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Climate-induced disaster risk, societal vulnerability and regional governance in Southern Africa: a systematic integrative review and SADC resilience implementation framework

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Abstract

Climate change has emerged as one of the most significant environmental threats to Southern Africa, not only because it increases exposure to droughts, floods, heatwaves and storms, but also because it converts existing poverty, food insecurity, weak infrastructure and institutional fragmentation into cumulative disaster risk. Reframing climate change as a cascading disaster-risk governance problem, this article examines how climate hazards interact with societal vulnerability and regional institutional capacity in the Southern African Development Community (SADC). The study uses a systematic integrative review of peer-reviewed and policy literature published between 1990 and 2025. Evidence was coded across five analytical domains: climate hazards, agricultural and food-system vulnerability, migration and urban risk, health impacts, business and productivity disruption, and regional climate governance. The article makes three scientific contributions. First, it develops a climate-risk transmission-chain explanation showing how drought, heat and flooding move from environmental exposure into food insecurity, displacement, urban informality, disease burdens and productivity losses. Second, it extends intergovernmentalism theory to disaster risk reduction by explaining why regional adaptation remains weak where member-state sovereignty, unequal capacity and fragmented implementation override collective-risk logic. Third, it proposes the SADC Climate Resilience Implementation Framework (SCRIF), a five-pillar model linking risk surveillance, climate-smart agriculture, urban-migration planning, regional financing and accountability-based governance. The review finds that SADC vulnerability is not simply a function of physical climate exposure; it is produced through interacting socio-economic and governance conditions. A transition from fragmented climate adaptation to coordinated disaster risk reduction is therefore required to support resilience, sustainable development and the protection of vulnerable communities in Southern Africa.

Introduction

Climate change has become one of the central development challenges of the twenty-first century, with impacts extending beyond environmental degradation to economic stability, public health, human mobility, infrastructure security and social cohesion. It is increasingly recognised as a security and development threat because it intensifies stresses that already weaken livelihoods and governance systems in vulnerable regions (Busby, 2007; Adger et al., 2003). In disaster-risk scholarship, climate change is significant not only because it increases the frequency and intensity of hazards, but because it depends on the interaction between hazards, exposure, vulnerability and weak institutional capacity. Droughts, floods and storms become disasters when fragile livelihoods, poverty, weak social protection, limited assets and inadequate response systems turns environmental stress into hunger, displacement, disease and economic loss (World Bank, 2022). The report further states that poor and vulnerable communities, particularly in low-and lower-middle-income countries bear the greatest disaster impacts. Disaster risk reduction is therefore, essential for protecting livelihoods, reducing vulnerability and strengthening climate change adaptation

Southern Africa is particularly exposed to this interaction. The SADC region faces recurrent droughts, extreme heat, floods, severe storms, water stress and agricultural shocks, while many member states remain constrained by poverty, inequality, limited public finance, rapid urbanisation and uneven governance capacity (Davis-Reddy & Vincent, 2017; Quinn et al., 2020; African Union, 2023). These conditions mean that climate change should be studied as a multi-hazard and multi-sector disaster-risk system rather than as a narrow environmental problem. The disaster-risk framing is important because it shifts the policy question from “what climate impacts exist?” to “how do hazards, vulnerability and governance failures combine to generate cascading losses, and where can regional institutions intervene?” (Mukherjee & Rowan, 2026).

Previous studies have documented climate impacts on agriculture, food security, health, migration and economic productivity in Africa and Southern Africa (Serdeczny et al., 2015; Mugambiwa & Tirivangasi, 2017; Mpandeli et al., 2020; Nhemachena et al., 2020; Khine & Langkulsen, 2023; Semosa, 2025). However, much of this literature remains sectorally fragmented. Agricultural studies often examine crop yields and water stress; migration studies examine displacement and informal settlements; health studies examine climate-sensitive disease; and governance studies examine institutional coordination. The weakness is that these domains are frequently treated as parallel effects rather than interacting mechanisms within a cumulative disaster-risk chain.

This article addresses that gap by synthesising evidence across sectors and theorising the institutional conditions that enable or constrain regional disaster risk reduction in SADC. The article is guided by three research questions: (1) What climate-related hazards and sectoral impacts are documented across SADC, particularly in agriculture, health, migration, productivity and urban systems? (2) How do governance arrangements and intergovernmental dynamics influence adaptive capacity and regional disaster risk reduction? (3) What integrated governance pathways can strengthen resilience in the SADC region?

The central argument is that economic regions with high income inequality like Southern Africa face a climate-induced disaster-risk trap (Cappelli, Costantini, & Consoli, 2021).This trap emerges when repeated climate shocks reduce agricultural output, deepen poverty, intensify rural-urban migration, increase disease exposure, disrupt business productivity and overwhelm under-resourced institutions (Eboreime, Anjorin, Obi-jeff, Ojo, & Hertelendy, 2025). The trap is not inevitable; it is shaped by choices about regional coordination, financing, infrastructure, urban planning, accountability and knowledge systems.

Contribution and originality of the study

This article seeks to reframe SADC climate change as a regional disaster-risk governance problem. This is achieved by advancing four specific contributions. First, the study synthesises dispersed sectoral evidence into an integrated climate-risk transmission-chain model. Rather than listing impacts separately, it explains how drought, heat, floods and storms transmit risk through agriculture, livelihoods, migration, informal urbanisation, health and productivity. Second, the study extends

intergovernmentalism theory into the disaster risk reduction domain. It argues that SADC climate governance is constrained not only by limited capacity, but by the political logic of sovereignty, uneven member-state capability and weak supranational enforcement. Third, the study develops the SADC Climate Resilience Implementation Framework (SCRIF) as a practical and theoretically grounded contribution. The framework links early-warning systems, climate-smart agriculture, urban-migration planning, health-sensitive disaster preparedness, climate finance and accountability mechanisms. Fourth, the study identifies specific future research pathways, including longitudinal vulnerability measurement, spatial modelling of climate mobility, comparative institutional analysis and evaluation of regional adaptation finance, making the paper useful for disaster-risk scholars, policymakers and practitioners.

Theoretical framework: intergovernmentalism and regional disaster-risk governance

This study adopts Hoffmann's intergovernmentalism theory, which explains regional cooperation as a product of member-state preferences, national interests and sovereignty concerns (Syssoyeva, 2018). Regional organisations can facilitate coordination, but collective action is limited where national governments retain control over implementation, financing, enforcement and policy priorities. This is directly relevant to SADC because climate hazards are transboundary, while most adaptation and disaster management powers remain national. Addressing transboundary climate risks requires coordinated action beyond national silos, yet the capacity of existing regional and global institutions to manage these risks remains uncertain (Anisimov & Magnan, 2023)

Climate-induced disaster risk is rarely confined within national borders (Anisimov & Magnan, 2023) (Barnard, 2014), hence the need for coordinated action beyond national boundaries (Anisimov & Magnan, 2023). Drought affects shared river basins and food markets; flooding disrupts transport corridors; displacement crosses administrative boundaries; and disease outbreaks may spread through mobility and weak urban infrastructure. Yet SADC's climate responses depend heavily on voluntary cooperation among member states with unequal fiscal capacity, administrative capability and political priorities.

The SADC climate policy reflects a classical regional governance dilemma in which formal commitments to policy coherence are undermined by sovereignty concerns, uneven institutional capacity, weak coordination and divergent national priorities (Kalonga, Niekerk, & Nemakonde, 2026). Member states recognise that climate change threatens food security, water resources, infrastructure, health and development. However, regional adaptation remains uneven because states often prioritise domestic economic pressures, short-term political incentives and national development plans over binding regional commitments (Mapuva & Munyengwa-Mapuva, 2014; SADC Secretariat, 2019). This helps explain why policy recognition has not automatically translated into coherent implementation.

Intergovernmentalism therefore provides a stronger explanatory lens than a purely technical adaptation framework, as regional climate policy is mediated by state interests, bargaining dynamics, institutional coordination and sovereignty constraints (Moravcsik, 1993).Technical solutions such as drought-resistant crops, early-warning systems, renewable energy, irrigation and green infrastructure are

necessary but insufficient where regional institutions lack authority, funding or accountability mechanisms. The analytical task is to identify how institutional fragmentation converts climate hazards into avoidable disaster losses.

Methodology

Review design

The study employed a systematic integrative review design. This approach was selected because the research problem spans multiple disciplines and evidence types, including environmental science, public health, migration studies, agriculture, economics, development studies and governance. A systematic integrative review is suitable where the objective is not only to summarise empirical findings but to combine them into a conceptual framework that explains relationships across sectors (Fisch & Block, 2018). The unit of analysis was therefore not a single sector, such as agriculture or health, but the transmission of climate risk across social, economic and institutional systems. This design strengthens the scientific logic of the article because it allows the review to identify mechanisms rather than simply describe impacts.

Search strategy and screening

The review covered literature published between 1990 and 2025. Academic searches were conducted across Google Scholar, ScienceDirect, SpringerLink and Web of Science, supplemented by grey literature from the World Bank, African Union, African Development Bank and SADC institutions. The search used combinations of the following terms: “climate change”, “global warming”, “SADC”, “Southern Africa”, “agriculture”, “food security”, “migration”, “health”, “governance”, “economic impacts”, “disaster risk”, “resilience”, “adaptation” and “urban vulnerability”.

The Boolean search string applied across the databases was: (“climate change” OR “global warming”) AND (“SADC” OR “Southern Africa”) AND (“agriculture” OR “food security” OR “migration” OR “health” OR “governance” OR “economic impacts” OR “disaster risk” OR “resilience”). A total of 110 records were initially identified. After title and abstract screening, full-text review and relevance assessment, 89 sources were retained for analysis.

Inclusion, exclusion and quality criteria

Sources were included if they addressed climate-related hazards, impacts, vulnerability, adaptation, governance or resilience in Southern Africa, SADC or comparable sub-Saharan contexts. Peer-reviewed articles, institutional reports and policy documents were included because disaster-risk studies require evidence from both academic and practice-oriented sources. Sources were excluded where they were not regionally relevant, lacked substantive climate or disaster-risk content, were purely opinion-based without analytical value, or duplicated evidence already captured in stronger sources.

A limitation of the evidence base is that many SADC studies remain country-specific, sector-specific or policy-descriptive. This constrained the possibility of formal meta-analysis. The study therefore used thematic synthesis and mechanism-based interpretation rather than pooled statistical estimation. This choice is methodologically defensible because the primary objective was explanatory integration rather than effect-size aggregation.

Data extraction and synthesis

Data were extracted using a structured template covering author, year, geography, sector, hazard type, population or system affected, method, principal findings, governance relevance and identified gaps. The extracted evidence was coded into five domains: (1) physical climate hazards; (2) food systems and agriculture; (3) migration, urbanisation and social vulnerability; (4) health and well-being; and (5) business, productivity and governance.

The synthesis followed a transmission-chain logic. Evidence was examined for how one risk generates another: for example, drought reduces agricultural production; reduced production increases income and food insecurity; livelihood insecurity increases migration; migration expands informal settlements; informal settlements amplify health and service-delivery risks; and governance fragmentation limits coordinated response. This analytical procedure supports the article's claim to scientific originality.

Table 1
Review architecture and analytical contribution

Review element	Operationalisation in this study	Contribution to originality
Evidence base	89 retained academic and policy sources from 1990–2025	Moves beyond unsystematic narrative review
Analytical unit	Climate-risk transmission chains across SADC systems	Explains linkages among hazards, vulnerability and governance
Theory	Intergovernmentalism applied to climate and disaster-risk governance	Explains why regional response remains fragmented
Output	SADC Climate Resilience Implementation Framework (SCRIF)	Converts synthesis into a practical implementation model
Source: Authors' Compilation (2026)		

Results: climate-induced disaster-risk transmission in SADC

Physical hazards and regional exposure

The literature consistently identifies Southern Africa as a region of high climate exposure. Recurrent droughts, irregular rainfall, extreme heat, floods, storms and water stress have become major threats to livelihoods, infrastructure and public services (Davis-Reddy & Vincent, 2017; Serdeczny et al., 2015; Quinn et al., 2020). Although climate change affects all regions, the consequences are uneven because

exposure interacts with adaptive capacity. Developing regions experience more severe outcomes where institutions, infrastructure, health systems and financial resources are weak (Adger et al., 2003; African Union, 2023).

The disaster-risk implication is that hazard frequency alone does not explain SADC vulnerability. A similar drought may produce different outcomes depending on irrigation coverage, market access, social protection, early-warning capacity, public finance and institutional responsiveness. This distinction is central to disaster-risk science because risk is produced by the interaction of hazard, exposure and vulnerability rather than by hazard alone.

Agriculture, food security and livelihood disruption

Agriculture remains central to many SADC economies and livelihoods, especially among rural and low-income populations. The sector's dependence on rain-fed systems makes it highly vulnerable to temperature increases, rainfall variability and drought (Mugambiwa & Tirivangasi, 2017; Nhemachena et al., 2020; Omotoso et al., 2023). Evidence suggests that precipitation changes, drought and rising temperatures can reduce yields, threaten food security and intensify poverty in countries such as Malawi, Zimbabwe, Zambia, Mozambique and parts of South Africa (Serdeczny et al., 2015; Semosa, 2025).

This agricultural vulnerability is the first major transmission channel in the SADC climate-disaster system. When drought weakens agricultural output, the effect is not confined to crop production. It reduces household income, increases food prices, weakens nutrition, disrupts rural employment, increases demand for state support and may trigger migration. Food insecurity therefore functions as both an outcome of climate risk and a mechanism through which further social risks are produced.

The evidence also suggests heterogeneity across countries, agro-ecological zones and production systems. Some studies report variable effects across livestock, field crops and horticulture, indicating that adaptation strategies must be context-specific (Ningi et al., 2025). A generic SADC adaptation strategy is therefore insufficient. Differentiated interventions are required for drought-prone rural districts, peri-urban food systems, irrigated commercial agriculture and smallholder farming communities.

Migration, urbanisation and social vulnerability

Climate-related migration is one of the clearest examples of cascading risk. Environmental degradation, drought, livelihood insecurity and water stress contribute to rural-urban movement and internal displacement (Balsari et al., 2020; Rigaud et al., 2018; Mpandeli et al., 2020). Rapid urbanisation in sub-Saharan Africa already places pressure on infrastructure, housing, water and sanitation systems (Saghir & Santoro, 2018). Climate stress intensifies these pressures by increasing the movement of people from resource-constrained rural areas into urban spaces that may lack adequate planning and service capacity.

For disaster-risk reduction, migration should not be treated only as a demographic outcome. It is also an adaptive strategy, a vulnerability marker and a governance stress test. Where migration is planned, supported and integrated into urban development, it can reduce exposure and diversify livelihoods. Where it is unmanaged, it can expand informal settlements, increase exposure to floods and heat, deepen poverty and overload municipal services.

The SADC literature shows that informal settlements around major urban centres often lack sanitation, safe water, electricity, drainage, healthcare and waste management (Davis-Reddy & Vincent, 2017; Mupedziswa & Kubanga, 2017). These conditions transform climate-induced mobility into urban disaster risk. Flooding, heat islands, disease exposure and service breakdown are not merely environmental problems; they are failures of anticipatory planning and inclusive urban governance.

Health, disease and well-being

Climate change has significant implications for public health in Southern Africa. Rising temperatures, rainfall variability, flooding, poor sanitation and water scarcity can increase the risk of vector-borne, water-borne and respiratory diseases (Ramin & McMichael, 2009; Khine & Langkulsen, 2023; Matandirotya et al., 2023; Kaseya et al., 2024). Children, elderly people, low-income households and rural populations are especially vulnerable because they often have limited access to healthcare, nutrition, cooling infrastructure and safe water.

Health risk represents the second major amplification point in the climate-disaster chain. Drought can increase malnutrition; floods can contaminate water; heat can increase cardiovascular and respiratory stress; displacement can increase exposure to communicable diseases; and weak health systems can convert manageable risks into avoidable mortality. This demonstrates why climate governance and disaster preparedness must be linked to public-health planning.

The migration-health nexus is especially important. Climate-induced displacement may concentrate vulnerable populations in settlements with poor sanitation and limited healthcare. These conditions can increase cholera, malaria and diarrhoeal disease risks, while food insecurity worsens child nutrition (McMichael, 2015; Coovadia et al., 2022). Effective adaptation therefore requires climate-sensitive health surveillance, water and sanitation investment, heat-action planning and integrated local disaster preparedness.

Business, labour productivity and economic resilience

Climate change also affects businesses and economic productivity. Extreme heat can reduce labour productivity, compromise physical working conditions and disrupt output, particularly in agriculture, construction and manufacturing (Deschenes, 2023; Zhang et al., 2018; Zhang et al., 2023). Climate risks also disrupt supply chains, alter raw material availability, increase energy costs, damage infrastructure and create stranded-asset risks (Winn et al., 2011; Patnaik & Fabrizio, 2023; Narayan et al., 2024).

This is scientifically important because disaster-risk studies often concentrate on households and public institutions, while under-analysing firms as transmission points in regional vulnerability. In SADC, business disruption matters because firms provide employment, tax revenue, food processing, logistics, construction materials and critical supply chains. When firms are exposed to heat, water shortages, unreliable energy and regulatory uncertainty, climate risk spreads into employment, prices, public revenue and household welfare.

Environmental regulation may also generate innovation and competitive advantages if supported by finance, technology and predictable policy environments (Reid & Toffel, 2009; Yi et al., 2020; Sun et al., 2020). However, in less developed and fiscally constrained economies, firms may lack the resources to decarbonise, upgrade technology or climate-proof operations. This indicates that private-sector resilience should be included within regional disaster-risk planning rather than treated as separate from adaptation policy.

Governance fragmentation and institutional capacity

The findings indicate that SADC's climate challenge is also a governance challenge. Regional frameworks recognise climate change as a cross-cutting development concern, yet implementation remains uneven across member states due to differences in institutional capacity, resources, political priorities and enforcement (SADC Secretariat, 2019; Mapuva & Munyengwa-Mapuva, 2014; Silwimba & Fadum, 2022).

Intergovernmentalism explains why this gap persists. SADC can encourage cooperation, knowledge exchange and policy alignment, but it cannot easily compel member states to finance, implement or enforce climate and disaster-risk commitments. Where member states face immediate economic pressures, political instability or fiscal constraints, regional commitments may become aspirational rather than operational.

Country-level differences reinforce this point. South Africa has stronger institutional and financial capacity than many other SADC members, while countries such as Mozambique, Malawi and Zimbabwe face acute exposure combined with poverty, infrastructure deficits or economic instability (World Bank, 2024; Khendlo & Beeharry, 2025; Adom et al., 2024). Botswana and Zambia occupy intermediate positions, with policy mainstreaming efforts but continued capacity gaps (Pillay et al., 2025). Treating SADC as a homogeneous region therefore risks overlooking differentiated vulnerability and response capacity.

Discussion

From climate impact review to disaster-risk explanation

The main scientific insight of this review is that SADC climate risk is cascading, cumulative and institutionally mediated. The evidence does not support a simple linear model in which climate hazards

automatically produce social outcomes. Instead, hazards interact with livelihood structures, food systems, public services, urban planning, health capacity, business exposure and governance arrangements. This means that disaster risk is co-produced by environmental change and development conditions.

The climate-risk transmission chain developed in this paper can be summarised as follows: physical hazards increase stress on water and agricultural systems; agricultural disruption undermines food security and income; livelihood insecurity contributes to migration; unplanned migration increases urban informality; informal settlements increase health and service-delivery risks; labour and business disruption reduce productivity; and fragmented governance weakens prevention, preparedness and recovery. This chain is not deterministic, but it identifies points where policy intervention can reduce risk.

Climate-risk transmission-chain model

In SADC, drought and heat are not only agricultural events; they are food-security, migration, health, productivity and governance events. Floods are not only hydrological events; they are urban-planning, infrastructure, sanitation and disease-risk events. The model therefore supports a systems-based approach to disaster risk reduction.

Table 1
Climate-risk transmission-chain model

Transmission stage	Mechanism	Likely SADC manifestation	Policy implication
Hazard exposure	Drought, heat, floods, storms and rainfall variability	Crop failure, water stress, infrastructure damage	Early warning, climate information and hazard mapping
Livelihood shock	Reduced yields, income loss and food price pressure	Food insecurity and rural poverty	Climate-smart agriculture and social protection
Mobility response	Migration as coping or survival strategy	Rural-urban movement and displacement	Planned mobility, urban reception capacity and housing policy
Urban amplification	Informality, poor drainage, sanitation and heat exposure	Flood risk, disease outbreaks and service stress	Resilient urban planning and settlement upgrading
Health amplification	Malnutrition, vector-borne and water-borne disease, heat stress	Cholera, malaria, respiratory and cardiovascular burdens	Climate-sensitive health surveillance
Economic feedback	Labour productivity loss and supply-chain disruption	Business interruption, lower income and public revenue stress	Private-sector resilience and climate finance
Governance filter	Coordination, financing and accountability capacity	Fragmented adaptation and uneven disaster preparedness	Regional implementation framework and accountability indicators

Pillar 1: Regional risk intelligence and early warning. SADC should strengthen shared hazard surveillance, climate information systems, vulnerability mapping and public communication across member states.

Pillar 2: Climate-smart food and water security. Regional policy should prioritise drought-resistant crops, irrigation, water harvesting, soil conservation, regional grain reserves and farmer-level climate services.

Pillar 3: Planned mobility and resilient urbanisation. Climate-induced migration should be integrated into urban planning, informal-settlement upgrading, housing, sanitation and local disaster preparedness.

Pillar 4: Climate-health and livelihood protection. Health systems should integrate heat-action plans, disease surveillance, nutrition monitoring and water-sanitation responses into disaster-risk planning.

Pillar 5: Governance accountability and resilience finance. SADC should develop measurable adaptation and disaster-risk indicators, strengthen peer-review mechanisms and mobilise regional climate finance for high-vulnerability areas.

Policy implications

The findings indicate that SADC climate policy should move from fragmented sectoral adaptation to integrated disaster risk reduction. First, climate-smart agriculture must be treated as a regional food-security and disaster-prevention priority. Water harvesting, irrigation, drought-resistant seed systems, climate information services and farmer support should target the most vulnerable districts rather than relying on generic national plans.

Second, urban and migration planning should become central to climate governance. Climate-induced mobility is likely to intensify pressure on cities and informal settlements. SADC member states should therefore integrate migration scenarios into housing, sanitation, water, drainage, healthcare and employment planning.

Third, health systems need stronger climate-sensitive surveillance. Disaster preparedness should include heat-health action plans, vector and water-borne disease monitoring, nutrition surveillance and emergency water-sanitation systems. These interventions would reduce avoidable mortality and morbidity from climate-related shocks.

Fourth, the private sector should be included in resilience planning. Firms are exposed to heat, water stress, energy instability and supply-chain disruptions. Business continuity planning, green innovation finance and climate-risk disclosure can reduce systemic economic vulnerability.

Fifth, SADC should strengthen regional accountability. Climate and disaster-risk strategies should include measurable indicators, reporting obligations, peer learning and financing mechanisms. Without accountability, regional commitments are likely to remain symbolic.

Limitations and future research

This study has limitations. It relies on secondary literature and policy documents; therefore, it cannot directly measure causal effects across countries. The evidence base is uneven, with stronger documentation for agriculture and migration than for business disruption and cross-border institutional performance. The review also includes heterogeneous methodologies, which limits comparability across studies and prevents formal meta-analysis.

Future research should develop longitudinal datasets that measure climate exposure, vulnerability, institutional capacity and disaster outcomes across SADC countries. Spatial modelling could improve understanding of climate-induced mobility and urban exposure while, comparative institutional studies could explain why some member states implement adaptation more effectively than others. Firm-level research could examine how climate shocks affect productivity, employment and supply chains. Finally, evaluation research is needed to test whether regional climate-finance mechanisms reduce vulnerability in the most exposed communities.

Conclusion

The SADC region faces an intensifying climate-induced disaster-risk challenge. The evidence shows that the region's vulnerability is not produced by climate exposure alone. It is generated through the interaction of drought, heat, floods and storms with rain-fed agriculture, poverty, weak infrastructure, rapid urbanisation, health-system constraints, business exposure and fragmented regional governance.

The article contributes to disaster-risk scholarship by developing a climate-risk transmission-chain model and by applying intergovernmentalism theory to explain why regional adaptation remains fragmented. It further proposes SCRIF as an implementation framework for moving SADC from dispersed climate adaptation to coordinated disaster risk reduction. The key conclusion is that resilience in Southern Africa requires not only technical adaptation, but institutional transformation, regional accountability and sustained investment in the communities and systems most exposed to cascading climate risk.

Declarations

AI use

AI-assisted editing was used to improve structure, clarity and language. The authors remain responsible for the argument, interpretation, citations and final content.

Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced the writing of this article.

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Ethical considerations

This study analysed pre-existing public literature and policy documents and did not involve direct human participants, animal subjects, plant experiments or clinical trials. Ethical waiver clearance number: 5460.

Data availability

Data sharing is not applicable because no new primary dataset was generated. The article is based on publicly available published literature and policy documents.

Disclaimer

The views expressed in this article are those of the authors. The authors are responsible for the article's arguments, findings and conclusions.

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Figures

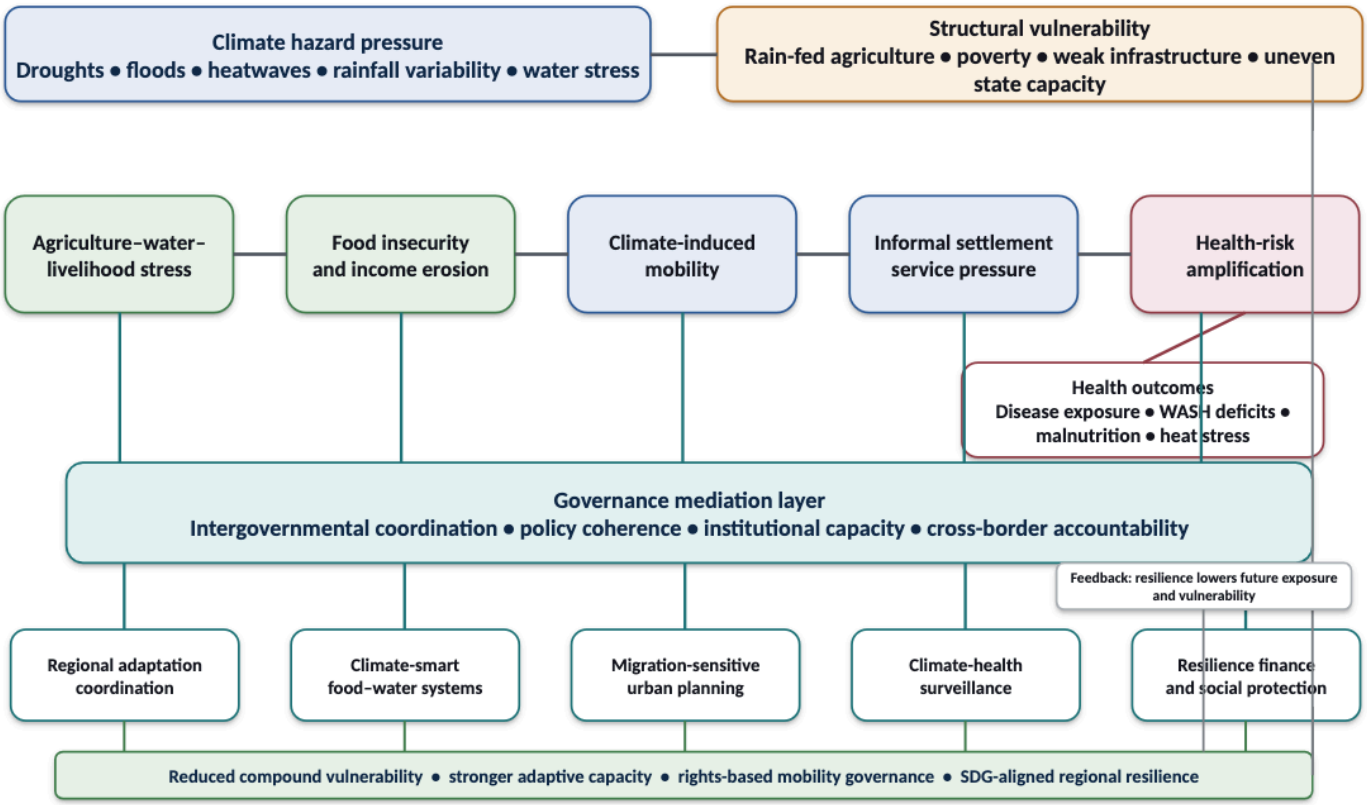


Figure 1

SADC Climate Resilience Implementation Framework (SCRIF)

The SADC Climate Resilience Implementation Framework (SCRIF) is proposed as a five-pillar framework for strengthening regional resilience. It is not intended to replace national adaptation plans or disaster-management legislation. Instead, it provides an implementation logic for aligning regional coordination with local vulnerability reduction.