

Institutional governance and climate–health–economic resilience in Africa: Multisectoral coordination, policy integration, and adaptation implementation

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Citation: Chigudu, D. (2026). Institutional governance and climate–health–economic resilience in Africa: Multisectoral coordination, policy integration, and adaptation implementation. *European Journal of Sustainable Development Research*, 10(4), em0437. <https://doi.org/10.29333/ejosdr/19261>

ARTICLE INFO

Received: 23 Mar. 2026

Accepted: 16 Jul. 2026

ABSTRACT

Climate change is a systemic threat to Africa's health systems, economies, and development trajectory, with the continent projected to bear the highest climate-related disease burden by 2030. This systematic review examines institutional governance frameworks for climate–health–economic resilience in Africa, with a focus on multisectoral coordination, policy integration, and adaptation implementation. The review synthesises 30 peer-reviewed studies (2015–2025) identified through a structured search of Scopus, Web of Science, Google Scholar, and African Journals OnLine, screened against pre-specified inclusion criteria and analysed through framework-based thematic synthesis (coded in Microsoft Excel) across three domains: governance mechanisms, the climate–health–economic nexus, and implementation barriers and enablers. The synthesis reveals that coordination failures across sectors and levels of government are the dominant barrier (~80% of studies; 24 of 30), followed by inadequate climate finance (~73%; 22 of 30) and institutional capacity deficits (~67%; 20 of 30). Health departments were excluded from National Adaptation Plans in 40% of the SADC countries reviewed (2 of 5). The review's theoretical contribution is to position governance as an endogenous mediator across the climate–health–economic nexus rather than as exogenous context, and to translate the resulting evidence into 15 operational recommendations, each specifying the level, instrument, lead actor, and monitoring vehicle required to advance reform. This is among the first systematic reviews to synthesise institutional governance arrangements at the climate–health–economic nexus across multiple African regions.

Keywords: Africa, climate governance, institutional frameworks, multisectoral coordination, policy integration, climate–health–economic nexus, adaptation implementation, systematic review

INTRODUCTION

The Climate Challenge in Africa

Climate change is one of Africa's most pressing challenges and threatens to reverse decades of development gains. Rising temperatures, more frequent and intense precipitation events, and sea-level rise are already affecting social, economic, and environmental systems across the continent (Nemakonde & Van Niekerk, 2022; Sodje et al., 2025). By 2030, Africa is projected to experience the highest burden of climate-related disease globally. The economic consequences are substantial, ranging from disruptions to health systems and household incomes to losses in agricultural productivity and quality of life (Meyer et al., 2024). Frequent droughts and extreme weather events damage livelihoods. They expose smallholder farmers to repeated shocks and contribute to internal displacement (Adebayo, 2025; Chidubem, 2025; Chigudu,

2025). The resulting costs include increased healthcare expenditure, reduced labour productivity, agricultural losses, and broader social instability (Chigudu, 2025; Makoba et al., 2024). Pastoralist and smallholder communities are particularly affected by erratic precipitation, rising temperatures, and entrenched poverty. Women, children, and persons with disabilities are disproportionately exposed to physical, psychosocial, and cognitive harms (Kerich et al., 2025).

The Governance Imperative

Addressing Africa's climate challenge requires more than technical solutions; it demands robust institutional governance frameworks that can coordinate multisectoral responses, integrate climate considerations across policy domains, and ensure effective implementation of adaptation strategies (Allarané et al., 2024; Kum, 2025; Mthembu & Nhamo, 2022). In many African countries, however, climate

governance remains fragmented, with weak institutional capacity, poor coordination, and significant gaps between policy aspirations and implementation (Adom et al., 2024; Gadu et al., 2024; Kum, 2025; Mordzeh-Ekpampo et al., 2025; Zembe et al., 2022). The detailed empirical evidence for these patterns, and the specific country cases that illustrate them, are presented in Sections *Background and Theoretical Foundations* and *Results*; the present section notes only the general challenge.

Climate change cuts across multiple policy domains. Effective responses therefore require coordination among environment, health, agriculture, disaster management, urban planning, and finance (Adebayo, 2025; Nemaconde & Van Niekerk, 2022; Zembe et al., 2022, 2023). In practice, however, adaptation is too often handled by environmental agencies, disaster risk reduction by disaster-management agencies, and health responses by health departments alone, with no shared mandate or budget. This horizontal fragmentation is compounded by vertical disparities in capacity, with local governments typically the weakest despite being on the frontline of climate impacts.

The Climate–Health–Economic Nexus

Climate change, public health, and economic systems are deeply interdependent, making integrated governance responses both challenging and essential (Chigudu, 2025; Teresiūtė et al., 2025; Wright et al., 2024). Climate change is associated with a growing burden of cardiovascular, respiratory, and vector-borne diseases, particularly in low- and middle-income countries (Teresiūtė et al., 2025). Climate-induced illness imposes healthcare costs, reduces labour productivity, and undermines household welfare (Chigudu, 2025; Wright et al., 2024). Economic vulnerabilities, in turn, weaken adaptive capacity and create feedback loops in which climate risks compound existing fragilities (Chigudu, 2025; Mordzeh-Ekpampo et al., 2025).

Despite growing recognition of these interconnections, climate governance frameworks frequently fail to integrate health and economic considerations (Meyer et al., 2024; Mthembu & Nhamo, 2022; Zembe et al., 2022). Health departments are routinely excluded from climate adaptation planning, and economic-development strategies rarely incorporate climate-risk assessments (Meyer et al., 2024; Mthembu & Nhamo, 2022). Few studies have systematically synthesised governance arrangements that

jointly address climate, health, and economic resilience in Africa, and very few have analysed the institutional conditions under which such arrangements actually deliver implementation outcomes. This is the gap the present review seeks to fill.

Research Objectives, Scope, and Review Design

This study is conducted as a *systematic review with framework-based thematic synthesis*. Its design and protocol are reported in full in Section *Materials and Methods*. The review pursues four objectives: (1) to analyse multisectoral coordination mechanisms and their effectiveness; (2) to assess policy integration approaches across climate, health, and economic domains; (3) to identify barriers to and enablers of adaptation implementation; and (4) to synthesise evidence-

based recommendations for strengthening climate governance. Drawing on 30 peer-reviewed studies and case material from 12 sub-Saharan countries, the review contributes to understanding how institutional arrangements shape resilience outcomes and identifies pathways for transformative governance reform.

BACKGROUND AND THEORETICAL FOUNDATIONS

Climate Governance Frameworks in Africa

Climate governance encompasses the institutional arrangements, policy frameworks, legal instruments, and coordination mechanisms through which societies organise collective action to address climate change (Adom et al., 2023; Kum, 2025; Lueong, 2024). In Africa, climate governance frameworks have evolved substantially over the past two decades, driven by international commitments, including the Paris Agreement, the Sendai Framework for Disaster Risk Reduction, and the Sustainable Development Goals (Mthembu & Nhamo, 2022; Sodje et al., 2025; Wright et al., 2024). Translating these international commitments into effective national and local action, however, remains incomplete (Chidubem, 2025; Kum, 2025; Mthembu & Nhamo, 2022).

National climate governance structures typically include designated climate-change focal points, national climate-change committees or councils, and sector-specific adaptation plans (Makoba et al., 2024; Meyer et al., 2024). Many African countries have developed National Adaptation Plans (NAPs), National Adaptation Programmes of Action (NAPAs), and climate-change response strategies (Makoba et al., 2024; Meyer et al., 2024; Mthembu & Nhamo, 2022). These instruments often lack strong legal backing, suffer from limited cross-sectoral integration, and face implementation-capacity constraints (Kum, 2025; Mthembu & Nhamo, 2022; Zembe et al., 2022). The effectiveness of climate governance depends critically on institutional quality, including regulatory frameworks, enforcement mechanisms, accountability structures, and coordination capacities (Bambi et al., 2024). Empirical evidence from sub-Saharan Africa shows that countries with stronger institutional quality have lower environmental impacts and better capacity to address climate challenges (Bambi et al., 2024).

Multisectoral Coordination and Policy Integration

Climate change is a systemic problem cutting across multiple policy domains and government bodies. Climate governance therefore requires *horizontal alignment* across sectors (environment, health, agriculture, water, energy, infrastructure) and *vertical coordination* across levels of government (national, provincial, local) (Adom et al., 2023; Afinowi, 2023; Nemaconde & Van Niekerk, 2022). Policy coherence — the alignment of objectives, instruments, and monitoring across related policy domains — is central to good climate governance (Zembe et al., 2022, 2023). In practice, however, food-security strategies, disaster-risk-reduction policies, and climate-adaptation plans are often developed and implemented by different agencies, with different objectives,

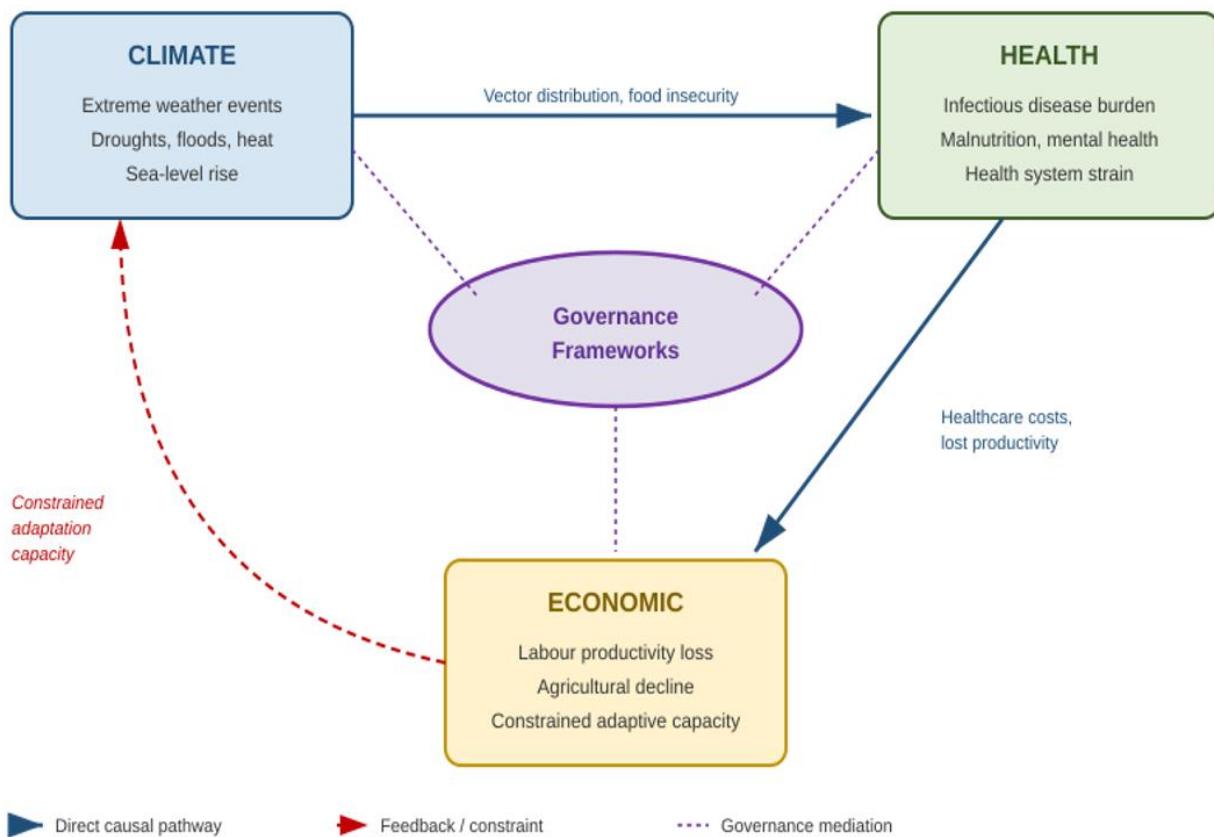


Figure 1. The climate–health–economic nexus in African contexts. Solid arrows indicate direct causal pathways; dashed lines represent feedback mechanisms and governance mediation (Source: Synthesised from reviewed literature Chigudu, 2025; Kerich et al., 2025; Teresiūtė et al., 2025; Wright et al., 2024)

monitoring frameworks, and budget envelopes (Zembe et al., 2022, 2023). Research from South Africa demonstrates that incoherences between policies in these interconnected domains weaken synergies and overall resilience (Zembe et al., 2022, 2023). Integrated approaches that explicitly link climate adaptation, disaster risk management, and sustainable development show greater potential for resilience-building (Afinowi, 2023; Mthembu & Nhamo, 2022; Nema-konde & Van Niekerk, 2022), and South Africa’s climate action illustrates the comparative gains of more collaborative, cross-sectoral approaches relative to more siloed approaches elsewhere (Afinowi, 2023).

The Climate–Health–Economic Nexus in African Contexts

The climate–health–economic nexus refers to the multidimensional ways in which climate change simultaneously shapes health outcomes and economic systems. In African contexts, the nexus is intensified by high dependence on climate-sensitive sectors (notably rain-fed agriculture and natural resources), constrained health infrastructure, and limited fiscal space (Chigudu, 2025; Wright et al., 2024). Climate change affects health through several pathways: direct impacts from heat and extreme weather events; indirect effects through altered disease-vector distribution and food-system disruption; psychosocial impacts (anxiety, depression, displacement-related trauma); and compounding pathways such as poverty and forced migration (Kerich et al., 2025; Teresiūtė et al., 2025; Wright et al., 2024).

The economic consequences are substantial: rising disease burdens generate healthcare costs, reduce labour productivity, and divert resources from development investments (Chigudu, 2025; Wright et al., 2024); agricultural disruptions threaten food security and rural livelihoods; and climate-induced disasters destroy infrastructure and productive assets (Adebayo, 2025; Chidubem, 2025; Chigudu, 2025). These economic losses, in turn, constrain adaptive capacity and resilience, producing vicious cycles of vulnerability (Chigudu, 2025; Mordzeh-Ekpampo et al., 2025).

Figure 1 illustrates these interconnected causal pathways and the role of governance in mediating them. Two features distinguish this representation from existing climate–health and climate–economy frameworks. First, in most published climate–health frameworks (e.g., the Lancet Countdown family of diagrams), governance is treated as exogenous context; in most climate–economy frameworks (damage-function diagrams), health is omitted altogether. **Figure 1** places governance as an *endogenous mediator* on every causal arrow rather than as background. Second, the framework explicitly includes *feedback loops* from constrained adaptive capacity back to climate vulnerability, capturing the cascading dynamics that are especially pronounced in low- and middle-income African settings.

Adaptation Implementation: Established Findings

Despite progress in policy formulation, adaptation implementation in Africa remains uneven and incomplete (Chidubem, 2025; Gadu et al., 2024; Kum, 2025; Mordzeh-

Ekpampo et al., 2025; Mthembu & Nhamo, 2022). The conceptual literature identifies four sources of this implementation challenge: (i) policy aspirations consistently outpace administrative and fiscal capacity (Adom et al., 2024; Gadu et al., 2024; Mthembu & Nhamo, 2022); (ii) climate finance flows to African adaptation remain an order of magnitude below estimated needs (Allarané et al., 2024; Kum, 2025; Owusu et al., 2024); (iii) coordination is hampered by sectoral silos that pre-date climate-policy mandates (Adom et al., 2024; Nema-konde & Van Niekerk, 2022, 2023; Zembe et al., 2022, 2023); and (iv) political-economy dynamics — power asymmetries, competing interests, rent-seeking, and misaligned incentives — shape both formulation and delivery (Mordzeh-Ekpampo et al., 2025). These four conceptual strands provide the analytical lens applied in Section *Results*.

Gaps in the Existing Literature

Three gaps remain. First, climate, health, and economic dimensions are typically analysed in parallel rather than as an integrated nexus, leaving the governance implications of their interdependencies under-specified. Second, the political economy of subnational implementation — in particular, the conditions under which local governments translate national plans into action — has received limited systematic attention. Third, studies that catalogue governance weaknesses often stop short of operational recommendations that name instruments, levels, and lead actors. The present review addresses these three gaps directly.

MATERIALS AND METHODS

Review Design

The study was conducted as a systematic review with framework-based thematic synthesis. The approach combines a pre-specified search and screening protocol with interpretive coding suited to the conceptual diversity of the governance literature.

Search Strategy

Four databases were searched: Scopus, Web of Science (Core Collection), Google Scholar (first 200 results per query), and African Journals OnLine (AJOL). Searches were run between 7 January and 18 March 2026 and covered publications dated 1 January 2015 – 31 December 2025. The post-2015 timeframe was chosen to align with the adoption of the Paris Agreement, the Sendai Framework, and the Sustainable Development Goals — the international architecture that shapes contemporary African climate governance.

Three search blocks were combined with the Boolean operator AND:

- **Block A (governance):** (“climate governance” OR “institutional governance” OR “climate policy” OR “multisectoral coordination” OR “policy coherence” OR “policy integration” OR “adaptation implementation”);
- **Block B (nexus):** (“climate change” AND (health OR economic OR resilience OR adaptation));

- **Block C (region):** (Africa OR “sub-Saharan Africa” OR SADC OR ECOWAS OR EAC OR “West Africa” OR “East Africa” OR “Central Africa” OR “Southern Africa” OR the names of individual African countries).

Inclusion and Exclusion Criteria

Studies were eligible for inclusion if they (i) were peer-reviewed; (ii) addressed African case material at country, sub-region, or continental scale; (iii) substantively engaged with at least one of institutional governance, multisectoral coordination, policy integration, or adaptation implementation; and (iv) were published in English. Studies were excluded if they were purely technical mitigation studies (e.g., emissions inventories), opinion pieces or commentaries without empirical or policy content, conference abstracts only, or duplicates.

Screening and Selection

The initial search returned 487 unique records after de-duplication. Title and abstract screening reduced the set to 84 records. Full-text screening against the inclusion criteria yielded 30 studies that constitute the analytic dataset. The 12 sub-Saharan countries represented are South Africa, Kenya, Botswana, Mozambique, Namibia, Zimbabwe, Cameroon, the Democratic Republic of Congo, Ghana, Nigeria, Burkina Faso, and Chad. The characteristics of the 30 studies are summarised in **Table 1**.

Data Extraction and Synthesis

A structured coding template was developed iteratively in Microsoft Excel and applied to all 30 included studies. The analytical strategy was *framework-based thematic synthesis*. A priori categories were derived from the four conceptual strands identified in Section *Adaptation Implementation: Established Findings*, and additional inductive sub-themes were added as they emerged from the data. Three thematic domains structured the extraction: (i) *governance mechanisms and institutional frameworks* (coordination structures, policy-integration approaches, stakeholder-engagement strategies, and implementation mechanisms); (ii) *climate-health-economic nexus evidence* (specific impacts, vulnerabilities, and relationships among climate, health, and economic systems); and (iii) *adaptation-implementation barriers and enablers*. Governance mechanisms were classified by type (vertical coordination, horizontal coordination, policy framework coherence, stakeholder engagement), by scale (national, provincial, local), and by sector (health, agriculture, disaster management, urban planning). Frequency counts of barrier categories were derived from the structured coding (a study was coded as reporting a coordination failure when it explicitly identified inter-agency or inter-governmental coordination weaknesses as a determinant of poor adaptation outcomes). The same convention was applied to financing and capacity barriers. Effective interventions and enabling factors were synthesised across studies to underpin the recommendations in Section *Evidence-Based Recommendations*.

Methodological Limitations

Three limitations apply specifically to the review procedure. First, restricting eligibility to peer-reviewed English-language sources excludes potentially relevant grey

Table 1. Characteristics of peer-reviewed studies included in the analysis (n = 30), 2015–2025. All entries listed below are core analytic studies; no contextual-only sources are included. *Source:* Author’s compilation from the 30 peer-reviewed studies retained at full-text screening (see Section *Screening and Selection*)

Study	Country/Region	Year	Study Type	Key Focus	Thematic Area
Kum (2025)	Cameroon	2025	Policy analysis	Governance fragmentation, legal gaps, and limited finance	CCA, governance
Meyer et al. (2024)	SADC (5 countries)	2024	Policy review	Health exclusion from NAPs; weak vertical integration	Climate–health nexus
Sodje et al., (2025)	Africa (multi-country)	2025	Engineering review	Infrastructure resilience under climate/disaster risk	DRR, infrastructure
Nemakonde and Van Niekerk (2022)	Africa (multi-country)	2022	Book chapter	DRR–CCA integration framework	CCA, DRR
Chigudu (2025)	Africa (multi-country)	2025	Conceptual/empirical	Climate–health–economic intersectionality	Nexus analysis
Chidubem (2025)	Africa (multi-country)	2025	Policy review	Governance challenges and opportunities	CCA policy
Adebayo (2024)	Africa (multi-country)	2024	Review	Environmental concerns in social policy planning	Social policy
Makoba et al. (2024)	Botswana / Africa	2024	Policy review	National climate policies; NAP development	CCA policy
Kerich et al. (2025)	Kenya (rural)	2025	Empirical	Socio-economic, health, and ecosystem vulnerabilities	Nexus, vulnerability
Mthembu and Nhamo (2022)	South Africa	2022	Policy analysis	SDG 13, adaptation policies, institutional frameworks	Governance
Wright et al. (2024)	Africa (multi-country)	2024	Review	Climate–health nexus: mitigation and adaptation	Climate–health nexus
Allarané et al. (2024)	Chad (N’Djamena)	2024	Case study	Urban CCA integration barriers	Urban governance
Zembe et al. (2022)	South Africa	2022	Content analysis	Policy coherence: food security, DRR, CCA	Policy coherence
Mordzeh-Ekpampo et al. (2025)	Sub-Saharan Africa	2025	Political economy	Governance gap in climate-resilient agriculture	Governance, agriculture
Adom et al. (2024)	South Africa (KZN)	2023	Empirical	Institutional transformation for CCA governance	Governance
Gadu et al. (2024)	South Africa (EC)	2024	Case study	Aspirations vs actions gap at the local level	Implementation gap
Lueong (2024)	Cameroon / DRC	2024	Review	Governance role in CCA; Congo Basin	Governance
Chevallier (2023)	Africa (multi-country)	2024	Policy analysis	Climate-smart agriculture policy coherence	Agriculture, policy
Zembe et al. (2023)	South Africa	2023	Framework paper	Policy coherence framework: food, DRR, CCA	Policy coherence
Owusu et al. (2023)	Ghana (Accra)	2023	Empirical	Institutional arrangements for flood risk management	Urban, DRR
Afinowi (2023)	Nigeria / South Africa	2023	Comparative	Multi-level urban climate governance	Urban governance
Nemakonde and Van Niekerk (2022)	SADC region	2022	Empirical	Conditions for DRR–CCA institutional integration	Governance, SADC
Tahiru et al. (2026)	Ghana (Northern)	2025	Review	Pastoralist and farming community adaptation	Community CCA
Asibey et al. (2024)	Ghana (Kumasi)	2024	Empirical	Local multilevel governance for climate planning	Local governance
Appau et al. (2024)	Ghana (Kumasi)	2024	Empirical	Asset-based community urban climate resilience	Community CCA
Elisée (2024)	Burkina Faso	2024	Policy analysis	CCA integration into agro-sylvo-pastoral policies	Agriculture, policy
Badolo (2024)	Burkina Faso	2024	Scenario planning	Long-term climate resilience scenarios to 2075	Resilience planning
Nyahunda (2024)	South Africa / Zimbabwe	2024	Comparative	Indigenous knowledge systems in CCA policy	IKS, policy
Teresiūtė et al. (2025)	Global / Africa	2025	Systematic review	Climate change, health, economic stability	Nexus analysis
Bambi et al. (2024)	Sub-Saharan Africa	2024	Empirical	Governance, institutions, resilience: threshold effects	Governance

literature and Francophone scholarship that is particularly important for Central and West African contexts. Second, frequency counts derived from a structured coding of 30 studies are indicative rather than statistical estimates, and should not be interpreted as population-level prevalence. Third, single-coder extraction (with cross-checks) was used in place of dual independent extraction; this is a known constraint of qualitative-evidence syntheses with small teams. Conceptual and empirical limitations of the broader argument are addressed separately in Section *Conceptual Limitations and Future Research*.

RESULTS

Governance Fragmentation and Institutional Weaknesses

Governance fragmentation is widespread across the reviewed cases and links directly to the coordination-failure category in **Table 2** (~80% of studies; 24 of 30). In Cameroon, climate governance is characterised by fragmented national legislation, weak legal procedures, and poor coordination of implementation (Kum, 2025). In South Africa, weak institutions operate in silos, lack secure financing, and fail to coordinate across sectors (Adom et al., 2024). At subnational

Table 2. Adaptation implementation barriers in African climate governance: frequencies, country contexts, and sources (n = 30 studies). *Source:* Author's synthesis based on the 30 reviewed studies; frequency counts derived from the structured coding described in Section *Data Extraction and Synthesis*

Barrier category	Frequency in analysed studies	Representative countries / contexts	Key sources
Coordination failures (poor vertical and horizontal integration)	~80% (24 of 30)	Cameroon, South Africa (national & local), SADC states, Ghana (Greater Accra)	Kum (2025); Meyer et al. (2024); Adom et al. (2023); Gadu et al. (2024); Owusu et al. (2023); NemaKonde and Van Niekerk (2022)
Inadequate climate finance and resource mobilisation	~73% (22 of 30)	Cameroon, South Africa, Chad (N'Djamena), Ghana (Greater Accra), Nigeria	Kum (2025); Mthembu and Nhamo (2022); Allarané et al. (2024); Owusu et al. (2023)
Institutional capacity deficits (especially at local level)	~67% (20 of 30)	Cameroon, South Africa (KwaZulu-Natal), and SADC states broadly	Kum (2025); Meyer et al. (2024); Mthembu and Nhamo (2022); Adom et al. (2023)
Health-sector exclusion from National Adaptation Plans	40% of SADC NAPs reviewed (2 of 5)	Botswana, Mozambique, Namibia, South Africa, Zimbabwe	Meyer et al. (2024)
Political-economy constraints (power dynamics, rent-seeking, competing interests)	Qualitative; recurrent	Sub-Saharan Africa broadly, Cameroon, South Africa	Kum (2025); Mthembu and Nhamo (2022); Mordzeh-Ekpampo et al. (2025)
Technical and knowledge gaps (data deficits, limited IKS integration)	Qualitative; recurrent	SADC states, Cameroon/DRC, South Africa, Zimbabwe	Meyer et al. (2024); Lueong (2024); Nyahunda (2024)
Policy incoherence across sectors (food security, DRR, climate adaptation)	Qualitative; recurrent	South Africa, Burkina Faso, Sub-Saharan Africa broadly	Zembe et al. (2022, 2023); Chevallier (2024); Elisée (2024)

level, the Eastern Cape Province exhibits limited integration of climate change into local development planning, with severe capacity deficits at municipal level (Gadu et al., 2024). KwaZulu-Natal's institutional response is poorly structured, underfunded, and lacks accountability mechanisms (Adom et al., 2024). The Greater Accra Metropolitan Area faces inadequate funding and logistics for flood management, with most organisations excluded from national-level climate-change decision-making (Owusu et al., 2024).

Across the continent, the institutional arrangements supporting climate-change adaptation, disaster risk reduction, and sustainable-development initiatives are fragmented and inconsistent, with mandates spread across different ministries or agencies (NemaKonde & Van Niekerk, 2022). Placing climate-change adaptation in environmental agencies, disaster risk reduction in disaster-management agencies, and SDG implementation across multiple sectors creates structural barriers to coherent programming (NemaKonde & Van Niekerk, 2022) and leads to duplication of effort and resources (NemaKonde & Van Niekerk, 2022, 2023). These patterns map directly onto the coordination-failure and policy-incoherence categories in Table 2.

Policy Incoherence and Integration Gaps

Policy incoherence emerged as a recurring obstacle. South African policies addressing food security, disaster risk reduction, and climate-change adaptation exhibit specific inconsistencies documented in Zembe et al. (2022, 2023). Three concrete examples illustrate the pattern. First, the three instruments use *divergent vulnerability-targeting criteria*: the Integrated Food Security Strategy targets households below an income line, the Disaster Management Act framework targets geographic risk zones, and the National Climate Change Adaptation Strategy targets economic sectors, so the same vulnerable population is reached inconsistently. Second, *monitoring indicators are not aligned*: each instrument has its own indicator set with no shared denominator, preventing

joint progress reporting. Third, *budget envelopes are administered separately* by three different departments (Agriculture, Cooperative Governance and Traditional Affairs, and Forestry, Fisheries and the Environment), with no pooled or jointly governed financing. The resulting incoherence weakens the joint effect of three otherwise individually credible policies.

Health-sector integration into climate adaptation planning is similarly weak. An assessment of National Adaptation Plans across five SADC countries (Botswana, Mozambique, Namibia, South Africa, Zimbabwe) found that health departments were excluded from climate assessments in 40% of countries, despite all five prioritising health in their NAPs (Meyer et al., 2024). Where health surveillance and early warning systems were included in NAPs, they were poorly linked to broader climate, economic, and labour policies (Meyer et al., 2024). Climate-smart agriculture and food-systems policies across Africa are similarly fragmented, with significant gaps in the integration of climate-change objectives into national agricultural strategies in Burkina Faso (Chevallier, 2024; Elisée, 2024).

Multisectoral Coordination Challenges

Multisectoral coordination is weak in most reviewed cases. In Cameroon and the Democratic Republic of Congo, limited information on how climate governance operates and on the local implementation of national policies has compounded coordination shortfalls (Lueong, 2024). In South Africa, leadership, financing, and inter-governmental coordination remain insufficient. Inclusive-governance practices are uneven (Lueong, 2024). The Eastern Cape Province illustrates how the absence of an integrated local-level climate-governance system leads to climate concerns receiving little attention in municipal decision-making (Gadu et al., 2024). In Cameroon, coordination problems across levels of government have undermined the mobilisation of climate finance and the implementation of policy programmes (Kum, 2025).

Horizontal coordination across social-policy domains is also weak in several countries, where environmental concerns are addressed in disaster-management or agriculture portfolios but not embedded in social policy (Adebayo, 2025). In N'Djamena (Chad), urban climate-adaptation policy is underdeveloped because of weak political commitment and organisational constraints (Allarané et al., 2024).

The Climate–Health–Economic Nexus: Empirical Evidence

A growing body of African evidence connects climate hazards to health and economic outcomes. In rural Kenya, droughts, erratic rainfall, and rising temperatures interact with poverty and gender inequalities to heighten climate vulnerability (Kerich et al., 2025). Higher temperatures are associated with elevated disease, malnutrition, and mental-health risks and place strain on ecosystems and livelihoods. Pastoralists, women, children, and persons with disabilities experience disproportionately adverse health and livelihood outcomes, including reduced life expectancy (Chigudu, 2025; Kerich et al., 2025). By 2030, sub-Saharan Africa is projected to bear the highest global burden of climate-related disease (Meyer et al., 2024; Wright et al., 2024).

On the economic side, sub-Saharan Africa's agriculture and food systems exhibit substantial vulnerabilities, with climate-resilient agriculture policies often failing because of political-economy dynamics (Mordzeh-Ekpampo et al., 2025). To make these dynamics concrete: in the cases reviewed, “institutional weakness” refers in practice to (i) the absence of legal mandates compelling agriculture ministries to incorporate climate-adaptation criteria into input-subsidy programmes, (ii) the dominance of single-commodity producer associations in agricultural-policy formulation — which crowds out the more diffuse interests of climate-vulnerable smallholders — and (iii) donor-driven project cycles that prioritise short-term productivity gains over long-horizon resilience investments. “Competing interests” refers concretely to the misalignment between fertiliser-subsidy lobbies (favouring intensification) and agro-ecological adaptation advocates (favouring diversification and soil-health investments) (Mordzeh-Ekpampo et al., 2025). Documented economic impacts include reduced production, rising poverty and food insecurity, and recurrent flood-related losses of life, property, and productive assets, with long-term effects on recovery and development (Owusu et al., 2024).

Adaptation Implementation Barriers

The reviewed evidence points to four dominant barrier categories, summarised in **Table 2** and quantified against the analytic dataset of 30 studies.

Inadequate climate finance appears in 22 of 30 studies (~73%). Cameroon's climate governance is hampered by limited climate finance, coordination capacity, and national capability (Kum, 2025). South Africa's adaptation efforts suffer from financing constraints and from prioritisation problems within available envelopes (Mthembu & Nhamo, 2022). In N'Djamena, limited access to finance constrains integrated urban climate adaptation (Allarané et al., 2024), and the Greater Accra flood-management system is hampered by limited budgets and logistics (Owusu et al., 2024).

Institutional capacity deficits appear in 20 of 30 studies (~67%) (Kum, 2025). Cameroon lacks an effective national legislative framework for floods. South African subnational institutions vary significantly in capacity, with municipalities typically having the smallest staffing complements with climate-relevant expertise; in the Eastern Cape and KwaZulu-Natal, fewer than 3 full-time-equivalent climate specialists were reported per province (Adom et al., 2024; Gadu et al., 2024). SADC countries also report weak coordination and capacity at the district and local levels.

Coordination failures across sectors and levels of government appear in 24 of 30 studies (~80%) (Adom et al., 2024; Gadu et al., 2024; Kum, 2025; Meyer et al., 2024; Nemaconde & Van Niekerk, 2023; Owusu et al., 2024). They include the absence of inter-ministerial bodies, non-aligned monitoring indicators, and parallel rather than joint programming.

Political and governance constraints frequently hamper adaptation. Political-economy determinants — power dynamics, institutional weaknesses, competing interests, rent-seeking, colonial legacies, and donor influence — undermine climate-resilient agricultural policy in sub-Saharan Africa (Mordzeh-Ekpampo et al., 2025). In N'Djamena, weak political will and organisational obstacles prevent the integration of climate adaptation into urban policy (Allarané et al., 2024). South Africa exhibits knowledge gaps and uneven leadership capacity that hinder coherent adaptation (Mthembu & Nhamo, 2022). Knowledge and data limitations also impede implementation: indigenous and local knowledge could play important roles, but are unevenly integrated into formal climate-policy frameworks; comparison of South Africa and Zimbabwe shows that Zimbabwe has gone further than South Africa on this front (Nyahunda, 2024).

Figure 2 presents the governance fragmentation–integration spectrum, with indicative positioning of selected case countries based on their governance characteristics and associated resilience outcomes. Country positions are derived from the modal score across four criteria reported in the reviewed studies: (1) presence of a binding climate-change law with cross-sectoral mandates; (2) operational status of an inter-ministerial coordination body; (3) inclusion of the health sector in the most recent NAP; and (4) availability of dedicated climate-adaptation finance at subnational level.

Successful Interventions and Enabling Factors

Despite the challenges, the evidence identifies four categories of intervention and enabling condition that are associated with better outcomes.

Policy-coherence frameworks

Policy-coherence frameworks that explicitly align objectives and implementation approaches across related domains improve outcomes (Zembe et al., 2023). South Africa's policy-coherence framework for food security, climate-change adaptation, and disaster risk reduction is one example (Zembe et al., 2023). The South African climate response — anchored in the National Climate Change Response White Paper (2011) and the National Climate Change Adaptation Strategy (NCCAS, 2020) — has built three notable coordination features documented in Afinowi (2023)

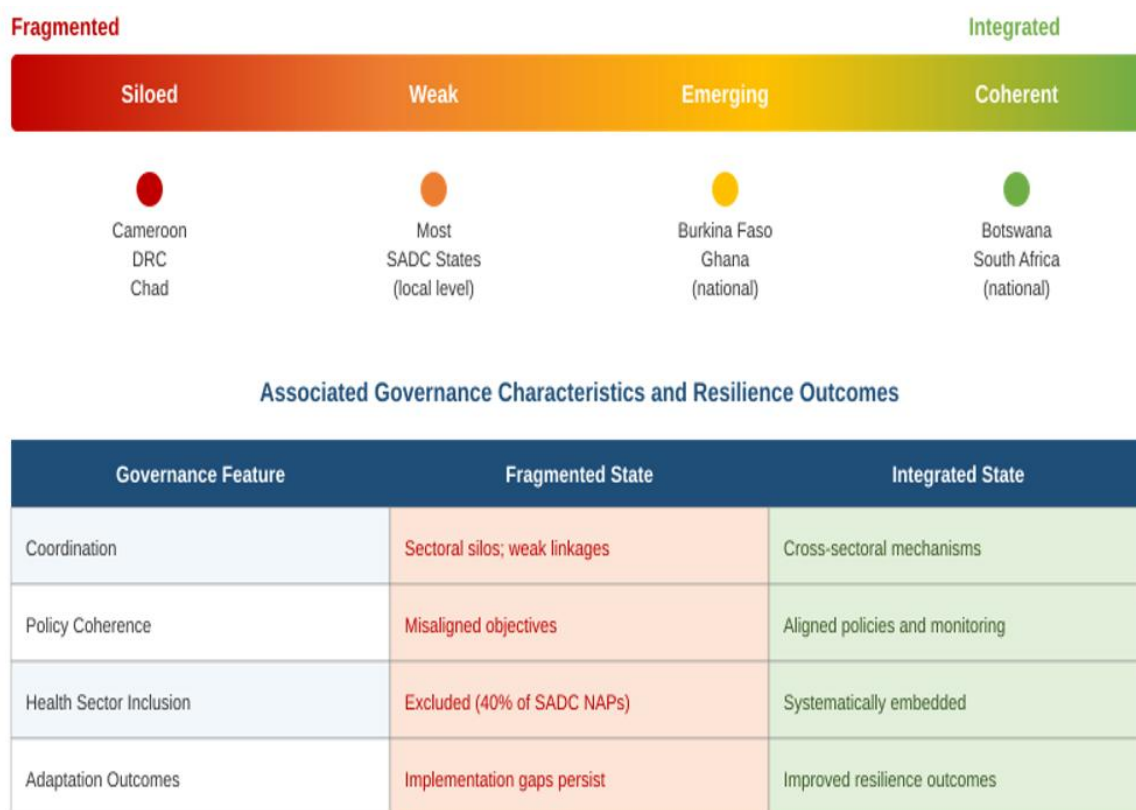


Figure 2. Governance fragmentation–integration spectrum and associated resilience outcomes. Country positioning is indicative, based on synthesised evidence across the 30 reviewed studies (2015–2025) (Source: Author’s own elaboration)

and Mthembu and Nhamo (2022): (i) a formal Inter-Ministerial Committee on Climate Change drawing in nine line ministries; (ii) explicit alignment of NCCAS objectives with the National Disaster Management Framework, achieved through cross-referenced indicators; and (iii) a Provincial Climate Change Forum mechanism that links national priorities to provincial implementation plans. Reported advantages include reduced duplication of risk assessments, joint provincial budgeting in two pilot provinces, and faster mobilisation of disaster-recovery finance after the 2022 KwaZulu-Natal floods (Afinowi, 2023; Mthembu & Nhamo, 2022). The example is not without limitations: the Inter-Ministerial Committee meets infrequently, and provincial uptake remains uneven (Afinowi, 2023; Mthembu & Nhamo, 2022).

Local and community-based adaptation

Community-driven planning has demonstrated effectiveness in rural Kenya, where ecological monitoring, land conservation, livelihood diversification, and climate-responsive social policies have been implemented in tandem (Adebayo, 2025; Kerich et al., 2025). Community-based resilience programmes and sustainable-farming practices have been deployed effectively in several African contexts (Chidubem, 2025). The Greater Accra case shows that high institutional awareness, strong organisational collaboration, and community engagement can underpin effective capacity-building (Owusu et al., 2024). Asset-based community-development approaches in Kumasi, Ghana, similarly demonstrate that pro-poor urban climate resilience is achievable when local governance arrangements actively

engage informal-settlement residents (Appau et al., 2024; Asibey et al., 2024).

Regional coordination

Regional coordination structures — SADC in particular — enable shared problem-solving for transboundary issues and provide a platform for harmonising adaptation responses across countries with similar agro-ecological and economic profiles (Meyer et al., 2024; Nema-konde & Van Niekerk, 2023). Such regional mechanisms address transboundary water resources, disease surveillance, food security, and disaster response that exceed any single country’s capacity (Meyer et al., 2024; Nema-konde & Van Niekerk, 2023).

Innovative finance

Innovative financing mechanisms can complement domestic budgets and unlock investments in resilience. Chigudu (2025) documents that green financing and renewable-energy investments support sustainable, equitable development in African contexts. Sodje et al. (2025) highlight infrastructure-resilience financing as a route to addressing climate and disaster risks together. Where these instruments have been deployed in the reviewed cases, they extend the fiscal space available for adaptation and create co-benefits across mitigation, public health, and economic development (Chigudu, 2025; Wright et al., 2024).

Cross-cutting enabling factors

Inclusive governance with active stakeholder participation supports climate-smart agriculture policy (Allarané et al., 2024; Kerich et al., 2025). Across the four categories above,

three cross-cutting enabling factors recur in the literature: explicit statutory mandates for cross-sectoral cooperation (Kum, 2025; Lueong, 2024); designated coordination bodies with adequate resourcing (Afinowi, 2023; Mthembu & Nhamo, 2022); and accountability frameworks that link cross-sectoral cooperation to meaningful consequences (Adom et al., 2024; Zembe et al., 2023).

DISCUSSION

The Governance Gap: From Fragmentation to Integration

Building on the review evidence, the governance gap in African climate resilience is best understood as a recurrent mismatch between policy aspirations and implementation realities, traceable to political-economy dynamics, resource constraints, and sectoral fragmentation rather than to a lack of plans on paper. The implication for theory is that climate-governance frameworks designed for high-capacity contexts may need to be reconceived for settings where statutory mandates exist on paper but lack the administrative architecture for delivery. The exclusion of health departments from NAPs in 40% of the SADC countries reviewed (Meyer et al., 2024) is one stark indicator: it suggests that the gap is not only one of capacity but of

institutional design — of who is in the room when climate policy is made. Bridging the gap, therefore, requires more than additional resources; it requires the design of coordination mechanisms whose membership and authority match the cross-sectoral nature of climate risk (Nemakonde & Van Niekerk, 2023; Zembe et al., 2022, 2023).

Multisectoral Coordination: A Typology and the Conditions for Improvement

Drawing the strands of evidence together, the review supports a four-part typology of coordination problems in African climate governance:

horizontal sectoral silos (e.g., health excluded from NAPs); *vertical capacity asymmetries* (national plans, weak local delivery); *mandate ambiguity* (no statutory lead agency for cross-cutting risks); and *political-economy capture* (well-organised sectoral lobbies displacing diffuse public interests). Two concrete examples drawn from the reviewed cases anchor the third type. In Cameroon, the Ministry of Environment, Nature Protection and Sustainable Development holds the Paris Agreement focal-point function, while flood and drought response sit with the Ministry of Territorial Administration's Civil Protection Directorate, and climate-sensitive disease surveillance sits with the Ministry of Public Health — with no statutory body empowered to issue binding instructions across the three (Kum, 2025; Lueong, 2024). As a result, the 2020–2022 Lake Chad Basin response involved overlapping assessments by all three ministries and a delayed integrated response. In the Greater Accra Metropolitan Area, flood-management responsibilities are split between the Hydrological Services Department, the National Disaster Management Organisation, the metropolitan and municipal assemblies, and the Ghana Meteorological Agency. None of these bodies has a legally enforceable lead-agency designation for flood-warning issuance, and during the June 2022 floods

three different warnings were released with different geographic footprints (Owusu et al., 2024).

The review's contribution beyond cataloguing failures is to identify three *conditions under which coordination improves*: (i) clear statutory mandates with enforceable lead-agency designations; (ii) coordination bodies that meet on a regular schedule with published minutes and dedicated secretariat support; and (iii) shared indicators backed by joint or pooled financing. Where these three conditions co-exist — as in elements of South Africa's NCCAS architecture (Afinowi, 2023; Mthembu & Nhamo, 2022)— coordination moves from formal to functional.

The Climate–Health–Economic Nexus: How Nexus Governance Differs from Sectoral Governance

Nexus governance differs from sectoral governance in three ways that have direct institutional implications. First, the *object of governance* is a system of interactions rather than a single policy domain: an effective response addresses how climate change reshapes health *and* how health outcomes condition economic capacity, rather than treating these in series. Second, the *membership of coordination bodies* must extend beyond the environment portfolio to include health, finance, and economic-development ministries as principals rather than observers. Third, the *monitoring architecture* must reflect joint outcomes (e.g., heat-related morbidity rates linked to labour-productivity losses), not parallel sectoral indicators. Each of these implications represents a meaningful departure from current practice in most African contexts (Meyer et al., 2024; Mthembu & Nhamo, 2022; Zembe et al., 2022).

The realism of these proposals within current institutional constraints is a fair question. Three considerations argue that they are achievable rather than aspirational. First, the relevant statutory architecture already exists in several African states: South Africa's Climate Change Act (2024) and Kenya's Climate Change Act (2016, amended 2023) demonstrate that framework legislation establishing inter-ministerial bodies is politically feasible. Second, regional bodies (SADC, ECOWAS, IGAD) provide an existing scaffolding for the harmonisation of nexus indicators across countries (Meyer et al., 2024; Nemakonde & Van Niekerk, 2023). Third, the costs of nexus governance are largely costs of coordination rather than of new infrastructure, and can be absorbed within existing institutional budgets when statutory mandates align them. The reform pathway therefore requires political will and institutional design more than new resources.

Adaptation Implementation: A Five-Part Diagnosis

Section *Evidence-Based Recommendations* sets out 15 recommendations for closing the implementation gap; the present section summarises only the diagnosis that motivates them. The reviewed evidence supports five interacting reasons for the persistent gap between adaptation policy and outcomes:

1. **Financing gap.** Adaptation costs in Africa are estimated at US\$30–50 billion per year by 2030, while flows remain an order of magnitude lower; domestic budget allocations to adaptation rarely exceed 1–2% in

the reviewed cases (Allarané et al., 2024; Kum, 2025; Mthembu & Nhamo, 2022; Owusu et al., 2024).

2. **Capacity gap at subnational level.** Local governments have the smallest staffing complements with climate-relevant expertise (Adom et al., 2024; Gadu et al., 2024).
3. **Coordination gap.** Coordination failures occur in approximately 80% of studies (24 of 30), ranging from the absence of inter-ministerial bodies to non-aligned monitoring indicators (Adom et al., 2024; Kum, 2025; Gadu et al., 2024; NemaKonde & Van Niekerk, 2023; Zembe et al., 2023).
4. **Political-economy gap.** Power asymmetries between central ministries (treasury, planning) and sectoral or local actors mean that climate priorities are systematically discounted in budget cycles (Mordzheh-Ekpampo et al., 2025).
5. **Knowledge and data gap.** Many NAPs were drafted with limited downscaled climate data, weak integration of indigenous-knowledge systems, and a thin evidence base on what works in implementation (Lueong, 2024; Meyer et al., 2024; Nyahunda, 2024).

Regional Perspectives and Context-Specific Considerations

African climate governance varies substantially across regions. South Africa exhibits more developed policy frameworks and institutional structures, although implementation challenges persist (Adom et al., 2024; Afinowi, 2023; Gadu et al., 2024; Mthembu & Nhamo, 2022; Zembe et al., 2022, 2023). In West Africa, Ghana provides examples of multilevel local governance and community-based adaptation in Kumasi and Greater Accra (Appau et al., 2024; Asibey et al., 2024; Owusu et al., 2024). Central African countries face particularly acute capacity, coordination, and resource challenges, with Cameroon and the Democratic Republic of Congo illustrating the legislative and coordination weaknesses described above (Allarané et al., 2024; Kum, 2025; Lueong, 2024). East Africa illustrates a different pattern: Kenya's Climate Change Act (2016, amended 2023) provides one of the continent's most developed statutory frameworks for climate action, and rural Kenyan adaptation initiatives demonstrate how local ecological monitoring and livelihood diversification can be coupled with climate-responsive social policies (Kerich et al., 2025); East African Community member states have also begun harmonising disease-surveillance and food-security responses through regional protocols. These differences reflect variations in political systems, economic resources, institutional capacities, and climate vulnerabilities. Countries with stronger institutional quality demonstrate better capacity to address climate challenges (Bambi et al., 2024); even those with relatively strong policy frameworks face significant implementation gaps, suggesting that governance challenges transcend resource and capacity constraints alone (Gadu et al., 2024; Mthembu & Nhamo, 2022). Context also matters within countries: urban environments face challenges associated with rapid urbanisation, infrastructure deficits, and concentrated vulnerability (Allarané et al., 2024; Appau et al., 2024; Asibey et al., 2024; Owusu et al., 2024); rural and pastoral

communities face dependence on climate-sensitive resources, limited infrastructure, and remoteness; coastal areas face sea-level rise and storm surge; arid regions face drought and desertification (Adebayo, 2025; Kerich et al., 2025; Owusu et al., 2024). Effective governance must therefore be adaptable to context while preserving coordination across regions and sectors. Regional coordination structures — SADC and the East African Community in particular — enable shared problem-solving for transboundary issues (Meyer et al., 2024; NemaKonde & Van Niekerk, 2022).

Conceptual Limitations and Future Research

Three substantive limitations apply to the argument advanced here (the procedural limitations of the review method are reported separately in Section *Methodological Limitations*). First, the diversity of political, economic, and environmental contexts across Africa limits the cross-country generalisability of the synthesised findings. Second, rapidly evolving policy landscapes mean that some findings may not capture the most recent reforms (e.g., legislation enacted in 2025–2026). Third, the focus on formal institutional governance underplays informal governance, community agency, and public engagement, all of which shape outcomes on the ground. Future research should pursue, in order of priority: (i) longitudinal tracking of governance reforms enacted under post-2020 framework legislation in South Africa and Kenya, to evaluate whether statutory architecture translates into delivery; (ii) comparative nexus-governance studies that link climate, health, and economic outcomes across countries with similar starting positions; (iii) deeper political-economy analysis of how power relations shape implementation; and (iv) evaluation of innovative governance mechanisms (digital technologies, participatory approaches, and adaptive management).

EVIDENCE-BASED RECOMMENDATIONS

The following 15 recommendations translate the review's findings into operational guidance. Each specifies the level of action, the type of instrument, at least one reference design feature drawn from the reviewed evidence, a lead actor, and a monitoring vehicle.

Strengthening Institutional Frameworks

Recommendation 1. Enact binding national climate-change framework legislation

Following the finding that policy instruments often lack legal force (Kum, 2025; Mthembu & Nhamo, 2022; Zembe et al., 2022), countries that currently rely on policy documents without statutory force should adopt a Climate Change Framework Act on the model of *Kenya's Climate Change Act (2016, amended 2023)* or *South Africa's Climate Change Act (2024)*. Such acts should: (i) place a duty on the executive to publish, table, and update a National Adaptation Plan on a fixed five-year cycle; (ii) establish a statutory inter-ministerial Climate Change Council with cross-sectoral mandates including health and finance; (iii) create a Climate Change Fund with ring-fenced revenue sources; and (iv) impose reporting duties on subnational governments. At the

continental level, the African Union's Climate Change and Resilient Development Strategy (2022–2032) should be backed by a model law that the AU Commission can offer to member states. **Lead actor:** national parliaments. **Monitoring vehicle:** Adaptation Communications under the Paris Agreement.

Recommendation 2. Establish high-level intersectoral coordination bodies

Building on findings of fragmented coordination (Allarané et al., 2024; Chevallier, 2024; Lueong, 2024) and the case evidence on Cameroon and the Greater Accra Metropolitan Area (Kum, 2025; Lueong, 2024; Owusu et al., 2024), governments should establish coordination bodies with statutory authority across sectors and levels. The reference design is South Africa's *Inter-Ministerial Committee on Climate Change*, which draws in nine line ministries with a rotating chair, supported by Provincial Climate Change Forums (Afinowi, 2023; Mthembu & Nhamo, 2022). Such bodies should include environment, health, agriculture, finance, and disaster management, as well as civil society and affected communities. **Lead actor:** Office of the President or Prime Minister. **Monitoring vehicle:** published minutes and an annual public report.

Recommendation 3. Strengthen subnational institutional capacity

Where capacity is weakest — typically at municipal and provincial level (Adom et al., 2024; Gadu et al., 2024; Mthembu & Nhamo, 2022) — governments should adopt a multi-year capacity-building programme combining (i) statutory minimum staffing requirements (e.g., a designated climate-change officer in every district), (ii) ring-fenced operating budgets, (iii) standardised technical training delivered through national colleges of public administration, and (iv) twinning arrangements with stronger provinces or international peers. **Lead actor:** Ministry of Local Government / Cooperative Governance. **Monitoring vehicle:** annual capacity audit.

Enhancing Multisectoral Coordination and Policy Integration

Recommendation 4. Adopt cross-cutting policy-coherence frameworks

Building on Zembe et al.'s (2022, 2023) framework, governments should adopt formal policy-coherence frameworks linking climate change, disaster risk reduction, food security, health, and development. Each framework should specify (i) shared targeting criteria for vulnerable populations, (ii) a common indicator set with a single denominator, and (iii) a joint or pooled financing mechanism. **Lead actor:** National Planning Commission. **Monitoring vehicle:** annual policy-coherence report.

Recommendation 5. Integrate health systematically into climate adaptation

Following the finding that health departments were excluded from NAPs in 40% of SADC countries reviewed (Meyer et al., 2024), ministries of health should be statutory members of all climate-adaptation bodies and co-authors of every NAP. Each country should publish a dedicated *Climate–*

Health Action Plan embedded in the NAP, with explicit budget lines for climate-sensitive disease surveillance, heat action plans, and health system strengthening (Meyer et al., 2024; Wright et al., 2024). **Lead actor:** Ministry of Health. **Monitoring vehicle:** WHO–UNFCCC Health and Climate Country Profile.

Recommendation 6. Mainstream climate considerations into planning and public finance

Climate-risk assessments and adaptation measures should be integrated into all relevant strategies, including economic development planning and public financial management. Practically, this means *climate-tagging national budgets* using the OECD Rio markers (mitigation, adaptation, both, neither) and publishing the results in the annual budget statement. National and subnational budget allocations should prioritise climate adaptation, supported by the climate-tagging system (Kum, 2025; Lueong, 2024). **Lead actor:** Ministry of Finance. **Monitoring vehicle:** annual climate-budget statement.

Improving Vertical and Horizontal Coordination

Recommendation 7. Formalise vertical coordination systems

Coordination between national, provincial, and local levels should be established through regulations or memoranda of understanding that specify terms of reference, responsibilities, and communication channels (Adom et al., 2024; Gadu et al., 2024; Lueong, 2024). Provincial Climate Change Forums (South African model) should be made statutory, with mandated quarterly reporting to the Inter-Ministerial Committee. **Lead actor:** Office of the President / Prime Minister. **Monitoring vehicle:** Quarterly forum reports.

Recommendation 8. Strengthen regional coordination and cooperative action

Regional coordinating bodies — SADC, ECOWAS, EAC, IGAD — should operationalise mechanisms that address common climate challenges, promote knowledge sharing, optimise resource use, and mitigate transboundary impacts (Meyer et al., 2024; Nema-konde & Van Niekerk, 2023). Concrete vehicles include the *SADC Climate Change Adaptation Strategy* and IGAD's *Climate Prediction and Applications Centre*. Priority areas include transboundary water resources, disease surveillance, food security, and disaster response (Meyer et al., 2024; Nema-konde & Van Niekerk, 2023). **Lead actor:** regional secretariats. **Monitoring vehicle:** biennial regional progress report.

Mobilising Resources and Addressing Financial Constraints

Recommendation 9. Diversify climate finance

Building on the financing gaps documented in Cameroon, South Africa, Chad, and Ghana (Allarané et al., 2024; Kum, 2025; Mthembu & Nhamo, 2022; Owusu et al., 2024) and the financing options identified by Chigudu (2025), governments should pursue a diversified strategy combining domestic public finance, multilateral climate finance, and private investment (Chigudu, 2025; Kum, 2025; Lueong, 2024). Four specific instruments are tractable in the African context: *sovereign green bonds* (Egypt, Nigeria, and Kenya have issued these); *climate-resilient debt clauses* (Barbados-style pause-

and-restructure clauses adapted for sovereign borrowing); *debt-for-climate swaps*; and access to the new *Loss and Damage Fund* agreed at COP28. Regional vehicles, such as the Africa Climate Change Fund (administered by the African Development Bank), offer additional options. Finance should prioritise vulnerable communities and sectors (Chigudu, 2025; Kum, 2025). **Lead actor:** Ministry of Finance / debt-management office. **Monitoring vehicle:** annual climate-finance flow report.

Recommendation 10. Leverage green investments for co-benefits

Investments in renewable energy, sustainable agriculture, ecosystem-based adaptation, and green infrastructure should be prioritised for their potential to generate co-benefits across mitigation, adaptation, health, and economic development (Chigudu, 2025; Wright et al., 2024). Investment criteria should explicitly score co-benefits across the climate–health–economic nexus (Chigudu, 2025). **Lead actor:** national development banks and infrastructure agencies. **Monitoring vehicle:** co-benefits scorecard for all major investments.

Enhancing Stakeholder Engagement and Inclusive Governance

Recommendation 11. Support community-led adaptation and locally driven planning

Adaptation processes should be community-led and grounded in local knowledge, empowering affected populations (Adebayo, 2025; Kerich et al., 2025; Owusu et al., 2024). Governance frameworks should require meaningful participation, with attention to women, youth, indigenous peoples, and persons with disabilities (Adebayo, 2025; Allarané et al., 2024; Kerich et al., 2025). Practical instruments include local adaptation plans developed through participatory rural appraisal and ward-level climate committees with budgetary authority. Participatory mechanisms can become tokenistic, however, when they are appended to predetermined plans rather than empowered to shape decisions; safeguards include statutory consultation timeframes, published responses to community submissions, and minority-veto rights on issues affecting indigenous peoples. **Lead actor:** local governments. **Monitoring vehicle:** participation audit included in annual reporting.

Recommendation 12. Integrate indigenous and local knowledge systems

Climate policy and adaptation should anchor scientific evidence alongside indigenous knowledge systems (Adebayo, 2025; Meyer et al., 2024; Nyahunda, 2024). Integration should occur through participatory learning that respects diverse knowledge systems. Operationally, this means co-producing local climate-risk assessments with traditional authorities and indigenous-knowledge holders, and providing recognition and remuneration for their contributions. Implementation faces persistent challenges — limited institutional uptake, unequal valuation of knowledge systems, and the risk of extracting indigenous knowledge without reciprocity — which require ethical co-production protocols and benefit-sharing arrangements (Nyahunda, 2024). **Lead actor:** National

Research Councils in partnership with traditional authorities. **Monitoring vehicle:** published co-production protocols.

Strengthening Monitoring, Accountability, and Learning

Recommendation 13. Establish integrated monitoring and evaluation systems

Comprehensive M&E systems are essential for tracking integrated resilience across climate, health, and economic domains (Zembe et al., 2023). Indicators should cover policy coherence, coordination effectiveness, and implementation outcomes (Zembe et al., 2023). The reference design is an indicator set built around the *Adaptation Communications* template under the Paris Agreement, augmented with health (WHO health-system metrics) and economic (national accounts) indicators. **Lead actor:** National Statistical Office. **Monitoring vehicle:** biennial integrated-resilience dashboard.

Recommendation 14. Strengthen accountability mechanisms

Effective climate governance requires clear accountability frameworks that define who is responsible for what, set performance objectives, and identify consequences for non-performance (Adom et al., 2024; Lueong, 2024). Accountability mechanisms must be implemented at all levels by both governmental and non-governmental entities (Adom et al., 2024). They should include an independent audit by the supreme audit institution and mechanisms for recourse for affected communities. **Lead actor:** Supreme Audit Institution / Parliamentary Oversight Committee. **Monitoring vehicle:** annual climate-governance audit.

Recommendation 15. Foster learning and adaptive management

Climate governance should incorporate evidence-based lessons and practice-based adaptation, supported by mechanisms that allow successful approaches to be scaled (Chevallier, 2024; Chidubem, 2025). Knowledge exchange — through communities of practice, documentation, and knowledge-transfer platforms — facilitates learning and systems change across countries (Chevallier, 2024; Nemaconde & Van Niekerk, 2023). **Lead actor:** designated learning agency (e.g., AU Commission for continental learning). **Monitoring vehicle:** biennial learning review.

CONCLUSIONS

This systematic review of institutional governance and the climate–health–economic nexus in Africa reveals significant threats and opportunities. Sub-Saharan Africa is projected to bear the world's largest share of the climate-related disease burden by 2030 (Meyer et al., 2024), with cascading consequences for health systems and economic development. Meeting these challenges requires institutional governance frameworks that coordinate across sectors, integrate climate considerations across policy levels, and ensure implementation. The evidence assembled here points to a persistent governance gap, with poor coordination across institutions and significant policy disjunctures (Adom et al., 2024; Kum, 2025; Meyer et al., 2024; Mthembu & Nhamo,

2022; Owusu et al., 2024). These weaknesses are compounded by political-economy factors — power relations, competing interests, and misaligned incentives — that shape both formulation and delivery (Mordzeh-Ekpampo et al., 2025).

This is among the first systematic reviews to synthesise institutional governance arrangements at the climate–health–economic nexus across multiple African regions, and the first to derive a four-part typology of coordination problems with associated conditions for improvement. Achieving climate resilience in Africa requires transformative governance reforms that transcend sectoral silos, strengthen institutional capacity, enhance coordination, and explicitly integrate health and economic considerations into climate adaptation. The fifteen recommendations presented here provide an operational roadmap, organised around six themes: strengthening institutional frameworks; enhancing multisectoral coordination and policy integration; improving vertical and horizontal coordination; mobilising resources; enhancing stakeholder engagement; and strengthening monitoring, accountability, and learning. Each recommendation specifies a level of action, an instrument, a lead actor, and a monitoring vehicle, addressing the policy-relevance limitation of much of the prior literature.

Two future-research priorities are most urgent. First, longitudinal tracking of governance reforms enacted under the post-2020 framework legislation (notably South Africa's Climate Change Act 2024 and the amended Kenyan Climate Change Act) is needed to test whether statutory architecture translates into delivery on the ground. Second, comparative nexus-governance studies are needed to identify the institutional configurations that produce co-beneficial outcomes across climate, health, and economic domains in countries with similar starting positions. The recommendations and research agenda offered here are intended to support African governments, regional bodies, and development partners in accelerating the implementation of adaptation strategies in the service of the most vulnerable populations.

Funding: No funding source is reported for this study.

Ethical statement: The author stated that this study is a systematic review of previously published, publicly available scholarly literature. It did not involve human participants, human tissue, animal subjects, or the collection, generation or processing of any primary or identifiable personal data. Ethics committee review and informed consent were therefore not applicable. All source material was publicly available and has been fully cited.

AI statement: The author stated the use of Claude (Anthropic), solely to improve the language and readability of the manuscript. No generative AI tool was used to conduct the literature search, screen or select studies, extract or code data, generate analysis, or produce references. The author reviewed and edited all output and takes full responsibility for the content of the publication.

Declaration of interest: No conflict of interest is declared by the author.

Data sharing statement: Data supporting the findings and conclusions are available upon request from the author.

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