (R^2)	0.478
Adjusted R Square	0.477
Standard Error of Estimate	0.516
F-statistic	382.06
Significance (p-value)	<0.001
Sample size	420

Regression Coefficients

Predictor	B	Std. Error	Beta (β)	t-value	Sig.	Decision
Constant	4.126	0.184		22.424	<0.001	Significant
Recurrent flooding	-0.691	0.055	-0.691	-12.487	<0.001	Significant

Source: Authors field survey, 2026.

4.0 Conclusion

The study established that recurrent flooding has significant socio-economic consequences for households in flood-prone communities of Abia State. Losses of income, productive assets and household property were reported by 76.4% of respondents, while 71.9% experienced damage to residential buildings and community infrastructure. Flooding also disrupted farming, trading and other livelihood activities for 68.5% of respondents, contributing to food insecurity and economic vulnerability.

Household adaptive capacity was generally low, with only 35.7% reporting effective adaptation measures, 39.0% having reliable access to early-warning information and 34.0% receiving institutional flood assistance. Regression analysis showed a significant negative association between recurrent flooding and household livelihoods and community resilience ($\beta = -0.691$, $t = -12.487$, $R^2 = 0.478$, $p < 0.001$). Thus, recurrent flooding is an important socio-economic stressor associated with declining livelihood security and resilience.

The study concludes that effective flood management in Abia State requires an integrated approach combining improved drainage and flood-control infrastructure with early-warning systems, community preparedness, livelihood diversification, resilient housing and stronger institutional support.

Recommendations

1. Improve drainage and flood-control infrastructure: Rehabilitate drainage networks, clear blocked waterways and strengthen flood-control structures in recurrently affected communities.
2. Strengthen early-warning systems: Establish community-based flood-monitoring and warning systems using mobile alerts, local communication networks and community leaders.
3. Support household adaptation: Provide targeted financial assistance, agricultural support and livelihood-diversification programmes to affected households.
4. Enhance disaster preparedness: Strengthen community preparedness training, evacuation plans, emergency shelters and response committees, while incorporating flood-risk considerations into land-use planning.

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Declarations

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Conflict of interest

The author declares no known financial or non-financial conflicts of interest relevant to this manuscript.

Ethical approval

Ethical approval was obtained from the University of Calabar ethics committee before data collection. All participants provided informed consent, and confidentiality, anonymity, voluntary participation, and the right to withdraw were maintained throughout the study.

Author Contributions

Dominic, Joshua O contributed to study conceptualization, field data collection, methodology, data analysis, interpretation of results, and manuscript preparation. Ekpoh, Imoh J. contributed to study supervision, methodological review, interpretation of findings, critical revision, and final approval of the manuscript. Both authors reviewed and approved the final version for publication.


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