



RESEARCH ARTICLE

ENVIRONMENTAL GOVERNANCE AS A CATALYST FOR DISASTER RISK REDUCTION: REPOSITIONING INSTITUTIONAL PRIORITIES FOR SUSTAINABLE DEVELOPMENT IN NIGERIA

NOBLE CHIANIGAM BROWN ¹, CHINYERE GIFT VICTOR-WOKEM ²

^{1,2} Department of Geography and Environmental Studies, Ignatius Ajuru University of Education, Rumuolumeni, P. M. B. 5047, Port Harcourt, Rivers State, Nigeria,

ABSTRACT

This study examined environmental governance as a catalytic mechanism for disaster risk reduction (DRR) and sustainable development in Nigeria. Against the backdrop of recurrent flooding, environmental degradation, and growing socio-economic vulnerabilities, the research interrogated how institutional effectiveness, regulatory enforcement, and inter-agency coordination influenced disaster outcomes. Drawing on a mixed-methods design, quantitative data (2005–2023) were analysed using multiple regression models, while qualitative insights were obtained from semi-structured interviews with key environmental and emergency management officials. The findings revealed a statistically significant negative relationship between environmental governance effectiveness and disaster frequency ($\beta = -0.62$, $p < 0.01$), indicating that stronger compliance monitoring and regulatory enforcement reduced environmentally induced disasters. Institutional coordination positively influenced preparedness outcomes ($\beta = 0.55$, $p < 0.05$), underscoring the importance of integrated governance frameworks. Furthermore, regulatory enforcement demonstrated a significant inverse relationship with economic loss ($\beta = -0.48$, $p < 0.05$), with cost–benefit analysis suggesting that every ₦1 invested in enforcement yielded approximately ₦4 in avoided disaster losses. Qualitative evidence highlighted the strategic value of integrating environmental governance into national security planning and decentralising enforcement authority. The study concluded that environmental governance was not peripheral to development policy but central to balancing security, economic growth, and environmental protection. Strengthening institutional coherence and enforcement capacity was therefore essential for risk-informed, sustainable development in Nigeria.

Keywords: Disaster risk reduction, environmental governance, institutional coordination, regulatory enforcement, sustainable development.

Corresponding Author

Noble Chianigam Brown,

Email Address: noble.brown@iaue.edu.ng, Telephone: +2348033382564

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1.0. INTRODUCTION

Nigeria's sustainable development trajectory is increasingly shaped by the intersection of environmental degradation, disaster vulnerability, and governance fragility. Over the past two decades, the country has experienced recurrent flooding, coastal erosion, oil spills, desertification, and urban environmental crises, all of which have imposed significant socio-economic costs. The devastating 2012 and 2022 floods, for instance, displaced millions and caused extensive infrastructure damage, exposing structural weaknesses in environmental planning and risk management systems. These environmental disruptions are not merely ecological phenomena but governance challenges that undermine national security and economic productivity.

Globally, disaster risk reduction (DRR) has shifted from reactive emergency response to proactive risk governance, as articulated in the Sendai Framework for Disaster Risk Reduction 2015–2030 (UNDRR, 2015). The framework emphasises strengthening disaster risk governance to manage disaster risk. However, in many developing states, including Nigeria, environmental governance remains fragmented, weakly enforced, and insufficiently integrated into development planning.

When we talk about taking care of the environment, we are really talking about how people and the planet interact. This is where environmental governance comes in - it is like a system that includes rules, laws, and ways for people to get involved in making decisions about the environment. Good governance helps reduce the risks of disasters by making sure people follow environmental rules, planning cities well, managing waste, and protecting natural ecosystems. On the other hand, if governance is weak, it can make disasters more likely due to poor planning, corruption, and confusion about who's in charge. This can lead to big problems like cities being poorly planned, corruption, and institutions not doing their job, which can all contribute to disasters happening.

In Nigeria, things are pretty complicated when it comes to handling the environment and disasters. You've got agencies like the National Environmental Standards and Regulations Enforcement Agency, or NESREA for short, and the National Emergency Management Agency, known as NEMA, working together but also having some overlap in what they do. NESREA is mainly in charge of making sure environmental laws are followed, while NEMA focuses on getting ready for and responding to disasters. The problem is, these two areas - taking care of the environment and preparing for disasters - are not really connected in a way that helps prevent bad things from happening. This makes it harder to stop disasters before they occur.

Furthermore, environmental degradation in regions such as the Niger Delta has exacerbated socio-economic tensions and insecurity. Oil pollution, gas flaring, and ecosystem destruction have weakened livelihoods, thereby contributing indirectly to conflict dynamics (Watts, 2008). This underscores the need to reposition environmental governance as a foundational pillar of national security and sustainable economic growth.

When we think about keeping people safe from disasters, we often talk about how the environment and security are connected. But even with all this talk, there is still not enough research on how taking care of the environment can help reduce the risk of disasters in Nigeria. Most studies look at environmental management and disaster risk reduction as separate issues. This study aims to fill that gap by looking at how well Nigeria manages its environment and how that affects the risk of disasters



and the country's ability to develop in a sustainable way. By doing this, we can better understand the relationship between environmental governance and disaster risk reduction, and how it impacts Nigeria's progress towards a more sustainable future.

1.1. Objectives

The study is guided by the following four specific objectives.

1. To examine the relationship between environmental governance effectiveness and disaster frequency in Nigeria.
2. To assess the impact of institutional coordination on disaster preparedness and response outcomes.
3. To evaluate the influence of environmental regulatory enforcement on economic loss from disasters.
4. To determine how governance reforms can reposition environmental management as a strategic pillar for sustainable development and

2.0. CONCEPTUALIZATION AND LITERATURE REVIEW

Environmental Governance

Environmental governance refers to the structures and processes through which environmental policies are formulated, implemented, and enforced (Jordan, Wurzel, & Zito, 2005). It encompasses formal institutions, informal norms, regulatory mechanisms, and multi-level coordination arrangements. Scholars emphasise accountability, transparency, participation, and enforcement capacity as critical determinants of governance effectiveness.

In developing contexts, governance deficits often manifest in regulatory capture, inadequate funding, weak monitoring systems, and limited inter-agency coordination (Agrawal & Ribot, 1999). These deficiencies undermine environmental compliance and heighten disaster risks.

Environmental Governance and Disaster Risk Reduction

The theoretical link between environmental governance and DRR is grounded in vulnerability theory. According to Wisner et al. (2004), disasters are socially constructed through patterns of vulnerability shaped by political and economic processes. Environmental mismanagement such as deforestation, wetland encroachment, and unregulated urbanisation intensifies hazard exposure.

Adelekan (2010) demonstrated that poor urban planning in Nigerian cities increases flood vulnerability. Similarly, Akinyemi (2016) found that weak enforcement of environmental regulations contributed to recurrent erosion disasters in southeastern Nigeria.

The Sendai Framework underscores governance reform as essential for risk-informed development planning. Effective environmental regulation can prevent hazardous settlement patterns, reduce pollution-induced health crises, and preserve ecosystem services that buffer hazards.



Institutional Fragmentation in Nigeria

Nigeria's environmental governance architecture involves multiple federal and state agencies. NESREA enforces environmental standards, while NEMA coordinates disaster management. The Federal Ministry of Environment provides policy direction. However, institutional fragmentation and resource constraints limit enforcement capacity (Oladipo, 2018).

Research shows that when different groups have similar responsibilities and do not share information well, it can lead to confusing policies. As a result, checks on how projects affect the environment are not done properly, and this allows developments that can be very harmful to move forward without being stopped.

Environmental Degradation, Security and Economic Growth

Environmental degradation has economic and security implications. Flooding disrupts agricultural productivity and infrastructure networks, while oil spills diminish fisheries and livelihoods. Empirical estimates suggest that climate-related disasters cost Nigeria billions annually in GDP losses. Watts (2008) links environmental grievances in the Niger Delta to militancy and insecurity. Thus, strengthening environmental governance may simultaneously enhance economic stability and national security.

2.2. Research Gap

Here is how we can make sure that the connection between taking care of the environment and reducing disaster risks is clear in Nigeria. Even though we know theoretically that these two things are linked, we do not have enough real-life data to prove it in Nigeria. So, this study is trying to fill that gap by using numbers and stories to see how well we are doing with environmental governance and how that affects what happens during disasters.

3.0. METHODOLOGY

A mixed-methods research design was adopted, combining quantitative analysis with qualitative institutional assessment. Quantitative data (2005–2023) were obtained from: National disaster reports, Environmental compliance records, GDP and economic loss datasets, **and** State-level governance performance indicators. We talked to 25 people who work for agencies that handle environmental issues and emergencies. They shared their thoughts and experiences with us in interviews that were partly structured, but also allowed for open and honest conversations.

Variables and Model Specification

Dependent Variables: • Disaster Frequency (annual events); • Economic Loss (₦ billions)

Independent Variables: • Environmental Governance Index (constructed from enforcement rate, inspection coverage, compliance rates); • Institutional Coordination Score; • Regulatory Enforcement Strength

Multiple regression analysis was employed: $DR = \beta_0 + \beta_1 EG + \beta_2 IC + \beta_3 RE + \varepsilon$

Qualitative data were analysed thematically to identify governance constraints.



4.0. RESENTATION OF RESULTS AND DISCUSSION

Table 1: Descriptive Statistics

Variable	Mean	Std. Deviation
Environmental Governance Index (EG)	65.4	10.8
Institutional Coordination Score (IC)	58.7	12.1
Regulatory Enforcement Strength (RE)	61.2	11.4
Disaster Frequency (DF)	12.6	4.3
Economic Loss (₦ Billion)	145.3	35.7

Source: Authors' Analysis (2025).

Table 2: Multiple Regression Analysis

Predictor Relationship	Beta (β)	t-value	p-value	R ²
Environmental Governance (EG) → Disaster Frequency	-0.62	-4.87	< 0.01	0.44
Institutional Coordination (IC) → Preparedness Score	0.55	3.92	< 0.05	0.36
Regulatory Enforcement (RE) → Economic Loss	-0.48	-3.41	< 0.05	0.29

Source: Authors' Analysis (2025).

4.1. Analysis of the Relationship between Environmental Governance and Disaster Frequency

When we look at how well governments manage the environment, we can see that it has a big impact on how often disasters happen. In fact, our analysis shows that better governance actually reduces the number of disasters caused by environmental factors. This makes sense when we think about how disasters are not just natural events, but are also influenced by the social and economic systems we have in place. For example, poor governance can lead to vulnerabilities that make communities more prone to disasters.

On the other hand, effective governance can help reduce these vulnerabilities and make communities more resilient. This idea is supported by research that suggests disasters are often the result of a combination of natural and social factors, rather than just natural events. By understanding this relationship, we can work to improve governance and reduce the risk of disasters. Research shows that poor city planning and lack of enforcement make Nigerian cities more prone to flooding.

In fact, states that closely monitor and enforce regulations tend to have fewer disasters related to floods and pollution. This backs up the idea that how we manage the environment plays a big role in how vulnerable we are to natural hazards. When we have strong systems in place to protect the environment, we can reduce the impact of disasters. This is especially important for cities, where the effects of flooding and pollution can be devastating. By prioritizing environmental governance, we can create safer and more resilient communities.

Here is how it looks when we break it down: the connection between how well a country is run and how often disasters happen is really strong. This means that good governance is a big part of reducing the risk of disasters, which is something that the Sendai Framework emphasizes. When a country has



strong rules to protect the environment, like controlling how land is used, stopping people from building on wetlands, and regulating what industries can release into the environment, it can really reduce the chances of a hazard turning into a disaster. This is because these rules help cut off the paths that hazards can take to become full-blown disasters. In effect, the findings move beyond theoretical assertions by quantifying governance as a measurable determinant of disaster outcomes in Nigeria.

4.2. Assessment of the Institutional Coordination and Disaster Preparedness

When different government agencies work together, it really helps to get things done and make sure everyone is on the same page. This is especially important when it comes to dealing with disasters and taking care of the environment. In fact, research has shown that when agencies share information and plan together, they can respond to disasters more quickly and save more lives. For example, states that have set up systems for sharing data and planning together have seen big improvements in how they handle disasters. They can get help to people faster and reduce the number of casualties. This just goes to show that working together and coordinating efforts is key to making sure we're prepared for disasters and can respond effectively when they happen. By doing so, we can save lives and reduce the impact of disasters on our communities.

In Nigeria, it is really important to note that the government agencies don't always work well together, which can cause problems. This is something that has been talked about a lot before (Oladipo, 2018). When we spoke to people, they told us that different government departments often do not communicate effectively, which supports what Ebeku said in 2004 about how there are too many agencies doing similar things and not coordinating well with each other, especially when it comes to taking care of the environment.

When we look at how well communities can prepare for disasters, it is not just about how they respond in an emergency. It's also about how different parts of the government work together. If the people who monitor the environment share their information with the teams that handle emergencies, they can warn people sooner about potential dangers. This makes the community less vulnerable to disasters. This idea is supported by global frameworks that focus on the role of governance in reducing disaster risks. By working together and sharing information, governments can help keep their people safer.

When it comes to getting ready for disasters, working together as a team is really important. This teamwork helps connect taking care of the environment to being prepared for disasters. Research shows that when teams work well together, it has a moderate but significant impact on how prepared we are for disasters. This means that teamwork is not the only factor, but it plays a big role in helping us get ready.

4.3. Evaluation of the Influence of Regulatory Enforcement and Economic Loss

When we look at how well rules are enforced to protect the environment, we can see that it actually helps reduce the amount of money lost due to disasters. This makes sense because if we take care of the environment, we can avoid some of the big costs that come with cleaning up after disasters. It is like being prepared ahead of time, which can save us a lot of money in the long run. This idea is



supported by research that shows taking care of the environment can actually help the economy by reducing the costs associated with recovering from disasters.

When we look at the numbers, it is clear that taking care of the environment is a smart move. For every ₦1 we put into making sure rules are followed, we save around ₦4 that would have been lost because of disasters. This shows that taking care of the environment is not just a rule to follow, but a good investment. It is like what Oladipo said in 2018: taking care of the environment helps us develop in a way that is good for everyone and saves us from expensive problems down the line.

The findings also fit with the bigger picture that connects harming the environment to economic problems. For example, Watts said in 2008 that when we do not take care of the environment, like in the Niger Delta, it can lead to social and economic issues. By stopping damage to infrastructure and keeping ecosystems healthy, enforcing rules can help reduce economic losses, both direct and indirect. This is important because it shows that taking care of the environment is not just good for nature, but also for the economy. When ecosystems are healthy, they provide many benefits, like clean water and air, that are essential for economic growth. So, by protecting the environment, we can also protect people's livelihoods and the economy as a whole.

Here is how we can look at it: environmental rules are often seen as a barrier to economic growth, but the numbers tell a different story. What really hurts the economy is when these rules are not enforced properly. This changes how we think about taking care of the environment - it is not just about saving the planet, but also about keeping our economy stable. In Nigeria, this means making environmental governance a key part of the country's development plan.

4.4. Determination of How Governance Reform can Boost Sustainable Development

The qualitative findings reveal strong consensus among respondents that integrating environmental governance into national security planning enhances resilience. This supports the argument that environmental governance is intrinsically linked to security and sustainable development.

Watts (2008) highlighted how environmental grievances in resource-dependent regions can escalate into insecurity. The study's findings extend this argument by demonstrating that governance reform through harmonised policy frameworks and decentralised enforcement can mitigate structural vulnerabilities that contribute to instability.

The call for decentralised enforcement authority aligns with Agrawal and Ribot's (1999) decentralisation framework, which emphasises accountability and local-level participation as prerequisites for effective governance. Strengthening local institutional capacity may reduce implementation gaps that currently undermine environmental regulation.

Here is how we can make sure the environment is protected and people are safe. When we take care of the environment, it helps reduce the risk of people losing their homes, jobs, and feeling unhappy. By looking at how the environment might affect security, Nigeria can plan ahead and make informed decisions to prevent disasters, which is in line with the Sendai Framework. This way, we can work towards a safer and more sustainable future.



Collectively, the results confirm that environmental governance is not a peripheral administrative function but a structural determinant of sustainable development outcomes.

5.0. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

Here's how we can make sure the environment is protected to reduce the risk of disasters in Nigeria. When the government enforces rules and regulations properly, and different institutions work together, it can really help cut down on the number of disasters and the amount of money lost because of them. So, taking care of the environment should be a top priority for the country's security and development. By doing this, we can create a safer and more sustainable future for everyone.

5.2. Recommendations

1. The National Environmental Standards and Regulations Enforcement Agency in collaboration with the Federal Ministry of Environment should strengthen environmental regulatory enforcement through increased budgetary allocation, deployment of geospatial monitoring technologies, and routine compliance inspections to reduce disaster frequency associated with environmental degradation.
2. To really make a difference, the National Emergency Management Agency and the Federal Ministry of Environment should work together to create a system that connects all the different groups and levels of government. This system would help share important information, assess risks together, and make sure everyone is prepared for emergencies in the same way, from the federal level all the way down to the states.
3. The Office of the National Security Adviser in partnership with the National Emergency Management Agency and the Federal Ministry of Environment should institutionalise environmental risk assessments within national security and development planning to proactively address climate-induced displacement, infrastructure vulnerability, and resource-based conflicts.
4. State Ministries of Environment and Local Government Environmental Departments should decentralise environmental governance by promoting community-based monitoring systems, public participation mechanisms, and transparent environmental reporting processes to enhance local resilience and sustainable development outcomes.

Conflict of Interest

The authors declare that no conflict of interest exist in this manuscript.



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