



CLIMATE-INDUCED DISASTERS AND GOVERNANCE RESPONSE IN THE NIGER DELTA REGION OF NIGERIA

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Abstract

This study examined the impact of climate-induced disasters on governance response in the Niger Delta region of Nigeria. Using a mixed-methods research design that combined qualitative and quantitative approaches, the study achieved three key objectives: identifying the major drivers of climate-induced disasters, assessing their effects on governance responsiveness and effectiveness, and analysing the challenges confronting governance institutions. Findings revealed that a complex interplay of human-induced, institutional, and environmental factors—particularly deforestation, poor urban planning, weak regulatory enforcement, and oil exploration activities, significantly contributes to the region's frequency and intensity of disasters. Furthermore, the study found systemic governance challenges hinder effective disaster response, including fragmented institutional coordination, inadequate human and financial resources, and weak policy implementation. Flooding emerged as the most statistically significant predictor of reduced governance effectiveness, while moderate rainfall was linked to improved response, likely due to enhanced early warning systems. The study concludes that climate-induced disasters in the Niger Delta reflect deep-rooted governance deficits, highlighting the need for coordinated and adaptive institutional frameworks.

Keywords: Climate-Induced Disasters, Governance, Environmental Vulnerability, Disaster Response, and Niger Delta.

Introduction

Globally, climate-induced disasters, such as extreme floods, cyclones, and droughts, are increasing in frequency and severity. Neef and Pauli (2020) note that “multi-risk environments” present challenges for resilient governance systems due to sudden ecological alterations requiring local and scientific knowledge integration. Stephens (2018) further warns that Earth-system



unpredictability makes historical precedent-based governance dangerous in the Anthropocene. Consequently, the urgency of understanding governance capability in this age of planetary crisis cannot be overstated. Continental perspectives indicate that Africa is experiencing rising climate-induced impacts. Environmental migration in Nigeria is rising, according to Abubakar, Bello, and Ismail (2025). Ecological stressors cause internal relocation. Akpan, Ja' Afar, and Eke (2025) show how climate shocks harm youth mental health, highlighting socioeconomic vulnerability. The uneven and fragmented African adaptation techniques show governance limitations in tackling climate concerns, according to Butu, Okeke, and Okereke (2022).

Nigeria is regionally affected by climate change. Regional planning issues are highlighted by Adamu and Tumba (2024), who emphasise policy objectives vs implementation realities. Adesope, Okorie, and Ootu (2024) reveal that even crop farmers lack timely climate information, thwarting adaptation efforts. Additionally, ACCORD (2024) documents that rising sea levels and flooding in Nigeria's coastal Niger Delta heighten conflict risks and stress state security operations. These studies illustrate how climate-induced disasters are intensifying humanitarian and governance crises.

Consequently, focusing on why climate-induced disasters matter: they undermine livelihoods, trigger displacement, damage infrastructure, and erode social cohesion. The cascading effects of environmental shocks demand more than ad hoc relief; they require proactive systems that are both adaptive and responsive. Moreover, governance response is critical because institutional capacity determines resilience. Kuranga and Umaru (2020) underline that timely, structured governance can reduce disaster impacts through planning, coordination, and resource deployment. However, as Stephens (2018) argues, governance must become adaptive, participatory, and flexible to operate effectively in unpredictable environments.

Specifically, the Niger Delta region warrants urgent attention. It is ecologically fragile, suffering from pollution, land subsidence, and coastal erosion, and highly exposed to climate hazards (Agbonifo, 2016; Altıparmak, 2022). Eneanya (2020) shows how environmental injustice and weak institutional accountability exacerbate climate vulnerability in the Niger Delta region. Additionally, governance has long been shaped by resource politics and oil-driven conflict (Ikenga, Edo, & Ighoshemu, 2022; Agbonifo, 2016). Consequently, assessing the responses, or



lack thereof of governance institutions to climate disasters in the Niger Delta is crucial for overall resilience.

This study connects environmental stressors and governance mechanisms. It investigates climate disaster causes such sea level rise and rainfall unpredictability and political and institutional dynamics affecting response capabilities. The study integrates Institutional Capacity Theory (Healey, 1998; Innes & Booher, 2003) and Systems Theory (Bertalanffy, 1968; Luhmann, 1995) to show how inter-agency institutional structures and systemic feedback affect coordination, resource mobilisation, and adaptive learning. Although, localized studies remain limited, particularly in fragile regions like the Niger Delta, where flooding, coastal erosion, sea-level rise, and subsidence persist (Agbonifo, 2016; Altuparmak, 2022). Yet reports highlight environmental degradation (Federal Ministry of Environment, 2021; Chizea, 2022), the specific ecological drivers of disasters at the micro-regional scale remain under-explored. Similarly, while climate shocks exacerbate migration, vulnerability, and gaps in planning (Abubakar et al., 2025; Adamu & Tumba, 2024), governance responsiveness in the Niger Delta is undermined by political interference, resource politics, and weak disaster planning (Kuranga & Umaru, 2020; Eneanya, 2020). Furthermore, persistent challenges, including poor funding, weak accountability, fragmented policies, and overlapping mandates, limit the effectiveness of institutional responses (Stout et al., 2024; Ikenga et al., 2022).

Accordingly, this study addresses these gaps through three objectives: (1) To determine the primary causes of climate-related disasters in the Niger Delta of Nigeria. (2) To examine the impact of climate-induced disasters on governance responsiveness and effectiveness in the Niger Delta region. (3) To identify and analyse the key challenges confronting governance institutions in responding to climate-induced disasters in the Niger Delta region. Lastly, this study offers a comprehensive understanding of how the Niger Delta can enhance resilience against rapidly changing climate threats by situating local dynamics within broader continental and global contexts, and by integrating ecological analysis with governance theory.

Contextual Conundrum

Climate-induced disasters like flooding, sea-level rise, coastal erosion, and saltwater intrusion have become more common in Nigeria's Niger Delta. These disasters have harmed ecological sustainability and millions of lives due to global climate change and unsustainable land use and



extractive activities (Agbonifo, 2016; Adamu & Tumba, 2024). Thus, local communities experience displacement, property loss, food insecurity, and psychological stress, especially among youth (Akpan, Ja' Afar, & Eke, 2025; Abubakar, Bello, & Ismail, 2025).

Despite national frameworks like the Nigeria National Climate Change Policy (Federal Ministry of Environment, 2021) and legislative instruments like the Climate Change Act (Ladan, 2022), the region still suffers weak governance, policy gaps, fragmented institutional coordination, and inadequate disaster preparedness. Governance institutions have been slow, reactive, and inconsistent, with overlapping mandates and limited resource allocation delaying involvement (Ogbonna, Ekene, & Njoku, 2020; Lekeh Development Foundation, 2024).

Furthermore, governance systems in the Niger Delta often lack the institutional capacity, stakeholder inclusiveness, and resilience-building mechanisms necessary for proactive disaster management (Altıparmak, 2022; Innes & Booher, 2003). While the region has attracted substantial oil revenue over decades, the persistent underdevelopment and environmental degradation—compounded by climate risks—raise serious questions about the responsiveness of state and non-state actors alike (Tobi, 2022; Ikenga, Edo, & Ighoshemu, 2022). Thus, understanding how governance structures adapt to, mitigate, or exacerbate climate vulnerabilities is urgently important.

Significant knowledge gaps remain despite the growing body of literature on climate change and governance. First, there is limited research that specifically identifies the key drivers of climate-induced disasters in the Niger Delta from both anthropogenic and systemic perspectives (Adesope, Okorie, & Ootu, 2024; ACCORD, 2024). Second, few studies have examined how climate-related events affect the effectiveness and legitimacy of governance responses, especially concerning early warning systems, emergency relief, and long-term adaptation strategies (Neef, 2020; Butu, Okeke, & Okereke, 2022).

Third, existing research rarely addresses the systemic and administrative challenges—such as bureaucratic inefficiency, poor inter-agency collaboration, and corruption—that constrain governance responses in disaster-prone communities (Hoang, 2024; Stephens, 2018; Olayode & Arrey, 2023). This limited attention in existing literature represents a critical research gap, as effective disaster response depends on policy design, institutional implementation, local engagement, and social trust (Healey, 1998; Chizea, 2022).



Therefore, this study aims to fill existing research gaps by addressing three core questions: What are the main drivers of climate-induced disasters in the Niger Delta? How have these disasters impacted governance responsiveness and effectiveness? What challenges hinder governance institutions in managing climate-related disasters? Accordingly, the study identifies these drivers, evaluates the impact on governance responsiveness and effectiveness, and analyses institutional obstacles to disaster management. By doing so, it contributes to the development of more informed, coordinated, and sustainable governance frameworks for enhancing climate resilience in the Niger Delta.

Furthermore, the research is guided by the following hypotheses: H_1 posits that climate-induced disasters significantly impact the responsiveness and effectiveness of governance in the Niger Delta region. Consequently, this study provides evidence-based insights to improve governance and guide reforms that boost climate resilience in the Niger Delta.

Theoretical and Empirical Perspectives on Climate Vulnerability and Governance in Africa

Africa's susceptibility to climate change is closely associated with institutional robustness and governance. Theoretical and empirical research concurs that frail institutions exacerbate the effects of climate-induced disasters, especially in ecologically vulnerable and politically unstable regions. Healey (1998) and Innes and Booher (2003) argue that collaborative governance is essential for enhancing institutional capacity, consistent with Bertalanffy's (1968) General System Theory, which underscores interdependent governance networks that must adapt to environmental shocks.

The Niger Delta exemplifies how poor governance increases vulnerability. Agbonifo (2016) identifies regulatory failures in Nigeria's oil sector as drivers of environmental degradation and weak adaptive capacity. Altıparmak (2022) reinforces this, linking environmental damage to governance failures and escalating insecurity. These challenges, rooted in historic marginalisation and unequal development (Ikenga, Edo, & Ighoshemu, 2022; Tobi, 2022), reflect broader systemic issues across the region.

Planning frameworks also fail to integrate climate resilience. Adamu and Tumba (2024) and Kuranga and Umaru (2020) note that Nigeria's planning systems poorly connect disaster risk reduction and environmental sustainability. Furthermore, Butu, Okeke, and Okereke (2022) highlight the persistent underfunding of local adaptation efforts, with insufficient technical capacity and financial autonomy impeding implementation.



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Recent research also highlight socio-psychological effects. Akpan, Ja'Afar, and Eke (2025) explore how climate-related displacement affects youth mental health, while Dhari (2024) links environmental uncertainty to economic anxiety, showing the need for governance that includes psychological resilience.

Comparative research in Africa and the MENA region underscores the importance of governance. Karimi and Mosaffa (2022) and Neef (2020) argue that adaptive governance is critical to transitioning from reactive disaster response to anticipatory adaptation strategies. Institutional capacity theory (Healey, 1998; Hoang, 2024) and disaster risk governance models (Stephens, 2018; Eneanya, 2020) further stress resource adequacy, coordination, transparency, and inclusivity.

In the Niger Delta, Ogbonna, Ekene, and Njoku (2020) and Lekeh Development Foundation (2024) advocate for strengthened local institutions and community governance. However, Olayode and Arrey (2023) caution that systemic instability undermines reforms. ACCORD (2024) links climate change to rising insecurity, especially in unprotected coastal zones.

Although policies like Nigeria's 2021 Climate Change Act (Federal Ministry of Environment, 2021; Ladan, 2022) show promise, Clean Technology Hub (2023) and Stout et al. (2024) stress that success depends on bridging financing and implementation gaps. Institutional reform and inclusive, coordinated governance are central to addressing Africa's climate vulnerability.

Theoretical Foundation

This study examines the governance response to climate-induced disasters in Nigeria's Niger Delta through two complementary frameworks: Institutional Capacity Theory and Systems Theory, both of which offer critical insights into disaster governance in complex socio-ecological contexts.

Healey (1998) established the Institutional Capacity Theory, which emphasises an institution's capacity to mobilise resources, foster trust, share information, and include a variety of actors in problem-solving. Relational (trust and networks), knowledge (expertise and data), and mobilisation (leadership and resource allocation) are the three interconnected dimensions that are highlighted. In the Niger Delta, where institutions face the compounded challenges of flooding, erosion, and oil-induced degradation (Ogbonna et al., 2020; Eneanya, 2020), this theory provides a framework to assess why institutional responses often fail. Studies by Abubakar, Bello, and Ismail (2025) highlight how institutional fragmentation and weak adaptive capacity contribute to climate-related displacement, illustrating key limitations addressed by this theory.



Simultaneously, Systems Theory, rooted in Bertalanffy's (1968) biological model and extended by Luhmann (1995), views institutions as components of a dynamic, interdependent governance system. This theory is vital for understanding how governance functions across multiple levels, local, state, national, and international, often with overlapping mandates and uncoordinated roles. In the Niger Delta, such fragmented institutional arrangements hinder effective disaster response (Kuranga & Umaru, 2020; ACCORD, 2024). Systems Theory thus informs the second objective of this study: evaluating how climate-induced disasters affect governance performance. Empirical examples such as the failure of early warning systems and disjointed inter-agency collaboration (Tobi, 2022; Butu, Okeke, & Okereke, 2022) underscore the importance of systemic analysis. Moreover, Systems Theory enables a critical understanding of how the Niger Delta's social, environmental, and economic subsystems interact within broader governance structures. This aligns with the findings of Chizea (2022) and the Lekeh Development Foundation (2024), who advocate for integrated, systems-based planning. It also reflects the multi-scalar governance gaps identified by Olayode and Arrey (2023), stemming from Nigeria's centralised policies and localised vulnerabilities. By examining the internal capacities of institutions as well as the outward complexity of inter-institutional dynamics, these theories together address the goals of the study. While Systems Theory describes external connections and feedback processes, Institutional Capacity Theory concentrates on improving internal functionality. Their integration provides a holistic foundation for assessing the governance challenges and potentials in the Niger Delta's climate adaptation landscape.

Methodology

The study used a mixed-methods research design that integrated qualitative and quantitative techniques. This technique was used to study institutional dynamics that shape governance responses and quantify climate-induced disasters.

Geographically, the study is confined to Rivers, Bayelsa, Delta, Akwa Ibom, and Cross River States in the Niger Delta, examining public governance responses to floods, coastal erosion, and erratic rainfall. It analyses the roles of formal institutions in disaster preparedness, response, and adaptation, with limited reference to non-governmental actors. These states were purposefully selected due to their vulnerability to climate hazards and socio-economic importance within Nigeria's coastal region (Lekeh Development Foundation, 2024; Ogbonna, Ekene, & Njoku,



2020). Therefore, they represent suitable contexts for evaluating climate governance in Nigeria's coastal region.

The study population (7,744) comprises government officials and policy actors, including 4,358 NDDC staff, 255 personnel from five State Emergency Management Agencies (SEMAs), 3,055 officials from State Ministries of Environment, Works, and Urban Planning, and 76 from the Federal Ministry of Environment. Hence, the target population includes those actively engaged in disaster response and climate governance.

Using Krejcie and Morgan's (1970) formula, the appropriate sample size (366) was determined. A multi-stage sampling technique was applied. First, the target sample was stratified into major stakeholder groups: officials of the Niger Delta Development Commission (NDDC), personnel from the five State Emergency Management Agencies (SEMAs) in the Niger Delta, officers from the State Ministries of Environment, Works, and Urban Planning across the five states, and staff of the Federal Ministry of Environment. This stratification ensured that the perspectives of both federal and state-level institutions were included. In the second stage, proportional allocation was applied to distribute the sample size across strata based on staff strength and institutional relevance, thereby preventing over- or under-representation. Finally, in the third stage, purposeful sampling was used to select 18 key informants for in-depth interviews. These informants were chosen based on their roles as senior administrators, policy makers, or frontline disaster management implementers, thereby providing both strategic and operational insights.

Data was gathered using primary and secondary methods. Semi-structured interviews with key informants provided qualitative data, while structured questionnaires collected quantitative data. Official records and pertinent policy documents, as well as scholarly works, were also examined. Descriptive statistics (frequencies, means, percentages) were used to analyse data collected on objectives one and three. In contrast, ordinal regression analysis was used to test the study hypothesis, which supports objective two. Summative content analysis and manual coding of interview transcripts analysed qualitative data on objectives one to three. Consequently, quantitative and qualitative findings were triangulated.

A pilot study was executed in designated LGAs within Rivers State to enhance the instruments. Expert reviews ensured validity and reliability, and Cronbach's Alpha ensured reliability, with values above 0.70 being acceptable. So, the research tools were both accurate and dependable.



The study adhered to all ethical research protocols. Information, confidentiality, and informed consent were provided. Institutional ethics approval was also obtained. The study adhered to ethical norms and protected the rights and welfare of human participants.

The Analysis of the Key Drivers of Climate-Induced Disasters in the Niger Delta Region of Nigeria.

This study distributed 366 questionnaires, of which 348 were returned, representing a 95% response rate. The responses were used in the descriptive and inferential analysis below.

Table 1 revealed respondents' viewpoints on key drivers of climate-induced disasters in The Niger Delta Region of Nigeria. First, frequent flooding as driven by poor urban planning and blocked drainage systems was strongly supported by respondents, with 253 (72.70%) strongly agreeing and 86 (24.71%) agreeing. In comparison, only 3 (0.86%) were undecided, and 4 (1.15%) disagreed, with just 2 (0.58%) strongly disagreeing. Consequently, the high mean score of 4.53 implies that poor urban infrastructure and ineffective drainage management are widely perceived as major contributors to flood-related disasters. This analysis underscores the need for urgent urban planning reforms and infrastructural investments to reduce flood risks.

Similarly, weak enforcement of environmental regulations received strong support, with 278 (79.88%) strongly agreeing and 54 (15.52%) agreeing, while 2 (0.57%) were undecided, 5 (1.44%) disagreed, and 9 (2.59%) strongly disagreed. Thus, with a mean of 4.76, the implication is that institutional lapses and lack of regulatory enforcement are critical governance failures that aggravate the impact of climate-induced hazards. This analysis highlights the necessity for stricter environmental compliance and capacity building in regulatory institutions.

Moreover, deforestation and land degradation attracted near-unanimous agreement, as 320 (91.95%) strongly agreed, 22 (6.32%) agreed, 2 (0.57%) were undecided, while only 1 (0.30%) disagreed, and 3 (0.86%) strongly disagreed. Given the exceptionally high mean of 4.85, implies that the removal of vegetation cover is universally viewed as a severe driver of environmental vulnerability. Consequently, reforestation and land restoration initiatives are imperative for climate adaptation in the region.

In addition, population pressure and unregulated settlements in flood-prone zones received agreement from 229 (65.81%) strongly agreeing and 107 (30.75%) agreeing, while 2 (0.57%) were undecided, 4 (1.15%) disagreed, and 6 (1.72%) strongly disagreed, resulting in a mean of 4.16. This result indicates that respondents recognize human settlement patterns as a key risk factor.



Therefore, the implication is that improved spatial planning and stricter zoning laws are essential to reduce vulnerability in high-risk areas.

Furthermore, gas flaring and oil exploration activities were supported by 156 (44.83%) strongly agreeing and 121 (34.77%) agreeing, while 5 (1.44%) were undecided, 44 (12.64%) disagreed, and 22 (6.32%) strongly disagreed, yielding a mean of 4.68. This analysis implies that extractive activities are widely viewed as contributing to environmental degradation and climate change impacts, underscoring the need for cleaner technologies and environmental accountability in the oil and gas sector.

Conversely, for unpredictable rainfall patterns, only 100 (28.74%) strongly agreed, and 125 (35.92%) agreed, while 5 (1.44%) were undecided. However, a significant number—44 (12.64%) disagreed and 74 (21.26%) strongly disagreed—resulted in a lower mean of 2.83. This result signifies divided perceptions, indicating that not all respondents link erratic rainfall directly with climate-induced disasters. The implication is the need for improved awareness and climate literacy on the cascading effects of changing precipitation trends.

Lastly, sea-level rise as a driver of coastal erosion received 95 (27.30%) strongly agreeing and 105 (43.40%) agreeing, while 3 (0.86%) were undecided, but 93 (26.72%) disagreed, and 6 (1.72%) strongly disagreed, leading to a moderate mean of 3.25. Therefore, the implication is that while many respondents acknowledge sea-level rise, a substantial portion are either unaware or unconvinced of its role in coastal erosion, suggesting a gap in climate change communication and risk perception.

The analysis reveals widespread recognition of human-induced and institutional drivers of climate disasters, with extreme concern about deforestation, weak regulation, and flooding. However, perceptions regarding less visible or slower-onset risks like sea-level rise and rainfall unpredictability are more varied. Hence, governance reforms, environmental enforcement, and public awareness must be prioritized for effective climate disaster management in the Niger Delta.



Table 1: Respondents' Views on The Key Drivers of Climate-Induced Disasters in The Niger Delta Region of Nigeria.

Key Drivers of Climate-Induced Disasters	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Total	Mean
Frequent flooding in the Niger Delta is primarily driven by poor urban planning and blocked drainage systems.	253 (72.70)	86 (24.71)	3 (0.86)	4 (1.15)	2 (0.58)	348 (100)	4.53
Weak enforcement of environmental regulations contributes to the worsening effects of climate-induced hazards.	278 (79.88)	54 (15.52)	2 (0.57)	5 (1.44)	9 (2.59)	348 (100)	4.76
Deforestation and land degradation have significantly increased the region's vulnerability to climate disasters.	320 (91.95)	22 (6.32)	2 (0.57)	1 (0.30)	3 (0.86)	348 (100)	4.85
Population pressure and unregulated settlements in flood-prone areas have increased disaster risks.	229 (65.81)	107 (30.75)	2 (0.57)	4 (1.15)	6 (1.72)	348 (100)	4.16



Gas flaring and oil exploration activities contribute to environmental degradation and climate-related disasters.	156 (44.83)	121 (34.77)	5 (1.44)	44 (12.64)	22 (6.32)	348 (100)	4.68
Unpredictable rainfall patterns have disrupted traditional farming and increased food insecurity.	100 (28.74)	125 (35.92)	5 (1.44)	44 (12.64)	74 (21.26)	348 (100)	2.83
Sea-level rise is a significant factor contributing to coastal erosion in the Niger Delta region.	95 (27.30)	105 (43.40)	3 (0.86)	93 (26.72)	6 (1.72)	348 (100)	3.25
Grand Mean							4.15

Source: Author's Computation (May, 2025)

Challenges Confronting Governance Institutions In Responding to Climate-Induced Disasters in The Niger Delta Region.

Table 2 shows respondents' views on the challenges confronting governance institutions in responding to climate-induced disasters in the Niger Delta region. First, the view that governance institutions in the Niger Delta lack adequate funding to respond to climate-induced disasters effectively received widespread support, with 253 respondents (72.70%) strongly agreeing and 86 (24.71%) agreeing. In contrast, only 3 (0.86%) were undecided, 4 (1.15%) disagreed, and 2 (0.58%) strongly disagreed, resulting in a mean score of 4.53. This result implies that funding constraints are a significant barrier to institutional responsiveness and must be addressed through budgetary prioritisation and financial reforms.



Likewise, the issue of a shortage of skilled personnel in government agencies was affirmed by 278 respondents (79.88%) who strongly agreed and 54 (15.52%) who agreed; only 2 (0.57%) were undecided, 5 (1.44%) disagreed, and 9 (2.59%) strongly disagreed, yielding a mean of 4.76. This signifies a clear skills gap in disaster management, implying that investment in capacity-building and personnel training is urgently needed.

Furthermore, inter-agency coordination and collaboration during climate disaster responses were seen as weak, as evidenced by 320 respondents (91.95%) strongly agreeing and 22 (6.32%) agreeing, with just 2 (0.57%) undecided, 1 (0.30%) disagreeing, and 3 (0.86%) strongly disagreeing, producing the highest mean of 4.85. This analysis implies a severe coordination challenge among government bodies, pointing to the need for integrated response frameworks and clear institutional mandates.

In addition, delays in decision-making processes were identified as an obstacle by 229 respondents (65.81%) strongly agreeing and 107 (30.75%) agreeing; 2 (0.57%) were undecided, 4 (1.15%) disagreed, and 6 (1.72%) strongly disagreed, with a mean score of 4.16. This analysis highlights bureaucratic inefficiencies that hinder timely disaster response and suggests that procedural reforms are necessary for agile governance.

Conversely, the perception that climate policies and action plans are poorly implemented at state and local levels had mixed responses: 156 (44.83%) strongly agreed, 121 (34.77%) agreed, 5 (1.44%) were undecided, 44 (12.64%) disagreed, and 22 (6.32%) strongly disagreed, leading to a moderate mean of 3.68. This result implies implementation gaps, especially at sub-national levels, suggesting the need for local accountability mechanisms and better resource alignment.

Moreover, political interference in climate disaster management received support from 100 respondents (28.74%) strongly agreeing and 125 (35.92%) agreeing, while 5 (1.44%) were undecided, 44 (12.64%) disagreed, and 74 (21.26%) strongly disagreed, with a mean of 4.25. This result implies that political interests are perceived as compromising institutional effectiveness, calling for stronger governance safeguards and depoliticised emergency response processes.

Lastly, regarding inadequate access to climate data and early warning systems, 95 respondents, representing 27.30%, strongly agreed, and 105 (43.40%) agreed. In contrast, 3 (0.86%) were undecided, but 93 (26.72%) disagreed, and 6 (1.72%) strongly disagreed, resulting in a mean score of 3.83. This analysis presents a technological and infrastructural deficit, indicating a need for improved climate intelligence and data integration at all governance levels.



The data reveals strong agreement that funding, personnel shortages, poor coordination, and political interference are primary challenges hindering governance institutions. While some issues like data access and policy implementation received more mixed views, the grand mean of 4.29 reflects an overall consensus that systemic governance inefficiencies significantly constrain disaster response capacity in the Niger Delta.

Table 2: Respondents' views on the challenges confronting governance institutions in responding to climate-induced disasters in the Niger Delta region.

Challenges	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Total	Mean
Governance institutions in the Niger Delta lack adequate funding to respond to climate-induced disasters effectively.	253 (72.70)	86 (24.71)	3 (0.86)	4 (1.15)	2 (0.58)	348 (100)	4.53
There is a shortage of skilled personnel in government agencies tasked with climate disaster management.	278 (79.88)	54 (15.52)	2 (0.57)	5 (1.44)	9 (2.59)	348 (100)	4.76
Inter-agency coordination and collaboration are weak during climate disaster response operations.	320 (91.95)	22 (6.32)	2 (0.57)	1 (0.30)	3 (0.86)	348 (100)	4.85
Delays in decision-making processes	229 (65.81)	107 (30.75)	2 (0.57)	4 (1.15)	6 (1.72)	348 (100)	4.16



hinder timely government responses to climate-related emergencies.							
Climate policies and action plans are poorly implemented at the state and local government levels.	156 (44.83)	121 (34.77)	5 (1.44)	44 (12.64)	22 (6.32)	348 (100)	3.68
Political interference negatively affects the ability of institutions to manage climate disasters effectively.	100 (28.74)	125 (35.92)	5 (1.44)	44 (12.64)	74 (21.26)	348 (100)	4.25
Inadequate access to climate data and early warning systems limits the preparedness of governance institutions.	95 (27.30)	105 (43.40)	3 (0.86)	93 (26.72)	6 (1.72)	348 (100)	3.83
Grand Mean							4.29

Source: Author's Computation, (May, 2025)

Test of Hypothesis

The concept that climate-induced disasters have a substantial impact on the Niger Delta region's governance's efficacy and responsiveness is examined in this section. The purpose of the test was to statistically ascertain whether climate-related occurrences have a discernible impact on governance effectiveness.



First, climate-induced disasters were operationalised through five key indicators: increased frequency and severity of flooding, coastal erosion, unpredictable rainfall patterns, sea level rise, and saltwater intrusion, as well as population displacement and livelihood loss (Akpan, Ja’Afar, & Eke, 2025; Ogbonna, Ekene, & Njoku, 2020; Adesope, Okorie, & Ootu, 2024; Altıparmak, 2022; Abubakar, Bello, & Ismail, 2025). These dimensions comprehensively reflect the region's nature and intensity of climate-related risks.

Afterward, ordinal regression analysis was used to evaluate the alternative hypothesis (H_1), which said that disasters caused by climate change have a big effect on how responsive and effective government is. This method was suitable because the data obtained from Likert-scale replies had an ordinal structure.

The application of ordinal regression provided insights into the predictive influence of climate-induced disasters on institutional responses, thus validating or refuting the proposed hypothesis.

Hypothesis:

H_1 – Climate-induced disasters have a significant impact on the responsiveness and effectiveness of governance in the Niger Delta region.

Table 3: Goodness-of-Fit

	Chi-Square	Df	Sig.
Pearson	883.829	554	.000
Deviance	535.954	554	.701

Link function: Logit.

Source: Author’s Computation, (May, 2025)

Table 3 shows that the Pearson Chi-Square value ($\chi^2 = 883.829$, $df = 554$, $p = .000$) is statistically significant. This typically suggests a lack of perfect fit between the observed data and the model. However, in complex social science models, such significance may reflect sample size sensitivity rather than poor model performance.

Conversely, the Deviance statistic ($\chi^2 = 535.954$, $df = 554$, $p = .701$) is not statistically significant, indicating a good model fit. In other words, the predicted values from the ordinal regression model do not significantly differ from the observed data.

Therefore, despite the Pearson test's indication, the non-significant Deviance test result provides stronger evidence that the model fits the data well. Accordingly, the model is considered



appropriate for explaining how climate-induced disaster variables affect governance responsiveness and effectiveness in the Niger Delta region.

Table 4: Parameter Estimates

	Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Threshold [The Responsiveness and Effectiveness of Governance in The Niger Delta Region =1]	-24.175	.522	2148.189	1	.000	-25.197	-23.152
[The Responsiveness and Effectiveness of Governance in The Niger Delta Region =2]	-21.594	.470	2114.829	1	.000	-22.515	-20.674
[The Responsiveness and Effectiveness of Governance in The Niger Delta Region =3]	-19.983	.452	1957.305	1	.000	-20.868	-19.098
[The Responsiveness and Effectiveness of Governance in The Niger Delta Region =4]	-18.807	.449	1755.759	1	.000	-19.687	-17.927
Location [Increased Frequency and Severity of Flooding =1]	-2.767	.761	13.228	1	.000	-4.259	-1.276
[Increased Frequency and Severity of Flooding =2]	-2.543	.587	18.774	1	.000	-3.693	-1.393
[Increased Frequency and Severity of Flooding =3]	-2.282	1.140	4.005	1	.045	-4.517	-.047
[Increased Frequency and Severity of Flooding =4]	-3.816	.604	39.893	1	.000	-5.001	-2.632
[Increased Frequency and Severity of Flooding =5]	0 ^a	.	.	0	.	.	.
[Implementation =0]	-3.333	.711	21.956	1	.000	-4.728	-1.939
[Coastal Erosion =1]	1.067	.446	5.711	1	.017	.192	1.942
[Coastal Erosion =2]	.743	.545	1.857	1	.173	-.325	1.810
[Coastal Erosion =3]	-.410	1.268	.105	1	.746	-2.896	2.075
[Coastal Erosion =4]	1.729	.793	4.752	1	.029	.174	3.283
[Coastal Erosion =5]	0 ^a	.	.	0	.	.	.
[Unpredictable Rainfall Patterns =1]	.755	.419	3.250	1	.071	-.066	1.576
[Unpredictable Rainfall Patterns =2]	.397	.458	.751	1	.386	-.501	1.296
[Unpredictable Rainfall Patterns =3]	2.304	.523	19.438	1	.000	1.280	3.329
[Unpredictable Rainfall Patterns =4]	.982	.446	4.839	1	.028	.107	1.857
[Unpredictable Rainfall Patterns =5]	0 ^a	.	.	0	.	.	.
[Sea Level Rise, and Saltwater Intrusion =1]	.603	.574	1.106	1	.293	-.521	1.728
[Sea Level Rise, and Saltwater Intrusion =2]	-.523	.526	.990	1	.320	-1.554	.507



[SeaLevelRise,andSaltwaterIntrusion=3]	-1.315	.650	4.092	1	.043	-2.589	-.041
[SeaLevelRise,andSaltwaterIntrusion=4]	-.457	.424	1.162	1	.281	-1.287	.374
[SeaLevelRise,andSaltwaterIntrusion=5]	0 ^a	.	.	0	.	.	.
[PopulationDisplacementandLivelihoodLoss=1]	-19.854	.571	1207.468	1	.000	-20.973	-18.734
[PopulationDisplacementandLivelihoodLoss=2]	-20.979	.320	4287.126	1	.000	-21.607	-20.351
[PopulationDisplacementandLivelihoodLoss=3]	-19.656	.312	3978.065	1	.000	-20.267	-19.045
[PopulationDisplacementandLivelihoodLoss=4]	-19.640	.300	4291.206	1	.000	-20.228	-19.052
[PopulationDisplacementandLivelihoodLoss=5]	-19.339	.000	.	1	.	-19.339	-19.339
[PopulationDisplacementandLivelihoodLoss=7]	0 ^a	.	.	0	.	.	.

Link function: Logit.

a. This parameter is set to zero because it is redundant.

Source: Author's Computation, (May, 2025)

The results from Table 4, derived using ordinal regression analysis, offer critical insights into how the five key indicators: increased frequency and severity of flooding, coastal erosion, unpredictable rainfall patterns, sea level rise, and saltwater intrusion, as well as population displacement and livelihood loss, influenced the responsiveness and effectiveness of governance in the Niger Delta. The threshold estimates in the model were all statistically significant ($p < 0.001$), confirming the suitability of the ordinal regression model for predicting the responsiveness and effectiveness of governance in the Niger Delta based on the dimensions of climate-induced disasters.

Next, regarding increased frequency and severity of flooding, all categories except the reference level (5) showed statistically significant negative coefficients ($p < 0.05$). This analysis indicates that as flooding becomes more severe, perceptions of governance effectiveness decrease significantly. Consequently, flooding is a strong predictor of a weakened governance response.

In the same vein, coastal erosion presented mixed results. While categories 1 and 4 were statistically significant ($p = 0.017$ and $p = 0.029$), categories 2 and 3 were not. This result implies that coastal erosion has a conditional influence on governance effectiveness, depending on the severity or location of occurrence.

Furthermore, unpredictable rainfall patterns had a statistically significant positive impact in categories 3 and 4 ($p < 0.05$), with category 3 being highly significant ($p = 0.000$). Therefore, governance institutions appear more responsive when rainfall variability is moderate to high, possibly due to improved early warning systems or adaptive planning.



On the contrary, the effects of sea level rise and saltwater intrusion mainly were statistically insignificant ($p > 0.05$) except for category 3 ($p = 0.043$), which showed a negative relationship. This result indicates that while sea level rise is a concern, its impact on governance responsiveness is less pronounced or effectively addressed.

Finally, population displacement and livelihood loss consistently showed strong statistical significance across all categories ($p = 0.000$), with substantial negative coefficients. Thus, this dimension exerts a profound negative impact on governance effectiveness, highlighting the urgency and gravity of socio-economic consequences caused by climate disasters.

Summative Content Analysis of Interview Transcripts by Objective.

Table 5: Background Information of Interviewee				
Informants	Position	Organisation	Code	Date
Informant 1	Director of Environmental Projects	Niger Delta Development Commission (NDDC)	Inf1	6 th May, 2025
Informant 2	Assistant Director, Infrastructure	Niger Delta Development Commission (NDDC)	Inf2	7 th May, 2025
Informant 3	Head of Operations	River State Emergency Management Agency (SEMA)	Inf3	7 th May, 2025
Informant 4	Senior Emergency Response Officer	Delta State Emergency Management Agency (SEMA)	Inf4	8 th May, 2025
Informant 5	Director, Disaster Risk Reduction	Bayelsa State Emergency Management Agency (SEMA)	Inf5	8 th May, 2025
Informant 6	State Coordinator	Akwa Ibom State Emergency Management Agency (SEMA)	Inf6	9 th May, 2025
Informant 7	Relief and Rehabilitation Officer	Cross River State Emergency Management Agency (SEMA)	Inf7	13 th May, 2023
Informant 8	Director, Urban Planning	Akwa Ibom State Ministry of Land	Inf8	15 th May, 2025
Informant 9	Environmental Policy Analyst	Akwa Ibom State Ministry of Environment and Natural Resources	Inf9	16 th May, 2025



Informant 10	Chief Town Planner	River State Ministry of Physical Planning and Urban Development	Inf10	20 th May, 2025
Informant 11	Director, Pollution Control	Rivers State Ministry of Environment	Inf11	20 th May, 2025
Informant 12	Director, Urban Renewal	Delta State Ministry of Urban Renewal	Inf12	21 th May, 2025
Informant 13	Environmental Compliance Officer	Delta State Ministry of Environment	Inf13	23 th May, 2025
Informant 14	Senior Surveyor	Cross River State Ministry of Land	Inf14	26 th May, 2025
Informant 15	Climate Change Desk Officer	Cross River State Ministry of Environment	Inf15	27 th May, 2025
Informant 16	Director, Housing and Urban Development	Bayelsa State Ministry of Lands, Housing and Urban Development	Inf16	28 th May, 2025
Informant 17	Senior Technical Officer	Bayelsa River State Ministry of Environment	Inf17	28 th May, 2025
Informant 18	Assistant Director / Climate Policy Analyst	Federal Ministry of Environment	Inf18	30 th May, 2025

Source: Author’s fieldwork, based on semi-structured interviews conducted between 6th May and 30th May, 2025, across relevant agencies in the Niger Delta region and the Federal Ministry of Environment.

Table 5 shows the background information of interviewees. The interview transcripts were presented objective by objective below using summative content analysis.

Objective 1 identified key drivers of climate-induced disasters in the Niger Delta region of Nigeria. Table 5 presents the semi-structured interviews conducted between May 6 and May 30, 2025, across relevant agencies in the Niger Delta region and the Federal Ministry of Environment. Theme 1 highlights the key drivers of climate-induced disasters. Substantial agreement across all 18 informants indicated that a convergence of environmental mismanagement and anthropogenic



activities is intensifying climate-induced disasters in the Niger Delta. Specifically, oil exploration, gas flaring, and illegal refining were highlighted as prime contributors to environmental pollution and degradation (Inf1, Inf11, Inf17). Additionally, unplanned urban growth and encroachments into ecologically sensitive zones such as floodplains were identified as exacerbating flood risks (Inf2, Inf4, Inf10, Inf16).

Informants also noted that deforestation, illegal logging, and wetland encroachment destroy the region's natural flood-control mechanisms, making it more susceptible to erosion and biodiversity loss. Waste disposal and drainage issues have aggravated urban flooding (Inf3, Inf17). Equally, systemic institutional weaknesses, particularly the lax enforcement of environmental laws and regulatory oversight, were mentioned as deepening climate risks (Inf9, Inf13, Inf18).

Consequently, natural water systems have been disrupted, while soil degradation and the destruction of green infrastructure further weaken community and ecosystem resilience (Inf2, Inf5, Inf8, Inf11, Inf12). Thus, climate variability, governance failures, and unsustainable land-use practices promote extreme weather occurrences like floods and droughts (Inf7, Inf15). The informants described the region as stuck between environmental damage and policy inertia.

Theme 2 underscored the impact of climate-induced disasters on governance responsiveness. Despite scattered improvements, governance structures appear compromised by institutional fragmentation and operational bottlenecks. On the one hand, some informants acknowledged functional early warning systems and coordinated evacuation strategies as effective during recent flood events (Inf1, Inf5, Inf6). Inf2, Inf11, and Inf17 reported fast resource deployment and oil spill containment, exhibiting technical and logistical readiness.

Community participation and policy formulation strengthened climate resilience (Inf3, Inf5, Inf12, Inf9, Inf15). However, widespread issues exist. Emergency obstacles included poor inter-agency cooperation and unstable communication (Inf1, Inf3, Inf10, Inf15, Inf18). Government responses have also been impeded by human resources, enforcement capabilities, and antiquated infrastructure (Inf2, Inf4, Inf13, Inf14, Inf17).

Additionally, the lack of community-centered planning and poor integration of climate risk into urban renewal frameworks were reported to reduce institutions' adaptive capacity (Inf8, Inf12). While select agencies display elements of strength, such as policy design and grassroots partnerships, systemic governance challenges, particularly poor coordination, fragmented



responsibilities, and insufficient funding, undermine large-scale, sustainable climate disaster response.

Objective 2 examined the impact of climate-induced disasters on the responsiveness and effectiveness of governance. Table 5 presents the semi-structured interviews conducted between May 6 and May 30, 2025, across relevant agencies in the Niger Delta region and the Federal Ministry of Environment. Theme 3 emphasised institutional challenges in climate disaster response. The cumulative testimony reveals that recurring climate disasters significantly disrupt institutional functions and service delivery across multiple levels of governance. For instance, agencies such as NDDC and SEMA reported that disaster response needs now routinely derail long-term infrastructure planning and development timelines (Inf1, Inf2, Inf4). Similarly, the suddenness and severity of flooding, droughts, and erosion events have overwhelmed logistics systems and diverted resources from core mandates to emergency responses (Inf3, Inf5, Inf7).

Furthermore, many informants expressed that the repeated need for emergency operations has eroded staff capacity and stretched budget allocations (Inf5, Inf6, Inf12). Critically, inadequate early warning systems and a lack of integration between government and local alert mechanisms hinder real-time interventions (Inf6). As a result, long-term policy planning and implementation, particularly within the ministries of environment and urban planning—have been stifled by the necessity for reactive rather than proactive interventions (Inf8, Inf9, Inf10, Inf15).

Theme 4 underlined institutional capacity and structural gaps. While some informants acknowledged operational successes, such as community-based early warnings and rapid relocations (Inf5, Inf12), wider structural and capacity gaps often undermined these. For example, several incidents exposed outdated data systems, insufficient personnel, and weak coordination between national and state actors (Inf1, Inf2, Inf3, Inf18). Likewise, environmental planning and development control lack climate sensitivity, with informants citing legacy infrastructure, obsolete zoning laws, and delayed funding as primary weaknesses (Inf8, Inf9, Inf10).

Moreover, fragmented communication channels have led to misaligned or delayed interventions, particularly during complex emergencies involving compound disasters like oil spills and flooding (Inf11). Even where institutional structures exist, they are often unprepared for extreme events such as wildfires, heatwaves, or coastal surges, revealing an apparent deficiency in adaptive planning and inter-sectoral integration (Inf7, Inf15, Inf16).



Objective 3 analysed the significant challenges confronting governance institutions in responding to climate-induced disasters. Table 5 presents the semi-structured interviews conducted between May 6 and May 30, 2025, across relevant agencies in the Niger Delta region and the Federal Ministry of Environment, highlighting institutional, financial, and logistical barriers in theme five. Across the board, institutions highlighted severe funding delays, particularly in accessing federal disbursements, as a central barrier to climate adaptation (Inf1). This financial constraint is compounded by outdated equipment, limited staffing, and migration of skilled responders, especially in emergency management agencies (Inf3, Inf4, Inf5). The lack of sustainable funding frameworks also forces agencies into reactive cycles, where each new disaster wipes out previous gains (Inf5, Inf6).

Moreover, informants pointed to outdated planning laws and lack of climate data as regulatory and informational bottlenecks (Inf8, Inf9, Inf14). Poor digital infrastructure and paper-based compliance procedures further slow response times and reduce strategic foresight (Inf13). Notably, there is also a significant shortage of in-house technical expertise, with agencies often dependent on external consultants for critical climate analyses (Inf17). Finally, horizontal and vertical governance fragmentation limits the alignment of policy and action across state and federal lines (Inf18).

Theme 6 emphasised the inter-agency coordination and response capacity. Ineffective coordination was repeatedly emphasized as a key structural flaw in Nigeria's climate disaster governance. Informants indicated that the absence of a harmonized operational framework between federal, state, and local actors leads to redundancy and delays in emergency response (Inf1, Inf2, Inf5). Additionally, information silos between agencies and poor data-sharing practices compromise the timeliness and effectiveness of relief efforts (Inf3, Inf6, Inf11).

Furthermore, urban planning decisions and emergency operations often function in isolation, resulting in disconnected land-use strategies and inconsistent implementation of zoning regulations (Inf8, Inf10). Despite the acknowledgment that strong coordination improves response quality (Inf7, Inf12), most informants lamented that inter-agency cooperation is still highly informal, frequently reliant on personal networks rather than institutionalized protocols (Inf5, Inf6, Inf9).



In conclusion, while inter-agency collaboration occasionally enhances operational efficiency, the systemic absence of joint planning forums, standardized communication channels, and integrated strategies continues to undermine effective climate disaster governance in the Niger Delta.

Triangulations of Quantitative and Qualitative Findings

The triangulation of findings from both quantitative and qualitative data strongly affirms that a combination of anthropogenic, institutional, and environmental factors significantly drives climate-induced disasters in the Niger Delta. From the quantitative survey in Table 1, the most frequently agreed-upon drivers include deforestation and land degradation (mean = 4.85), weak enforcement of environmental regulations (mean = 4.76), and poor urban planning with blocked drainage systems (mean = 4.53). These findings align with qualitative insights from Informants 1, 4, 5, 10, and 15, who unanimously noted the degradation of natural ecosystems, illegal logging, and infrastructural failures as critical enablers of disaster risk. Furthermore, oil exploration, gas flaring, and waste mismanagement were recurrently cited in the qualitative data (Inf1, Inf11, Inf17), corroborating the quantitative result where gas flaring and oil activities had a mean of 4.68 in Table 1. Likewise, both datasets converge on the issue of unregulated settlement and urban encroachment, noted by Inf2, Inf10, and Inf16, which support the 4.16 mean response under the “population pressure” item in the survey. Moreover, while the quantitative results show mixed levels of agreement on sea-level rise (mean = 3.25) and unpredictable rainfall patterns (mean = 2.83) as primary drivers, several informants (Inf3, Inf7, Inf12) indicated these factors are becoming increasingly disruptive. However, institutional weaknesses often compound their effects.

Similarly, the governance challenges related to climate disaster response are widely recognized across both datasets.

According to Table 2, the most prominent constraints include lack of skilled personnel (mean = 4.76), inter-agency coordination weaknesses (mean = 4.85), and inadequate funding (mean = 4.53). Informants 2, 4, 13, and 14 also cited personnel gaps, antiquated systems, and fragmented institutional duties as significant obstacles. Inf1, Inf3, Inf10, and Inf18 explicitly mentioned emergency communication difficulties, echoing the survey's findings on delayed decision-making and poor cooperation. Informants 5, 6, 9, and 15 confirmed proactive governance, including community-based solutions and policy participation. Theme 4 of the qualitative findings describes how structural weaknesses isolate and degrade these. This reality corresponds with the quantitative



mean of 3.68 for poor implementation of climate policies and 3.83 for inadequate early warning systems (Table 2).

Next, the ordinal regression analysis (Tables 3 and 4) tested and confirmed the hypothesis (H_1) that climate-induced disasters significantly affect governance effectiveness. The non-significant deviance statistic ($p = .701$) indicates a good model fit. Statistically significant predictors included flooding (all categories, $p < .05$), with strong negative estimates, meaning increased flooding correlates with reduced governance responsiveness. This result is consistent with the accounts of Inf3, Inf5, and Inf7, who emphasized how flooding derails institutional planning and overloads logistics. Conversely, sea-level rise and saltwater intrusion showed mostly insignificant coefficients, mirroring Table 1's low mean (3.25), and were only sporadically mentioned in the interviews. Nevertheless, population displacement and livelihood loss presented highly significant negative estimates across all thresholds (Table 4), further supported by Inf1, Inf2, Inf4, and Inf12, who stressed how disasters continuously strain institutional capacities and redirect long-term developmental focus to emergency relief. Finally, moderately variable rainfall ($p = .000$ for category 3) was a significant predictor, indicating governance becomes more responsive under specific rainfall patterns due to improved early warning adaptation. This supports qualitative inputs from Inf5 and Inf6, who noted warning system and evacuation improvements.

Triangulating quantitative and qualitative results shows a strong causal link between environmental deterioration, institutional fragility, and inadequate governance in handling climate-induced disasters in the Niger Delta.

Discussion of Findings

The study investigated the impact of Climate-Induced Disasters on Governance Response in the Niger Delta Region of Nigeria. Three objectives were achieved. It identified the key drivers of climate-induced disasters in the Niger Delta region of Nigeria. It also examined the impact of climate-induced disasters on the responsiveness and effectiveness of governance in the Niger Delta. It analysed significant challenges confronting governance institutions in responding to climate-induced disasters in the Niger Delta region. The study used a mixed-methods research design that integrated qualitative and quantitative techniques.

On objective one, the study revealed that a complex interaction of human-induced, institutional, and environmental factors primarily drives climate-induced disasters in the Niger Delta. Most notably, deforestation, weak enforcement of environmental regulations, and poor urban planning



emerged as dominant drivers, consistent across quantitative and qualitative datasets. This result aligns with previous research, such as those by Agbonifo (2016) and Eneanya (2020), which documented the adverse role of unsustainable land use and institutional failures in intensifying environmental degradation in the region. Moreover, the findings affirm that oil exploration activities, particularly gas flaring and improper waste disposal, significantly contribute to ecological instability. This finding corroborates assertions by Altıparmak (2022) and Ogbonna et al. (2020), who underlined the role of extractive industries in amplifying disaster vulnerabilities. While natural phenomena such as sea-level rise and erratic rainfall patterns were less consistently cited, qualitative accounts highlighted their growing disruptive potential, especially when compounded by weak institutional responses—a view supported by Chizea (2022) and Butu et al. (2022).

Concerning objective two, the ordinal regression analysis validates the hypothesis (H_1) that climate-induced disasters have a significant impact on governance responsiveness and effectiveness in the Niger Delta. The model fit was supported by a non-significant Deviance statistic ($\chi^2 = 535.954$, $df = 554$, $p = .701$), confirming its robustness despite the Pearson Chi-Square significance ($\chi^2 = 883.829$, $df = 554$, $p = .000$). Results reveal that flooding strongly predicts weakened governance, as all non-reference categories showed significant negative coefficients ($p < 0.05$). These findings align with the work of Kuranga and Umaru (2020) and Ogbonna, Ekene, and Njoku (2020), who highlighted the vulnerability of governance structures to recurrent flooding in the Niger Delta. Coastal erosion showed mixed effects, significant only in categories 1 and 4 ($p = 0.017$; $p = 0.029$). Unpredictable rainfall patterns enhanced responsiveness in categories 3 and 4 ($p = 0.000$; $p = 0.028$), possibly due to the implementation of adaptive measures. The results align with those of Adesope, Okorie, and Ootu (2024), who emphasized the importance of adaptive agricultural and institutional responses to rainfall variability. Sea level rise was largely insignificant, except in category 3 ($p = 0.043$). Critically, population displacement and livelihood loss exerted the most profound adverse effects across all categories ($p = 0.000$), underscoring severe socio-economic governance challenges. This finding aligns with Abubakar, Bello, and Ismail (2025), who emphasize that environmental migration and livelihood disruptions exacerbate governance failures in climate-vulnerable regions.

In addition, objective three reveals that systemic challenges severely hinder the governance capacity to respond effectively to climate-induced disasters. Chief among these are inadequate



human resources, fragmented institutional coordination, and insufficient financial support. These constraints were echoed in the works of Kuranga and Umaru (2020) and Ikenga et al. (2022), who highlighted the disconnect between national policy frameworks and localised institutional execution, particularly in climate-vulnerable regions. Nevertheless, while some community-level initiatives and participatory governance mechanisms were acknowledged, these remain largely unsystematic and hampered by poor policy implementation. This result reflects earlier concerns Healey (1998) and Innes and Booher (2003) raised regarding the limitations of fragmented governance systems in addressing multi-scalar environmental issues.

The study shows that climate-induced Niger Delta disasters are systemic governance issues. Although some disaster management efforts are successful, institutional coherence, ability, and foresight are lacking. As such, any sustainable solution must entail integrated, well-financed, and participatory governance frameworks advocated by national policies (Federal Ministry of Environment, 2021) and international best practices (Ladan, 2022; Clean Technology Hub, 2023).

Conclusion

This study examined the impact of climate-induced disasters on governance response in the Niger Delta region of Nigeria, identifying key disaster drivers, evaluating governance effectiveness, and analysing institutional challenges. Findings revealed that disasters are driven by a complex mix of human, institutional, and environmental factors—particularly deforestation, weak regulation, and oil exploration activities. These events significantly strain governance capacity, especially during flooding, which emerged as the strongest predictor of reduced institutional effectiveness. Systemic issues such as limited resources, poor coordination, and fragmented responses undermine disaster management efforts. Ultimately, the study highlights that climate-induced disasters in the Niger Delta are deeply intertwined with governance weaknesses, framing them as both environmental and institutional crises.

Recommendations

A thorough and collaborative governance response is important to address climate-induced disasters in Nigeria's Niger Delta, based on the study's findings. First, clarify agency roles and strengthen technology and human capabilities to promote institutional coordination. Environmental laws, especially those on deforestation, gas flaring, and land use, must be enforced to reduce anthropogenic climate risks. Urban development must address climate change through



zoning reforms, resilient infrastructure, and wetland conservation. Disaster readiness also requires early warning systems, community-based planning, and contingency plans.

These recommendations, however, necessitate ongoing investments in infrastructure, social protection for displaced communities, and climate adaptation. In order to improve accountability and guarantee locally based answers, participatory governance should also be encouraged. Similarly, promoting environmental knowledge and readiness requires public education. Lastly, for adaptive growth, climate-smart solutions should take advantage of moderate rainfall patterns. These actions form an inclusive governance framework to reduce disaster impacts and enhance regional resilience.

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