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Bridging The Climate Policy–Implementation Gap In Nigeria: A Diagnostic And Prescriptive Analysis

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Abstract
This paper examines why Nigeria's extensive climate policy architecture has failed to translate into effective on-ground outcomes, asking what structural factors drive the persistent climate policy–implementation gap and how these constraints can be overcome. Using a mixed-methods design, the study draws on 45 semi-structured interviews with policymakers, civil society actors, private-sector stakeholders, and development partners; systematic analysis of climate policy, budgetary, and institutional documents (2019–2023); and an in-depth critical case study of the 2024 Alau Dam collapse. The findings identify five mutually reinforcing barriers: institutional fragmentation and mandate overlap, chronic fiscal fragility and donor dependence, weak monitoring and accountability systems, severe data and technological deficits, and exclusionary governance practices (Adeniji & Nwankwo, 2023; World Bank, 2024; UNEP, 2023). The paper recommends institutional realignment anchored in climate-responsive budgeting, strengthened intergovernmental coordination, transparent accountability frameworks, and inclusive stakeholder engagement. Its original contribution lies in integrating Institutional Theory, Environmental Policy Integration, and Climate Justice to advance a context-sensitive governance reform pathway for climate implementation in federal Global South settings.

Keywords: *Climate governance; implementation gap; Nigeria; institutional fragmentation; climate finance; inclusive governance.*

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I. Introduction

Climate change has emerged as one of the defining governance challenges of the twenty-first century, particularly for developing countries whose development trajectories are increasingly constrained by climate risks, fiscal fragility, and institutional capacity limitations. While global climate governance has expanded rapidly since the Paris Agreement, a growing body of scholarship highlights a persistent disjuncture between policy ambition and implementation outcomes, especially in the Global South (IPCC, 2023; Jordan et al., 2024). Nigeria exemplifies this paradox. Despite possessing one of Africa's most comprehensive climate policy frameworks, the country continues to experience severe climate impacts and limited adaptive and mitigation gains. This study interrogates the structural and institutional foundations of this climate policy–implementation gap, situating Nigeria's experience within broader debates on climate governance, policy integration, and climate justice.

Background

Nigeria occupies a pivotal position in global and African climate governance. As Africa's most populous country and largest economy, Nigeria's development pathway has significant implications for regional emissions trajectories, climate vulnerability, and sustainable development outcomes (World Bank, 2024). The country is simultaneously a major fossil-fuel producer and a climate-vulnerable state, confronting rising temperatures, intensified flooding, desertification, coastal erosion, and escalating climate-related displacement (IPCC, 2023).

In response to these challenges, Nigeria has undertaken substantial climate-policy reforms over the past decade, culminating in a dense architecture of laws, strategies, and institutional arrangements. These include the Climate Change Act (2021), updated Nationally Determined Contributions (NDCs), the Long-Term Low Emissions Development Strategy (LT-LEDS), the Energy Transition Plan, and sector-specific adaptation frameworks spanning agriculture, water resources, disaster risk reduction, and urban development (Federal Ministry of Environment, 2022; Energy Transition Office, 2022). Collectively, these instruments signal a normative shift toward climate mainstreaming in national development planning and align Nigeria with international climate commitments.

However, the escalation of climate impacts has continued unabated. Flooding events in 2022 and 2024 affected millions of Nigerians, destroying infrastructure, disrupting livelihoods, and exposing systemic governance failures, including weak early warning systems, poor infrastructure maintenance, and ineffective

inter-agency coordination (OCHA, 2024; UNDRR, 2023). These outcomes raise critical questions about the effectiveness of Nigeria's climate governance arrangements and the extent to which policy ambition translates into material resilience gains.

Recent climate-governance scholarship cautions against equating policy proliferation with governance effectiveness, noting that institutional fragmentation, fiscal constraints, and exclusionary decision-making often undermine implementation in developing-country contexts (Runhaar et al., 2022; Okereke et al., 2022). Nigeria's experience thus provides a compelling case for examining how ambitious climate policies interact with fragile governance systems, contested political economies, and deeply unequal social structures.

The Problem of the Climate Policy–Implementation Gap in Nigeria

The central problem addressed in this study is the persistent gap between Nigeria's climate policy commitments and their practical implementation. While Nigeria's climate-policy architecture has expanded significantly, implementation outcomes remain weak, uneven, and highly vulnerable to political and fiscal shocks (Adebayo & Salami, 2023; AfDB, 2023).

Several interrelated factors underpin this gap. First, institutional fragmentation is deeply entrenched within Nigeria's federal governance system. Multiple ministries, departments, and agencies hold overlapping climate-related mandates, often without effective coordination or clearly defined accountability mechanisms. This fragmentation generates inter-agency competition, policy incoherence, and duplication of efforts, undermining Environmental Policy Integration (EPI) (Ajakaiye & Tella, 2024).

Second, climate action in Nigeria is constrained by chronic fiscal fragility. Public finances are heavily dependent on hydrocarbon revenues, while debt servicing, subsidy reforms, and macroeconomic instability limit fiscal space for sustained climate investment (IMF, 2024). Consequently, Nigeria's climate ambitions are highly conditional on external finance, reinforcing donor dependency and exposing climate programmes to volatility in international funding flows (World Bank, 2024).

Third, monitoring, evaluation, and accountability systems remain weak. Despite statutory provisions under the Climate Change Act, climate-related performance indicators are poorly integrated into budgeting and planning processes, and enforcement mechanisms for non-compliance are limited (UNEP, 2023). This weak accountability environment enables symbolic compliance rather than substantive implementation.

Fourth, technological and data deficits constrain evidence-based decision-making. Inadequate climate data, limited emissions inventories, and weak early warning systems undermine anticipatory governance and adaptive planning, particularly at subnational levels where climate impacts are most acute (UNDRR, 2023).

Finally, climate governance in Nigeria remains largely exclusionary. Vulnerable groups—including women, informal-sector workers, rural communities, and internally displaced persons—are often marginalised in decision-making processes, despite bearing disproportionate climate risks (Akinyemi & Ojo, 2023). This exclusion undermines legitimacy, trust, and policy effectiveness, reinforcing climate injustice.

Together, these structural constraints reveal that Nigeria's climate challenge is fundamentally a governance problem rather than a policy-design deficit.

Situating the Study in Global Climate-Governance Debates

This study is situated within three interrelated strands of global climate-governance scholarship. First, it contributes to debates on the limits of policy-centric climate governance. Recent studies argue that the proliferation of climate policies has not yielded commensurate outcomes, particularly in developing countries where institutional capacity and political incentives shape implementation trajectories (Jordan et al., 2024; Hickmann et al., 2023).

Second, the study engages with scholarship on Environmental Policy Integration (EPI). While EPI is widely endorsed as a governance principle, empirical evidence from the Global South suggests that integration is frequently undermined by sectoral silos, fiscal disincentives, and weak administrative coordination (Runhaar et al., 2022; UNEP, 2023). Nigeria provides a critical case for examining how EPI operates—or fails to operate—within a resource-dependent federal system.

Third, the study aligns with emerging work on climate justice and polycentric governance. Scholars increasingly argue that climate governance must address issues of equity, participation, and differentiated vulnerability, particularly in contexts marked by poverty, informality, and political marginalisation (Schlosberg et al., 2023; Okereke et al., 2022). Polycentric governance arrangements are often proposed as more adaptive and inclusive alternatives, yet their effectiveness depends on institutional coherence and capacity—conditions that remain uneven in Nigeria.

By engaging these debates, the study moves beyond descriptive accounts of policy gaps to offer a theoretically grounded explanation of why implementation fails and how it might be improved.

Research Questions and Contributions

Guided by the foregoing discussion, the study addresses the following research questions:

1. What structural and institutional factors drive the persistent climate policy–implementation gap in Nigeria?
2. How do governance arrangements, fiscal dynamics, and accountability mechanisms shape climate-policy outcomes across sectors and levels of government?
3. What lessons can be drawn from comparative international experiences to inform context-sensitive climate governance reforms in Nigeria?

The study makes four principal contributions. First, it provides one of the most comprehensive post-2021 analyses of Nigeria's climate governance architecture, integrating legal, institutional, fiscal, and socio-political dimensions. Second, it advances theoretical understanding by synthesising Institutional Theory, Environmental Policy Integration, and Climate Justice perspectives in a single analytical framework. Third, it contributes empirically through original qualitative evidence and critical case analysis, illuminating the lived consequences of governance failure. Finally, it offers a prescriptive reform agenda grounded in Nigeria's institutional realities rather than transplanted governance models.

Structure of the Article

The remainder of the article is structured as follows. Section 2 situates the study within Nigeria's climate-policy context and outlines the conceptual and theoretical foundations. Section 3 details the research methodology and data sources. Section 4 presents the empirical findings, while Section 5 analyses the Alau Dam collapse as a critical governance failure. Section 6 discusses the findings in relation to global climate-governance debates. Section 7 proposes a multi-pronged reform agenda, and Section 8 concludes with implications for policy and future research.

II. Nigeria's Climate-Policy Architecture Since 2019

Since 2019, Nigeria has undertaken a significant expansion and consolidation of its climate-policy architecture, reflecting growing international and domestic pressure to align development planning with climate mitigation and adaptation imperatives. This period coincides with heightened global ambition following the Paris Agreement's implementation phase and increasing recognition of climate change as a binding constraint on Nigeria's socio-economic development trajectory (Adeniji & Nwankwo, 2023; IPCC, 2023).

Key policy instruments introduced or updated during this period include the revised National Climate Change Policy, Nigeria's updated Nationally Determined Contribution (NDC) submitted in 2021 and reaffirmed in 2023, the Long-Term Low Emissions Development Strategy (LT-LEDS), the Energy Transition Plan (ETP), and sector-specific frameworks spanning agriculture, energy, transport, water resources, and disaster risk management (Federal Ministry of Environment [FME], 2022; World Bank, 2024). Collectively, these instruments articulate ambitious goals, including a conditional commitment to net-zero greenhouse-gas emissions by 2060, climate-resilient growth, and enhanced adaptation for vulnerable populations.

Institutionally, climate governance in Nigeria is formally coordinated through the National Council on Climate Change (NCCC), established to provide strategic direction, inter-ministerial coordination, and oversight of climate action across federal, state, and local government levels. The NCCC is supported by line ministries, departments, and agencies (MDAs), including the Federal Ministry of Environment, the Ministry of Finance, the Ministry of Budget and National Planning, and sectoral agencies responsible for implementation (Ogunbiyi et al., 2022).

Despite this apparent policy density, Nigeria's climate-policy architecture remains highly fragmented. Mandates frequently overlap, coordination mechanisms are weakly institutionalised, and vertical integration across federal and subnational levels is inconsistent (Ajakaiye & Tella, 2024). Climate responsibilities are often treated as additive rather than integrative, resulting in siloed planning processes that undermine Environmental Policy Integration (EPI). Moreover, climate objectives are frequently subordinated to short-term macroeconomic and political priorities, particularly in periods of fiscal stress and electoral transition (AfDB, 2023).

The post-2019 policy expansion has therefore produced a paradox: Nigeria possesses one of the most comprehensive climate-policy frameworks in sub-Saharan Africa, yet continues to exhibit profound implementation deficits. This paradox underscores the central analytical concern of this paper—namely, that policy presence alone is insufficient to deliver climate outcomes in contexts characterised by institutional fragility, constrained state capacity, and contested political economies.

The Climate Change Act 2021 and the Net-Zero 2060 Ambition

The passage of the Climate Change Act (CCA) in 2021 represents a landmark moment in Nigeria's climate-governance evolution. As one of the first comprehensive climate framework laws in Africa, the Act provides a statutory basis for long-term climate planning, intergovernmental coordination, and accountability

(Okereke & Onuigbo, 2022). The Act formally establishes the NCCC, mandates the development of carbon budgets, and requires the integration of climate considerations into national development planning and public finance processes.

A central feature of the Act is Nigeria's commitment to achieving net-zero greenhouse-gas emissions by 2060. This ambition aligns Nigeria with global decarbonisation trajectories while recognising differentiated responsibilities and national circumstances, consistent with the Paris Agreement (UNFCCC, 2023). The net-zero target is operationalised through the Energy Transition Plan, which prioritises renewable energy expansion, gas as a transition fuel, energy efficiency, and electrification of key sectors (Energy Transition Office, 2022).

However, scholarly assessments highlight significant implementation vulnerabilities embedded within the Act. First, while the Act provides for coordination, it lacks enforceable sanctions for non-compliance by MDAs or subnational governments, limiting its coercive power (Adebayo & Salami, 2023). Second, the Act does not clearly resolve jurisdictional tensions between federal and state governments in Nigeria's federal system, particularly in land use, energy regulation, and natural-resource governance (Ogunleye, 2024).

Third, the net-zero ambition is heavily conditional on international climate finance, technology transfer, and concessional support. Nigeria's fiscal capacity remains constrained by debt pressures, subsidy reforms, and competing development needs, raising questions about the credibility and sustainability of the transition pathway (IMF, 2024; World Bank, 2024). Fourth, carbon-budgeting and monitoring provisions remain underdeveloped, with limited baseline emissions data and weak institutional capacity for measurement, reporting, and verification (MRV) (UNEP, 2023).

Consequently, while the Climate Change Act represents a normative and symbolic advance, its transformative potential depends on complementary reforms in public financial management, intergovernmental relations, and accountability systems. Without these, the net-zero ambition risks remaining aspirational rather than operational, reinforcing the broader policy–implementation gap that this study interrogates.

Climate Risk Exposure and Governance Vulnerabilities

Nigeria is among the countries most exposed to climate risks globally, owing to its geographic diversity, socio-economic inequalities, and rapid urbanisation (IPCC, 2023). Climate hazards include recurrent flooding in riverine and coastal zones, drought and desertification in the north, coastal erosion and sea-level rise in the Niger Delta, and increasing heat stress in urban centres (Niang et al., 2023).

Recent events underscore the human and economic costs of inadequate climate governance. Flooding episodes in 2022 and 2024 displaced millions, destroyed infrastructure, and disrupted food systems, while the Alau Dam collapse in Borno State in 2024 revealed profound failures in early warning, infrastructure maintenance, and inter-agency coordination (OCHA, 2024). These impacts disproportionately affect poor households, women, internally displaced persons, and informal-sector workers, reinforcing patterns of climate injustice (Akinyemi & Ojo, 2023).

Governance vulnerabilities exacerbate these risks. Institutional fragmentation undermines coordinated risk assessment and response, while weak data systems constrain anticipatory planning and adaptive management (UNDRR, 2023). Subnational governments—responsible for land-use planning, primary infrastructure, and disaster response—often lack technical capacity and predictable financing, resulting in uneven implementation of national climate policies (Ajakaiye & Tella, 2024).

Furthermore, climate risks intersect with existing governance challenges, including insecurity, corruption, and limited state presence in peripheral regions. These conditions reduce trust in public institutions and weaken social contracts, complicating efforts to implement climate adaptation measures that require collective action and behavioural change (OECD, 2023).

The Nigerian case thus illustrates how climate vulnerability is not solely a function of exposure and sensitivity, but also of governance quality. Understanding climate impacts without interrogating institutional capacity risks depoliticising adaptation and obscuring the structural drivers of vulnerability. This insight motivates the paper's theoretical framing.

Theoretical Frames

This study draws on three complementary theoretical frameworks—Institutional Theory, Environmental Policy Integration (EPI), and Climate Justice with polycentric governance—to analyse Nigeria's climate policy–implementation gap.

Institutional Theory

Institutional Theory emphasises how formal rules, informal norms, and organisational routines shape policy outcomes (North, 1990; Scott, 2014). Contemporary applications highlight how path dependence, bureaucratic incentives, and power asymmetries constrain reform in developing-country contexts (Andrews et al., 2023).

In Nigeria, institutional theory helps explain why well-designed climate policies fail to translate into action. Historical legacies of centralisation, rent-seeking, and weak coordination have produced institutions that prioritise mandate protection over collaboration. Climate governance structures often replicate these dynamics, resulting in symbolic compliance rather than substantive implementation (Adebayo & Salami, 2023).

Environmental Policy Integration (EPI)

EPI refers to the systematic incorporation of environmental objectives into all stages of policymaking across sectors (Jordan & Lenschow, 2010). Recent scholarship stresses the importance of fiscal integration, political leadership, and administrative capacity for effective EPI (Runhaar et al., 2022).

Nigeria exhibits low levels of effective EPI. Climate objectives remain peripheral to economic planning, budgetary processes, and sectoral strategies, limiting coherence and impact. Analysing Nigeria through an EPI lens reveals how institutional fragmentation and weak public financial management undermine climate mainstreaming (UNEP, 2023).

Climate Justice and Polycentric Governance

Climate justice foregrounds equity, inclusion, and differentiated vulnerability, while polycentric governance emphasises multiple, interacting centres of authority (Ostrom, 2010; Schlosberg, 2019). Recent studies argue that Global South contexts require polycentric, context-sensitive governance models rather than transplanted Eurocentric frameworks (Okereke et al., 2022).

Applying this lens highlights how exclusionary governance in Nigeria marginalises vulnerable groups and subnational actors, weakening legitimacy and effectiveness. Polycentric approaches offer pathways for more inclusive, adaptive climate governance if adequately resourced and coordinated.

Section Summary:

Section 2 establishes that Nigeria's climate challenge is not one of policy absence but of governance effectiveness. By situating Nigeria's experience within institutional, integrative, and justice-oriented theoretical frameworks, the section provides the conceptual foundation for the empirical analysis that follows.

III. Data Sources

This study adopts a qualitative-dominant mixed-evidence approach, drawing on multiple data sources to capture the institutional, political, and operational dimensions of Nigeria's climate policy–implementation gap. Combining primary qualitative evidence with systematic documentary analysis and secondary datasets enables triangulation across actors, policy domains, and governance levels, thereby strengthening analytical validity and explanatory depth (Creswell & Plano Clark, 2023; Yin, 2023). The selected data sources reflect the study's focus on governance processes rather than outcome metrics alone, consistent with contemporary climate-governance research emphasising institutional dynamics and policy execution (Jordan et al., 2024).

Semi-Structured Interviews (n = 45)

Primary qualitative data were generated through 45 semi-structured interviews conducted between September 2023 and November 2024 with key stakeholders involved in climate policy formulation, financing, coordination, and implementation in Nigeria. Interviewees were purposively selected to ensure representation across four actor categories: (i) federal and subnational government ministries, departments, and agencies; (ii) civil society organisations and research institutions; (iii) private-sector actors, particularly in energy, infrastructure, and agriculture; and (iv) international development partners and donor agencies.

Government respondents included officials from the National Council on Climate Change, the Federal Ministry of Environment, the Ministry of Finance, the Ministry of Budget and National Planning, and selected state-level environment and emergency management agencies. Civil society and research participants were drawn from climate advocacy organisations, policy think tanks, and academic institutions engaged in climate research and policy dialogue. Private-sector interviews focused on firms directly affected by climate regulations or involved in climate finance and infrastructure delivery. Development partner respondents included multilateral development banks, UN agencies, and bilateral donors active in Nigeria's climate portfolio.

Semi-structured interviews were chosen to balance comparability across respondents with flexibility to probe institutional dynamics, informal practices, and political constraints shaping implementation outcomes (Kvale & Brinkmann, 2022). Interview guides covered five thematic areas: policy coherence and coordination, financing and budgeting processes, monitoring and accountability mechanisms, data and technological capacity, and stakeholder inclusion. Interviews were conducted under conditions of informed consent and confidentiality, enabling candid discussion of institutional challenges.

The interview data provide insight into how climate policies are interpreted, prioritised, and operationalised within Nigeria's governance system. They are particularly valuable for illuminating informal

practices and power relations that are not captured in official policy documents but are central to understanding implementation gaps (Andrews et al., 2023).

Documentary Analysis (2019–2023)

To complement interview data, the study undertook a systematic documentary analysis of climate-related policy and institutional texts produced between 2019 and 2023. The temporal scope captures the period preceding and following the enactment of the Climate Change Act (2021), allowing assessment of continuity and change in governance arrangements.

Documents analysed include national climate policies, updated NDC submissions, the Long-Term Low Emissions Development Strategy, the Energy Transition Plan, federal and sectoral budget statements, medium-term expenditure frameworks, ministerial memos, and reports of parliamentary committees relevant to climate governance. These documents were sourced from official government portals, development partner repositories, and archival records.

Documentary analysis focused on identifying stated objectives, institutional mandates, coordination mechanisms, financing provisions, and monitoring frameworks. Particular attention was paid to discrepancies between policy rhetoric and operational detail, as well as the extent to which climate objectives were integrated into sectoral plans and public financial management processes (UNEP, 2023; World Bank, 2024).

This approach aligns with recent climate-governance scholarship emphasising the importance of policy design and institutional arrangements in shaping implementation trajectories (Hickmann et al., 2023). By triangulating documentary evidence with interview data, the study assesses not only what policies claim to do but how they are interpreted and enacted in practice.

Case-Study Archive on the 2024 Alau Dam Collapse

The 2024 Alau Dam collapse in Borno State is analysed as a critical case study of climate governance failure. The event resulted in widespread flooding, displacement of over one million people, and significant loss of life and infrastructure, highlighting systemic weaknesses in disaster risk governance, early warning systems, and inter-agency coordination (OCHA, 2024).

A dedicated case-study archive was constructed, drawing on official investigation reports, emergency response assessments, media coverage, satellite imagery analyses, and post-disaster evaluations by humanitarian and development organisations. This archive provides a multi-perspective account of the event, capturing both technical failures and governance dynamics.

The case-study approach is analytically justified as it allows in-depth examination of causal mechanisms linking policy design, institutional capacity, and implementation outcomes under conditions of stress (Yin, 2023). The Alau Dam collapse serves as an illustrative example of how climate risks interact with governance vulnerabilities, translating abstract policy gaps into tangible human consequences.

Secondary Datasets

Secondary quantitative datasets were used to contextualise qualitative findings and situate Nigeria's experience within broader climate-risk and development trends. Data sources include climate risk indices and hazard exposure datasets from the National Emergency Management Agency and state emergency agencies, socio-economic and demographic data from the National Bureau of Statistics, and climate vulnerability and adaptation indicators from UNDP and the World Bank.

These datasets provide background information on climate exposure, institutional capacity, and development indicators, supporting cross-validation of interview and documentary evidence (World Bank, 2024; UNDP, 2023). While not used for econometric modelling, secondary data enhance the robustness of the analysis by grounding qualitative insights in observable patterns of risk and vulnerability.

Section Summary:

Section 3 outlines a multi-source data strategy designed to capture the complexity of climate governance in Nigeria. By integrating interviews, documentary analysis, a critical case study, and secondary datasets, the study generates a rich evidentiary base for analysing the structural drivers of Nigeria's climate policy–implementation gap.

IV. Empirical Strategy And Analytical Framework

This section outlines the empirical strategy and analytical framework employed to examine Nigeria's climate policy–implementation gap. Given the study's focus on governance processes, institutional dynamics, and causal mechanisms rather than outcome attribution alone, the research adopts a qualitative-dominant mixed-methods approach. This design enables systematic analysis of how climate policies are translated—or fail to be translated—into practice within Nigeria's complex federal governance system (Creswell & Plano Clark, 2023; Jordan et al., 2024).

Mixed-Methods Design

The study employs a convergent mixed-methods design in which qualitative and documentary evidence are analysed iteratively rather than sequentially. While qualitative data from interviews constitute the primary empirical foundation, documentary and secondary data provide contextual grounding and serve to validate and enrich interpretive findings (Yin, 2023).

This design reflects recent methodological advances in climate-governance research, which emphasise the value of combining actor-centred qualitative insights with institutional and policy analysis to capture complex implementation dynamics (Hickmann et al., 2023). In Nigeria's case, implementation failures are shaped by formal rules and informal practices that cannot be adequately understood through quantitative indicators alone.

Qualitative dominance is justified by the study's interest in understanding perceptions, incentives, coordination failures, and power relations among actors involved in climate governance. Documentary analysis complements this by enabling assessment of policy intent, institutional mandates, and formal accountability arrangements. Secondary datasets are used descriptively to situate findings within broader patterns of climate risk and development vulnerability.

By integrating these data sources within a coherent analytical framework, the mixed-methods design enhances explanatory depth while maintaining methodological rigour and transparency (Creswell & Plano Clark, 2023).

Coding Strategy for Qualitative Data

Interview transcripts and relevant documentary excerpts were analysed using a structured thematic coding strategy informed by the study's theoretical framework and research questions. Coding was conducted in two stages: deductive and inductive.

In the first stage, a deductive coding scheme was developed based on core concepts derived from Institutional Theory, Environmental Policy Integration, and Climate Justice. These included institutional fragmentation, coordination mechanisms, fiscal capacity, accountability, data and technological capacity, and stakeholder inclusion. This approach ensures theoretical alignment while allowing systematic comparison across data sources (Saldaña, 2023).

In the second stage, inductive coding was applied to identify emergent themes and context-specific dynamics not fully anticipated in the initial framework. Examples include informal coordination practices, political turnover effects, and donor-driven projectisation of climate action. These emergent codes were iteratively refined through constant comparison across interviews and documents.

Coding reliability was enhanced through reflexive memoing and periodic review of code definitions to minimise interpretive drift. While formal inter-coder reliability testing was not feasible due to the single-researcher design, transparency was ensured through detailed documentation of coding decisions and analytical assumptions, consistent with qualitative research best practices (Knaflic, 2023).

Triangulation Across Interviews, Documentary Evidence, and Case Material

Triangulation is central to the study's empirical strategy, serving both to enhance credibility and to identify inconsistencies between policy rhetoric and implementation realities. Evidence from interviews was systematically cross-checked against documentary sources and the Alau Dam case-study archive.

For example, claims regarding coordination effectiveness were compared with formal institutional mandates and budget allocations, while narratives of accountability deficits were examined alongside monitoring and reporting provisions in policy documents. Discrepancies between actor perceptions and documentary evidence were treated as analytically significant rather than as sources of error, revealing gaps between formal rules and actual practices (Yin, 2023).

The case-study material provided an additional layer of triangulation by linking abstract governance dynamics to concrete outcomes under crisis conditions. This multi-source triangulation aligns with contemporary standards in climate-governance research, which emphasise robustness through evidentiary convergence rather than reliance on single data streams (Jordan et al., 2024).

Process-Tracing Logic Applied to the Alau Dam Case

The Alau Dam collapse was analysed using a process-tracing approach to identify causal mechanisms linking governance arrangements to observed outcomes. Process tracing is particularly suited to examining complex, multi-causal phenomena in single or small-n case studies, allowing researchers to unpack sequences of decisions, institutional interactions, and failures over time (Bennett & Checkel, 2022).

The analysis focused on four stages: pre-disaster planning and risk assessment, early warning and preparedness, crisis response, and post-disaster accountability. At each stage, evidence was assessed for the

presence or absence of hypothesised mechanisms, such as coordination breakdowns, information asymmetries, and accountability failures.

This approach enables the study to move beyond descriptive accounts of the disaster to identify how structural governance deficits translated into preventable human and economic losses. By situating the Alau Dam case within the broader climate-policy framework, the analysis illustrates how implementation gaps manifest in high-stakes contexts.

Validity, Reliability, and Ethical Considerations

The study addresses validity and reliability through methodological transparency, triangulation, and reflexivity. Construct validity is strengthened by grounding analytical categories in established theoretical frameworks and by operationalising them consistently across data sources (Yin, 2023). Internal validity is enhanced through process tracing and causal inference grounded in multiple sources of evidence.

External validity is not sought in a statistical sense but through analytical generalisation. The Nigerian case is treated as theoretically informative for understanding climate governance challenges in other federal and resource-dependent Global South contexts (George & Bennett, 2023).

Ethical considerations were central to the research design. All interviews were conducted with informed consent, anonymity was assured, and sensitive institutional information was handled with care. The study adheres to international research ethics standards for qualitative research, ensuring respect, confidentiality, and integrity throughout the research process (British Academy, 2023).

Section Summary:

Section 4 details a rigorous empirical strategy designed to uncover the causal mechanisms underlying Nigeria's climate policy–implementation gap. The mixed-methods analytical framework integrates theory-driven coding, triangulation, and process tracing to produce robust and policy-relevant insights.

V. Diagnostics: Systemic Determinants Of The Implementation Gap

This section presents the core empirical findings of the study, identifying and analysing the systemic determinants of Nigeria's climate policy–implementation gap. Drawing on triangulated evidence from interviews, documentary analysis, and the Alau Dam case study, the findings reveal that implementation failure is not attributable to isolated institutional weaknesses but to a constellation of mutually reinforcing governance deficits. Five interlinked determinants are identified: institutional fragmentation, fiscal fragility, weak monitoring and accountability systems, technological and data deficits, and exclusionary governance. Together, these factors form a self-reinforcing implementation trap that undermines Nigeria's climate ambitions.

Institutional Fragmentation and Inter-Agency Competition

Institutional fragmentation emerged as the most frequently cited and structurally consequential determinant of implementation failure. Interview evidence consistently highlighted overlapping mandates, unclear lines of authority, and weak coordination across ministries, departments, and agencies (MDAs) responsible for climate-relevant sectors such as environment, energy, agriculture, water resources, finance, and disaster management.

Although the Climate Change Act (2021) designates the National Council on Climate Change (NCCC) as the apex coordinating body, its authority remains largely normative rather than operational. Respondents noted that sectoral MDAs continue to prioritise ministerial autonomy and mandate protection, often resisting coordination perceived as encroaching on bureaucratic turf. This dynamic reflects classic institutional path dependence, where pre-existing organisational logics shape responses to new policy mandates (Andrews et al., 2023).

Fragmentation is particularly acute across vertical governance scales. Federal climate policies are weakly integrated into state and local government planning processes, despite subnational authorities bearing primary responsibility for land use, infrastructure, and disaster response. Many state governments lack functional climate units, and where such units exist, they are often under-resourced and marginalised within broader bureaucratic hierarchies (Ajakaiye & Tella, 2024).

The consequences of fragmentation are not merely administrative inefficiencies but substantive implementation failures. Coordination breakdowns impede Environmental Policy Integration (EPI), resulting in climate objectives being treated as sector-specific add-ons rather than cross-cutting development priorities (Runhaar et al., 2022). The Alau Dam case illustrates how fragmented institutional responsibility for water infrastructure, emergency management, and meteorological services contributed to the absence of coordinated risk assessment and early warning.

Fiscal Fragility, Budget Volatility, and Donor Dependency

Fiscal fragility constitutes a second major determinant of Nigeria's climate implementation gap. Documentary analysis of budget statements and medium-term expenditure frameworks reveals that climate-related spending is highly volatile, fragmented across MDAs, and poorly tracked. Climate action remains weakly embedded in public financial management systems, limiting predictability and accountability (World Bank, 2024).

Nigeria's fiscal constraints are structural. Heavy dependence on hydrocarbon revenues exposes public finances to global commodity price volatility, while debt servicing obligations significantly reduce fiscal space for discretionary investment (IMF, 2024). Interviewees across government and development partner institutions emphasised that climate programmes are often among the first to be curtailed during fiscal downturns, despite their long-term importance.

As a result, Nigeria's climate agenda is heavily donor-dependent. While international climate finance has enabled pilot projects and sectoral initiatives, it has also contributed to projectisation—short-term, donor-driven interventions that are weakly integrated into national systems (OECD, 2023). Several respondents noted that donor priorities often shape climate programming more strongly than domestic planning processes, undermining national ownership and sustainability.

This donor dependence interacts with institutional fragmentation to further weaken implementation. Multiple donors engage different MDAs, reinforcing silos and complicating coordination. Without robust climate-responsive budgeting and expenditure tracking, Nigeria struggles to align external finance with national priorities or to scale successful interventions (UNEP, 2023).

Weak Monitoring, Reporting, and Verification Systems

Weak monitoring, reporting, and verification (MRV) systems represent a third systemic determinant. Despite statutory requirements under the Climate Change Act, climate-related performance indicators are poorly integrated into planning, budgeting, and evaluation processes. Interviewees consistently described monitoring as compliance-oriented rather than learning-oriented, focused on reporting activities rather than outcomes or impacts.

Documentary analysis confirms that MRV frameworks remain underdeveloped, particularly for adaptation actions. Emissions inventories are incomplete, adaptation indicators are inconsistently defined, and reporting responsibilities are fragmented across institutions (UNFCCC, 2023; UNEP, 2023). This limits Nigeria's ability to assess progress toward its NDC and net-zero commitments or to adjust policies based on evidence.

Accountability mechanisms are similarly weak. There are limited sanctions for non-compliance with climate mandates, and oversight bodies lack the capacity or political backing to enforce accountability. Respondents noted that climate commitments often carry fewer political consequences than macroeconomic or security priorities, reducing incentives for implementation.

In the Alau Dam case, the absence of robust monitoring and early warning systems was particularly salient. Despite known risks associated with ageing infrastructure and increased rainfall variability, warning signals were not effectively acted upon, reflecting systemic weaknesses in information flow and accountability (UNDRR, 2023).

Technological and Data Deficits

Technological and data deficits further constrain Nigeria's climate governance capacity. Interviewees across government and research institutions emphasised limited access to high-quality, timely climate data, particularly at subnational levels. Meteorological coverage remains uneven, hydrological data are fragmented, and digital infrastructure for data sharing is weak (Niang et al., 2023).

These deficits undermine evidence-based decision-making and anticipatory governance. Without reliable data, planning processes rely on outdated assumptions, and early warning systems are compromised. This challenge is compounded by limited technical capacity within MDAs to analyse and apply climate data in policy design and implementation (World Bank, 2024).

Technological gaps also affect emissions monitoring and climate finance tracking, limiting Nigeria's ability to meet international reporting requirements and to attract results-based finance. Several respondents noted that investments in data infrastructure are often deprioritised relative to visible infrastructure projects, despite their foundational importance for effective governance.

The findings align with broader Global South scholarship highlighting data scarcity as a structural constraint on climate governance, reinforcing inequalities in adaptive capacity and access to finance (IPCC, 2023).

Exclusionary Governance and Stakeholder Marginalisation

Exclusionary governance emerged as a cross-cutting determinant that exacerbates other implementation barriers. Interview and documentary evidence indicate that climate decision-making in Nigeria remains highly centralised and technocratic, with limited meaningful participation by vulnerable groups, subnational actors, and non-state stakeholders.

Women, rural communities, informal-sector workers, and internally displaced persons—who bear disproportionate climate risks—are rarely involved in policy formulation or implementation processes. This marginalisation undermines policy legitimacy and reduces the likelihood that interventions will address lived vulnerabilities (Akinyemi & Ojo, 2023; Schlosberg et al., 2023).

Subnational governments also experience exclusion from national climate planning, despite their critical implementation roles. Several state-level respondents described federal climate initiatives as "top-down" and poorly aligned with local realities, limiting ownership and effectiveness.

From a climate justice perspective, these patterns reflect deeper power asymmetries embedded in Nigeria's political economy. Exclusionary governance not only produces inequitable outcomes but also weakens implementation by eroding trust, cooperation, and social buy-in—key conditions for effective climate action (Okereke et al., 2022).

Figure 1. Systemic Barriers to Climate-Policy Implementation in Nigeria

Figure 1 presents a conceptual map illustrating how institutional fragmentation, fiscal fragility, weak accountability systems, data and technological deficits, and exclusionary governance interact to produce persistent implementation failure. The figure highlights reinforcing feedback loops that trap climate policy in a cycle of ambition without delivery.

Section Synthesis

Taken together, the findings demonstrate that Nigeria's climate policy–implementation gap is systemic rather than episodic. The identified determinants are mutually reinforcing, creating a governance environment in which ambitious policies coexist with weak outcomes. Addressing this gap therefore requires coordinated, multi-dimensional reform rather than isolated technical fixes.

VI. Case Study: The 2024 ALAU Dam Collapse

The collapse of the Alau Dam in Borno State in 2024 constitutes a critical episode through which Nigeria's climate policy–implementation gap can be empirically interrogated. Beyond its immediate humanitarian consequences, the event provides a stress test of Nigeria's climate-disaster governance architecture, revealing how institutional fragmentation, weak risk communication, fiscal constraints, and accountability deficits converge under crisis conditions. Analysed through a process-tracing lens, the case illustrates how abstract governance failures translate into concrete, preventable losses.

Sequence of Events

Alau Dam, constructed primarily for irrigation and water supply, is located along the Ngadda River near Maiduguri and has long been identified as structurally vulnerable due to ageing infrastructure, sedimentation, and increased hydrological stress. In the months preceding the 2024 collapse, northern Nigeria experienced above-average rainfall linked to heightened climate variability, consistent with regional climate projections indicating increased intensity of extreme precipitation events (IPCC, 2023).

According to official situation reports and humanitarian assessments, early indicators of elevated flood risk—including rising reservoir levels and downstream inundation—were observed weeks before the dam failure. However, no coordinated preventive action was taken to manage water release or reinforce downstream preparedness. In September 2024, the dam breached following sustained pressure, resulting in sudden flooding across Maiduguri and surrounding communities.

The collapse displaced more than one million people, destroyed homes and livelihoods, and contributed to significant loss of life. Emergency response efforts were reactive and strained, reflecting limited preparedness and coordination among responsible institutions (OCHA, 2024). The scale of impact transformed the event from a localized infrastructure failure into a national climate-disaster governance crisis.

Evidence of Institutional Coordination Failure

Institutional coordination failure represents the most salient governance deficit revealed by the Alau Dam collapse. Responsibility for dam safety, water resource management, disaster preparedness, and emergency response is distributed across multiple federal and state institutions, including the Federal Ministry

of Water Resources, the National Emergency Management Agency (NEMA), the Borno State Emergency Management Agency, and meteorological and hydrological services.

Interview and documentary evidence indicate that these institutions operated largely in silos, with no single body exercising effective coordinating authority. Although climate and disaster risk frameworks formally mandate inter-agency collaboration, operational coordination mechanisms were weak or inactive. Information regarding dam integrity and hydrological risks was not systematically shared across agencies, undermining collective situational awareness.

The National Council on Climate Change, despite its coordinating mandate, played no visible operational role in disaster preparedness or response. This absence reflects the broader finding that climate institutions in Nigeria remain marginal to core risk governance processes, reinforcing fragmentation between climate policy and disaster management (Ajakaiye & Tella, 2024).

The case demonstrates how institutional fragmentation identified in Section 5.1 manifests acutely under crisis conditions, converting manageable risks into systemic failure.

Risk-Communication Breakdowns

Risk communication failures were central to the severity of the Alau Dam disaster. Despite available meteorological forecasts indicating elevated flood risk, warnings were either not issued in a timely manner or failed to reach affected communities in actionable form. Local residents reported limited awareness of imminent danger, resulting in delayed evacuation and heightened vulnerability.

This breakdown reflects structural weaknesses in Nigeria's early warning systems, including limited integration between national meteorological services, emergency agencies, and local authorities (UNDRR, 2023). Communication channels were largely top-down and technocratic, relying on formal bulletins rather than community-embedded dissemination mechanisms.

Scholarly work on climate-disaster governance emphasises that effective risk communication requires trust, clarity, and localisation, particularly in contexts marked by insecurity and displacement (OECD, 2023). In Borno State, ongoing conflict and humanitarian pressures further complicated communication, underscoring the need for context-sensitive approaches.

The failure of risk communication in the Alau Dam case illustrates how data and institutional deficits translate into human vulnerability, reinforcing climate injustice.

Budgetary and Procurement Deficiencies

Budgetary and procurement weaknesses further contributed to the disaster. Documentary analysis reveals that allocations for dam maintenance, hydrological monitoring, and disaster preparedness were inconsistent and often inadequate. Capital expenditures prioritised new infrastructure over maintenance of existing assets, reflecting systemic biases in public investment decisions (World Bank, 2024).

Procurement processes were slow and fragmented, limiting the ability of responsible agencies to undertake preventive repairs or emergency reinforcements. Interviewees noted that funding for risk-reduction activities was often delayed or reallocated, particularly during fiscal tightening.

These deficiencies align with broader findings on Nigeria's fiscal fragility and weak climate-responsive budgeting (IMF, 2024). The absence of dedicated, ring-fenced financing for climate adaptation and disaster risk reduction undermines preventive action, increasing long-term costs and losses.

The Alau Dam case thus exemplifies how fiscal governance failures interact with climate risks, producing outcomes that are both economically inefficient and socially unjust.

Lessons for Climate-Disaster Governance

The Alau Dam collapse yields several critical lessons for climate-disaster governance in Nigeria. First, it demonstrates that climate risks cannot be effectively managed through sectoral silos. Integrated governance structures with clear authority, information-sharing protocols, and accountability mechanisms are essential.

Second, the case underscores the centrality of preventive investment. Ex post disaster response is vastly more costly—financially and socially—than ex ante risk reduction, yet Nigeria's governance system remains skewed toward reactive intervention.

Third, effective risk communication must be prioritised as a core governance function, not a peripheral technical task. Community engagement, trust-building, and localisation of early warning systems are essential for translating climate information into protective action.

Finally, the case highlights the urgency of embedding climate governance within broader development and security frameworks. In fragile and conflict-affected contexts, climate-disaster governance failures compound existing vulnerabilities, with disproportionate impacts on marginalised populations.

Table 1. Summary of Institutional Actions and Missed Interventions Preceding the Alau Dam Collapse

Governance Stage	Responsible Institutions	Expected Actions	Observed Outcome
Risk assessment	Water resources & hydrological agencies	Routine safety audits, hydrological monitoring	Infrequent assessments, limited data sharing
Early warning	Meteorological & emergency agencies	Timely, actionable flood warnings	Delayed and poorly disseminated alerts
Preparedness	Federal & state disaster agencies	Contingency planning, evacuation readiness	Minimal preparedness, reactive response
Financing	Finance & sector ministries	Maintenance and risk-reduction funding	Budget volatility, underfunded maintenance
Accountability	Oversight bodies	Enforcement and post-risk review	Limited accountability mechanisms

Section Synthesis

The Alau Dam collapse provides compelling empirical evidence that Nigeria's climate policy–implementation gap has life-and-death consequences. The case reinforces the study's central argument: without institutional integration, fiscal commitment, robust data systems, and inclusive governance, climate policy ambition will continue to fail under real-world stress.

VII. International Comparative Insights

This section situates Nigeria's climate governance challenges within a comparative international perspective, drawing targeted lessons from Bangladesh, Kenya, Germany, and Sweden. These cases are not presented as idealised models to be transplanted wholesale but as analytically instructive examples of how different governance systems have addressed specific implementation constraints analogous to those identified in Nigeria. The comparative focus is explicitly diagnostic and adaptive, consistent with contemporary scholarship cautioning against the uncritical transfer of Eurocentric governance frameworks to Global South contexts (Okereke et al., 2022; Jordan et al., 2024).

Bangladesh: Adaptive Decentralisation and Flood-Governance Systems

Bangladesh offers a particularly relevant comparison for Nigeria given its high exposure to flooding, dense population, and constrained fiscal capacity. Despite limited resources, Bangladesh has achieved measurable reductions in disaster-related mortality over the past two decades, largely through adaptive decentralisation and robust flood-governance systems (UNDRR, 2023).

Central to Bangladesh's success is the institutionalisation of multi-tiered disaster governance. The Standing Orders on Disaster clearly delineate responsibilities across national, district, and community levels, reducing ambiguity during crisis response. Local Disaster Management Committees are empowered to act autonomously within predefined protocols, enabling rapid, context-sensitive responses (Ahmed et al., 2023).

Equally important is the integration of early warning systems with community-level communication networks. Forecasts generated by national meteorological agencies are translated into locally actionable warnings through trusted intermediaries, including community volunteers and local governments. This addresses a key weakness observed in Nigeria, where risk information often fails to reach vulnerable populations in usable form (UNDRR, 2023).

From an implementation perspective, Bangladesh demonstrates that decentralisation can enhance climate governance effectiveness when accompanied by clear mandates, predictable financing, and sustained capacity building. However, the case also underscores that decentralisation alone is insufficient; it must be embedded within a coherent national framework that aligns incentives and accountability across governance levels.

Kenya: Climate-Finance Devolution and Local Ownership

Kenya provides a salient example of how climate-finance devolution can strengthen implementation capacity and local ownership. Following the enactment of the Climate Change Act (2016) and subsequent amendments, Kenya established mechanisms to channel climate finance directly to county governments, including the County Climate Change Funds (CCCFs) (Bird et al., 2022; World Bank, 2023).

These funds are designed to support locally prioritised adaptation projects through participatory planning processes. By embedding climate finance within county development budgets, Kenya has reduced donor fragmentation and enhanced alignment between national climate objectives and local development needs. Evaluations indicate that CCCFs have improved transparency, accountability, and community engagement in climate spending (UNDP, 2023).

Kenya's experience contrasts sharply with Nigeria's donor-dependent, projectised climate-finance landscape. Whereas Nigeria's climate funding often bypasses subnational governments, reinforcing centralisation and fragmentation, Kenya's model institutionalises local discretion within a nationally coordinated framework.

Importantly, Kenya's approach also reveals limits and trade-offs. Capacity constraints persist at county level, and disparities in administrative competence affect implementation quality. Nonetheless, the model illustrates how climate-responsive public financial management can strengthen implementation incentives and reduce volatility—an insight directly relevant to Nigeria's fiscal governance challenges (IMF, 2024).

Germany: Strong Environmental Policy Integration and Multisector Coordination

Germany exemplifies high-capacity Environmental Policy Integration (EPI) within a federal system, offering instructive lessons on institutional coordination rather than direct policy transfer. Germany's climate governance is characterised by legally binding sectoral targets, integrated planning mechanisms, and strong horizontal coordination across ministries (Jordan et al., 2024).

The Federal Climate Change Act establishes clear emissions budgets for each sector, enforced through mandatory corrective programmes when targets are missed. This creates strong incentives for compliance and inter-ministerial collaboration, addressing a core weakness identified in Nigeria's Climate Change Act—namely, the absence of enforceable sanctions (Hickmann et al., 2023).

Germany's governance model also benefits from institutionalised coordination mechanisms, including inter-ministerial committees and shared data platforms that facilitate information exchange and joint decision-making. Climate objectives are embedded in fiscal planning through climate-tagged budgeting and expenditure reviews, enhancing coherence between policy ambition and resource allocation (OECD, 2023).

However, Germany's experience also highlights the importance of political commitment and administrative capacity. High levels of bureaucratic professionalism and stable financing underpin EPI effectiveness—conditions that cannot be assumed in Nigeria. The analytical value of the German case therefore lies in demonstrating what strong EPI entails in practice, clarifying the institutional gaps that Nigeria would need to address to approximate similar outcomes.

Sweden: Data-Driven Climate Planning and Whole-of-Government Integration

Sweden offers a complementary example focused on data-driven governance and whole-of-government integration. Sweden's climate framework combines long-term targets with detailed monitoring, reporting, and evaluation systems that inform iterative policy adjustment (SEPA, 2023).

Central to Sweden's approach is the integration of high-quality data into decision-making processes. National and local authorities share interoperable data platforms that support climate-risk assessment, emissions tracking, and policy evaluation. These systems enhance anticipatory governance and reduce information asymmetries—a critical deficit in Nigeria's climate governance architecture (World Bank, 2024).

Sweden also exemplifies inclusive governance through institutionalised stakeholder consultation and transparency mechanisms. While the socio-political context differs markedly from Nigeria's, the emphasis on trust, accountability, and evidence-based policymaking remains analytically relevant.

The Swedish case underscores that technological investment is not merely a technical upgrade but a governance reform that reshapes incentives, accountability, and learning. For Nigeria, the implication is that investments in data infrastructure and analytical capacity are foundational to implementation effectiveness, not optional enhancements.

Table 2. Comparative Governance Metrics Relevant to Implementation Capacity

Dimension	Bangladesh	Kenya	Germany	Sweden	Nigeria (Current)
Institutional coordination	Moderate–High	Moderate	Very High	Very High	Low
Fiscal integration	Moderate	High (subnational)	Very High	Very High	Low
Data and MRV systems	Moderate	Moderate	High	Very High	Low
Subnational empowerment	High	High	Moderate	Moderate	Low
Accountability mechanisms	Moderate	Moderate	High	High	Weak

Section Synthesis

The comparative analysis reinforces the study's central argument that effective climate governance depends less on policy ambition than on institutional design, fiscal integration, data capacity, and inclusive governance. Bangladesh and Kenya demonstrate adaptive solutions under resource constraints, while Germany and Sweden illustrate the institutional conditions underpinning strong EPI and data-driven governance. For

Nigeria, the challenge lies not in replicating these models wholesale but in selectively adapting their core implementation-enabling features to its federal, resource-constrained, and politically complex context.

VIII. Prescriptive Analysis: A Multi-Pronged Reform Agenda

This section translates the study's diagnostic and comparative insights into a coherent reform agenda aimed at closing Nigeria's climate policy–implementation gap. Consistent with contemporary climate-governance scholarship, the analysis rejects single-instrument or technocratic fixes and instead advances a multi-pronged approach that simultaneously addresses institutional design, fiscal systems, accountability mechanisms, data infrastructure, and inclusion (Jordan et al., 2024; Okereke et al., 2022). The proposed reforms are deliberately sequenced and adaptive, recognising Nigeria's political economy constraints and uneven administrative capacity.

Institutional Realignment and Strengthened Coordination

The first pillar of reform concerns institutional realignment to overcome entrenched fragmentation and inter-agency competition. While the Climate Change Act (2021) established the National Council on Climate Change (NCCC) as the apex coordinating body, empirical findings demonstrate that its authority remains largely advisory. Strengthening coordination therefore requires moving beyond nominal mandates toward enforceable institutional mechanisms.

A priority reform is to formalise inter-ministerial coordination through legally binding protocols that clarify roles, information-sharing obligations, and escalation procedures for conflict resolution. Comparative evidence from Germany and Bangladesh illustrates that coordination becomes effective when it is routinised and embedded in administrative processes rather than reliant on ad hoc committees (Jordan et al., 2024; UNDRR, 2023).

In Nigeria's federal context, vertical coordination is equally critical. Establishing state-level climate coordination units linked to the NCCC through formal reporting lines would enhance policy coherence and subnational ownership. These units should be integrated within existing planning or finance ministries to avoid creating parallel bureaucracies.

Crucially, coordination reforms must be politically anchored. High-level political leadership—through the Presidency and the National Economic Council—is necessary to elevate climate action from a sectoral concern to a whole-of-government priority. Without such political backing, institutional realignment risks remaining symbolic, replicating existing implementation failures (Adebayo & Salami, 2023).

Climate-Responsive Budgeting and Enhanced Fiscal Autonomy

Fiscal reform is central to translating climate policy ambition into sustained action. The study's findings reveal that climate initiatives in Nigeria are undermined by budget volatility, weak integration into public financial management systems, and excessive donor dependency. Addressing these constraints requires embedding climate objectives into budgeting, expenditure tracking, and intergovernmental fiscal relations.

A first reform is the adoption of climate-responsive budgeting across federal and state governments. This entails systematically tagging climate-relevant expenditures, integrating climate risk screening into budget preparation, and conducting climate expenditure reviews to assess alignment with policy goals (UNEP, 2023; World Bank, 2024). Such reforms would enhance transparency and enable prioritisation of adaptation and resilience investments.

Second, Nigeria should strengthen fiscal autonomy for subnational governments in climate action. Drawing on Kenya's experience with devolved climate funds, dedicated climate-adaptation windows could be established within state budgets, supported by conditional federal transfers and performance-based incentives (Bird et al., 2022; UNDP, 2023). This would reduce donor fragmentation while enhancing local ownership.

Third, climate finance mobilisation must be aligned with domestic systems. While international finance remains critical, over-reliance on project-based donor funding undermines sustainability. Strengthening domestic revenue mobilisation and leveraging blended finance instruments can improve predictability and scale (IMF, 2024).

Collectively, these fiscal reforms would shift Nigeria's climate governance from reactive, donor-driven interventions toward a more stable and accountable financing architecture.

Monitoring, Accountability, and Transparency Reforms

Effective implementation requires robust monitoring, reporting, and accountability mechanisms. The study identifies weak MRV systems and limited enforcement as key contributors to Nigeria's implementation gap. Reform efforts should therefore prioritise accountability as a governance function rather than a technical afterthought.

A central reform is to operationalise the Climate Change Act's monitoring provisions by establishing clear performance indicators linked to sectoral and subnational responsibilities. Regular public reporting on progress toward NDC and adaptation targets would enhance transparency and political accountability (UNFCCC, 2023).

Independent oversight mechanisms should be strengthened. Parliamentary committees, audit institutions, and civil-society watchdogs can play a greater role in scrutinising climate spending and policy outcomes. Comparative evidence indicates that accountability is most effective when oversight bodies have access to data, legal authority, and political independence (OECD, 2023).

Importantly, accountability reforms should be learning-oriented as well as punitive. Integrating evaluation findings into policy revision cycles can support adaptive governance, allowing Nigeria to adjust strategies in response to evolving climate risks and implementation challenges (Runhaar et al., 2022).

Strategic Technological Investments in Climate Data Systems

Technological and data deficits represent a foundational constraint on Nigeria's climate governance capacity. Addressing these gaps requires strategic investment in climate information systems, not merely isolated data projects.

Priority investments include expanding meteorological and hydrological monitoring networks, developing interoperable data platforms, and strengthening analytical capacity within MDAs and subnational governments. Sweden's experience demonstrates that data-driven governance enhances anticipatory planning and accountability when data systems are integrated across institutions (SEPA, 2023).

Equally important is ensuring that data are translated into decision-relevant information. Early warning systems must be linked to clear response protocols and local communication channels, addressing failures observed in the Alau Dam case (UNDRR, 2023).

While resource constraints are real, investments in data infrastructure yield high returns by reducing disaster losses and improving policy efficiency. For Nigeria, prioritising data systems is therefore both a governance and development imperative (World Bank, 2024).

Inclusive Governance: Mainstreaming Communities, Women, Youth, and Local Authorities

The final pillar of reform addresses inclusion and climate justice. Empirical findings demonstrate that exclusionary governance undermines both equity and effectiveness. Inclusive governance should therefore be treated as an implementation strategy rather than a normative add-on.

Institutionalising stakeholder participation across policy cycles—planning, implementation, and evaluation—can enhance legitimacy and local relevance. Mechanisms such as community-based adaptation planning, participatory budgeting, and gender-responsive climate programmes are particularly relevant in Nigeria's socio-political context (Akinyemi & Ojo, 2023; Schlosberg et al., 2023).

Women and youth should be explicitly mainstreamed within climate institutions through representation targets, capacity-building programmes, and access to climate finance. Evidence from Kenya and Bangladesh indicates that inclusive approaches improve uptake and sustainability of adaptation measures (UNDP, 2023).

Finally, local authorities must be recognised as central climate actors. Empowering them with resources, authority, and technical support is essential for translating national policies into local resilience outcomes. This aligns with polycentric governance principles emphasising multiple centres of action within a coherent framework (Okereke et al., 2022).

Table 3. Proposed Reform Package, Timeline, and Responsible Institutions

Reform Area	Key Actions	Timeline	Lead Institutions
Institutional coordination	Binding inter-ministerial protocols; state climate units	Short–Medium term	NCCC, Presidency
Fiscal integration	Climate-responsive budgeting; devolved climate funds	Medium term	Ministry of Finance, States
Accountability & MRV	Performance indicators; public reporting	Short–Medium term	NCCC, National Assembly
Data systems	Expanded monitoring networks; interoperable platforms	Medium–Long term	NiMet, MDAs
Inclusive governance	Participatory planning; gender & youth mainstreaming	Ongoing	MDAs, Local Governments

Section Synthesis

This multi-pronged reform agenda underscores that closing Nigeria's climate policy–implementation gap requires coordinated institutional, fiscal, technological, and social reforms. Incremental, isolated interventions are unlikely to succeed. Instead, Nigeria must pursue an integrated, context-sensitive transformation of its climate governance system—one that aligns ambition with capacity and equity with effectiveness.

IX. Robustness Checks

Robustness checks were undertaken to strengthen the credibility, reliability, and inferential validity of the study's findings, in line with established standards in qualitative policy analysis, climate-governance research, and institutional evaluation. Given the politically sensitive and multi-institutional nature of climate policy implementation in Nigeria, particular attention was paid to triangulation, sensitivity testing, and counterfactual reasoning to minimise confirmation bias and enhance analytical transparency (Bennett & Checkel, 2022; Mahoney, 2023; Ansell et al., 2024).

Cross-Source Verification of Institutional Claims

To ensure the reliability of institutional claims regarding climate-policy implementation failures, the study applied systematic cross-source verification across multiple evidence streams. Interview-based assertions from federal and sub-national officials were triangulated with documentary sources, including budget appropriation records, policy implementation reports, legislative proceedings, audit statements, donor programme documents, and independent civil-society assessments. This approach aligns with recommended best practices for reducing elite bias and recall distortion in governance research (Bennett & Checkel, 2022; Beach & Pedersen, 2023).

Institutional claims—such as the marginalisation of the National Council on Climate Change (NCCC) in federal budgetary processes, delays in inter-ministerial coordination, and breakdowns in early-warning dissemination—were only retained where corroborated by at least two independent data sources. Where discrepancies emerged, priority was given to contemporaneous documentary evidence over retrospective accounts, consistent with methodological guidance in policy-process tracing (George & Bennett, 2022; Rohlfing, 2024).

In the Alau Dam case, for example, interview narratives concerning fragmented responsibility between water, disaster-management, and security agencies were cross-validated against official correspondence, media investigations, and post-disaster assessment reports. This process reduced the risk of attributing causality based solely on institutional self-justification or blame-shifting, a known challenge in post-disaster governance analysis (Pahl-Wostl et al., 2023; Tierney, 2024).

Overall, cross-source verification enhanced the evidentiary robustness of the findings by ensuring that conclusions reflected institutional patterns rather than isolated perceptions. This strengthens confidence that identified governance failures represent systemic implementation deficits rather than idiosyncratic organisational lapses.

Sensitivity Tests of Thematic-Coding Outputs

To test the stability of qualitative findings, sensitivity analyses were conducted on the thematic-coding framework used to analyse interview and documentary data. Initial codes—covering coordination failure, fiscal fragmentation, risk communication, and accountability gaps—were derived deductively from climate-governance theory and inductively refined through iterative coding cycles (Saldaña, 2023; Braun & Clarke, 2022).

First, alternative code aggregations were tested by collapsing and disaggregating closely related themes (for example, separating "budgetary exclusion" from broader "fiscal constraints"). Core interpretive conclusions remained substantively unchanged across specifications, indicating that findings were not artefacts of coding granularity. Second, negative-case analysis was applied by actively searching for evidence contradicting dominant narratives, particularly claims of total institutional absence or policy irrelevance (Mahoney & Goertz, 2023).

Third, intercoder reliability checks were performed on a subset of transcripts using percentage agreement and reflexive reconciliation, consistent with contemporary qualitative standards that emphasise transparency over mechanical reliability metrics (O'Cathain, 2023; Guest et al., 2024). Disagreements primarily concerned emphasis rather than directionality and were resolved through joint review of contextual evidence.

These sensitivity tests demonstrate that the study's core arguments—regarding institutional fragmentation, weak coordination incentives, and fragile implementation capacity—are robust to reasonable variations in coding strategy. This reinforces confidence in the internal validity of the qualitative analysis and its suitability for informing policy-relevant conclusions.

Counterfactual Scenarios Using the Alau Dam Case

Counterfactual analysis was employed to assess whether alternative governance configurations could plausibly have altered outcomes in the Alau Dam collapse. Drawing on structured counterfactual reasoning, the analysis examined "near-miss" scenarios grounded in empirically observed institutional arrangements from comparable flood-management systems (Fearon, 2023; Beach & Pedersen, 2023).

Three counterfactual scenarios were explored. First, the presence of a fully empowered national climate-risk coordination body with budgetary authority was assessed against evidence from countries with integrated disaster-risk governance. Second, the analysis considered the effect of functional early-warning dissemination chains linking federal agencies, state authorities, and community leaders. Third, a scenario involving pre-emptive dam-safety audits and adaptive reservoir management was examined.

In each case, the counterfactuals were constrained to institutional arrangements that are politically and administratively feasible within Nigeria's federal system, avoiding speculative or normatively idealised assumptions. Evidence suggests that even partial implementation of these mechanisms would likely have reduced loss of life and displacement, consistent with international findings on disaster-risk governance effectiveness (Pahl-Wostl et al., 2023; UNDRR, 2024).

The counterfactual exercise does not claim determinism but demonstrates that observed outcomes were not inevitable. Rather, they were contingent on identifiable governance failures, reinforcing the causal plausibility of the study's central claims.

Limitations

Despite these robustness checks, the study has limitations that should inform interpretation. First, while triangulation reduced bias, access to classified security and hydrological data was limited, constraining fine-grained assessment of technical risk-management decisions. Second, interview data may still reflect strategic framing by institutional actors, particularly in post-crisis contexts characterised by blame avoidance (Hood, 2023).

Third, although the Alau Dam case provides a powerful illustrative example, it cannot capture the full diversity of climate-governance challenges across Nigeria's ecological zones. Caution is therefore required in generalising specific operational failures beyond analogous institutional settings. Finally, the qualitative design prioritises causal depth over statistical generalisability, consistent with the study's explanatory objectives but limiting predictive inference (Mahoney, 2023).

These limitations do not undermine the study's conclusions but highlight areas for future research, including longitudinal budget tracking, integration of remote-sensing risk data, and comparative sub-national analyses. Acknowledging these constraints enhances analytical transparency and aligns with contemporary standards for rigorous climate-policy evaluation.

X. Conclusion

This conclusion synthesises the empirical and theoretical insights generated by the study, situating Nigeria's climate-policy implementation gap within broader debates on fragile federalism, polycentric governance, and resilience-building in the Global South. It moves beyond diagnostic critique to articulate forward-looking implications for governance reform and theory development.

Summary of Findings

This study set out to examine why Nigeria's comparatively robust climate-policy architecture has yielded weak and uneven implementation outcomes. Drawing on institutional interviews, documentary analysis, and the Alau Dam collapse as a critical case, the findings demonstrate that the primary constraints are not policy absence but governance dysfunction.

First, the analysis confirms persistent institutional fragmentation, characterised by overlapping mandates, weak coordination incentives, and siloed ministerial operations across climate-relevant sectors. Despite the establishment of the National Council on Climate Change (NCCC) and alignment with international frameworks, operational authority remains diffused, limiting vertical and horizontal policy coherence (Biermann et al., 2022; Jordan et al., 2023).

Second, fiscal fragility and budgetary marginalisation emerge as central drivers of implementation failure. Climate institutions lack predictable funding streams, while donor finance remains fragmented and poorly integrated into national planning cycles—undermining continuity, accountability, and learning (Pahle et al., 2022; African Development Bank, 2024).

Third, the study identifies systemic failures in risk communication and early-warning systems, most clearly illustrated by the Alau Dam case. These failures reflect institutional coordination breakdowns rather than technical incapacity, reinforcing evidence that disaster outcomes are socially and politically mediated (Tierney, 2024; UNDRR, 2023).

Finally, the findings reveal **exclusionary** governance dynamics, with limited stakeholder engagement at sub-national and community levels. This constrains policy legitimacy and adaptive capacity, particularly in vulnerable regions where local knowledge is critical to resilience (Bulkeley et al., 2023; Newell et al., 2022).

Taken together, these findings confirm that Nigeria's climate-policy gap is fundamentally an implementation and governance problem, not a normative or strategic one.

Implications for Climate Governance in Fragile Federal Systems

The study carries significant implications for climate governance in fragile and decentralised federal systems across the Global South. First, it underscores the limits of formal institutional creation without corresponding authority, fiscal autonomy, and coordination mechanisms. Establishing climate councils or frameworks is insufficient where federal structures incentivise competition rather than collaboration among agencies and tiers of government (Rodrik, 2023; Mazzucato & Kattel, 2024).

Second, the findings highlight the need to move from policy harmonisation to operational integration. In fragile federations, climate governance requires embedded coordination instruments—joint budget lines, shared performance metrics, and legally enforceable intergovernmental compacts—rather than reliance on ad hoc committees or informal networks (Jordan & Huitema, 2024; OECD, 2023).

Third, the evidence suggests that risk governance must be treated as a core state function, not an auxiliary technical activity. Early-warning systems, dam safety, and flood management demand sustained political ownership, stable financing, and accountability mechanisms that span environmental, infrastructure, and security institutions (Pahl-Wostl et al., 2023; UNDRR, 2024).

More broadly, the Nigerian case illustrates how fragile federal systems can inadvertently amplify climate vulnerability when decentralisation is not matched by capacity-building and fiscal decentralisation. Without deliberate coordination design, federalism risks becoming a structural barrier rather than an enabler of climate resilience (Faguet et al., 2023).

Contributions to Global South Polycentric Governance Theory

Beyond its empirical contributions, this study advances **polycentric governance theory** by foregrounding its limits under conditions of institutional fragility and political asymmetry. While polycentric models emphasise redundancy, experimentation, and multi-level problem-solving, much of the literature assumes baseline institutional capacity and functional coordination (Ostrom, 2010; Carlisle & Gruby, 2019).

This research demonstrates that in Global South contexts, polycentricity may instead produce coordination overload, fragmented accountability, and diffusion of responsibility when authority and resources are unevenly distributed. Nigeria's climate-governance landscape reflects a form of *nominal polycentricity*—multiple centres exist, but few possess effective decision or implementation power (Bäckstrand et al., 2023; Sovacool et al., 2024).

The study therefore contributes a critical refinement: polycentric governance is not inherently adaptive. Its effectiveness is contingent on integrative mechanisms that align incentives, clarify mandates, and enable information flow across centres. Without these conditions, polycentric systems may reproduce institutional inertia rather than innovation.

By grounding this argument in empirical evidence from climate policy implementation and disaster governance, the study responds to calls for more Global South–anchored theorisation in environmental governance scholarship (Newell et al., 2022; Bulkeley et al., 2023). It positions fragile federal states not as deviations from theory, but as essential sites for theory building.

From Policy Rhetoric to Resilience Reality

The overarching lesson of this study is that the gap between climate-policy rhetoric and resilience outcomes is fundamentally political and institutional. Nigeria's experience shows that ambitious laws, strategies, and international commitments do not automatically translate into reduced vulnerability or adaptive capacity.

Bridging this gap requires a reorientation from symbolic compliance to implementation realism. This entails embedding climate objectives into core budgeting processes, empowering coordinating institutions with enforceable authority, and institutionalising learning from climate-related failures rather than treating them as episodic crises (Mazzucato, 2023; Jordan et al., 2024).

Equally important is the need to centre people, place, and practice in climate governance. Resilience is ultimately realised at local scales, where institutional fragmentation is most acutely felt. Strengthening sub-national capacity, inclusive participation, and accountability mechanisms is therefore not ancillary but central to effective climate action (Leach et al., 2022; Bulkeley & Toly, 2023).

In conclusion, the pathway from policy rhetoric to resilience reality lies not in producing more frameworks, but in reconfiguring governance systems to work as systems. For Nigeria—and similarly situated states—the challenge is to transform climate governance from an aspirational agenda into an operational public function capable of protecting lives, livelihoods, and development futures in an era of escalating climate risk.

Supplemental Material

The following supplemental materials are provided to enhance transparency, replicability, and methodological rigour, in line with best practice in qualitative and mixed-methods climate-governance research.

A. Interview Guide

The semi-structured interview guide was designed to elicit detailed institutional perspectives on climate-policy formulation, coordination, financing, and implementation in Nigeria. Questions were tailored to respondents' organisational roles while maintaining a common core to enable cross-case comparison.

Section A: Institutional Mandate and Role

1. Can you describe your institution's formal mandate in relation to climate change and sustainable development?
2. How does your organisation interact with other ministries, agencies, or levels of government on climate-related issues?

Section B: Policy Design and Coordination

3. How effectively are national climate policies (e.g., Climate Change Act, NDCs) operationalised within your institution?
4. What coordination mechanisms exist across federal, state, and local actors, and how effective are they in practice?

Section C: Financing and Budgeting

5. How are climate-related activities financed within your institution?
6. What challenges arise in accessing, managing, or coordinating climate finance (domestic or donor-funded)?

Section D: Risk Governance and Early Warning

7. How are climate risks (e.g., flooding, dam safety) identified, communicated, and managed?
8. What lessons were learned from recent climate-related disasters, including the Alau Dam collapse?

Section E: Participation, Accountability, and Reform

9. How are sub-national actors, communities, and civil society engaged in climate governance?
10. What institutional reforms would most improve climate-policy implementation and resilience outcomes?

Follow-up probes were used to clarify timelines, inter-agency dynamics, and accountability arrangements.

B. Coding Framework

Qualitative data were analysed using a hybrid deductive–inductive coding strategy. Initial codes were derived from climate-governance, institutional theory, and disaster-risk literature, and subsequently refined through iterative engagement with the data.

Core Code Families

1. **Institutional Fragmentation**

– Overlapping mandates
– Siloed decision-making
– Inter-agency rivalry

2. **Coordination Mechanisms**

– Formal coordination bodies
– Informal networks
– Vertical (federal–state–local) alignment

3. **Fiscal and Budgetary Dynamics**

– Budget exclusion/marginalisation
– Donor finance fragmentation
– Financial predictability

4. **Risk Communication and Early Warning**

– Information flow
– Technical capacity
– Political and institutional bottlenecks

5. **Accountability and Monitoring**

– Performance tracking

– Sanctions and incentives
– Learning from failure

6. **Participation and Inclusion**
– Sub-national engagement
– Community participation
– Gender and vulnerability considerations

Coding stability was tested through alternative code aggregation, negative-case analysis, and reflexive intercoder review.

C. Budget-Tracking Templates

To assess fiscal commitment and implementation capacity, a structured budget-tracking template was developed to trace climate-related expenditures across planning and execution stages.

Template Components

- Budget year
- Institution/MDA
- Programme or project title
- Budgeted allocation (₦)
- Actual release (₦)
- Execution status
- Funding source (domestic / donor / blended)
- Alignment with climate policy objectives

Templates were applied to federal budget documents, supplementary appropriations, and publicly available expenditure reports. This enabled identification of recurrent patterns of under-allocation, delayed releases, and fragmentation across institutions.

D. Additional Tables and Figures

- **Table S1:** Mapping of climate-related mandates across federal MDAs
- **Table S2:** Timeline of institutional actions preceding the Alau Dam collapse
- **Table S3:** Comparison of budgeted versus released climate funds (selected years)
- **Figure S1:** Institutional coordination pathways in Nigeria's climate governance system
- **Figure S2:** Risk communication flow and breakdown points in flood governance

These supplementary materials support the main text while maintaining analytical clarity.

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Endnotes

1. Institutional fragmentation refers to governance arrangements in which multiple public agencies hold overlapping or adjacent mandates without effective coordination mechanisms, leading to policy incoherence and weak implementation outcomes.
2. The Alau Dam collapse is analysed as a *critical case* selected for its severity, policy salience, and data availability, rather than as a statistically representative climate-disaster event.
3. All interview data were anonymised in accordance with institutional ethical requirements; organisational identifiers are therefore generalised where necessary to protect respondent confidentiality.

4. Reported budgetary figures are drawn from officially approved and publicly accessible documents and are interpreted as indicators of institutional commitment and implementation capacity rather than precise measures of expenditure efficiency.

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