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INDIGENOUS KNOWLEDGE AND FLOOD ADAPTATION IN ANAMBRA STATE

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Abstract

Flooding remains a major challenge in Anambra State, Nigeria, due to its proximity to the Niger River. Seasonal floods displaced communities, destroy infrastructure, and threatened food security. The study evaluated the effectiveness of indigenous knowledge in achieving flood adaptation with the objective of drawing insights from a similar case study conducted in Palembang, Indonesia. The study adopted a qualitative research method. Purposive and Snowball sampling techniques were used to select participants with firsthand experience of recurring flood events and to reach hidden or marginalized knowledge holders in the study area. Primary data were collected via semi-structured interview and focus group discussions, and complemented with a review of government policy papers, previous academic studies, NGO reports, and historical flood records in Anambra State. The study identified six (6) themes: traditional flood prediction, adaptive housing, resilient agriculture, community-based response, declining indigenous knowledge, and institutional disconnect, as indicators for comparing with a similar case study in Palembang, Indonesia. Findings show that local communities used environmental cues like river behaviour, bird migration, and cloud formations to predict floods methods similar to those in Palembang. Traditional stilt houses made of mud and bamboo, and flood-resistant farming practices using yam and cassava, were common but declining due to urbanization and policy neglect. Social structures such as women's groups and elders played essential roles in flood response, though these too were weakening. The study recommended the integration of Indigenous and Local Knowledge (ILK) with modern flood risk management policies for a sustainable flood adaptation strategy in Anambra State.

Keywords: Community Resilience, Flood Adaptation, Flood Risk Management, Indigenous Knowledge Systems, Traditional Ecological Knowledge

1.0 INTRODUCTION

Flooding is one of the most recurrent and devastating environmental challenges faced by communities in Anambra State, Nigeria. Anambra State situates along the banks of the Niger River and its tributaries, experiences seasonal flooding that results in the displacement of thousands, destruction of farmlands, loss of

livelihoods, and significant economic setbacks (Nwafor, 2020). The increasing frequency and intensity of floods, largely attributed to climate change and environmental degradation, have intensified the vulnerability of flood-prone communities (IPCC, 2021). Despite the presence of modern flood management strategies, indigenous knowledge systems have played a critical role in enhancing resilience and enabling local populations to adapt to these recurring disasters.

Indigenous knowledge, the unique body of knowledge, practices and beliefs developed by indigenous communities often transmitted through generations, encompasses a wealth of traditional strategies designed to mitigate flood impacts. These practices are based on a deep understanding of local ecosystems, climate patterns, and hydrological cycles, making them uniquely suited to the specific conditions of flood-prone regions (Ajibade, Sulaimon & Oduwole, 2013). The study area employed indigenous knowledge on flood adaptation strategies developed through years of experience and environmental interaction such as; traditional elevated housing structures, locally referred to as mud stilt houses, allow residents to continue living in flooded environments without major disruptions, cultivation of flood-resistant crops such as yam and cassava, to help mitigate the adverse effects of flooding (Ifeanyi-Obi & Etuk, 2019). They also rely on natural indicators such as cloud formations, river tides, and bird migration patterns to predict impending floods (Ezenwaji, Nwosu & Okafor, 2016). Despite the effectiveness of these indigenous strategies, the study area continues to face increasing challenges of flood vulnerability due to modernisation and urbanisation; environmental changes; rapid infrastructural developments and deforestation disrupting traditional water flow patterns, exacerbating the severity of flooding (Nwosu & Okeke, 2021); and negligence of indigenous knowledge in flood risk management policies, favouring Western-centric approaches which may not always be suitable for local contexts (Olajide, 2020). As a result, many communities within the study area that have historically relied on traditional adaptation methods now find themselves more vulnerable to flood disasters.

This study aims to evaluate the effectiveness of indigenous knowledge in achieving flood adaptation with the objective of drawing insights from a similar case study conducted in Palembang, Indonesia, along the Musi River (Hapsari & Hardayani, 2022). In Palembang, indigenous communities have historically relied on adaptive strategies such as the construction of stilt houses (rumah panggung), floating houses (rumah rakit), and community-based flood response mechanisms to mitigate flood impacts. In the light of the above, the study aims to analyse the indigenous flood adaptation strategies, assessing their effectiveness, limitations, and potential for integration with modern flood adaptation approaches for an inclusive and community-driven solutions to flood challenges in the study area. By drawing comparisons with the case study from Palembang, Indonesia, this research seeks to highlight the strengths of indigenous knowledge in flood adaptation and management, and draw valuable insights that can inform sustainable flood adaptation strategies and frameworks in the study area.

1.2 Aim and Objectives

The aim of this research is to evaluate the effectiveness of indigenous knowledge in achieving flood adaptation in the study area. The specific objectives to actualise the aim include to:

- i. Identify the indicators for evaluating the effectiveness of indigenous knowledge in achieving flood adaptation in the study area;
- ii. Review and draw insights from similar case studies conducted in Palembang, and Indonesia
- iii. Conduct a comparative analysis of both case studies for a hybrid, context-sensitive flood adaptation framework.

2.0 MATERIALS AND METHODS

2.1 The Study Area

Anambra state is made up of twenty-one (21) Local Government Areas (LGAs) aggregated into seven (7) LGAs per Senatorial District, totalling three Senatorial Districts of Anambra North, Anambra South and Anambra Central. Out of the twenty-one (21) LGAs, the study area which is made up of six (6) LGAs (Ogbaru, Anambra East, Anambra West, Onitsha North, Onitsha South and Ayamelum), is among the vulnerable flood prone LGAs in Anambra State. The study area is located between Latitude 05° 45' 0" and 06° 45' 0" North of Equator and Longitude 06° 36' 0" and 07° 12' 0" East of Meridian (See Figure 1). It is bounded on the East by Oyi, Idemili North, Idemili South, Ekwusigo, Nnewi South and Ihiala Local Government Areas in Anambra State. On the West by the Niger River and its tributaries; on the North lies Ibaji Local Government in Kogi State and Uzo-Uwani Local Government in Enugu State; on the South are the Oguta Local Government in Imo State and Ogba/Egbe Local Government in Rivers State respectively. It covers land area of approximately 2129.875 Sq.km with the highest and lowest elevation at 184meters and 9meters respectively (See Figure 2).

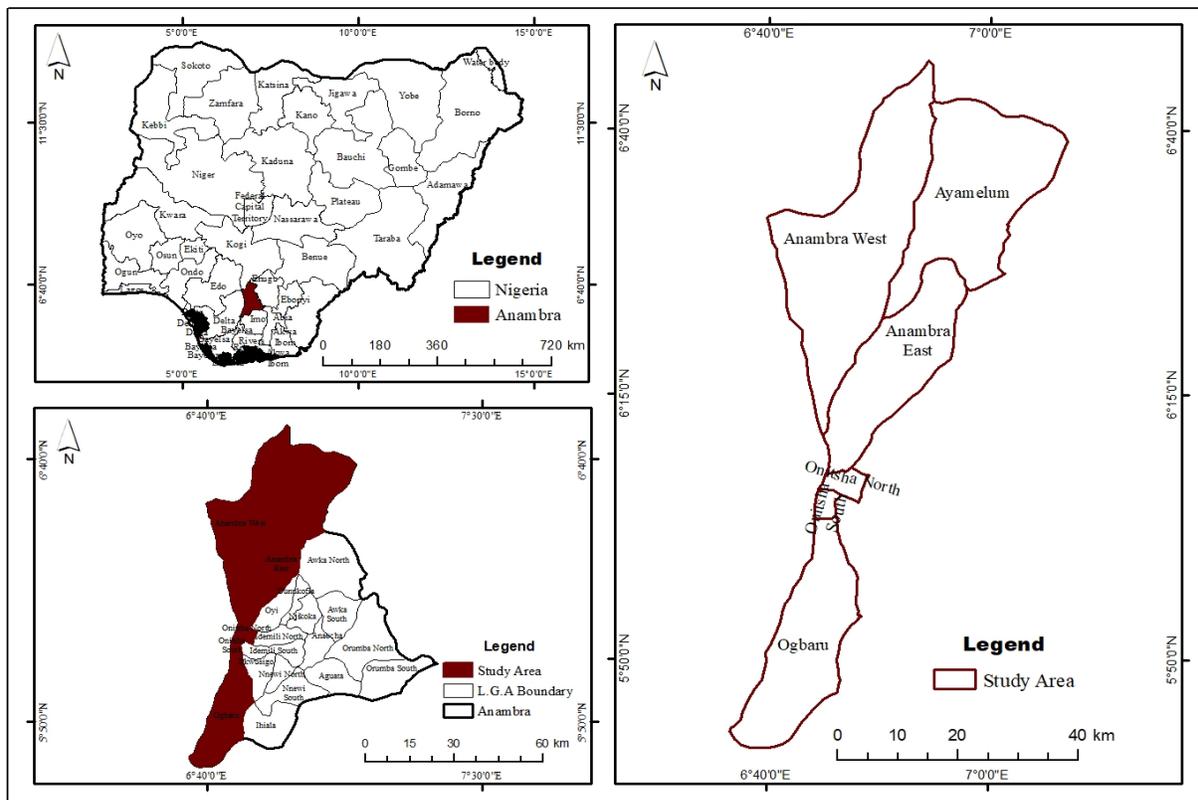


Figure 1: Location Map of the Study Area

Source: Digitized ArcGIS Desktop (2025)

2.2 Methodology

The study adopted a qualitative case study approach to explore the role of indigenous knowledge in enhancing flood resilience in Anambra State, Nigeria. The qualitative method was selected for its strength in capturing

rich, contextual and experiential data particularly relevant when examining community-based knowledge systems and local adaptation strategies (Creswell, 2013). Through this approach, the study aimed to document and analyse traditional flood mitigation practices, assess their effectiveness and identify opportunities for integration with modern flood risk management (FRM) techniques.

To draw broader insights and comparative lessons, the study also employed a comparative case study design by drawing on findings from a similar context Palembang, and Indonesia specifically the indigenous communities along the Musi River. This comparative analysis enabled a cross-cultural evaluation of indigenous adaptation strategies in flood-prone regions and provided a basis for developing a hybrid, context-sensitive resilience framework.

Data were gathered using several qualitative tools: semi-structured interviews were conducted with local elders, farmers, traditional leaders, and community members in selected flood-prone communities in Anambra State such as Ogbaru, Anambra East, Anambra West, Onitsha North, Onitsha South, and Ayamelum. Focus group discussions (FGDs) were held to collect narratives of flood history, prediction methods, and indigenous coping mechanisms. Participant observation was used to document physical adaptation features such as stilt houses, local drainage systems, and flood-resistant farming practices. A review of relevant documents including government policy papers, previous academic studies, NGO reports, and historical flood records in Anambra State was conducted.

Purposive sampling was used to select participants with relevant local knowledge or firsthand experience of recurring flood events. Snowball sampling was also employed to identify and reach hidden or marginalized knowledge holders within the communities.

The collected data were analysed using thematic analysis, which allowed for the identification, organization, and interpretation of patterns and themes related to indigenous flood adaptation practices. Interview and FGD transcripts were coded using qualitative analysis software of NVivo to ensure methodological rigor. Emergent themes were categorized under key aspects such as flood prediction, housing adaptations, agricultural practices, community mobilization, and integration challenges. Insights from the Palembang case study was then used for comparative thematic synthesis to identify parallels and divergences between the two contexts, ultimately informing policy and practice recommendations for Anambra State.

The qualitative case study method proved well-suited for exploring complex social phenomena such as indigenous knowledge systems, which are deeply embedded in cultural and environmental contexts (Yin, 2018). By combining this with comparative analysis, the study not only illuminated local solutions but also contextualized them within broader global practices, thereby enhancing the transferability and relevance of the findings.

3.0 LITERATURE REVIEW

Flood risk management and climate adaptation in flood-prone regions increasingly recognise the value of Indigenous and Local Knowledge (ILK) and Traditional Ecological Knowledge (TEK) as vital tools for community resilience. Two significant studies by Vogt, Vogl, Mulkey, Gordon, & Alves (2016) and Bwambale, Muhumuza, and Nyeko (2019) provide insight into how localised knowledge systems are used to understand and respond to evolving flood patterns in distinct geographic and cultural contexts. Vogt et al. (2016) explored how ILK assists smallholder farmer-fishers, known as Caboclos, in the Amazon Delta in

Brazil to adapt to changing hydro-climatic conditions. The study focused on the process of incremental adaptation (PIA), where communities respond to environmental variability through gradual, rather than radical, shifts in land and resource-use systems. Employing a 30-year ethnographic approach including semi-structured interviews, transect walks, surveys, historical flood reconstructions, and multi-temporal landscape mapping, the researchers gathered extensive data on how ILK enables adaptation. Their findings suggest that ILK is the most valuable asset for Caboclos, facilitating adaptive land use and enhancing agro-diversity and agro biodiversity in response to shifting flood patterns. The study highlights a “tradition of change,” a cultural tendency to accommodate environmental variability through continuous, small-scale adaptations. Despite the strength of ILK, the authors note that increasing flood unpredictability challenges traditional systems, necessitating ongoing learning and adaptation.

Similarly, Bwambale, Muhumuza, and Nyeko (2019) examine the role of TEK in flood risk management (FRM) among the Bakonzo people in Uganda’s Rwenzori Mountains. Their qualitative case study centres on the Nyamwamba watershed, an area historically vulnerable to flash floods. The researchers conducted semi-structured interviews with ten elders, individuals aged 50 and above, who possess rich, firsthand experience with local flood patterns and traditional practices. The study documented several traditional ecological approaches (TEAs), such as Eri’hera (an individual cleansing ritual), Eri’honga (a communal cleansing ritual), and the strategic planting of indigenous vegetation along riverbanks to reduce soil erosion and flood risks. These practices reflect an intimate relationship between spiritual, ecological, and practical dimensions of local environmental management. The study also revealed a significant decline in the use of TEAs. Factors contributing to this include the spread of Christianity, which reframed traditional practices as pagan; institutional constraints, such as restricted access to sacred lands following the establishment of national parks; and the failure to transmit TEK to younger generations due to the passing of elders and a lack of cultural continuity. Despite these challenges, the authors argue that integrating TEK into modern FRM strategies could strengthen community-based resilience, particularly by aligning scientific methods with indigenous insights.

Both studies underscore the adaptability embedded within local knowledge systems and the cultural mechanisms that support environmental responsiveness. Vogt et al. (2016) demonstrate how ILK enables systemic yet incremental adaptations rooted in daily land use, while Bwambale et al. (2019) stressed the ritual and ecological dimensions of TEK as both predictive and preventive tools for flood risk. A key theme across both contexts is that while ILK and TEK are inherently adaptive, their sustainability is contingent upon intergenerational transmission and recognition within broader policy frameworks. These findings highlight the importance of preserving and integrating traditional knowledge in contemporary climate adaptation and disaster risk reduction strategies.

Abdullahi, Abdussalam, and Odeh (2022), in their study titled Assessment of Indigenous Knowledge of Flood Risk Reduction in Guyuk Local Government Area, Adamawa State, Nigeria, provide a comprehensive evaluation of local indigenous practices for flood mitigation. The study, published in the Journal of Agricultural Economics, Environment and Social Sciences, investigates the extent to which TEK is applied in Guyuk LGA, Nigeria. The researchers employed a survey research design using purposive random sampling to collect data from 380 residents of flood-prone areas, including Guyuk, Banjiram, and Dukul. Findings from the study revealed that the educational background of respondents significantly influenced the adoption of indigenous flood mitigation practices. Common methods identified included the digging of trenches and the construction of drainage channels around residential areas to facilitate the flow of water.

Notably, many community members regarded flooding as a natural phenomenon and perceived its management as the exclusive responsibility of the government. This perception has contributed to limited community participation in proactive flood mitigation efforts. The study also reported that floods occur annually during the rainy season, particularly affecting settlements along floodplains. Adverse consequences included destruction of property and livelihoods, increased cost of living, and outbreaks of waterborne diseases due to contaminated water supplies. The researchers identified a critical disconnect between TEK and formal government-led flood management systems. While the community harbors valuable knowledge, its exclusion from official frameworks hinders a comprehensive and inclusive approach to disaster risk reduction. Abdullahi et al. (2022) advocate for several strategies to bridge this gap: fostering community education and sensitization programs, developing integrated drainage systems, and discouraging construction in flood-prone areas.

Similarly, Ahmad (2019), in his article *The Role of Indigenous Knowledge in Managing Floods Projects* published in the *Advances in Social Sciences Research Journal*, examines the application of TEK in flood management within Khursheed village, District Sargodha, Pakistan. This region is frequently impacted by floods, and the study aimed to document indigenous flood prediction and response practices. A qualitative research approach was adopted, involving three focus group discussions and thirty in-depth interviews with local community members. This methodology allowed for a rich understanding of localised strategies and their cultural underpinnings. The study identified several indigenous practices that significantly enhance community resilience to floods. These include traditional flood forecasting based on environmental signals, resilient construction techniques, adaptive agricultural methods, and spiritual coping mechanisms that reinforce psychological preparedness. However, the study also highlights the marginalization of TEK within official disaster management policies. The disconnect between local and institutional practices limits the effectiveness of national flood response strategies.

Both studies converge on key recommendations that highlight the necessity of integrating TEK into formal disaster risk management. They stress collaborative efforts between policymakers, scientists, and local communities to institutionalise TEK. Furthermore, they advocate for educational initiatives to preserve and transmit traditional knowledge across generations. Identifying the cultural dimensions of disaster risk management not only enhances resilience but also ensures that policies are grounded in the lived realities of vulnerable populations. In conclusion, the literature clearly indicates that indigenous knowledge systems offer valuable tools for community-based flood management. Integrating these practices into modern frameworks can promote a more holistic, inclusive, and sustainable approach to disaster risk reduction. Acknowledging and revitalizing TEK strengthens local capacity and fosters ownership in resilience-building processes, particularly in flood-prone regions.

4.0 RESULTS AND DISCUSSIONS

The findings from this study are presented thematically based on data collected across the six flood-prone LGAs in Anambra State; Ogbaru, Anambra East, Anambra West, Onitsha North, Onitsha South and Ayamelum (Figure 2). Themes were derived from repeated patterns identified in interviews, focus group discussions, field observations, and documents. Comparative insights from Palembang, and Indonesia, are interwoven to provide additional context and highlight both similarities and differences in indigenous flood adaptation practices, Table 1, for comparative synthesis.

A) Flood Prediction and Early Warning Systems

One of the most prominent themes that emerged from interviews and focus group discussions across all the LGAs under study was the reliance on environmental cues as flood early warning signals. Participants consistently reported that local residents, particularly elders, utilise a variety of natural indicators rooted in traditional ecological knowledge to predict imminent flooding events. Among the most cited indicators were changes in the colour and velocity of the Niger River, which flows through and alongside many of these communities. In both Ogbaru, Anambra East and Anambra West, elders noted that when the river water turns a dark muddy brown earlier than usual and its current accelerates, it signals that heavy upstream rains have occurred and that floodwaters are likely to arrive soon. *“When the river turns muddy too early and flows faster than usual, we know the floods are near,” explained a 68-year-old farmer in Ogbaru. “It’s a message from the river. We’ve learned to listen.”*

Similarly, unusual bird migration patterns were also perceived as indicators. Participants in Ayamelum, Onitsha North and Onitsha South stated that sudden movements of birds inland from their usual wetlands habitats often preceded the arrival of floodwaters. Such behaviour is interpreted as birds instinctively avoiding inundated areas. Another intriguing and widely shared practice involved observing the behaviour of ants and termites. Elders in Ayamelum, in particular, inferred that when certain species of ants begin relocating their nests to elevated grounds or walls, it is considered a strong warning sign of approaching floods. According to one village elder, *“The ants know before we do. They begin to climb, and that tells us we must prepare.”*

However, residents in Ogbaru mentioned fish migration patterns, noting that increased activity or movement of specific fish species toward shallower waters or smaller tributaries could indicate rising water levels in the main river channel. Cloudy sky formations and changes in wind direction were also cited as natural signs frequently used by farmers and fishermen to forecast heavy rainfall and potential flooding. These predictive practices are not random superstitions, but rather represent a systematic body of localised knowledge that has developed through decades and in many cases centuries of close interaction with the natural environment. The use of multiple, corroborating signs add to the credibility and perceived reliability of these indigenous methods.

Similar flood prediction systems have been documented in Palembang, Indonesia, where communities along the Musi River rely on traditional calendars, rainfall patterns, river turbidity, and celestial cues like moon phases to anticipate flooding (Hapsari & Hardayani, 2022). These methods closely parallel those in Anambra, demonstrating the universal value of Traditional Ecological Knowledge (TEK) in flood prediction. In both regions, TEK enables proactive actions such as securing homes, storing food, and organising community responses despite the lack of formal meteorological tools. However, the continuity of this knowledge is at risk due to the increasing reliance on digital forecasts, which are often not locally accurate, and the reduced role of elders in community planning.

B) Housing and Physical Adaptation Techniques

Participant observation in Anambra West, Anambra East and Ayamelum revealed that traditional flood-adaptive housing techniques, particularly mud stilt houses, remain in use especially among older generations. Built from local materials like mud, raffia palm, and bamboo, these elevated structures rise two to four feet above ground level, protecting living areas from floodwaters and allowing residents to remain in place during inundation. These homes mirror flood-resilient practices in Palembang, Indonesia, where rumah panggung stilt houses and rumah rakit floating homes, were used to adapt to rising waters (Hapsari & Hardayani, 2022).

However, in the study area, the adoption of these techniques is in decline due to increasing urbanisation and a growing preference for cement-block houses, which, though seen as modern and durable, are more vulnerable to flooding. Modern development policies often disregard traditional architectural knowledge, contributing to a loss of indigenous resilience strategies. In contrast, Palembang communities have preserved and supported their adaptive housing methods through local government and NGO engagement.



Plate 1: A Model Revitalised Traditional Buildings

Source: Google (2025)

Revitalising traditional building techniques through hybrid models that integrate indigenous and modern engineering could enhance structural flood resilience and preserve valuable cultural practices in the study area, Plate 1.

C) Agricultural Adaptation Practices

In flood-prone LGAs such as Ogbaru, Anambra East, Anambra West, and Ayamelum, local farmers have adopted adaptive agricultural practices in response to increasingly unpredictable flooding. A key strategy is shifting planting seasons to align with flood cycles, often delaying cultivation until waters recede to avoid crop loss. To enhance resilience, farmers grow flood-resistant tubers like yam, cassava, and cocoyam on elevated mounds to improve drainage. Communal plots are sometimes reserved for emergency post-flood farming.

Meanwhile, indigenous flood-resilient plants play a vital role, Plate 2. Species such as Elephant grass (Achara), Waterleaf ‘Mgbolodi’ Fluted pumpkin ‘Ugu’, and African breadfruit ‘Ukwa’ help reduce erosion, improve soil retention, and provide flood-tolerant food sources. These practices reflect similar adaptations found in Palembang and Indonesia, including elevated farming beds and floating gardens, highlighting the value of indigenous knowledge in climate resilience.



Plate 2: Typical Indigenous Flood-Resilient Plants in the Study Area

Source: fieldwork (2025)

However, these systems face threats from changing flood patterns, land degradation, and lack of institutional support. Strengthening traditional methods while integrating modern tools like climate-resilient crops and digital forecasting will be crucial for sustainable agriculture in Anambra State.

D) Community-Based Response and Collective Memory

Strong social networks emerged as a central pillar of community-based flood resilience across all the study locations in Anambra State. Elders, traditional rulers, and community heads serve as trusted sources of information, often acting as the first to interpret environmental signals and alert others about impending floods. This grassroots communication system ensures timely warnings and fosters a collective sense of preparedness. In Anambra East, women's groups were particularly active in organizing emergency food supplies and coordinating post-flood sanitation efforts, showcasing the gendered dimensions of community resilience. Similar community structures were observed in Palembang and Indonesia, where informal neighbourhood alert systems and local response teams are mobilized once flood threats are detected. These groups often rely on long-standing social ties and mutual trust to facilitate rapid communication and resource-sharing during emergencies.

However, participants in Anambra noted that the strength of these social networks is gradually declining. Factors such as youth migration to urban areas, changing religious dynamics, and reduced communal activities have weakened traditional bonds. As a result, the reliability and effectiveness of community-based flood response efforts are at risk, underscoring the need to reinforce social cohesion as a vital component of flood resilience.

E) Perceived Challenges and Declining Indigenous Knowledge

Participants across the study area voiced deep concern over the diminishing transmission of traditional flood knowledge to younger generations. Many attributed this decline to formal education systems that prioritize Western scientific perspectives while neglecting or dismissing indigenous knowledge systems. As a result, traditional ecological insights once passed orally and through daily practice are gradually being overlooked. “Our children don’t want to learn from us. They believe only what they read in books,” lamented a traditional leader in Ogbaru, highlighting the growing disconnect between elders and youth. Government policies were also criticised for favouring external, top-down flood management strategies that rarely incorporate community-based practices. This marginalisation of indigenous knowledge not only weakens local resilience but also erodes cultural identity. Similarly, in Palembang, Indonesia, communities report that younger people are increasingly disengaged from ancestral practices due to digital distractions, modern education, and shifting value systems. These parallel experiences point to a shared global challenge: preserving and revitalizing traditional knowledge in an era dominated by modernisation and technological change.

F) Institutional Disconnect and Policy Gaps

Document analysis and interviews with local officials revealed that while community members actively use traditional methods, local government flood risk management strategies rarely incorporate indigenous knowledge. Policy documents tend to highlight engineering solutions such as embankments and dredging, with little or no reference to community-based practices. This mirrors findings from the Musi River study, where indigenous systems were also sidelined in favour of centralised, top-down disaster management strategies.

Table 1: Comparative Synthesis of the Study Area and Palembang, Indonesia

S/No	Theme	Study Area (Anambra State, Nigeria)	Palembang (Indonesia)
1	Flood Prediction	Environmental cues (river flow, clouds, animals).	Traditional calendars, sky and river observations
2	Housing Adaptation	Mud stilt houses, elevated platforms	Stilt houses (rumah panggung), floating houses (rumah rakit)
3	Agricultural Practices	Flood-resistant crops, altered planting schedules	Elevated farming beds, floating gardens
4	Community Mobilization	Informal warning systems, women's groups, elder councils	Neighbourhood watch teams, informal alert systems
5	Institutional Integration	Largely absent	Limited, with growing awareness
6	Intergenerational Knowledge Loss	High concern due to youth disengagement	Similar patterns observed

Source: *Authors Compilation (2025)*

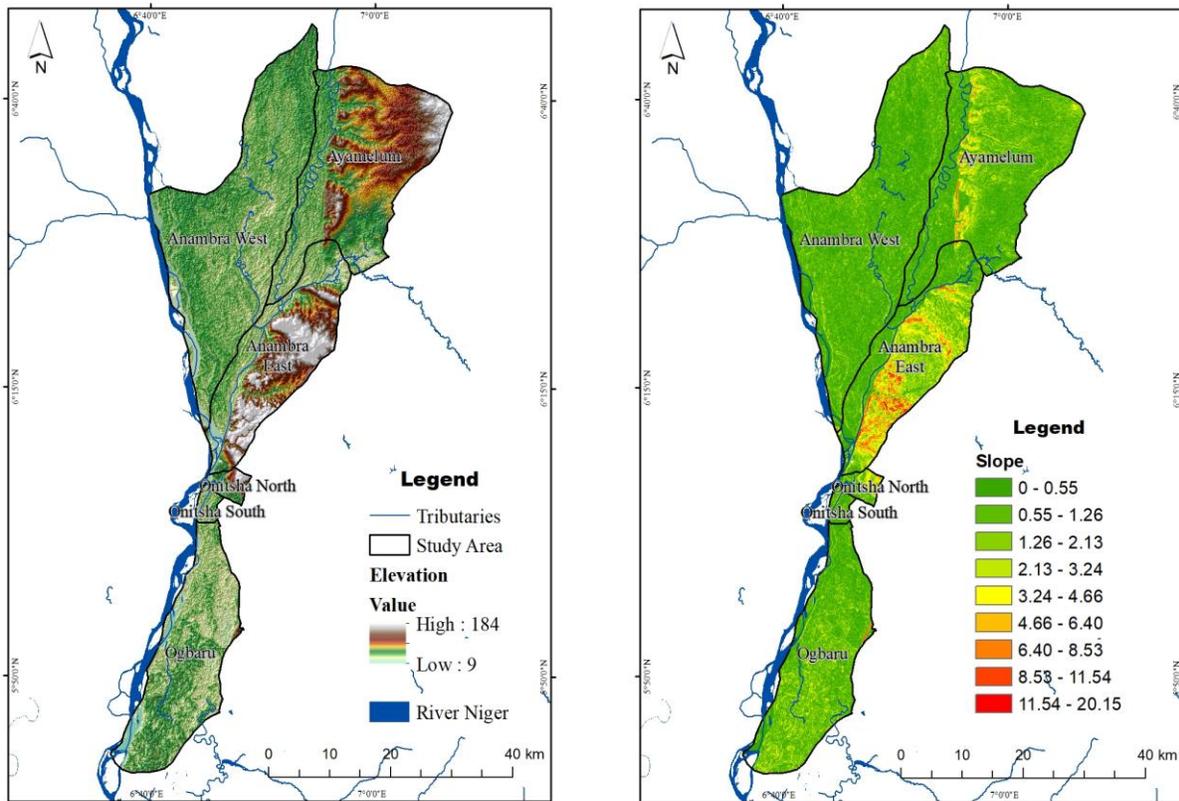


Figure 2: Elevation and Slope Analyses of the Study Area

Source: field work (2025)

5.0 RECOMMENDATIONS

The findings of this study highlight the ongoing importance of indigenous knowledge in enhancing flood resilience in Anambra State. Community-driven strategies such as the use of environmental cues for flood prediction, traditional housing adaptations like elevated buildings, and resilient agricultural practices have proven to be effective, context-specific approaches that significantly bolster local disaster preparedness and response capacity. These traditional methods are often more affordable and culturally appropriate than many modern alternatives.

However, the erosion of indigenous knowledge, particularly among younger generations, poses a substantial threat to the continuity and effectiveness of these adaptive systems. This decline is largely due to urbanisation, modernisation, and a lack of structured mechanisms for intergenerational knowledge transfer. The disconnection between elders and youth weakens community resilience and undermines the sustainability of local adaptive practices.

A comparative synthesis with Palembang, presented in Table 1, reveals similar patterns of traditional flood adaptation across both regions. Nonetheless, a critical gap persists in the formal recognition and integration of indigenous knowledge into government-led disaster management frameworks. This shortfall underscores

the need for a more inclusive, hybridised approach to flood resilience that bridges the divide between scientific and local knowledge systems.

To address this, policymakers must actively recognise and institutionalise the value of indigenous flood resilience practices. Formal disaster risk management policies should be designed to support and enhance traditional strategies while complementing them with modern techniques. Additionally, school curricula should be reformed to include local ecological knowledge and traditional environmental management practices, ensuring the younger generation is equipped with a balanced understanding of both scientific and indigenous perspectives on sustainability.

Moreover, the integration of indigenous flood prediction methods into digital technologies, such as mobile-based early warning systems and GIS mapping tools, offers a promising path forward. Embedding traditional cues and indicators within modern digital platforms can enhance the accuracy, accessibility, and community trust in early warning systems. Local governments can also play a vital role by launching public awareness campaigns and community-based engagement programs to preserve and promote these practices.

Incentivising the preservation of traditional adaptation methods such as elevated housing, community-constructed flood barriers, and nature-based solutions will require sustained investment and collaboration among governmental, educational, and civil society stakeholders. Ultimately, a synergistic model that respects and revitalises indigenous knowledge while embracing modern innovation is essential for building a flood-resilient Anambra State.

6.0 CONCLUSION

This study demonstrates that indigenous knowledge systems in Anambra State offer significant potential for flood resilience. Traditional environmental monitoring techniques, adaptive housing solutions, and agricultural practices have been shaped over generations and tailored to local flood risks. However, the decline in the transmission of this knowledge, combined with the marginalization of indigenous practices by formal flood management systems, threatens the effectiveness of these strategies in the face of increasing flood risks. By bridging the gap between traditional and modern approaches to flood management, communities can benefit from a more holistic and sustainable disaster response. Future policies should promote the integration of indigenous knowledge into formal flood risk management, ensuring that local populations are empowered to adapt to flood challenges. This approach will not only enhance flood resilience but also preserve valuable cultural knowledge for future generations, ensuring that communities can continue to thrive in the face of environmental adversity.

7.0 DECLARATION OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this research. This study was conducted independently, and no financial, personal, or professional affiliations influenced the outcomes or interpretation of the findings. All data collection, analysis, and conclusions were carried out with impartiality and transparency, adhering to ethical research practices.

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