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Coastal Flooding and Socio-Ecological Issues in Akwa Ibom State, Nigeria: Causes and Implications

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Abstract

The study examined the causes of coastal communities in Akwa Ibom State, Nigeria with a view to mitigating loss in economic environment. Six local government areas were selected and three communities each making a total of eighteen communities. Four objectives formulated for the study included identifying and mapping flood sites in coastal communities of Akwa Ibom State, investigating the causes of flooding in coastal communities, assessing the effects of flooding on livelihood in the coastal communities and examining coping mechanisms employed by residents to address flood challenges. The study adopted both qualitative and quantitative research approach using questionnaires and direct interview of affected community inhabitants. It was revealed that.

coastal flood is caused by many factors and the socio-ecological implications are diverse; ranging from disruption of movement, trade and food production among others. In the light of this, regular environmental education should be given priority in the society including improved urban planning, resilient infrastructure, early warning systems, and community-based adaptation measures. This study contributes to the broader discourse on environmental hazards and in coastal ecosystem, emphasizing the need for policy action to mitigate the socioeconomic vulnerability of Akwa Ibom's coastal populations.

Keywords: *Coastal Flooding, Socio-ecological Issues, Causes, Implications, Akwa Ibom State.*

INTRODUCTION

Geographically, flooding is attributed to the overflow of a significant body of water onto land not typically submerged, primarily caused by extreme weather events. A contributing factor to this phenomenon, rising global temperatures, leads to heavy downpours that inundate coastal areas, as noted by Daniel (2024). The extensive detrimental effects of flooding were demonstrated by Ujene (2023), as inundation and considerable harm are caused to plants, animals, humans, buildings, and infrastructure alike. Consequently, flooding has become recognized as a global natural hazard that affects countless lives, results in the loss of properties, and destruction of numerous species within affected environments. Indeed, it was highlighted by Ifiok et al. (2022) that flooding consistently poses a significant threat to the overall quality of the environment. The pervasive nature of this hazard necessitates a comprehensive understanding of its origins and impacts, along with a concerted global effort to develop and implement effective mitigation and adaptation strategies. The ongoing changes in climatic patterns further amplify the urgency of addressing this critical environmental challenge.

Due to the nature of flooding and its relative negative implications, numerous attempts have been made by global communities to manage the situation. For example, the World Bank (2021) indicated that flooding had impacted over 100 countries worldwide, a sentiment echoed by Komolafe et al. (2018), who specifically highlighted that more than 20 nations in Sub-Saharan Africa alone experienced significant flood events, affecting upwards of 5 million people and causing economic damages exceeding $500 million annually. Similarly, the United Nations Office for Disaster Risk Reduction (UNDRR) (2021) reported that between 2000 and 2019, floods accounted for 44% of all disaster events globally, impacting over 1.6 billion people

and resulting in an estimated $650 billion in economic losses. The long-term economic recovery of affected regions is also significantly hampered, with businesses being forced to close and agricultural output severely reduced, contributing to food insecurity and livelihood disruption.

Akwa Ibom State, a coastal region within the oil-rich Niger Delta, is particularly susceptible to flooding due to its low-lying topography, substantial rainfall, and proximity to the Atlantic Ocean, as indicated by Komolafe et al. (2018). It has been observed that coastal flooding is not exclusively a challenge for the Nigerian coastline but is a global phenomenon affecting virtually all coastlines worldwide, as noted by Ujene et al. (2023). Research by Akukwe et al. (2018) revealed that this state's coastal communities, encompassing settlements along rivers, creeks, and estuaries, frequently experience floods attributable to both natural and anthropogenic factors. The unique geographical characteristics of Akwa Ibom State, combined with the increasing intensity of global weather patterns, create a particularly vulnerable environment that is prone to significant and recurring inundation events.

Natural contributors to flooding in Akwa Ibom State include excessive rainfall, river overflow, tides, waves, near-shore currents, storms, and rising sea levels associated with climate change, according to Ologunorisa et al. (2018). The vulnerability of Akwa Ibom's coastal terrain is intensified by its characteristic wetlands and estuaries, which, while ecologically valuable, also serve as conduits for water during heavy precipitation and tidal surges. Furthermore, anthropogenic activities such as deforestation, inadequate drainage systems, unregulated urbanization, land reclamation, farming, dredging, forest clearing, and the construction of dams and jetties, along with sand mining, are found to exacerbate these natural risks, as documented by Etuonovbe et al. (2018). These human-induced modifications of the landscape disrupt natural water flow and increase the susceptibility of communities to severe flooding events.

A multifaceted approach is necessitated for addressing the root causes and mitigating the impacts of coastal flooding in Akwa Ibom State. The critical need for understanding the socio-economic implications of flooding on coastal livelihoods has been emphasized by existing studies, including Akukwe et al. (2019), for the development of effective mitigation strategies, policies, and interventions. A holistic approach to flood management is advocated, encompassing sustainable land-use planning, improved drainage systems, and community-based adaptation strategies. This comprehensive framework would involve not only engineering solutions but also the empowerment of local communities to actively participate in flood preparedness and response efforts. The integration of traditional knowledge with modern scientific approaches is also seen as crucial for developing resilient and sustainable solutions that are tailored to the unique context of the region.

This study, building on this premise, is focused on the socio-economic consequences of flooding in Akwa Ibom's coastal communities, aim at providing insights for informing policy interventions designed to enhance resilience and reduce the vulnerability of these populations. Given the recurring nature of flooding and its devastating effects, this study is considered crucial for understanding the problem's dynamics and proposing sustainable solutions, thereby contributing to the broader discourse on flood menace and its implications for livelihoods in coastal Nigeria.

2.0 LITERATURE REVIEW

The recurring menace of flooding in Akwa Ibom State's coastal communities has significant socio-economic and environmental consequences Etim and Akpabio (2023). It has been reported by Akpan and Obafemi (2021) that over 65% of households in regions such as Ibeno and Eket are affected by annual flooding, which results in widespread property destruction and displacement. Furthermore, it was revealed by the same study that adequate flood adaptation strategies are lacked by 40% of residents, which exacerbates their vulnerability to flood events. Similarly, it was found by Udoh and Etim (2022) that 72% of fishing and farming activities, which constitute the primary livelihoods in these areas, are disrupted by flooding, leading to an estimated annual income loss of ₦2.3 billion. Geographic Information System (GIS) mapping was utilized by Inyang and Brownson (2020) to identify Ikot Abasi and Eastern Obolo as high-risk zones, with 80% of their landmass being prone to inundation during peak rainfall. Despite these evident risks, the sufficiency of government intervention remains questionable, as noted by Etim and Akpabio (2023), who reported that only 15% of affected communities received post-flood relief between 2019 and 2023. These findings collectively underscore a critical gap in proactive flood management, leaving coastal populations in perpetual distress.

Further insights into the escalating flood crisis have been provided by the Akwa Ibom State Emergency Management Agency (AKSEMA, 2024). It has been highlighted by AKSEMA that flood incidents experienced an increase of 30% from 2019 to 2023, yet mitigation efforts largely remain reactive rather than preventive. This upward trend in flood occurrences, coupled with insufficient proactive measures, signifies a dire situation for the coastal inhabitants. The persistent nature of this menace has far-

reaching implications, extending beyond immediate property damage to affect the health, infrastructure, and sustainable development of the region. Without robust and forward-looking strategies, the vulnerability of these communities is expected to intensify, making recovery more challenging and costly. The repeated impact of flooding not only erodes economic stability but also diminishes the overall quality of life for those living in these susceptible areas, contributing to a cycle of poverty and displacement. Therefore, addressing this critical gap in proactive flood management is paramount to safeguarding the well-being and future prosperity of Akwa Ibom's coastal populations.

The pervasive nature of the flood menace in Akwa Ibom's coastal communities extends its detrimental effects to public health and vital infrastructure. It was reported by Akpan and Obafemi (2021) that flood-induced water contamination affects 58% of drinking sources, which subsequently contributes to an annual increase of 22% in waterborne diseases such as cholera. The severe damage suffered by 90% of community infrastructure, including roads and schools, was emphasized by Udoh (2023), leading to significant hindrance in economic and educational activities. Furthermore, it has been noted by Inyang and Brownson (2020) that GIS-based flood models predict a 40% expansion of flood-prone areas by 2030, indicating a worsening of risks if no intervention is undertaken. The prolonged displacement of affected households is also a significant concern, as Etim and Akpabio (2023) found that 75% of displaced households remain in temporary shelters for over six months, placing considerable strain on existing social systems and resources. These findings underscore the multifaceted challenges posed by the recurring floods, which necessitate comprehensive and integrated solutions.

Financial mismanagement further exacerbates the vulnerability of these communities. It was revealed by AKSEMA (2024) that only 10% of allocated flood mitigation funds successfully reach grassroots implementation, thereby forcing communities to rely on often ineffective indigenous coping mechanisms. This significant disparity between allocated funds and actual on-the-ground impact highlights a systemic issue in the distribution and utilization of resources meant for disaster preparedness and response. Compounding this problem, the effects of climate change are intensifying rainfall patterns, with projected sea-level rises of 0.5 meters by 2025 (AKSEMA, 2024), which gravely threatens the total submersion of low-lying areas like Oron. Despite these alarming statistics and dire predictions, it has been observed that policy responses remain fragmented, indicating a clear absence of integrated disaster risk reduction frameworks. This lack of a cohesive strategy leaves coastal populations acutely exposed to the escalating impacts of climate change and recurrent flooding.

Frequent coastal flooding poses a serious menace to livelihoods in vulnerable communities, threatening fishing, farming, trade, and housing. In Nigeria, flooding disrupts fishing activities by destroying fishing gear, reducing catch, and displacing fishermen, while farmlands are inundated, leading to crop failure and food insecurity (Ejenma et al, 2018; Ituen, Johnson and Njoku, 2014; Kolawole et al, 2018; Udosen et al, 2018). Studies have shown that recurrent floods increase poverty and reduce household income, leaving communities highly vulnerable to environmental shocks (Adelekan, 2016; IPCC, 2022). Understanding the implications of coastal flooding on livelihoods is therefore crucial for developing sustainable adaptation strategies and protecting the socio-economic well-being of coastal populations.

The systemic gaps in flood preparedness and response are further compounded by critical deficiencies in infrastructure and policy enforcement (NEMA, 2012, 2013). The absence of community-centric flood early warning systems (Udoh 2023) leaves residents unprepared for impending disasters, while weak enforcement of building codes (Inyang and Brownson, 2020) contributes to the construction of vulnerable structures in high-risk areas, thereby aggravating exposure to flood events. This study endeavors to address these critical systemic gaps by evaluating sustainable mitigation strategies that are specifically tailored to Akwa Ibom's unique coastal vulnerabilities.

3.0 MATERIALS AND METHODS

The study area is Akwa Ibom State, a coastal state in the South-South geopolitical zone of Nigeria, strategically located along the Bight of Bonny and is bordered by the Atlantic Ocean to the south. A significant 13.4% of Nigeria's 940km Atlantic coastline traversed through the state as in Figure 1.1. Geographically, it is located within the humid tropical rainforest zone of South-South Nigeria, precisely between latitudes 4°32'N and 5°33'N and longitudes 7°25'E and 8°25'E of the Greenwich Meridian. The state formed an integral part of the Niger Delta region, characterized by extensive mangrove swamps, estuaries, creeks, and floodplains. The coastal areas of Akwa Ibom State is particularly susceptible to flooding due to their specific geographical location, inherent topography, and prevailing climatic conditions, rendering them highly vulnerable. The State shares borders with Abia State to the north, Cross River State to the east, and Rivers State to the west.

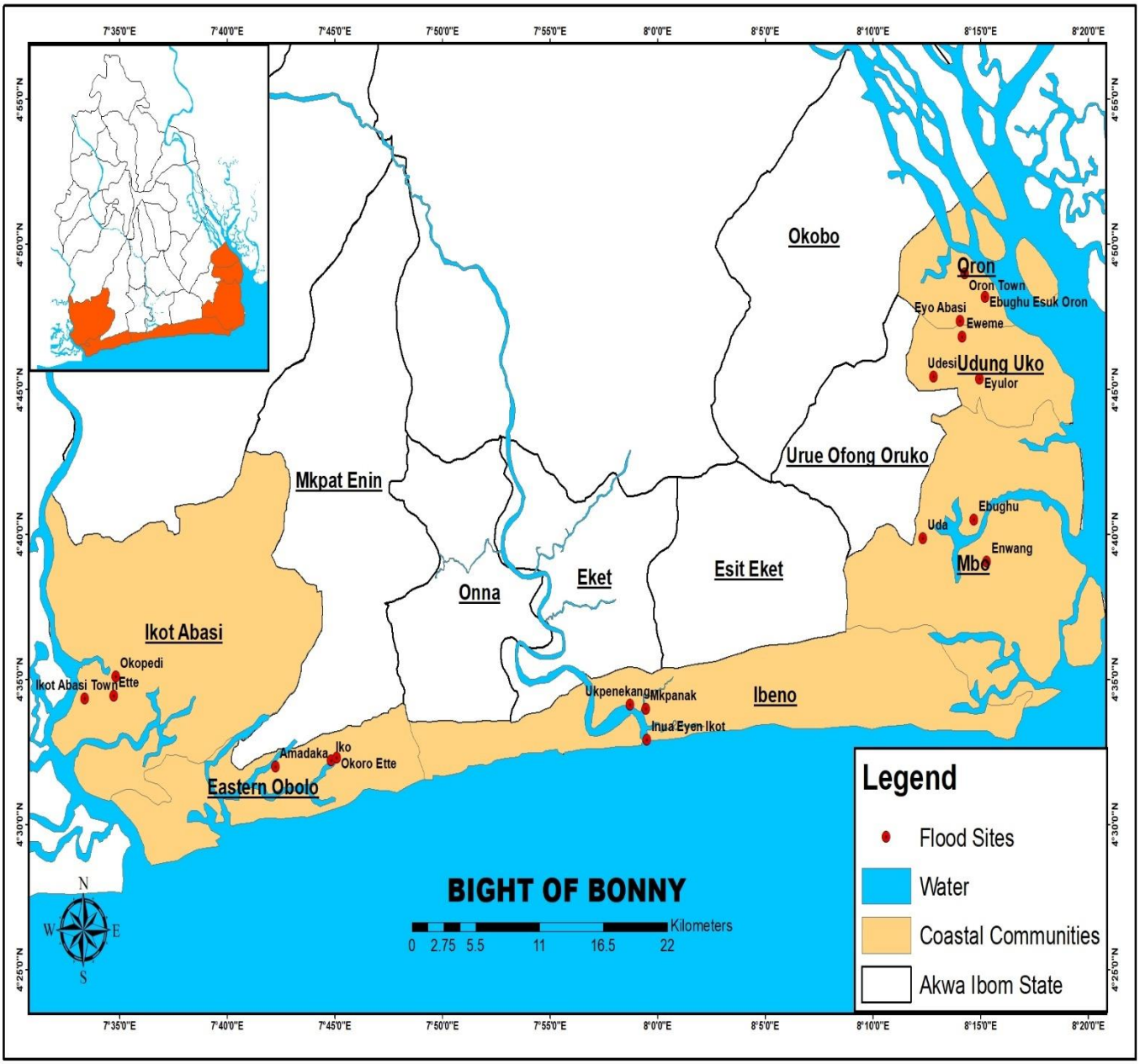

Figure 1.2: Flood Sites in Coastal Communities of Akwa Ibom State | Source: Compiled and Produced at GIS Lab, University of Uyo 2025

3.1 Methods

The study employed mixed research approach using qualitative and quantitative approach. This approach allowed for an efficient snapshot of the existing conditions, perceptions, and experiences related to flood menace and its implications on livelihoods in Ibeno, Eastern Obolo, Mbo, Ikot Abasi, Udung Uko, and Oron Local Government Areas of Akwa Ibom State. By gathering information from a diverse group of participants across these six locations simultaneously, these six Local Government Areas were carefully selected as coastal areas with 20 meters elevation above sea level.

Direct oral interviews involving the use of questionnaires, personal observation, measurement and recording of useful information were employed. Other sources of information were from academic journals, text books, seminar papers, internet browsing, published and unpublished articles, maps and newspapers. On the data set, data was collected on the socioeconomic characteristics which include; sex, age, marital status, level of education, age bracket and occupation. Also, data was collected on coastal flooding and on livelihood. On the basis of collecting data on livelihood, livelihood activities were used. The livelihood activities include; fishing, farming housing and properties, health and sanitation, sand dredging, tourism, transportation, business and trading, oil and gas activities, lumbering, tourism, road construction and drilling of boreholes. The identification of sampled flood sites with geographical coordinates was presented in Table 3.1.

Table 3.1: Identification of Sampled Flood Sites with Geographical Coordinates

L.G.A & POPULATION	Sampled Communities	Affected Population	Total Sample Size (10% of Population for questionnaire administration.)	ELEVATION	LATITUDE	LONGITUDE
Ikot Abasi, 169,200	1.Okopedi	350	35	11m	4.5850°N,	7.5800° E
	2.Ete	250	25	13m	4.6000° N,	7.5500° E
	3.Ikot Abasi Town	300	30	15m	4.5700° N,	7.5600° E
Ibeno 95,500	4.Mkpanak	250	25	16m	4.5500° N,	7.9700° E
	5.Ukpenekang	350	35	17m	4.5778° N,	7.9936° E
	6.Inua Eyet Ikot	300	30	18m	4.5600° N,	7.9750° E
Eastern Obolo 76,500	7.Amadaka	200	20	10m	4.6100° N,	7.9100° E
	8.Okoroette	250	25	11m	4.6023° N,	7.8950° E
	9.Iko	250	25	12m	4.5833° N,	7.9167° E
Mbo 130,400	10.Uda	200	20	10m	4.6667° N,	8.1667° E
	11.Enwang	150	15	12m	4.6500° N,	8.1500° E
	12.Ebughu	150	15	13m	4.6833° N,	8.2000° E
Idung uko 67,700	13.Udesi	100	10	39m	4.7333° N,	8.0833° E
	14. Eyulor	150	15	40m	4.7400° N,	8.0900° E
	15.Eweme	150	15	41m	4.7500° N,	8.1000° E
Oron 111,500	16.Ebughu Esuk Oron	100	10	60m	4.6833° N,	8.2000° E
	17.Oron Town	190	19	100m	4.7000° N,	8.2333° E
	18.Eyo Abasi	150	15	80m	4.7167° N,	8.2500° E
TOTAL 650,600		**3,840**	**384**			

Source: Field Survey (2025)

The sampling procedure for this study employed a random sampling approach, primarily focusing on six LGAs in Akwa Ibom State, three communities each making a total of eighteen communities. A total of 384 questionnaires were administered across these eighteen selected villages, representing a 10% sample of their combined total population. This 10% target was a pragmatic adjustment from an initial plan for a 25% sample, necessitated by time constraints and the dynamic nature of the population, where factors like death and migration, along side the transient presence of migrants, business people, and educationists, made access to a larger percentage challenging. Questionnaires, designed using an ordinal scale and structured to align with the study's objectives, were distributed to both households and business establishments within the area. The primary respondents were individuals engaged in various economic activities prevalent in the area, including fishing, tourism, trading, mining, farming, oil and gas, lumbering, boat construction, transportation, and hairdressing/barbing businesses, as well as general residents.

For data analysis, the causes of coastal flooding in the coastal communities of Akwa Ibom state as well as the effect of flooding in the coastal communities were presented using simple frequencies, percentages, means, and standard deviations, to illustrate the nature and extent of flooding's impact on various aspects of community livelihoods.

4.0 RESULTS AND DISCUSSION

The following demographic information was obtained for the study.

Table 4.1: Respondents' Gender

Community	Number of Questionnaire Administered	Male	Female	Percentage (%)
Okopedi	35	17	13	7.9
Ete	25	10	15	6.6
Ikot Abasi Town	30	22	8	7.9
Mkpanak	25	16	9	6.6
Ukpenekang	35	27	8	9.2
Inua Eyet Ikot	30	20	10	7.9
Amadaka	20	12	8	5.3
Okoroette	25	16	9	6.6
Iko	25	13	12	6.6
Uda	20	11	9	5.3
Enwang	15	9	6	4.0
Ebughu	15	8	7	4.0
Udesi	10	5	5	2.6
Eyulor	15	9	6	4.0
Eweme	15	4	11	4.0
Ebughu Esuk Oron	10	4	6	2.6
Oron Town	19	13	6	5.0
Eyo Abasi	15	7	8	4.0
Total	**379**	223	156	100

Source: Field Data (2025)

Table 4.2: Marital Status and Educational Qualification of Respondents

Marital status		**Number of Respondent**	**Percentage (%)**
Single		93	24.5
Married		89	23.5
Divorced		113	29.8
Widow/Widower		86	22.2
Total		379	100
Educational Qualification	**Number of Respondent**	**Percentage**	**Number of Respondent**	**Percentage (%)**
Primary education (FSLC))	176	44.44	113	29,8
Secondary education (SSCE)	202	51.01	93	24.5
Tertiary education (HND/BSc)	10	2.53	89	23.5
Never been to school	8	2.02	84	22.2
Total	396	100	379	100

Source: Field Data (2025)

Table 4.3: Occupational Status of Sampled Respondents

Occupation	Number of Respondents	Percentage (%)
Civil Servant	40	10.6
Mining	20	5.3
Trading	90	23.7
Farming	80	21.1
Fishing	149	39.3
Total	**379**	**100**

Source: Field Data (2025)

Table 4.4: Age of Respondents

Age	Number of Respondents	Percentage (%)
20 – 29	80	21.1
30 – 39	140	36.9
40 – 49	70	18.5
50 –59	60	15.8
60 and above	29	7.7
Total	**379**	**100**

Source: Field data, 2025.

Table 4.5: Monthly Income of Respondents

Monthly Income	Number of Respondents	Percentage (%)
Below 30,000	130	34.3
30,000- 50,000	89	23.5
51,000 -100,000	114	30.1
100,000 and above	46	12.1
Total	**379**	**100**

Source: Field Data (2025)

Table 4.6: Human Activities that Respondents are Involved that Causes Flooding

Community	Number of Questionnaire Administered	Digging of Trenches	Sand dredging	Road construction	Lumbering	Agricultural activities	Mean	Standard Deviation
Okopedi	35	3	7	2	10	13	3.66	4.64
Ete	25	1	3	1	14	6	3.84	5.43
Ikot Abasi Town	30	2	2	1	23	2	3.70	9.51
Mkpanak	25	0	2	1	8	14	4.36	5.92
Ukpenekang	35	1	2	3	17	12	4.06	7.11
Inua Eyet Ikot	30	8	5	2	10	5	2.97	3.08
Amadaka	20	5	2	1	9	3	3.15	3.16
Okoroette	25	3	3	2	7	5	3.40	2.00
Iko	25	3	0	1	13	8	3.92	5.43
Uda	20	2	1	1	5	11	4.10	4.24
Enwang	15	1	3	2	4	5	3.60	1.58
Ebughu	15	1	2	2	9	1	3.47	3.39
Udesi	10	1	0	1	5	3	3.90	2.00
Eyulor	15	0	0	1	6	8	4.47	3.74
Eweme	15	1	1	5	5	3	3.53	2.00
Ebughu Esuk Oron	10	0	0	1	3	6	4.50	2.55
Oron Town	19	4	2	3	5	5	3.26	1.30
Eyo Abasi	15	1	4	5	3	2	3.07	1.58
Total	**379**	37	39	35	156	112	66.95	68.67
Average Mean	**21.06**	2.06	2.17	1.94	8.67	6.22	3.72	3.82

Source: Field Data (2025)

Table 4.7: Causes of Flooding in Respondents' Community

Community	Number of Questionnaire Administered	Excessive rainfall	Over flow of rivers and sea tides	Overflow of water from the ocean bank	Sea level rise	Coastal erosion	Mean	Standard Deviation
Okopedi	35	10	7	2	10	6	2.86	3.32
Ete	25	6	3	1	9	6	3.24	3.08
Ikot Abasi Town	30	7	8	1	12	2	2.80	4.53
Mkpanak	25	6	2	1	8	8	3.40	3.32
Ukpenekang	35	4	9	3	7	12	3.40	3.67
Inua Eyet Ikot	30	8	5	2	10	5	2.97	3.08
Amadaka	20	5	2	1	9	3	3.15	3.16
Okoroette	25	3	3	2	7	5	3.40	2.00
Iko	25	3	0	3	11	8	3.84	4.42
Uda	20	2	1	1	5	11	4.10	4.24
Enwang	15	1	3	2	4	5	3.60	1.58
Ebughu	15	1	2	2	9	1	3.47	3.39
Udesi	10	1	0	1	5	3	3.90	2.00
Eyulor	15	0	0	1	6	8	4.47	3.74
Eweme	15	1	1	5	5	3	3.53	2.00
Ebughu Esuk Oron	10	0	0	1	3	6	4.50	2.55
Oron Town	19	4	2	3	5	5	3.26	1.30
Eyo Abasi	15	1	4	5	3	2	3.07	1.58
Total	**379**	63	52	37	128	99	62.95	52.97
Average Mean	**21.06**	3.50	2.89	2.06	7.11	5.50	3.50	2.94

Source: Field Data (2025)

Table 4.8: Level of Flooding Respondents' Experiences

Community	Number of Questionnaire Administered	No flood	Seasonal flood	Flash flood	Coastal flood	Catastrophic	Mean	Standard Deviation
Okopedi	35	2	7	3	10	13	3.71	4.64
Ete	25	1	3	1	9	11	4.04	4.69
Ikot Abasi Town	30	2	8	1	12	7	3.47	4.53
Mkpanak	25	6	2	1	8	8	3.40	3.32
Ukpenekang	35	4	9	3	7	12	3.40	3.67
Inua Eyet Ikot	30	1	5	2	10	12	3.90	4.85
Amadaka	20	5	2	1	9	3	3.15	3.16
Okoroette	25	3	3	2	7	5	3.40	2.00
Iko	25	3	0	3	11	8	3.84	4.42
Uda	20	2	1	1	5	11	4.10	4.24
Enwang	15	1	3	2	4	5	3.60	1.58
Ebughu	15	1	2	2	9	1	3.47	3.39
Udesi	10	1	0	1	5	3	3.90	2.00
Eyulor	15	0	0	1	6	8	4.47	3.74
Eweme	15	1	1	5	5	3	3.53	2.00
Ebughu	10	0	0	1	3	6	4.50	2.55
Oron Town	19	4	2	3	5	5	3.26	1.30
Eyo Abasi	15	1	4	5	3	2	3.07	1.58
Total	**379**	38	52	38	128	123	66.21	57.66
Average Mean	**21.06**	2.11	2.89	2.11	7.11	6.83	3.68	3.20

Source: Field Data (2025)

Table 4.9: Socio-ecological Issues associated with coastal flood

Community	Number of Questionnaire Administered	Displacement of Fishermen	Displacement of Business Ventures	Low Catch	Distortion of Employment	Decrease in Agricultural Yield	Mean	Standard Deviation
Okopedi	35	2	1	3	14	15	4.11	6.89
Ete	25	0	3	1	9	12	4.20	5.24
Ikot Abasi Town	30	2	8	1	12	7	3.47	4.53
Mkpanak	25	0	2	2	8	13	4.28	5.39
Ukpenekang	35	4	2	3	14	12	3.80	5.57
Inua Eyet Ikot	30	1	5	2	7	15	4.00	5.57
Amadaka	20	1	2	1	9	7	3.95	3.74
Okoroette	25	3	3	2	7	5	3.40	2.00
Iko	25	3	0	3	11	8	3.84	4.42
Uda	20	2	1	1	5	11	4.10	4.24
Enwang	15	1	3	2	4	5	3.60	1.58
Ebughu	15	1	2	2	9	1	3.47	3.39
Udesi	10	1	2	1	3	3	3.50	1.00
Eyulor	15	3	0	1	6	5	3.67	2.55
Eweme	15	1	1	5	5	3	3.53	2.00
Ebughu Esuk Oron	10	2	1	2	3	2	3.20	0.71
Oron Town	19	1	2	3	5	8	3.89	2.77
Eyo Abasi	15	1	4	5	3	2	3.07	1.58
Total	**379**	29	42	40	134	134	67.08	63.17
Average Mean		1.61	2.33	2.22	7.44	7.44	3.73	3.51

Source: Field Data (2025)

Table 4.10: Type of Property Lost

Community	Number of Questionnaire Administered	Loss of lives and Properties	Displacement of homes	Loss of livestock	Destruction of fishing equipment	Loss of crops	Mean	Standard Deviation
Okopedi	35	2	1	3	14	15	4.11	6.89
Ete	25	0	3	1	9	12	4.20	5.24
Ikot Abasi Town	30	2	8	1	12	7	3.47	4.53
Mkpanak	25	0	2	2	8	13	4.28	5.39
Ukpenekang	35	4	2	3	14	12	3.80	5.57
Inua Eyet Ikot	30	1	5	2	7	15	4.00	5.57
Amadaka	20	1	2	1	9	7	3.95	3.74
Okoroette	25	3	3	2	7	5	3.40	2.00
Iko	25	3	0	3	11	8	3.84	4.42
Uda	20	2	1	1	5	11	4.10	4.24
Enwang	15	1	3	2	4	5	3.60	1.58
Ebughu	15	1	2	2	9	1	3.47	3.39
Udesi	10	1	2	1	3	3	3.50	1.00
Eyulor	15	1	0	1	6	7	4.20	3.24
Eweme	15	1	1	5	5	3	3.53	2.00
Ebughu Esuk Oron	10	2	1	2	3	2	3.20	0.71
Oron Town	19	1	2	3	5	8	3.89	2.77
Eyo Abasi	15	0	4	5	4	2	3.27	2.00
Total	**379**	26	42	40	135	136	67.81	64.28
Average Mean	**21.06**	1.44	2.33	2.22	7.50	7.56	3.77	3.57

Source: Field Data (2025)

Table 4.11: Effect of Flooding on Access to Basic Amenities

Community	Number of Questionnaire Administered	Destruction of roads	Damage to markets	Obstruction/destruction of school buidings	Damage to houses	Obstruction or destruction of health facilities	Mean	Standard Deviation
Okopedi	35	2	1	3	11	18	4.20	7.31
Ete	25	0	3	1	9	12	4.20	5.24
Ikot Abasi Town	30	2	8	1	5	14	3.70	5.24
Mkpanak	25	0	2	2	8	13	4.28	5.39
Ukpenekang	35	4	2	3	14	12	3.80	5.57
Inua Eyet Ikot	30	1	5	2	7	15	4.00	5.57
Amadaka	20	1	2	1	9	7	3.95	3.74
Okoroette	25	3	3	2	7	5	3.40	2.00
Iko	25	3	0	3	11	8	3.84	4.42
Uda	20	2	1	1	5	11	4.10	4.24
Enwang	15	1	3	2	4	5	3.60	1.58
Ebughu	15	1	2	2	9	1	3.47	3.39
Udesi	10	1	2	1	3	3	3.50	1.00
Eyulor	15	1	0	1	6	7	4.20	3.24
Eweme	15	1	1	5	5	3	3.53	2.00
Ebughu Esuk Oron	10	2	1	2	3	2	3.20	0.71
Oron Town	19	1	2	3	5	8	3.89	2.77
Eyo Abasi	15	0	4	5	4	2	3.27	2.00
Total	**379**	26	42	40	125	146	68.13	65.42
Average Mean	**21.06**	1.44	2.33	2.22	6.94	8.11	3.79	3.63

Source: Field Data (2025)

Findings as revealed in Table 4.1 to 4.5 shown the demographic characteristics of respondents. The study investigated gender distribution across eighteen communities, as detailed in Table 4.1. A total of 379 questionnaires were administered. Among the respondents, 223 were male and 156 were female. The number of respondents across all communities was a total of 58.8% males and 41.2 % females.

The study equally investigated the marital status of respondents across several communities, as detailed in Table 4.2 A total of 379 questionnaires were administered. From the analysis of marital status of respondent, it shows that 24.5% of the respondent sampled were single, 23,5% were married, 29.8% were divorced, and 22.2% were widow/widower.

For the educational status of respondents across eighteen communities that was surveyed, with a total of 379 questionnaires administered. A total of 113 sampled respondents representing 29.8% had primary education possessing FSLC, 93 respondents representing 24.5% had secondary education with SSCE qualification, 89 respondents or 23.5% had tertiary education either HND or BSc while 84 respondents representing 22.2% of the total respondents had never been to school.

Table 4.3 entitled " Occupational Status of Sampled Respondents," shows the occupational distribution across various communities. Main occupation of the people in the area shows that people in the area that are fishermen made up of 39.3% of the population, traders 23.7%, farmers 21.1%, miners 5.3% and civil servants 10.6%. Base on this, the area is mostly dominated by fishermen. Across all 379 administered questionnaires, there were a total of 149 fishing, 20 mining, 90 trading, 80 farming, and 40 civil servant respondents.

The age distribution of the 379 respondents across the 18 sampled communities revealed a varied demographic. The Age bracket shows that, people within 20 - 29years, made up 21.1% of total respondents, those in 30 - 39years made up roughly 36.9% constituting 140 individual being the largest proportion of participants and 70 people within 40 - 49years made up 18.5%, those in 50 - 59yrs made up 15.8% and people who were 60 and above made up 12.5% (29 respondents). This shows that people within 29 - 39 years dominated the area.

When considering income, about 130 respondents earned below N30,000 monthly and they made up a total of 34.3%, 89 respondents of 23.5% earned between N30,000 and N50,000, 114 respondents had monthly incomes ranging from N51,000 to N100,000, and 46 respondents who made up of 12.1% earned N100,000 and above.

The study also revealed that lumbering and agricultural activities were the most frequently reported human activities contributing to flooding (see Table 6). Across all communities, 156 respondents identified lumbering as a cause, while 112 pointed to agricultural activities. For instance, in Ikot Abasi Town, a high of 23 respondents implicated lumbering, and Okopedi saw 13 respondents attribute flooding to agricultural activities. Conversely, road construction (35 respondents) and digging of trenches (37 respondents) were cited least often. The average mean across all activities was 3.72, indicating that these human interventions collectively played a significant role in flooding incidents, with lumbering consistently demonstrating the highest individual impact across various settlements like Mkpanak (8 respondents) and Ukpenekang (17 respondents), where it was a prominent factor.

By considering natural causes of coastal flood, it was revealed that respondents attributed flooding to a variety of factors in their communities (see Table 7). Overall, sea level rise was identified as the most prevalent cause, with 128 responses, followed closely by seasonal flood at 99 responses. Excessive rainfall also played a significant role, garnering 63 responses, while overflow of rivers and sea tides accounted for 52 responses. The least cited cause of flooding was the release of water from dams, with only 37 mentions. Analysis of the average means across communities further solidified this, with sea level rise registering the highest mean of 7.11, and coastal erosion at 5.50, indicating their widespread perceived importance. This comprehensive assessment provided crucial insights into the varied, yet predominantly sea-related, perceived drivers of flooding across the respondent communities.

The survey on flooding experiences across 18 communities, involving 379 respondents, indicated a high prevalence of severe to catastrophic flooding (see Table 8). Overall, 128 respondents reported experiencing Severe flooding, and 123 reported Catastrophic levels, representing the dominant categories.

Fig 2: Low elevation of coastal environment

Fig 3: Lumbering: Human-triggered coastal flood

The combined responses for these two highest severity levels accounted for approximately 66% of all reported experiences. The overall average mean flood experience was 3.68 (on a scale likely peaking at 5 for catastrophic), confirming a significant perceived impact. Communities like Eyulor (mean 4.47) and Ebughu (mean 4.50 for the smaller sample) recorded the highest average severity, indicating extremely challenging conditions. Conversely, Eyo Abasi (mean 3.07) and Amadaka (mean 3.15) reported comparatively lower, though still significant, mean flood levels. This spatial assessment underscored widespread and often extreme flooding challenges across the diverse communities surveyed.

Fig 4: Land cover change in coastal environment

On the basis of the effect of flooding on source of livelihood, it was revealed that across the 18 communities, there was serious distortion of employment and a decrease in agricultural yield, affecting up to134 respondents in total. Still in the fishing settlements, low catch impacted 40 individuals, while 42 business ventures and 29 fishermen were displaced across the communities. Okopedi, Ukpenekang, and Inua Eyet Ikot showed high numbers of employment distortion (14 respondents each), alongside significant decreases in agricultural yield (15 in Okopedi and Inua Eyet Ikot, 12 in Ukpenekang). Mkpanak also reported a high decrease in agricultural yield with 13 affected.

Table 4.11 revealed the devastating impact of flooding on various communities, based on 379 questionnaires. The most prevalent losses were crops (136 cases) and fishing equipment (135 cases), significantly outweighing losses of lives and properties (26), displacement of homes (42), and livestock (40). Okopedi and Ukpenekang reported the highest number of fishing equipment lost, with 14 each, while Okopedi and Inua Eyet Ikot recorded the highest crop losses, at 15. The data clearly showed the multifaceted nature of property loss, with significant variations across communities, highlighting widespread disruption to livelihoods and substantial human costs incurred due to coastal flooding.

Moreover, the study investigated the effect of flooding on access to basic amenities across 18 communities, with 379 questionnaires administered. Analysis revealed that damage to houses (totaling 125 reports) and obstruction or destruction of health facilities (totaling 146 reports) were the most prevalent impacts, signifying a severe threat to residents' wellbeing. Damage to markets (42 reports) and obstruction/destruction of school buildings (40 reports) also significantly hampered daily life and education. While less frequent, destruction of roads (26 reports) still contributed to accessibility issues. Communities like Okopedi, Ete, Mkpanak, and Eyulor showed higher mean scores (around 4.20 and 4.28) for amenity disruption, indicating more pronounced effects compared to communities like Ebughu Esuk Oron (3.20) and Eyo Abasi (3.27). Overall, the findings clearly demonstrated that flooding considerably impedes access to critical services, profoundly affecting community functionality and livability.

CONCLUSION

Coastal communities in Akwa Ibom State, including Ikot Abasi, Eastern Obolo, Ibeno, Mbo, Udung Uko, and Oron, face severe and frequent flooding primarily driven by heavy rainfall, river overflow, rising sea levels, and poor drainage infrastructure, as mapped by the University of Uyo's GIS unit in 2025. These floods significantly impact livelihoods, with fishing and farming being the most affected sectors, leading to displacement, property loss (crops, homes, lives), and health issues like contaminated drinking water.

Given the significant link between human activities and flood occurrences, we recommend that appropriate measures be put on ground to stem the level of it occurrence in Nigeria. Specifically, that government should ensure that environmental management policies are properly enforced in the country. Development control activities should be taken seriously to avoid the erection of developments on flood plains and flood prone areas. Finally, regular environmental education should be given priority in the society. It was suggested that government should implement comprehensive community-level educational

programs and stricter enforcement of environmental regulations to curb practices like deforestation, indiscriminate waste disposal, mining, sand dredging and unauthorized construction that exacerbate flooding.

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