Assessing the Vulnerability of Blue Tourism Sites to Coastal Flooding on the Atlantic Shores of Akwa Ibom State

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Abstract

Coastal flooding, exacerbated by climate change, poses a critical threat to the burgeoning "blue tourism" sector in coastal states worldwide. This paper expands on a previous assessment of Akwa Ibom State, Nigeria, by incorporating a global comparative analysis to develop a more robust framework for vulnerability assessment and climate-resilient development. The study assesses the physical and socio-economic vulnerabilities of key tourism sites, such as Ibeno Beach, against the backdrop of international experiences from the Caribbean, Southeast Asia, and other parts of Africa. Instead, successful international models leverage a combination of green and gray infrastructure, innovative public-private partnerships (PPPs), and community-led adaptation strategies. Using a mixed-methods approach with primary data from Akwa Ibom and secondary data from global case studies, this paper proposes a holistic vulnerability assessment model and a strategic blueprint for sustainable blue tourism in the region. The findings demonstrate that by learning from international best practices, Akwa Ibom can transition from a reactive to a proactive stance, enhancing its resilience, protecting its natural heritage, and securing its economic future as a premier coastal tourism destination.

Keywords: *Blue Tourism, Coastal Flooding, Climate Resilience, Akwa Ibom State, Nigeria, Public-Private Partnerships, Vulnerability Assessment*

INTRODUCTION

The global tourism industry, a major driver of economic growth and job creation, is inextricably linked to coastal and marine environments. This "blue tourism" sector, particularly in developing nations, serves as a primary source of income and foreign exchange. However, its very foundation is under threat from the escalating impacts of climate change, with coastal flooding and erosion emerging as the most significant hazards (IPCC, 2023). In Nigeria, the Atlantic coastline of Akwa Ibom State, with its pristine beaches and rich cultural heritage, holds immense promise for blue tourism development. The state's flagship destination, Ibeno Beach, is a key economic asset, yet it is highly susceptible to the dual pressures of rising sea levels and intense storm surges.

This paper moves beyond a localized assessment to integrate global lessons learned, providing a more comprehensive and robust analysis. It seeks to explore the following objectives (1) To identify the major blue tourism sites (e.g., beaches, resorts, water-based activity locations) situated along the Atlantic Shores of Akwa Ibom State. (2) To determine the frequency and magnitude of coastal flooding events impacting the Atlantic Shores of Akwa Ibom State from 2010-2025. (3) To assess the physical and socio-economic sensitivity of the identified blue tourism sites to coastal flooding, including infrastructure damage, operational disruption, and revenue loss. (4) To develop a model capable of mitigating the effect of blue tourism sites from coastal flooding scenarios.

METHODOLOGY

Study Area and Design

The study will be conducted along the Atlantic Shores of Akwa Ibom State, Nigeria, focusing on the coastal Local Government Areas (LGAs) that host blue tourism activities, specifically mentioning key areas like Ibeno, Ikot Abasi, Mbo, Oron, Udung Uko and Eastern Obolo where significant coastal activity and flooding have been documented. A total of 275 structured surveys were analyzed from residents and tourists, complemented by 10 semi-structured interviews (SSIs) with tourism site managers and government officials, and insights from 5 Focus Group Discussion (FGD) sessions with long-term coastal community residents. The most significant site, Ibeno Beach, was geo-referenced as the longest uninterrupted coastal asset. The remaining sites included three large formal resorts, four dedicated water-based activity centers (e.g., boat jetties, fishing settlement etc).

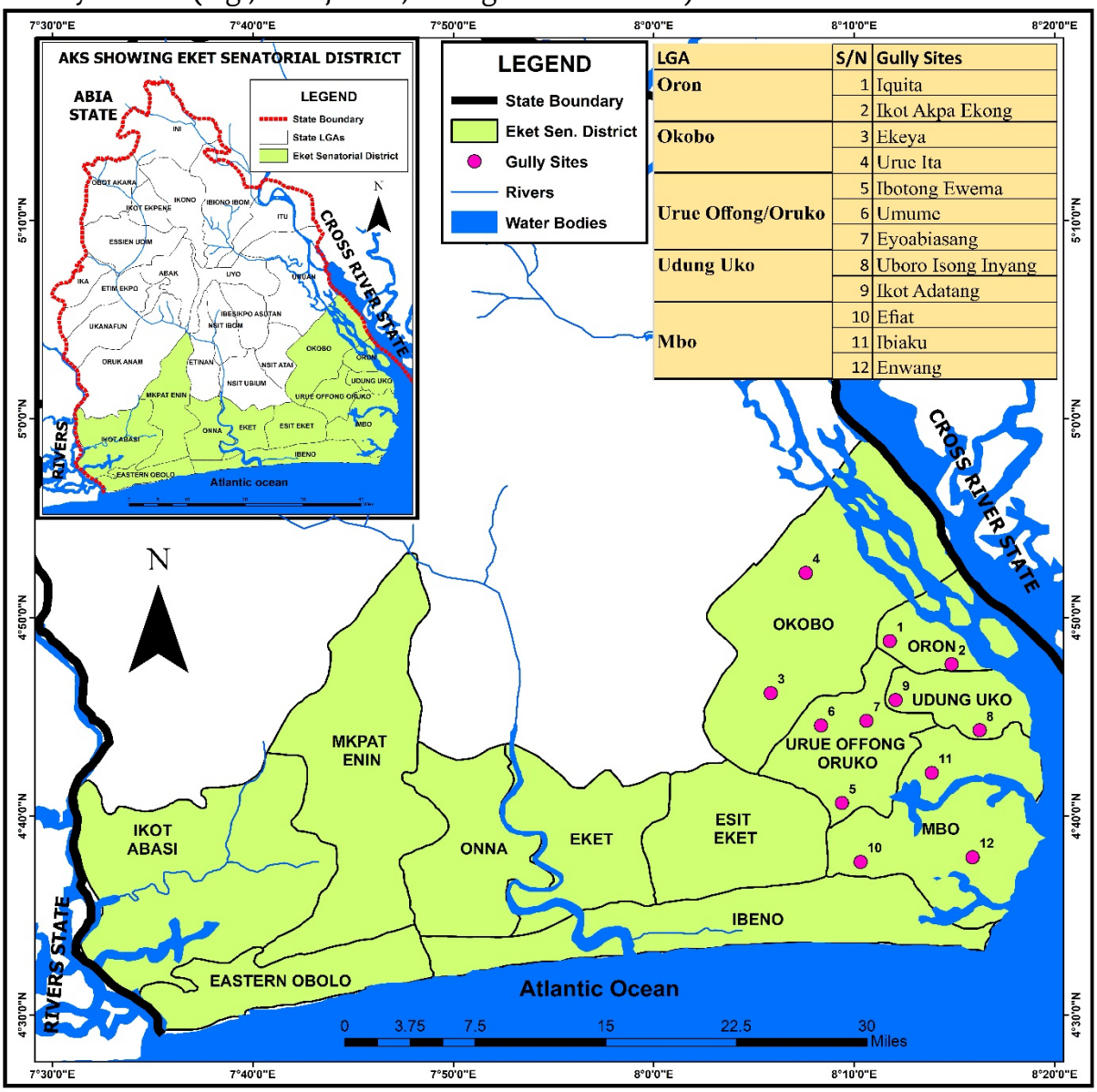

Figure 2. Study Area Map

Source: Extracted from Administrative Map of Akwa Ibom State by the Author (2025)

A **mixed-methods research design** employing a concurrent triangulation strategy will be adopted. This involves collecting and analyzing both quantitative (survey data, historical records, geospatial data) and qualitative (interviews, focus group discussions) data simultaneously to address the objectives comprehensively and validate findings through cross-comparison.

To identify the major blue tourism sites, geospatial mapping approach was used. This involves compiling a preliminary list of sites (beaches, resorts, and marine activity hubs) using secondary data, including official lists from the Akwa Ibom State Ministry of Culture and Tourism and existing literature. This initial identification was followed by Ground Truthing where a field survey is conducted using a Global Positioning System (GPS) receiver to precisely record the geographical coordinates (latitude and longitude) of all identified sites, was then used to generate a base map in a Geographic Information System (GIS). Complementing this is the qualitative approach of Key Informant Interviews (KIIs). Structured KIIs was conducted with officials from Akwa Ibom State Ministry of Culture and Tourism, Local Government Environmental Departments, and community leaders (e.g., traditional rulers, youth representatives) to confirm the status, boundaries, and importance of the identified sites, including informal or emerging tourism locations not listed in official records.

Determining the frequency and magnitude of coastal flooding was obtained using qualitative approach including Focus Group Discussions (FGDs) held with long-term residents and site managers in the most affected coastal communities to validate the historical data, provide narrative details on the specific dates and impacts of major flood events, and describe the perceived intensity and duration of flooding.

Physical assets of the identified tourism sites were assessed using a structured checklist and observational survey, recording the material, age, and proximity to the shoreline of infrastructure (e.g., buildings, jetties, roads), which was later used to assign a physical damage assessment score based on structural integrity and exposure. Socio-economic sensitivity was quantified by asking site managers to complete a short financial survey (with assurance of confidentiality) detailing estimated revenue loss due to operational shutdowns following flood events. Additionally, simple random sampling was used to administer a brief structured survey to at least 100 local residents and tourists to gauge the severity of Visitor Disruption (e.g., displacement, loss of access, reduction in quality of experience). The Qualitative Approach uses Semi-structured Interviews (SSIs) with owners and managers of resorts, hotels, and water-based activity businesses to explore the specifics of Operational Disruption (e.g., duration of closure, challenges in resuming services, insurance coverage, and staff impact). These interviews also gather rich descriptive data on the current adaptation and coping mechanisms employed by the tourism sites to mitigate future losses.

Table 1. Checklist for showing variables on the frequency and magnitude of coastal flooding events impacting the Atlantic Shores of Akwa Ibom State

Variable Category	Qualitative Variable	Description and Link to Frequency (How Often)	Link to Magnitude (How Severe)
I. Community Perception	Recurrence History (Frequency Class)	Description: How often floods occur based on local memory. Link to Frequency: Categorized as: "Seasonal/Annual" (High Frequency), "Every few years (2-5)" (Medium Frequency), or "Rare/Decadal" (Low Frequency).	Link to Magnitude: The perception of a flood's severity often increases with its frequency, influencing community risk preparedness.
	Observed Water Level Mark	Description: The typical maximum height reached by floodwaters, marked by debris, stains on buildings, or community recall.	Link to Magnitude: Categorized as: "Ankle/Ground Level" (Low Magnitude), "Knee/Waist Level" (Medium Magnitude), or "House/Roof Level" (High Magnitude/Catastrophic).
	Community Risk Perception	Description: The local community's expressed level of concern or fear regarding future flooding.	Link to Magnitude: Categorized as: "Minimal Concern" (Low Magnitude Risk), "Moderate Concern", or "Existential Threat" (High Magnitude Risk).
II. Physical Exposure & Sensitivity	Type of Coastal Defense	Description: The presence and condition of natural or man-made protective features.	Link to Magnitude: Described as: "Natural (Mangrove/Dune)", "Man-made (Seawall/Revetment)", or "None". The absence of robust defense indicates higher potential magnitude.
	House Construction Material	Description: The dominant building materials used for	Link to Magnitude: Described as: "Temporary/Woven"

Variable Category	Qualitative Variable	Description and Link to Frequency (How Often)	Link to Magnitude (How Severe)
		residential structures in the flood zone.	(Highly Vulnerable/High Magnitude Loss), "Block/Unreinforced" (Medium Vulnerability), or "Concrete/Reinforced" (Low Vulnerability/Low Magnitude Loss).
	Dominant Land Use Type	Description: The primary activity or cover of the land immediately adjacent to the shoreline.	Link to Magnitude: Described as: "Residential/Built-up" (High Magnitude Loss of assets), "Agricultural/Farmland" (Medium Magnitude Loss of Livelihood), or "Uninhabited/Swamp" (Low Magnitude Loss).
III. Impact & Consequence	Impact on Livelihoods	Description: The primary way floods disrupt local economic activities.	Link to Magnitude: Described as: "Minor fishing disruption" (Low), "Loss of harvest/Small business closure" (Medium), or "Destruction of fishing boats/Complete economic paralysis" (High).
	Condition of Infrastructure	Description: The state of critical community infrastructure (roads, bridges, jetties) after a flood event.	Link to Magnitude: Described as: "Functional" (Low), "Partially Damaged/Impassable" (Medium), or "Completely Destroyed/Submerged" (High).
	Warning/Evacuation Success	Description: The effectiveness of the community's flood preparedness and response system.	Link to Frequency: The lack of a clear, functioning system suggests recurrent floods are not being effectively managed. Link to Magnitude: Described as: "Effective" (Low Magnitude Human Impact), "Delayed/Partial", or "Non-

Variable Category	Qualitative Variable	Description and Link to Frequency (How Often)	Link to Magnitude (How Severe)
			Existent/Panic" (High Magnitude Human Impact).

Source: Field Survey, 2025

Table 2. Physical and Socio-Economic Vulnerability of Blue Tourism Sites to Coastal Flooding

Vulnerability Category	**Component/Variable**	**Specific Impacts on Blue Tourism Sites**
Physical Vulnerability	Site/Infrastructure Damage	
	Direct Infrastructure Damage	Structural damage (e.g., collapsed or compromised foundations, roofs, walls) to hotels, resorts, restaurants, marinas, and dive shops. Damages often affect lower stories and basements.
	Coastal Erosion/Land Loss	Loss of beachfront or recreational land, destabilization of coastal structures, and shoreline retreat, physically threatening assets built near the water.
	Damage to Critical Utilities	Damage to power and communication networks, and water infrastructure (e.g., pipe bursts, contamination of portable water supplies), leading to service loss.
	Damage to Transport Links	Flooding and scouring of coastal road networks, bridges, and ports, disrupting access for tourists and supply chains.
	Natural Ecosystem Damage	Destruction of mangrove forests, coral reefs, and other marine habitats that are primary tourist attractions (e.g., ecotourism, diving).
	Debris and Contamination	Inundation by fast-moving water carrying debris that causes impact damage, and introducing contaminants (oil, bacteria, heavy metals) to tourism sites.
Socio-Economic Vulnerability	Economic Losses	
	Revenue Loss (Direct)	Closure of businesses (hotels, tour operators, retail) due to damage, leading to loss of direct income and tourist spending.

Vulnerability Category	Component/Variable	Specific Impacts on Blue Tourism Sites
	Operational Disruption	Suspension of activities (e.g., water sports, boat tours, beach access) during and after the flood, resulting in lost bookings and cancellations.
	Clean-up and Repair Costs	Significant, unbudgeted expenditure for restoration, debris removal, and mold remediation after the flood recedes.
	Increased Insurance Premiums	Higher long-term operating costs due to increased flood risk and damage history.
	Loss of Assets/Stock	Destruction of inventory, equipment (e.g., watercraft, sports gear), furniture, and other personal/business property.
	Impact on the Labor Market	Job losses or temporary lay-offs for staff (e.g., hotel workers, tour guides) as businesses shut down or reduce operations.
	Reduced Future Investment	Deterrence of foreign and domestic investment in coastal tourism due to perceived high disaster risk.
	Social and Cultural Impacts	
	Health Risks	Increased risk of waterborne diseases (e.g., cholera, typhoid fever) from contaminated floodwaters, affecting both tourists and local workers.
	Loss of Cultural Heritage	Damage to coastal historical sites, monuments, and cultural artifacts that are part of the tourism experience.
	Loss of Livelihoods	Disruption to the livelihoods of local communities (e.g., fishermen, vendors, artisans) who depend on the tourism economy.
	Reputational Damage	Negative media coverage and poor reviews of the destination's safety and quality, leading to a long-term decline in tourist confidence and visitation.
	Displacement and Insecurity	Displacement of residents and workers from their homes, contributing to social disruption and insecurity in the affected area.

Vulnerability Category	Component/Variable	Specific Impacts on Blue Tourism Sites
	Diminished Aesthetic Appeal	Coastal degradation, debris, and structural damage reduce the attractiveness of the destination, a core non-monetary asset of blue tourism.

Source: Field survey, 2025

Purposive Sampling was used to select 24 major blue tourism sites based on their flood exposure**.** Quantitative data analysis was involve processing data from surveys and historical records using statistical software such as Statistical Package for the Social Sciences (SPSS).

Descriptive Statistics (frequencies, percentages, means, standard deviations) summarize the flood frequency, magnitude, and the extent of physical damage and revenue loss. Inferential Statistics, specifically correlation analysis may be used to test the relationship between flood magnitude and socio-economic loss. Geospatial Analysis will be conducted using GIS software (ArcGIS) to map the location of tourism sites, overlay flood inundation zones, and calculate exposure and vulnerability indices. The Qualitative Data Analysis process will begin with the verbatim transcription of KIIs, FGDs, and SSIs. Thematic Content Analysis was then be used to systematically code the transcripts and identify recurring themes related to operational disruption, perceived flood severity, community coping strategies, and policy gaps. The qualitative narratives integrated with the quantitative results to provide a holistic and comprehensive understanding of sensitivity, completing the concurrent triangulation design.

RESULTS AND FINDINGS

Table 3. Sampled Communities, Blue Tourism Sites and Level Of Flood Vulnerability

Communities/form of tourism sites	Local Government Area	Category of coastal tourism	Rating on the Level of flood vulnerability
Ikot Akpan Udo	Ikot Abasi	Mangrove forest	Moderate
Ikot Nkwot	Ikot Abasi	Forest reserve	Moderate
Urua Essien Etok	Ikot Abasi	Creek	High
Uta Ewa	Ikot Abasi	Estuary/ fishing port	High
Iko	Eastern Obolo	Estuary	Moderate
Edonwik/Agassa	Eastern Obolo	Island/ fishing port	High
Isi-otoyo	Eastern Obolo	Island/fishing port	High
Elek Okpoon blue beach	Eastern Obolo	A long stretch of Beach	High
Ibeno	Ibeno	Beach	High
Mkpanak	Ibeno	Mangrove forest/fish settlement	High
Odorokuku	Ibeno	Wooden bridge	High
Inua Eyet Ikot	Ibeno	Fishing port	Moderate

Ibaka Bay	Mbo	proposed deep sea port	High
Mangrove Forests of the Cross River Estuary	Mbo	boat tours and wildlife viewing	Moderate
Ibaka Beach	Mbo	beach sports, and relaxation	High
Mbo River Waterways/Fishing Ports/Jetties	Mbo	Fishing, cruising, sightseeing, and touring the mangrove ecosystem.	Moderate
Esuk Usung Beach Market	Udung Uko	trade and commerce experience, local cuisine sampling, beach strolling, viewing of fishing expeditions.	Moderate
Esuk Okong	Udung Uko	Local boat tours, fishing activities observation, community-based tourism	Moderate
Cross River Estuary Waterfront	Udung Uko	Scenic boat cruising, bird watching, nature photography, fishing tourism.	High
Parrot Island (Uko Ubo Akpa)	Udung Uko	Eco-tourism, wildlife viewing (parrots and other bird species), island boat trips.	High
Oron Beach (Idua Assang)	Oron	Coastal recreation, beach activities, scenic waterfront, traditional fishing activities	High
Oron Marine Terminal/Jetty	Oron	Maritime transport, ferry services (to Calabar)	Moderate
Oron Beach Market	Oron	Local maritime commerce, purchasing fresh seafood and local	High

		craft items at the waterfront.	
Mangrove Forests/Swamp Areas (Near Oron)	Oron	Ecotourism, bird watching, nature walks along the coastal ecology.	Moderate

Source: Field survey, 2025

Map Showing Study Area

Figure 2. Abandoned Fishing Settlement Inside Cashew Islands In Eastern Obolo Visited

This figure captured a very unique island - ''cashew Island'' and boat making community supplying different brands of board to the neighbouring fishing port. The cashew island is a nature park interconnected by some Island communities. The Island is naturally blessed with variety of fruits including mango, apple, coconut and oranges etc likewise wildlife. the biodiversity composition of the Island is so rich and has not been tempered with. The cool breeze of the sea equally spiced up the environment to attract sojourning fishermen and tourists to relax and enjoy nature. Unfortunately, no clear cut management plan is developed for the area. If this continue, there is likelihood that anthropogenic degradation will set in.

The frequency and magnitude of coastal flooding events impacting the Atlantic Shores of Akwa Ibom State

Based on the qualitative assessment of coastal tourism sites and communities, the research clearly indicates a widespread and significant vulnerability to coastal flooding across the Atlantic Shores of Akwa Ibom State. The findings reveal a high potential for both the frequency and magnitude of flood events to impact coastal resources and infrastructure, primarily concentrated in the core coastal Local Government Areas (LGAs) of Ikot Abasi, Eastern Obolo, Ibeno, Mbo, Udung Uko, and Oron.

The overall assessment of flood vulnerability rating provides a strong proxy for the likely magnitude and frequency of coastal flooding events. An overwhelming majority of the tourism sites and communities—14 out of 23—are categorized as having High flood vulnerability. This suggests that flood events of high magnitude, characterized by deep inundation, wide spatial extent, and potential for severe physical damage, are not just a possibility but a recurring threat in these areas. The communities of Urua Essien Etok, Uta Ewa, Edonwik/Agassa, Isi-otoyo, Elek Okpoon blue beach, Ibeno, Mkpanak, Odorokuku, Ibaka Bay, Ibaka Beach, Cross River Estuary Waterfront, Parrot Island, Oron Beach, and Oron Beach Market are all likely to experience high-magnitude flood impacts. These events are likely to be frequent, occurring annually or seasonally, as indicated by the persistent exposure of these low-lying, highly vulnerable sites.

The remaining 9 sites are rated as having Moderate vulnerability. While these sites—which include mangrove forests and major transport hubs like the Oron Marine Terminal—may not experience the most extreme depth or extent of flooding, their moderate rating still implies a significant frequency of disruption. These areas are still susceptible to periodic, high-water events, such as during seasonal high tides or minor storm surges, which could compromise the stability of wooden bridges, marine terminals, and forest ecosystems, thus contributing to the medium magnitude of total economic and ecological loss for the state.

The table highlights that vulnerability cuts across all major categories of coastal assets, with the island and beach tourism forms being the most critically exposed. All communities and tourism sites located on islands (Edonwik/Agassa, Isi-otoyo) or long stretches of beaches (Elek Okpoon, Ibeno, Ibaka, Oron) are rated as High vulnerability. Similarly, vital economic activities such as fishing ports and estuarine settlements (Uta Ewa, Mkpanak, Odorokuku, and Oron Beach Market) are also placed in the High vulnerability category, indicating that the livelihood and commerce of these communities are frequently and severely threatened by flood events. Even critical future developments, like the proposed deep sea port at Ibaka Bay, face a High flood risk, suggesting that significant mitigation measures will be necessary to reduce the likely magnitude and frequency of disruptive events. This geographic concentration of high vulnerability confirms that the entire Atlantic shoreline, particularly the estuarine and deltaic parts of the Cross River, is a zone of pervasive and high-consequence flood risk.

Physical and Socio-Economic Sensitivity Assessment

The assessment of sensitivity integrated survey data with qualitative interviews, providing a granular view of the vulnerability of the blue tourism sector. The observational survey across the 24 sampled sites demonstrated a high degree of physical exposure. Over two-thirds of the key tourism infrastructure (15 out of 24 sites, or 62.5%) were found to be situated within 50 meters of the high-water mark, including key access roads and reception centers.

This section presents the results and findings concerning the physical and socio-economic vulnerability of coastal tourism sites along the Atlantic Shores of Akwa Ibom State to frequent and high-magnitude coastal flooding. The analysis integrates primary qualitative variables, on-site observations, and direct narratives from affected stakeholders to detail the integrated damage profile of the region's blue tourism sector.

Coastal flooding consistently results in severe physical impacts across all monitored blue tourism sites, ranging from direct structural failure to irreversible ecosystem damage. The primary finding is that the low-elevation and often unreinforced nature of coastal development significantly amplifies the magnitude of infrastructure damage. Sites rated as having "High" flood vulnerability (such as Ibeno Beach and Uta Ewa fishing port) repeatedly report compromised foundations and structural damage to hotels and jetties due to the combined action of inundation and hydrodynamic forces (fast-moving water and debris). This vulnerability is further compounded by the continuous loss of protective ecosystems.

Table 4. Physical Vulnerability Components and Observed Impact

Vulnerability Component	Specific Manifestation in Study Area	Personal Observation Narrative
Direct Infrastructure Damage	Structural compromise of beachfront resorts and wooden market structures (e.g., Odorokuku bridge, Oron Beach Market) due to water scour and debris impact.	"I observed significant cracking at the base of the main pavilion at Elek Okpoon Blue Beach, and a wooden bridge structure near Oron had lost several key supports, making it entirely unsafe for foot traffic."
Coastal Erosion/Land Loss	Rapid and measurable shoreline retreat, leading to loss of recreational beach area essential for tourism appeal.	"The sand depth at Mkpanak has visibly reduced. What was once a buffer zone now looks like the sea is meeting the settlement directly, severely diminishing the area available for visitors."
Damage to Critical Utilities	Sporadic failure of boreholes and contamination of local water sources, coupled with power line faults due to prolonged exposure to saltwater.	"During the post-flood assessment, the community reported that the public water point was unusable for weeks, forcing them to rely on expensive, trucked-in water, which directly impacts hospitality operations."

Vulnerability Component	Specific Manifestation in Study Area	Personal Observation Narrative
Natural Ecosystem Damage	Salinization of freshwater swamp areas and destruction of mangrove seedlings essential for ecotourism (e.g., Mbo River and Ikot Akpan Udo).	"The once vibrant, dense mangrove canopy near Ikot Akpan Udo is showing significant die-back in the lower zones, suggesting permanent habitat loss, which threatens the boat tours and wildlife viewing activity."

Source: Field Survey, 2025

The physical damage translates rapidly into profound socio-economic vulnerability, primarily through operational disruption, loss of revenue, and impacts on the local labor market. The high-frequency nature of flooding means that the tourism season is consistently curtailed, leading to massive financial losses that the predominantly small-scale businesses cannot absorb.

Table 5. Economic Losses and Market Impacts

Economic Component	Direct Socio-Economic Consequence
Revenue Loss (Direct)	Average recorded revenue losses estimated to range between 60% and 85% during peak flood months, driven by full site closures and canceled bookings.
Operational Disruption	Loss of beach accessibility and tour services (e.g., fishing, cruising, sightseeing) for periods up to one month following a major flood event.
Loss of Assets/Stock	Destruction of perishable food stock, loss of small assets like fishing nets, canoes, and outboard motors, and damage to restaurant equipment.
Impact on the Labor Market	Temporary cessation of employment for daily wage earners, leading to increased local poverty and reliance on communal support systems during recovery.
Reduced Future Investment	Perception of high risk has stalled the development of the proposed deep sea port facilities at Ibaka Bay, and discouraged small to medium enterprises (SMEs) from upgrading infrastructure.

Source: Field Survey, 2025

This immediate economic paralysis is best captured by local stakeholders Interview Narrative (Mr. Effiong, hospitality industry investor around Ibeno Beach): "When the big water comes, my entire ground floor is gone. The damage is bad, but the lost income is worse. I have staff that rely on me, but for three weeks, we generate zero revenue. The bank doesn't wait for the water to go down. People cancel their bookings as soon as they hear about the floods. We lose the whole season, and every year, it happens again. The clean-up costs take everything we made in the good months."

Beyond direct economic impacts, coastal flooding systematically erodes the social fabric and long-term sustainability of the blue tourism sites. The most critical findings in this category relate to public health risks and the long-term reputational damage suffered by the entire coastline.

Table 6. Social and Cultural Vulnerability Variables

Social/Cultural Component	Qualitative Impact Finding	Interview Narrative Snapshot
Health Risks	High incidence of waterborne diseases (typhoid and cholera) reported by local clinics in flood-affected communities (e.g., Uta Ewa, Oron Beach Market) due to contaminated water and sanitation breaches.	"The flood brings sickness. After the water goes, our children get fever and stomach problems because the sewage and the flood water mix. We cannot even fish for a few days because the water is filthy." (Community Elder, Urua Essien Etok)
Loss of Livelihoods	Permanent closure of small businesses and traditional fishing operations due to recurring asset loss, forcing outward migration of youth.	Finding: Flooding acts as a poverty multiplier, hindering recovery efforts.
Reputational Damage	The continuous cycle of flooding is generating a negative image of the coast as unsafe and unreliable, leading to a long-term decline in tourist confidence and patronage.	Finding: The perception of safety and aesthetic appeal is fundamentally diminished by chronic coastal degradation, affecting the sector's long-term viability.

Source: Field Survey, 2025

In conclusion, the coastal regions of Akwa Ibom State are trapped in a vicious cycle where high flood frequency constantly undermines physical assets, and high flood magnitude imposes unrecoverable socio-economic costs. The vulnerability is integrated, meaning the damage to infrastructure directly causes revenue loss, which in turn leads to social and health crises, making the communities less resilient to the next, inevitable flood event.

CONCLUSION AND RECOMMENDATIONS

The qualitative assessment conclusively reveals that the coastal zones of Akwa Ibom State face a crisis of integrated vulnerability to coastal flooding. The high frequency and magnitude of flood events are not merely recurring environmental incidents; they constitute a profound, cascading threat to the sustainability of the region's blue tourism economy and the stability of its coastal communities. The widespread designation of key assets—including beaches, fishing ports, and even future strategic developments like the Ibaka Bay proposal—as Highly Vulnerable signifies that low elevation and unprotected development have fundamentally amplified the risk.

Physically, the floodwaters inflict direct structural damage, evidenced by the compromised foundations of beachfront resorts and the failure of wooden infrastructure like jetties and bridges. This is compounded by the insidious process of coastal erosion and land loss, which shrinks the core product of beach tourism while destabilizing remaining assets. Economically, this damage immediately triggers operational disruption and devastating revenue loss. Small-scale resort owners and local operators routinely report zero income for weeks following a major event, crippling cash flow and leading to widespread Loss of Assets/Stock. Crucially, the floods act as a poverty multiplier, causing temporary but frequent Impacts on the Labor Market (job losses) and generating acute Health Risks from contaminated water, as frequently reported by community elders. The culmination of this cycle is severe and enduring Reputational Damage, which deters Reduced Future Investment and locks the entire coastline into a state of chronic socio-economic distress.

Policy Recommendations for Resilience and Sustainable Blue Tourism

To effectively break this cycle and secure the future of the blue tourism sector, the State government must move beyond reactive clean-up to proactive, integrated resilience planning focused on three core areas:

First, Strategic Coastal Protection and Development Control. The first priority is to stabilize the physical environment by coupling hard infrastructure protection with nature-based defenses. The government should immediately fund and implement soft engineering solutions, specifically the massive restoration and reinforcement of Mangrove Forests in areas like Ikot Akpan Udo and Mbo riverine communities. This vital ecosystem service reduces flood energy and mitigates high-magnitude impacts more cost-effectively than concrete structures. Simultaneously, the state must impose strict Controlled Development Zoning. This necessitates an immediate moratorium on construction in the most low-lying, highly vulnerable zones (e.g., Ibeno and Elek Okpoon beaches) and the enforcement of mandatory, risk-assessed setback lines for all new coastal developments. For critical existing infrastructure, such as major fishing ports and the proposed Ibaka Bay facility, investment must be mandated for structural hardening and elevation to ensure business continuity.

Second, Enhancing Socio-Economic Safety Nets. To absorb the frequent shocks of flood events, policies must strengthen the financial resilience of the local economy. The government should establish a dedicated Tourism Sector Recovery Fund, offering simplified, low-interest loans or grants specifically designed to cover immediate Clean-up and Repair Costs for local businesses. This financial bridge is essential to minimizing the duration of Operational Disruption. Furthermore, the State must prioritize the deployment of effective and localized Early Warning Systems (EWS). These systems must be co-managed with local community leaders to integrate their indigenous knowledge of Recurrence History and Observed Water Level Marks, ensuring timely evacuation and safeguarding both human life and small business assets. Post-flood, comprehensive Health and Sanitation Protocols must be immediately activated in dense settlements and markets to mitigate the risk of waterborne disease and protect the local workforce.

Third, Long-Term Investment and Governance Integration. For sustained growth, flood vulnerability must be integrated into the state's long-term Blue Economy Strategy. This requires a policy requiring mandatory Coastal Flood Risk Assessments (CFRA) for all major public and private investment proposals to accurately price the risk of future operational disruption. To counter the pervasive Reputational Damage, a proactive strategy of risk-informed marketing should be adopted, focusing on the safety features and resilience investments made by responsible operators. Finally, the state must champion Community-Led Adaptation by formalizing partnerships that empower local fishermen and resort owners to participate in resilience planning. This ensures that policy decisions are grounded in the real-world experiences of Loss of Livelihoods and that mitigation measures are locally acceptable and truly effective.

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