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Climate Change and Environmental Governance in Kogi State: Assessing Flood Control Policies and Community Resilience

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Abstract

Climate change has emerged as one of the most pressing environmental challenges confronting developing societies, particularly in vulnerable regions where weak environmental governance and inadequate disaster management systems intensify the impact of natural hazards. Kogi State remains one of the most flood-prone states in the country, experiencing devastating flood disasters that have affected lives, livelihoods, infrastructure, agriculture, and socioeconomic development. This study examines climate change and environmental governance in Kogi State with emphasis on assessing flood control policies and community resilience strategies. The study adopted a qualitative document analysis method using secondary sources of data such as government reports, journal articles, policy documents, publications from environmental agencies, and relevant literature on climate governance and disaster management. Findings from the study reveal that although federal, state, and local authorities have introduced several flood control policies and environmental management initiatives, implementation has remained weak due to inadequate funding, poor coordination among agencies, corruption, insufficient public awareness, and lack of effective community participation. The study further reveals that local communities in Kogi State have developed various resilience mechanisms, including local adaptation practices, community support networks, temporary migration, and indigenous coping strategies to reduce flood vulnerability. The study recommends enhanced collaboration between government agencies, non-governmental organizations, traditional institutions, and local residents to strengthen disaster preparedness and promote long-term environmental sustainability in Kogi State.

Keywords: Climate change; environmental governance; flood control policies; community resilience

1. INTRODUCTION

Climate change has become a major global environmental and developmental challenge, affecting human security, ecosystems, and governance systems. Its impacts—such as rising temperatures, irregular rainfall, desertification, sea-level rise, and extreme weather events—have intensified environmental disasters and increased community vulnerability, particularly in developing countries. In Africa, and Nigeria in particular, these changes have resulted in droughts, flooding, erosion, and food insecurity, driven by rapid urbanisation, weak infrastructure, limited institutional capacity, and poor enforcement of environmental policies (Intergovernmental Panel on Climate Change, 2023).

In Nigeria, flooding remains one of the most severe and recurring climate-related disasters, causing widespread destruction of homes, displacement of populations, loss of agricultural land, outbreaks of waterborne diseases, and damage to infrastructure. Increasing rainfall intensity within the Niger and Benue river basins has further heightened flood risks in many communities (National Emergency Management Agency, 2024). Kogi State, located at the confluence of these rivers, is particularly vulnerable, with communities such as Lokoja, Ibaji, Bassa, Ajaokuta, and Koton Karfe repeatedly affected by devastating floods that displace residents, destroy farmlands, and disrupt livelihoods. These recurring disasters also highlight weaknesses in environmental management and disaster response systems in the state (Aladejana & Ebijuoworih, 2024).

Environmental governance refers to the institutional frameworks, policies, and processes used to manage environmental challenges and promote sustainable resource use. In Nigeria, various flood control and environmental protection measures have been introduced, including drainage construction, desilting of waterways, early warning systems, urban planning enforcement, sanitation campaigns, and interventions by agencies such as the National Emergency

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Management Agency and the Federal Ministry of Environment (Federal Ministry of Environment, 2024).

2. STATEMENT OF THE PROBLEM

Despite these interventions, flooding continues to constitute a major environmental and humanitarian problem in Kogi State. Weak implementation of environmental policies, inadequate funding, poor institutional coordination, corruption, indiscriminate waste disposal, and uncontrolled urban development have undermined effective flood management efforts in the state. In addition, insufficient ecological resources and poor disaster preparedness have reduced the ability of relevant authorities to effectively address recurring flood incidents. Human activities such as deforestation, sand excavation, and construction on natural waterways have also intensified environmental degradation and increased the vulnerability of communities to climate-related disasters (Bello et al., 2024).

As a result, community resilience has become an important aspect of climate adaptation and disaster management in flood-prone areas. Residents of affected communities in Kogi State have adopted various coping and adaptation mechanisms such as communal support systems, temporary relocation, indigenous flood management practices, and local environmental sanitation initiatives to minimize the effects of flooding. However, the success of these resilience strategies largely depends on effective government support, public enlightenment, access to resources, and inclusive environmental governance frameworks that encourage community participation in environmental decision-making processes (Nche, 2024).

This study therefore focuses on climate change and environmental governance in Kogi State with particular attention to flood control policies and community resilience. The study seeks to examine the effectiveness of existing environmental governance measures, identify the challenges affecting flood control implementation, and evaluate how local communities respond to recurring flood disasters. The significance of the study lies in its contribution to

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existing literature on climate governance, disaster management, and environmental sustainability in Nigeria, while also offering practical recommendations for improving flood management policies and strengthening community resilience in Kogi State.

3. OBJECTIVES OF THE STUDY

The general objectives of this study is to examine climate change and environmental governance in Kogi State with emphasis on assessing flood control policies and community resilience. The specific objectives are:

1. To examine the impact of climate change on the occurrence and severity of flooding in Kogi State.
2. To assess the effectiveness of environmental governance institutions and flood control policies in managing flood disasters and community vulnerability in Kogi State.
3. To investigate community vulnerability and resilience to flooding, including the role of local coping strategies and the key challenges affecting environmental governance in Kogi State.

4. CONCEPTUAL REVIEW

4.1 Climate Change

Climate change describes persistent changes in climatic conditions over an extended period, mainly resulting from human-induced activities such as deforestation, urbanization, industrial emissions, burning of fossil fuels, and unsustainable environmental practices. In Kogi State, the manifestations of climate change are increasingly visible through erratic rainfall patterns, rising temperatures, prolonged drought periods, soil erosion, and recurrent flooding, particularly in Lokoja and other communities situated around the confluence of Rivers Niger and Benue. The changing climate has intensified environmental disasters by increasing the occurrence and severity of floods, leading to the destruction of residential buildings,

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agricultural lands, transportation networks, educational facilities, and other public infrastructures (Aladejana & Ebijuoworih, 2024).

The geographical position of Kogi State significantly increases its susceptibility to climate-related disasters because the state lies within the floodplain of two major rivers. Excessive rainfall and overflowing river channels have repeatedly displaced residents, disrupted agricultural production, increased food insecurity, and exposed communities to various health and economic challenges. Recent studies indicate that climate change has heightened environmental vulnerability and flood risks across several local government areas in the state (Oyedele et al., 2022). Furthermore, since agriculture remains the dominant source of livelihood for many rural households in Kogi State, irregular rainfall and flood disasters negatively affect crop yields and food supply. Consequently, climate change has evolved into a major environmental, economic, and developmental concern that requires effective policy responses and sustainable adaptation strategies.

4.2 Environmental Governance

Environmental governance refers to the framework of institutions, policies, regulations, administrative mechanisms, and stakeholder engagements established to manage environmental resources and address ecological problems. It encompasses the collaborative efforts of government agencies, non-governmental organizations, local communities, and private sector actors in promoting environmental sustainability and protecting natural resources.

Environmental governance in Kogi State involves the formulation and implementation of policies relating to flood control, waste management, erosion prevention, urban planning, environmental awareness, and disaster risk reduction. Agencies such as the Kogi State Ministry of Environment and the National Emergency Management Agency (NEMA) play vital roles in coordinating environmental protection and disaster management activities. Effective

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environmental governance is essential for reducing the impacts of climate change and ensuring sustainable environmental management practices.

Despite these efforts, environmental governance in Nigeria continues to face significant obstacles, including inadequate funding, poor institutional coordination, corruption, weak enforcement of environmental laws, and limited community participation. In many parts of Kogi State, indiscriminate refuse disposal, blocked drainage systems, and uncontrolled urban expansion have contributed to worsening flood conditions. Research emphasizes that successful environmental governance should integrate community participation, indigenous knowledge, and institutional capacity building to strengthen resilience and improve disaster preparedness (Edoka, 2026). Moreover, although Nigeria has introduced several environmental and climate-related policies, weak implementation at state and local government levels continues to hinder effective environmental management. Strengthening governance structures is therefore necessary for effective flood mitigation and climate adaptation in Kogi State.

4.3 Flood Control Policies

Flood control policies refer to the laws, programs, strategies, and interventions designed to prevent, minimize, or manage flood disasters and their consequences on human populations, infrastructure, and the environment. These policies may involve structural measures such as drainage systems, dams, levees, and embankments, as well as non-structural approaches including land-use planning, public enlightenment campaigns, flood forecasting systems, and disaster preparedness initiatives.

The increasing occurrence of flood disasters has made flood control policies in Kogi State an important aspect of environmental management, particularly in Lokoja and nearby riverine settlements. Government institutions and environmental agencies have introduced several flood management initiatives aimed at reducing vulnerability among affected communities. Such measures include flood prediction programs, relocation of residents from highly

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vulnerable areas, construction of drainage facilities, and public awareness campaigns on flood risks.

However, the effectiveness of these flood control measures has been undermined by poor policy implementation, weak institutional collaboration, inadequate maintenance of drainage infrastructure, and population growth in flood-prone locations. Studies reveal that many communities continue to experience recurring floods because authorities often prioritize emergency responses after disasters rather than preventive and long-term mitigation strategies (Buba et al., 2021). Contemporary research also highlights the importance of nature-based solutions such as afforestation, wetland conservation, and sustainable land management practices in mitigating flood risks. These environmentally friendly approaches improve water absorption and reduce surface runoff while enhancing ecological sustainability (Idris et al., 2025). Therefore, flood control policies remain an essential component of environmental governance because they shape the preparedness, response, and recovery capacities of governments and communities facing climate-induced disasters.

4.4 Community Resilience

Community resilience refers to the capacity of individuals, households, and communities to prepare for, withstand, adapt to, and recover from environmental hazards and disasters such as floods, droughts, and climate-related emergencies. A resilient community possesses strong social, economic, institutional, and environmental systems that enable it to maintain stability and recover effectively during periods of crisis.

Community resilience has become increasingly significant in Nigeria because many communities, in Kogi State for instance, are repeatedly affected by flood disasters that threaten lives, livelihoods, and public infrastructure. Community resilience involves preparedness measures, access to information, social support systems, adaptive livelihood practices, and active participation in disaster management processes.

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Research conducted in flood-prone areas of Lokoja indicates that indigenous knowledge and community participation play crucial roles in enhancing flood preparedness and adaptation. Residents often rely on local coping mechanisms such as constructing elevated buildings, using informal warning systems, temporary migration, and communal assistance during flood periods (Buba et al., 2021). Nevertheless, resilience capacities in many communities remain weak due to widespread poverty, inadequate infrastructure, low literacy levels, and insufficient government support. Studies further demonstrate that household preparedness for disasters largely depends on access to information, income levels, and institutional assistance (Ogunwumi & Ihinegbu, 2025).

4.5 Flood Vulnerability

Flood vulnerability refers to the extent to which people, infrastructure, ecosystems, and communities are exposed and susceptible to damage caused by flooding. Vulnerability is shaped by several factors including geographical location, poverty, environmental degradation, inadequate infrastructure, population pressure, and limited adaptive capacity.

Kogi State remains highly vulnerable to flooding because many settlements are located along the floodplains of Rivers Niger and Benue. Communities in Lokoja and surrounding areas frequently experience flood disasters that result in displacement, destruction of property, loss of agricultural activities, and increased health challenges. Factors such as climate change, deforestation, poor drainage systems, and uncontrolled urbanization further increase the vulnerability of communities to flooding.

Studies have identified varying levels of flood risks across Kogi State, with several communities classified as highly vulnerable due to their exposure and limited resilience capacities (Aladejana & Ebijuoworih, 2024). Vulnerability assessments also reveal that socio-economic factors such as unemployment, poverty, and limited access to social amenities worsen the impacts of flooding on households (Oyedele et al., 2022). Additionally,

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participatory approaches to vulnerability assessment are increasingly encouraged because they incorporate indigenous knowledge and community experiences into disaster management planning. Such approaches help policymakers design more inclusive and effective flood mitigation strategies (Buba et al., 2021).

5. THEORETICAL REVIEW

Adaptive Governance Theory provides a relevant framework for the study "Climate Change and Environmental Governance in Kogi State: Assessing Flood Control Policies and Community Resilience." It explains how governments, institutions, communities, and other stakeholders jointly respond to environmental challenges and uncertainties associated with climate change and disasters. The theory emphasises flexibility, collaboration, institutional learning, participation, and resilience in environmental management, emerging as a response to the limitations of rigid, centralised governance systems in addressing complex issues such as flooding and ecosystem degradation (Djalante et al., 2012).

It further argues that environmental challenges are dynamic and unpredictable, requiring governance structures that can continuously adapt to changing conditions. Adaptive governance promotes cooperation among state agencies, civil society, traditional institutions, and private actors, alongside policy learning, information sharing, innovation, and participatory decision-making to strengthen resilience against climate-related risks (Leach et al., 2018). In flood-prone contexts, the theory is particularly useful as it highlights the need for proactive and inclusive strategies that enable societies to collectively adjust to increasing climate variability rather than relying solely on reactive responses (Cosoveanu et al., 2019).

5.1 Application of Adaptive Governance Theory to the Study

Adaptive Governance Theory is highly relevant to this study as it provides a framework for understanding the relationship between environmental institutions, flood control policies, and community resilience in addressing climate-induced flooding in Kogi State. It explains the role

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of government agencies such as the Kogi State Ministry of Environment and NEMA in developing flexible and responsive flood management strategies capable of adapting to changing climatic conditions (Danhassan et al., 2023). The theory also emphasises stakeholder participation, highlighting the importance of collaboration between government, local communities, traditional authorities, civil society, and other actors, as well as the integration of indigenous knowledge and community-based adaptation strategies in flood management (Akamani, 2023).

Furthermore, it helps explain community resilience by stressing preparedness, institutional flexibility, social cooperation, and continuous learning as key factors that enable communities to withstand and recover from flooding, supported by measures such as early warning systems, infrastructure development, and coordinated emergency response (Oladokun & Montz, 2019). The theory also sheds light on challenges such as weak institutional coordination, poor policy implementation, limited funding, and low public participation, arguing that effective environmental governance requires integrated systems, policy consistency, and active community engagement (Okunola et al., 2026).

6. METHODOLOGY

This study adopted a qualitative research design using content analysis to examine climate change and environmental governance in Kogi State, with particular focus on flood control policies and community resilience. Data were obtained from secondary sources, including academic journals, government policy documents, official reports from environmental agencies such as the National Emergency Management Agency (NEMA), publications from the Federal Ministry of Environment, and credible online materials addressing climate change impacts and flood management in Nigeria. The collected documents were systematically selected, reviewed, and analysed using qualitative content analysis, where relevant information was coded and grouped into themes reflecting the study objectives. Key themes included

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climate change impacts on flooding, effectiveness of flood control policies, institutional responses, and community-based resilience strategies. This approach enabled an in-depth interpretation of patterns, relationships, and meanings within the data, providing a structured understanding of how environmental governance and community actions interact to address flood risks in Kogi State.

7. FINDINGS OF THE STUDY

1. Climate change has significantly intensified flooding in Kogi State, particularly in communities along the Niger–Benue confluence, with increased rainfall, rising temperatures, and river overflow worsening the frequency and severity of flood disasters. These impacts are further amplified by human activities such as poor urban planning, blocked drainage systems, indiscriminate waste disposal, and settlement in flood-prone areas, all of which heighten community vulnerability and expose residents to recurring environmental risks.
2. Environmental governance institutions and flood control policies in Kogi State face major limitations, including inadequate funding, weak institutional coordination, poor enforcement of environmental regulations, and limited technical capacity. In addition, flood management strategies are largely reactive, focusing on emergency response rather than long-term prevention, adaptation, and integrated planning, with insufficient community participation in decision-making and implementation processes.
3. Community resilience to flooding is shaped by both local coping strategies and structural constraints. While residents engage in indigenous adaptation measures such as temporary relocation, informal flood warnings, and communal support systems, their effectiveness is weakened by poverty, poor infrastructure, and low institutional support. Nonetheless, integrating community knowledge and adopting sustainable, nature-based solutions such as afforestation, wetland restoration, improved land-use planning, and

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drainage development are essential for strengthening long-term flood resilience in Kogi State.

8. DISCUSSION OF FINDINGS

The findings of the study demonstrated that climate change has played a major role in the growing occurrence and severity of flooding in Kogi State, especially in Lokoja and surrounding communities situated along the confluence of Rivers Niger and Benue. The study revealed that increased rainfall intensity, rising temperatures, overflowing rivers, and unstable climatic conditions have aggravated environmental disasters within the state. These findings are consistent with the study conducted by Aladejana and Ebijuoworih (2024), which identified several communities in Kogi State as highly susceptible to flooding due to climate-related environmental vulnerabilities. Their research further showed that recurrent flood disasters continue to endanger livelihoods, infrastructure, and sustainable development across different parts of the state.

The study further revealed that environmental governance institutions in Kogi State encounter several difficulties in effectively addressing flood disasters. Challenges such as inadequate funding, weak institutional collaboration, poor enforcement of environmental policies, and limited technical expertise were identified as major constraints undermining flood management efforts. Although agencies such as the National Emergency Management Agency (NEMA) and the Kogi State Ministry of Environment have implemented various flood control measures, the findings suggest that these interventions have not been sufficient in tackling the persistent flood crisis. This finding corroborates the position of Edoka (2026), who argued that weak institutional frameworks and inadequate capacity-building initiatives have negatively affected environmental governance and flood preparedness in Lokoja metropolis.

Another important finding of the study is that poor physical planning, indiscriminate waste disposal practices, blocked drainage channels, and uncontrolled urban expansion have

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significantly increased flood vulnerability in Kogi State. The study observed that many residents still occupy highly vulnerable floodplain areas despite recurring environmental disasters, thereby increasing their exposure to flood risks. This finding supports the work of Oyedele et al. (2022), who identified poor housing conditions, economic hardship, weak flood management systems, and dependence on climate-sensitive livelihoods as major contributors to flood vulnerability among communities in Kogi State.

In addition, the study found that flood control policies in Kogi State are predominantly reactive rather than preventive. Government interventions are mainly focused on emergency relief operations and rescue efforts after flood incidents instead of implementing long-term adaptation and mitigation strategies. This finding is in agreement with Buba et al. (2021), who noted that flood management practices in Lokoja largely follow a post-disaster response pattern characterized by limited community involvement in planning and implementation processes.

The findings also indicated that community participation and indigenous coping mechanisms are essential in strengthening resilience against flooding in Kogi State. Residents in flood-prone communities adopt various local adaptation measures such as temporary migration, construction of elevated buildings, communal assistance systems, and local flood warning methods during periods of flooding. However, the study established that resilience capacities remain weak because of poverty, poor infrastructure, low public awareness, and inadequate governmental support. This finding aligns with Ogunwumi and Ihinegbu (2025), who reported that many households in Kogi State exhibit low levels of preparedness for future flood disasters due to inadequate sensitization programs and limited institutional assistance.

Furthermore, the study established that climate-induced flooding has severe socio-economic and environmental impacts on affected communities in Kogi State. Flood disasters were found to cause displacement of residents, destruction of farmlands, food shortages, health-related problems, loss of livelihoods, and damage to public facilities and infrastructure. This finding

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supports the study by Nche (2024), which revealed that flood victims in Kogi State frequently suffer property losses, livelihood disruptions, and increased vulnerability to waterborne diseases and other environmental health challenges.

The study also revealed that incorporating community knowledge and participatory approaches into flood management strategies can improve environmental governance and disaster preparedness. Findings showed that local communities possess important knowledge regarding flood patterns, vulnerable locations, and adaptation practices that can complement government interventions. This supports the argument of participatory environmental management scholars who maintain that community engagement and bottom-up approaches are necessary for effective disaster risk reduction and sustainable flood management (Buba et al., 2021).

Finally, the study revealed that sustainable and nature-based flood mitigation measures such as afforestation, wetland restoration, sustainable land-use management, and improved drainage infrastructure are necessary for reducing flood vulnerability and enhancing resilience in Kogi State. The findings indicate that achieving long-term environmental sustainability requires proactive and adaptive governance systems capable of addressing the increasing impacts of climate change. This finding is consistent with Idris et al. (2025), who emphasized the importance of ecosystem-based and nature-based flood mitigation strategies in strengthening environmental resilience within the Niger-Benue confluence region of Kogi State.

9. CONCLUSION & RECOMMENDATIONS

The study concludes that climate change is a major driver of the increasing frequency and severity of flooding in Kogi State, particularly in communities located along the Niger–Benue confluence. This situation is worsened by human-induced factors such as poor urban planning, inadequate drainage systems, indiscriminate waste disposal, and settlement in flood-prone areas, all of which significantly heighten community vulnerability. Environmental governance institutions and flood control policies in the state are constrained by weak coordination,

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insufficient funding, poor enforcement of regulations, and limited technical capacity. The dominance of reactive, emergency-based responses over long-term preventive and adaptive strategies, coupled with low levels of community participation, limits the effectiveness of flood management efforts.

Finally, the study establishes that while communities employ indigenous coping mechanisms to enhance resilience, these efforts remain insufficient due to structural challenges such as poverty, weak infrastructure, and limited institutional support. It therefore concludes that strengthening adaptive governance through improved institutional capacity, community involvement, and nature-based flood management strategies is essential for sustainable flood resilience in Kogi State. The study recommends that:

1. **Enforce and update floodplain zoning laws with community participation**: Current policies often lack enforcement, leading to construction on high-risk floodplains. Recommend revising land-use regulations to legally designate "no-build" zones, while involving community leaders in mapping and marking these areas. Provide clear relocation incentives (e.g., land swaps or housing support) to reduce arbitrary evictions and build trust in governance.
2. **Shift from reactive emergency response to anticipatory action**: Kogi's flood policies tend to focus on post-disaster relief. Establish an anticipatory action framework that triggers pre-arranged funding and logistics (e.g., early distribution of water purification tablets, temporary shelters, and livestock relocation) once river levels hit defined thresholds from the Nigeria Hydrological Services Agency (NIHSA). This reduces loss of lives and livelihoods.
3. **Invest in nature-based solutions alongside hard infrastructure**: Instead of relying solely on dykes and drainage channels, restore wetlands, floodplains, and riparian vegetation that naturally absorb floodwaters. Pilot community-managed retention

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basins and agroforestry along riverbanks. These green measures are cheaper to maintain over time and enhance agricultural resilience, especially for fishing and farming communities in Lokoja, Idah, and Koton Karfe.

4. **Establish a Kogi State Climate Resilience Fund with local oversight**: Create a dedicated, transparent fund sourced from state ecological funds, federal adaptation budgets, and development partners. Ensure at least 40% is directly accessible to community-based organizations (CBOs) and women's groups for small-scale resilience projects—such as raised wells, elevated granaries, or flood-resilient seedling banks. Require annual public scorecards on fund disbursement and impact.
5. **Institutionalize community-based early warning and evacuation drills**: Technical early warnings often fail to reach remote riverine communities in time. Mandate a multi-agency task force (state emergency agency, NIMET, local radio, and village heads) to translate flood forecasts into local languages and trigger door-to-door alerts. Conduct biannual, community-led evacuation drills with designated safe routes and high-ground assembly points, tracked via simple mobile-phone-based feedback systems.

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