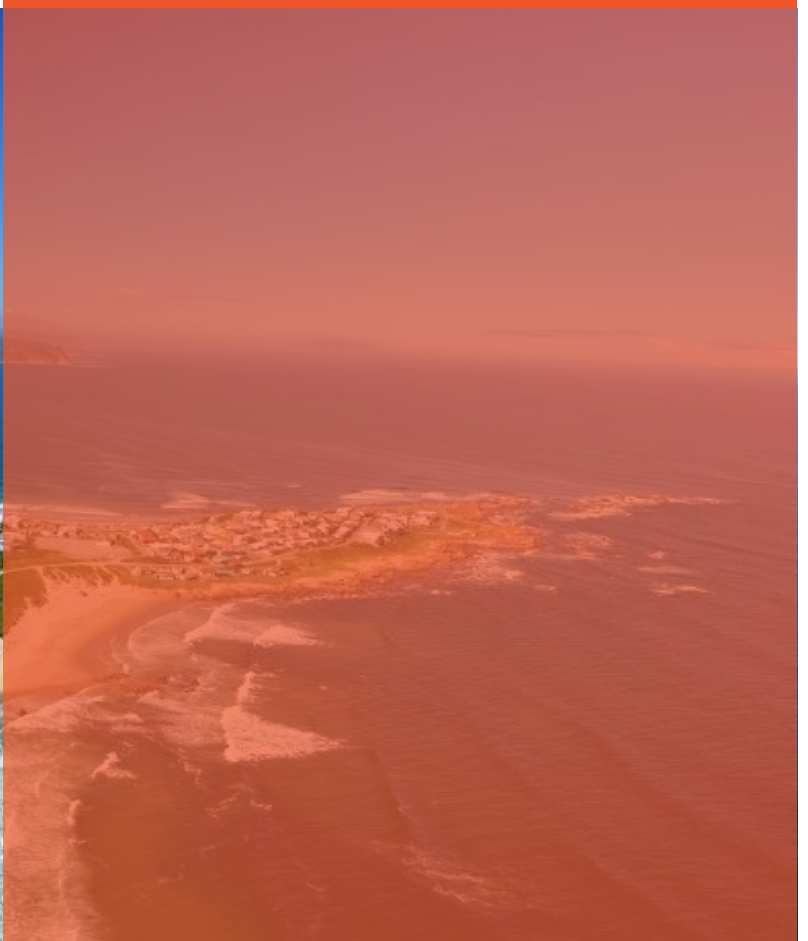




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An Intellidex Company

Scaling insurance for climate resilience in Africa: *Insights from South Africa*



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CLIMATE
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About Krutham

Krutham, is a leading research and consulting firm that specialises in the financial sectors of emerging markets. Its analysis is used by companies, investors, stockbrokers, regulators, policy makers and companies in South Africa and around the world. It has offices in Johannesburg, London and Boston.

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List of abbreviations

ACCF	Africa Climate Change Fund	IDPs	Integrated Development Plans
AfDB	African Development Bank	IDRC	International Development Research Centre
ARC	African Risk Capacity	IFRC	International Federation of Red Cross and Red Crescent Societies
CASP	Comprehensive Agricultural Support Programme	IFRS	International Financial Reporting Standards
CAT	Catastrophe	IMF	International Monetary Fund
CCA	Climate Change Adaptation	IRENA	International Renewable Energy Agency
CDRF	Climate and Disaster Resilience Fund	IRP	Integrated Resource Plan
CFM	Climate Fund Managers	ITA	Investment Tax Allowance
CI2	Climate Investor Two	IUDG	Integrated Urban Development Grant
COGTA	Department of Cooperative Governance and Traditional Affairs	IUDP	Integrated Urban Development Programme
COP	Conference of the Parties	IUGD	Integrated Urban Grant for Development
CPI	Climate Policy Initiative	JET IP	Just Energy Transition Investment Plan
CSI	Corporate Social Investment	JETP	Just Energy Transition Partnership
CSIR	Council for Scientific and Industrial Research	KLIP	Kenya Livestock Insurance Programme
CSR	Corporate Social Responsibility	MCR	Minimum Capital Requirement
DAFF	Department of Agriculture, Forestry and Fisheries	MIG	Municipal Infrastructure Grant
DBSA	Development Bank of Southern Africa	MNSSP II	Malawi National Social Support Programme II
DFID	Department for International Development (UK)	MoFEP D	Ministry of Finance, Economic Planning and Development (Malawi)
DMP	Disaster Management Plan	MoGC	Ministry of Gender, Children, Disability and Social Welfare (Malawi)
DMP	Disaster Management Plans	DSW	Disability and Social Welfare (Malawi)
DMRE	Department of Mineral Resources and Energy	MURP	Municipal Risk Pooling
DPME	Department of Planning, Monitoring and Evaluation	NAP	National Adaptation Plans
DRF	Disaster Risk Financing	NCCAS	National Climate Change Adaptation Strategy
DRR	Disaster Risk Reduction	NCCRP	National Climate Change Response Policy
ESG	Environmental, Social, and Governance	NDC	Nationally Determined Contribution
FCDO	Foreign, Commonwealth & Development Office (UK)	NDF	Nordic Development Fund
FSCA	Financial Sector Conduct Authority	NDMA	National Drought Management Authority (Kenya)
G7	Group of Seven	NDMC	National Disaster Management Centre
GCF	Green Climate Fund	NDP	National Development Plan
GDP	Gross Domestic Product	NSNP	National Safety Net Programme (Kenya)
GH2	Green Hydrogen	ORSA	Own Risk Solvency Assessment
GOI	Governance and Operational Standards for Insurers	P&C	Property and Casualty
GoM	Government of Malawi	P4RR	Partnership for Risk and Resilience
HSNP	Hunger Safety Net Programme	PA	Prudential Authority
IAIS	International Association of Insurance Supervisors		
IDP	Integrated Development Plan		

PFMA	Public Finance Management Act
PPP	Public-Private Partnership
R	Rand (currency of South Africa)
SAIL	Savings and Insurance Layering
SAM	Solvency Assessment and Management
SARB	South African Reserve Bank
Sasria	South African Special Risks Insurance Association
SASSA	South African Social Security Agency
SCR	Solvency Capital Requirement
SCT	Social Cash Transfer
SCTP	Social Cash Transfer Programme
SONA	State of the Nation Address
SRD	Social Relief of Distress
VSLAs	Village Savings and Loans Associations
WFP	World Food Programme

Executive summary

South Africa has a well-established and competitive insurance industry, with many companies active internationally. However, the country is increasingly vulnerable to climate change, with temperatures rising at twice the global average and frequent extreme weather events causing substantial economic and social impacts, including losses across agriculture, tourism and biodiversity. This report assesses the potential of climate risk insurance to enhance resilience in South Africa. Below are the key findings:

Climate change impact on South Africa and the insurance industry

South African economy, society and environment

- South Africa experienced 31 natural disasters between 2019 and 2024, with increasing frequency and intensity of floods, droughts, and wildfires.
- These events threaten key economic sectors, with projected GDP losses of up to 5% by 2050 if global warming exceeds 2°C.

Climate change and the insurance sector

- Insurers face rising physical risks due to extreme weather events, leading to higher claims, reinsurance costs, and adjustments in pricing strategies.
- Compared with Kenya and Malawi, South African insurers are very exposed to transition risks. These risks stem from decarbonisation commitments and accompanying regulatory changes that threaten the industry's investment exposure to carbon-intensive assets such as coal and mining.

Role of insurance in climate and disaster risk financing

- South Africa has a sophisticated risk-layering strategy to finance disaster response but faces an annual disaster funding gap of R2.3bn.
- There is limited dedicated funding for disaster risk reduction (DRR) and adaptation efforts to strengthen climate resilience. However, more funding alone will not solve this issue. Climate resilience financing and planning is also a challenge at the national level. The National Treasury retains significant amounts of risk,

evidenced by a heavy reliance on budgetary mechanisms to finance disaster response.

- Another prominent barrier is a lack of planning and coordination for climate resilience at the sub-national government level.
- Insurance can address disaster risk financing gaps through rapid payouts, incentivising DRR and providing financial protection against high-impact climate events.

South Africa's insurance sector

- South Africa boasts one of the highest insurance penetration rates in the world (10%) and has a high insurance density of \$905 per capita.
- Life insurance dominates while the non-life sector faces challenges in expanding affordable coverage to underserved populations, including informal settlements and smallholder farmers.

Strengths that facilitate the use of insurance for climate risk management

- Strong insurance infrastructure, including cell captive models and InsurTech collaborations, which enables tailored and scalable products.
- High market sophistication allows for technological innovation, such as geocoded risk assessments and mobile insurance platforms.
- Extensive social protection system with established grant infrastructure. This offers a foundation for integrating insurance into climate resilience strategies.

Barriers and challenges

- Affordability remains a key barrier for low-income groups and smallholder farmers, exacerbated by rising premiums linked extreme weather events.
- Limited capacity and data availability undermine the use of municipal risk pools and accurate risk modelling for medium frequency, less severe events.
- Regulatory compliance costs discourage new entrants, particularly in microinsurance markets.

Insurance sector participation in climate resilience

- Insurers are engaging in DRR efforts through CSI and ESG efforts that focus on climate risk data sharing. However, there is significant room for greater engagement not only through CSI budgets but also through their investment activities.
- South Africa's adaptation strategy recognises the private sector as a crucial partner in strengthening the country's climate change response.
- However, barriers in PPP regulations such as rigid and lengthy approval processes, lack of differentiation for project size, and insufficient integration into broader infrastructure policies undermine potential participation on adaptation from the insurance sector.

Recommendations

Affordability and access

- Mobilise premium support through multiple funding streams, including private sector CSR/ESG initiatives, international climate finance and the proposed Climate Change Response Fund.
- Integrate insurance with existing social protection schemes, leveraging the South African Social Security Agency's (SASSA's) infrastructure.
- Support the development of agricultural index insurance through public-private partnerships, with structured premium subsidies for smallholder farmers.
- Leverage digital distribution channels to reduce costs and improve accessibility.

Regulatory framework

- Update regulations for index and microinsurance products to strengthen innovation.
- Explore the creation of a Climate Risk Insurance Pool for municipalities.
- Create standardised risk assessment metrics and clear protocols for emergency payment triggers.

Incentivise insurance sector participation in climate resilience

- Implement targeted incentive programmes for private sector adaptation investments.
- Develop a standardised framework for valuing adaptation projects.
- Establish an insurance industry climate adaptation task force to drive sector involvement.
- Create innovative financial instruments, including resilience bonds and adaptation-focused PPPs.

Implementation focus

- Prioritise collaboration between government entities, insurers and stakeholders.
- Ensure sustainable and scalable approaches through blended funding arrangements.
- Mandate climate adaptation and resilience requirements in municipal infrastructure grants.
- Strengthen digital infrastructure in underserved areas to support insurance accessibility.
- A country platform, focused on adaptation and resilience, could help provide coordination, resource mobilisation and other support for implementing some of the proposed measures.

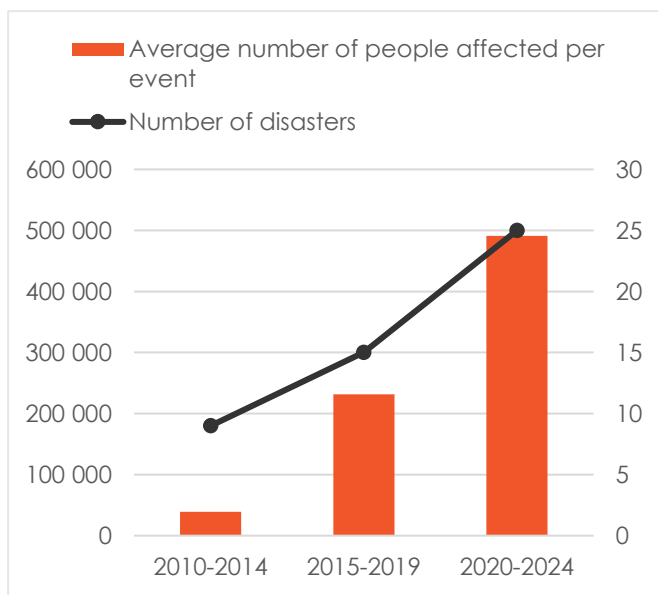
Introduction

Climate change impacts in South Africa

Climate change is significantly and structurally affecting South Africa's climate profile. The country has experienced a rise in annual surface temperature from 0.5°C in 2012 to 1.09°C in 2022, contributing to more extreme weather events, heavy rains and disruptions to biodiversity habitats (Ziervogel et al., 2022). South Africa ranks as the fifth-most water-scarce country in sub-Saharan Africa, with average annual rainfall of 464.4mm. Despite this scarcity, the country has experienced an increase in both the intensity and frequency of heavy rainfall events. This climatic volatility threatens water resources, agriculture and environmental stability (The World Bank Group, 2021a).

The impact of climate change has been substantial. In the past five years, South Africa has recorded 31 natural disasters, resulting in nearly 1,000 deaths, displacing more than 7,000 people and affecting more than 12-million individuals (see Figure 1 (EM-DAT & CRED, 2024). As Figure 2 shows, these events are becoming more frequent and intense, with more people being affected per disaster.

Figure 1: Rising frequency of natural disasters and number of people affected per event, 2010-2024



The economic implications are significant. Between 1952 and 2019, disasters caused \$9bn in economic losses, with less than \$1.5bn covered by insurance (Maher et al., 2022). Without adaptation measures, South Africa could be facing a 5.03% GDP loss by 2050 if global warming exceeds 2°C. This is higher than the estimated average impact on global GDP of up to 4.4% (Munday et al., 2023). These losses are exacerbated by poor infrastructure maintenance, such as inadequate stormwater drainage systems (Rulashule, 2024).

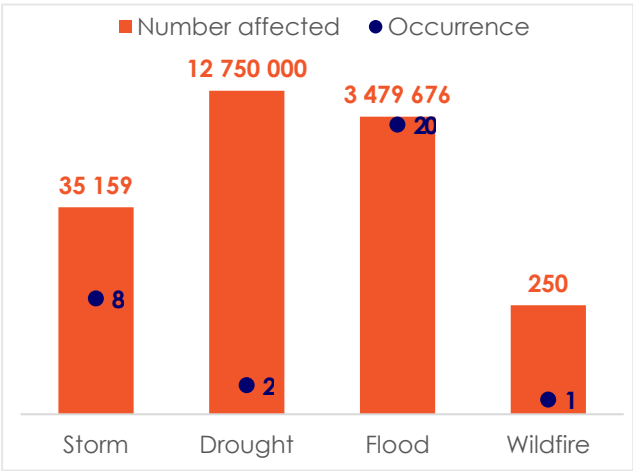
Three keys economic sectors – mining, agriculture and tourism – face particular challenges. The country hosts three of the world's 36 biodiversity hotspots, with natural resources supporting millions of households (Johnston et al., 2024). The mining sector, contributing 7.3% of GDP and employing over 469,000 workers, is vulnerable to water scarcity and flooding (Arp, 2024). This vulnerability extends to the financial sector, particularly insurers with exposure to carbon-intensive industries. Approximately R264bn in annual mining sales are at risk due to international carbon-reduction commitments, despite the sector's crucial role in exports, employment and supporting industries (Bour et al., 2022).

With South Africa warming at twice the global average, its agriculture sector is heavily affected, leading to reduced crop yields, increased livestock losses and more frequent extreme weather events (Igamba, 2023). More than 80% of South Africa's land area is dedicated to agriculture, with only 12% of that being arable and 69% suitable for extensive livestock farming (Lötter, 2017). The sector's vulnerability is particularly concerning given its role in employment and food security in a country with high levels of unemployment. Agriculture accounts for 10.2% of formal employment, while 72% of South African households rely on it for supplementary food, 12.9% for their primary food source and 3.2% for main income (A. Partridge & Louw, 2020; STATSSA, 2023). Climate change projections indicate that rising temperatures will make land less viable for crops and severely threaten livestock, potentially leading to GDP losses of R217bn–R651bn by 2050.

South Africa's biodiversity also faces an existential threat from climate change, with 14% of plant species, 17% of mammals and 15% of birds at risk

of extinction – a situation likely to worsen as temperatures continue to rise (Igamba, 2023). The decline threatens both ecosystem services and the nature-based tourism industry. As one of only 17 “mega-biodiverse” countries globally, South Africa’s iconic attractions, including the Kruger National Park, Table Mountain and the Garden Route, generate substantial tourism revenue and support approximately 2.5-million jobs across formal and informal sectors. Climate change is already causing habitat shifts and species redistribution, affecting tourism and vital ecosystem services such as water provision (ANT, 2022).

Figure 2: Number of people affected by natural disaster type, 2019-2024



Source: EM-DAT & CRED (2024)

These impacts are particularly severe for vulnerable populations, as many of the country’s most vulnerable population groups are employed in climate-sensitive sectors such as agriculture and tourism. For instance, the 2015-2016 drought in the Free State province caused 80% of agricultural businesses in Thaba Nchu to lose more than 50% of their employees (Hlalele et al., 2016). Likewise, the April 2022 floods in KwaZulu-Natal not only claimed 459 lives but also displaced 40,000 people, destroyed over 12,000 homes and resulted in temporary unemployment for 45,000 individuals (Magidimisha-Chipungu, 2024).

Climate change impact on the South African insurance sector

Climate risk is a growing concern for both the reinsurance sector and primary non-life insurers. The International Association of Insurance Supervisors (IAIS) identifies two primary categories of climate risks. **Transition risks** emerge from changes in policy, regulation, technological development and consumer preferences, potentially leading to credit, market, liquidity and reputational risks for insurers. **Physical risks** stem from extreme weather events and long-term climate changes, directly affecting market, credit and liquidity risks (IAIS, 2024).

South African insurers are significantly exposed to climate risks, primarily due to the country’s vulnerability to extreme weather events and its economic reliance on carbon-intensive industries. The property and casualty (P&C) insurance market is especially susceptible to physical risks, as South Africa experiences an increasing frequency and severity of climate-related disasters such as droughts, floods and wildfires (Gounden, 2021). These events not only lead to higher claim frequencies and severities but also affect business volumes and operational risks for insurers. For instance, between 2000 and 2011, Old Mutual Insure’s average annual catastrophe (CAT) cost was R39m, but this jumped to R371m between 2012 and 2022 (Moonstone, 2024)). These events include the devastating KwaZulu-Natal floods in 2022 and recent flood events in the Western Cape. This trend has led some insurers to reassess their risk models and pricing strategies, with some excluding flood cover entirely (AON, 2023).

The transition to a low-carbon economy presents additional challenges for South African insurers. Unlike other African nations such as Malawi and Kenya, South Africa’s economy is heavily reliant on carbon-intensive industries, with coal accounting for more than 70% of primary energy consumption (IRENA, 2024). Major institutional investors, including insurers such as Sanlam, rank among the top five institutional investors in the coal sector (Mbebe et al., 2024). This exposure makes the sector vulnerable to potential asset devaluations and regulatory changes (Prudential Authority, 2024a; S&P, 2024).

The implementation of the Just Energy Transition Partnership (JETP), which aims to decommission two-thirds of coal assets by 2035, creates additional complexity for insurers who must balance their existing portfolio exposures with growing transition risks. While some insurers like Santam, a Sanlam subsidiary, have begun implementing restrictions on new thermal coal projects, the industry's approach remains cautious, with most firms continuing to provide coverage for existing fossil fuel operations.

Reinsurance companies face mounting challenges through both physical and transition risks. Physical risks manifest through increased natural catastrophe frequency and severity, resulting in higher claims and strains on capital reserves. Transition risks, as discussed, are growing for reinsurers as the country's decarbonisation objectives put the value of the industry's carbon-intensive assets at risk.

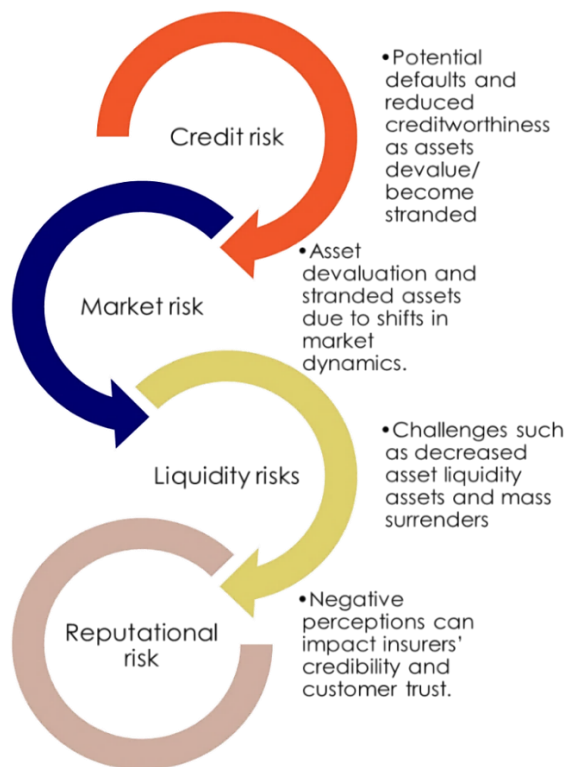
As these physical and transition risks intensify, they create significant market risk for reinsurers, that is, the risk of loss due to movements in market prices on the value of a reinsurer's assets and liabilities (Prudential Authority, 2018b). For instance, market risk comprised 36.1% of reinsurers in South Africa's Solvency Capital Requirement (SCR) risk components, the second-highest risk component after life insurance underwriting risk (Prudential Authority, 2023). Climate-related risks heighten market risk in the following ways:

- Investment portfolio exposure, where holdings in carbon-intensive sectors face potential value deterioration as markets incorporate climate transition risks.
- Asset price volatility increases as markets respond to enhanced climate risk disclosures and growing awareness of climate impacts.
- Direct market responses to extreme weather events, creating both landfall uncertainty (location and timing of events) and impact uncertainty (subsequent economic consequences).

Stock options for companies with operations in regions affected by extreme weather events show increases in implied volatility of 5%-10%, with this uncertainty often persisting for several months after events occur (Kmetz et al., 2024). This volatility affects asset valuations across reinsurers' investment portfolios, particularly in developing

countries where extreme weather events can trigger significant market responses.

Figure 3: Climate change impact on insurance sector



Implications and opportunities

Despite the challenges posed by climate change, South Africa's insurance sector is uniquely positioned to strengthen the country's climate resilience through several avenues. The country's relatively high insurance penetration rate of approximately 10%, combined with an advanced insurance industry that increasingly incorporates digital solutions, provides a strong foundation for expanding climate risk coverage. This established infrastructure creates opportunities for innovative approaches to climate risk management.

Product innovation presents a significant opportunity for the sector to partner with public sector actors. Given South Africa's strong life insurance market, insurers could develop integrated products that bundle climate disaster insurance with existing life insurance products. Additionally, there is potential to leverage the country's comprehensive social welfare system by creating insurance products linked to social grants, particularly targeting high-risk locations. These

innovative approaches could help extend climate risk protection to vulnerable populations while building on existing insurance infrastructure.

Municipal insurance schemes represent another promising avenue for climate resilience. These schemes could serve a dual purpose of providing coverage while incentivising proactive climate and disaster risk management. By linking premiums to risk exposure and mitigation measures, insurers could encourage municipalities to implement better risk management practices and invest in resilience measures.

The insurance sector's role as a major institutional investor in South Africa positions it to make substantial contributions to climate resilience. As some of the biggest institutional investors both globally and within South Africa, insurers can direct investments towards climate adaptation through several channels:

- Direct investment in climate-resilient infrastructure and property developments.
- Funding for infrastructure projects that enhance community resilience.
- Supporting adaptation efforts through corporate social investment schemes.

This report examines both the role of insurance as a climate disaster risk management tool and the role of the insurance sector in adaptation in South Africa.

Methodology

The findings and recommendations discussed relied on:

- Extensive desktop research examining existing literature, policy documents and market data
- Stakeholder engagements with insurance companies, regulators, industry associations as well as NGOs working on climate resilience
- Peer reviews by independent experts to ensure the robustness of our findings.

The research took place over a period of eight months and also benefitted from insights at this year's COP 29 in Baku, Azerbaijan.

The report is structured as follows:

The first section examines the impact of climate change on South Africa's economy and society, followed by a focus on how these impacts are channelled to the insurance sector (see ***Climate change impact on South Africa and the insurance industry***).

The second section looks at South Africa's broader climate and disaster risk financing strategies, identifying strengths and weakness. This section looks at how the integration of insurance into climate resilience financing can bridge funding gaps, incentivise disaster risk reduction and support adaptation efforts (see ***Role of insurance in climate and disaster risk financing***).

The third section looks at the country's insurance industry, focusing in particular in the capacity of non-life primary insurers and reinsurers to underwrite climate risk. It also gives a mapping of existing insurance products that provide cover against climate-related disasters, identifying key strengths, including innovative products, established social protection systems, and technological advancements that can be leveraged to scale the use of insurance for climate resilience purposes. It also discusses the main barriers such as affordability, regulatory challenges, and capacity limitations (see ***South Africa's insurance sector***).

The fourth section looks at how the insurance industry is contributing to climate resilience through their investment portfolios, ESG/CSI initiatives and how these actions align with the country's climate resilience policy agendas. It identifies the main barriers that need to be addressed to strengthen participation among not only the insurance industry but the private sector as a whole (see

Insurance sector participation in climate resilience).

The report concludes with actionable and strategic recommendations that aim to offer a framework for integrating insurance into climate resilience. These recommendations balance immediate priorities, like addressing funding gaps, with long-term goals, such as fostering innovation and resilience-building (see ***Recommendations***).

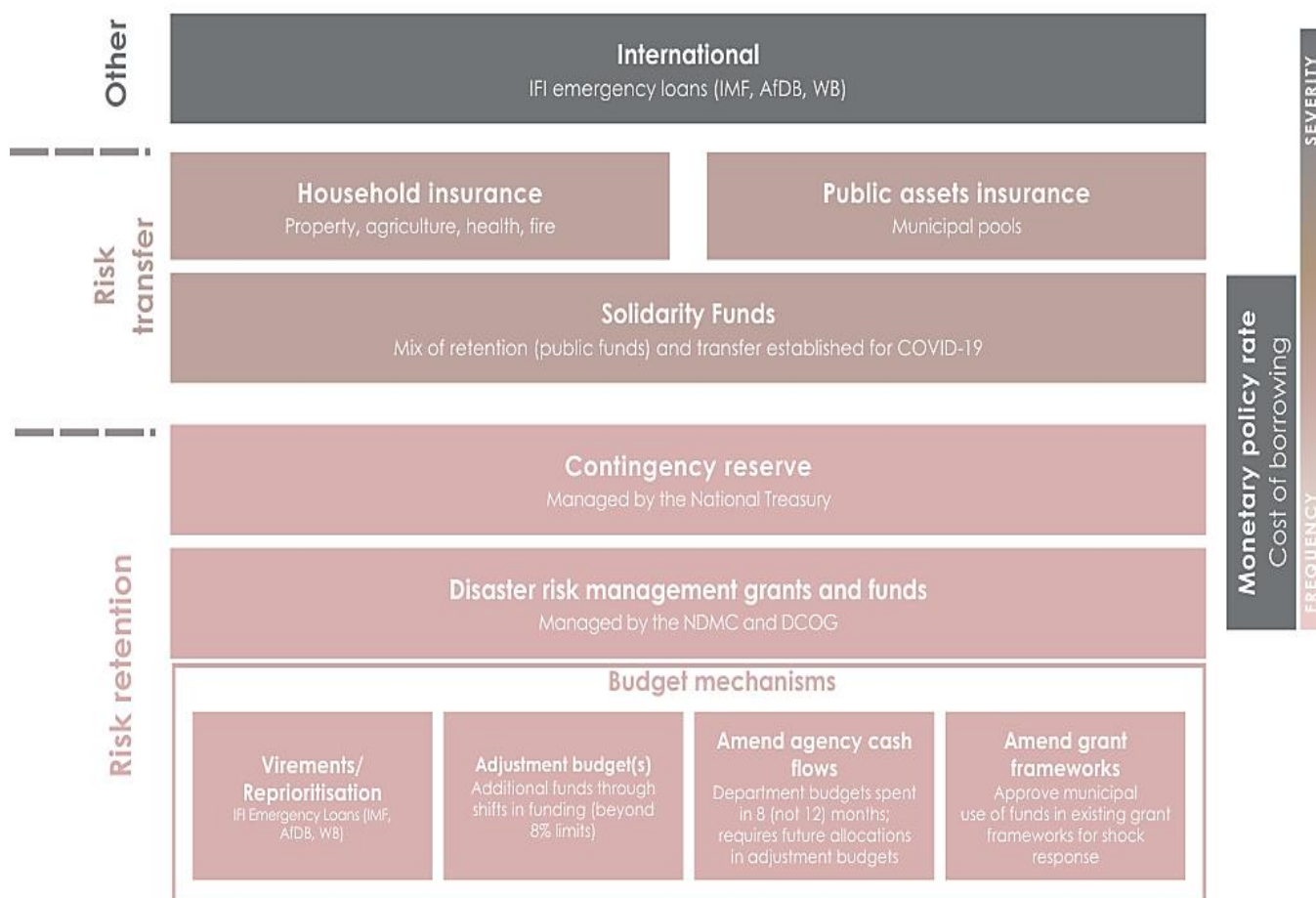
Climate and disaster risk financing in South Africa

Disaster risk management and financing in South Africa is planned across three different phases of disaster cycles: disaster risk reduction (DRR) before a disaster occurs; emergency relief for when a disaster strikes and recover for rebuilding after a disaster (see Figure 4) (Bruwer et al., 2017). The National Climate Change Adaptation Strategy (NCCAS) requires provincial government and municipal governments to integrate DRR and climate change adaptation efforts into their integrated development plans (IDPs). While these are not legally mandated in the NCCAS, the recently passed Climate Change Act (CCA) formalises these requirements and legally mandates provincial and municipal governments as well as national government departments to develop climate change response plans and mainstream DRR and adaptation into policy and planning (Rumble, 2024).

South Africa's National Treasury is also developing a climate budget tagging framework to inform policy, planning and budget decisions by tracking climate-related expenditures in public budgets (Godongwana, 2024b). Earlier in 2024, President Cyril Ramaphosa announced the creation of a Climate Change Response Fund that will prioritise adaptation by targeting key areas of vulnerability (Creamer, 2024).

These are promising developments in addressing South Africa's climate and disaster vulnerability and bridging disaster risk reduction (DRR) and climate adaptation, which have largely been approached in silos until now. This section discusses the strengths and limitations of South Africa's current climate and disaster financing strategies and examines how the insurance sector could facilitate improved risk transfer. In particular, it assesses the feasibility and potential impact of three complementary strategies relevant to the South African context:

Figure 4: National Treasury's disaster risk financing instruments



- **Risk reduction:** reducing risk through DRR efforts and adaptation investments.
- **Risk retention:** opportunities and limitations to risk absorption capacity.
- **Risk transfer:** leveraging insurance for climate risk management.

Reducing risk: the need for integrated climate and disaster risk management

Disaster risk management in South Africa is financed by the National Treasury in consultation with the National Disaster Management Centre (NDMC). National Treasury has established a complex risk-layering strategy to finance disaster response, built on three pillars:

- Various ex-ante and ex-post instruments based on the severity of a disaster.
- South Africa's diversified economy that can, in general, mitigate economic shocks.
- National Treasury's high transparency and openness in budget preparation that enables it to borrow from capital markets to respond to disasters (Maher et al., 2022).

Despite this robust framework, this financing strategy leaves a R2.3bn annual DRM gap (Maher et al., 2022). A key contributor to this shortfall is insufficient planning and financing for DRR and adaptation. This inadequate focus on adaptation leaves critical sectors, including supply chains, infrastructure, businesses and households, vulnerable to intensifying climate impacts, ultimately amplifying disaster-related economic losses.

Disaster risk reduction and adaptation funding at sub-national level

The complexity of this funding gap becomes particularly evident when examining DRR and adaptation funding at sub-national levels. National Treasury does not provide dedicated DRR funding to sub-national government levels. Instead, it requires that DRR initiatives be embedded within the strategic and operational budgets of relevant provincial and municipal departments.

Sub-national entities are expected to incorporate DRR costs into their routine budgets and infrastructure projects, using existing conditional infrastructure grants where applicable. For capital projects, municipalities must conduct feasibility studies that include disaster risk assessments, ensuring that the costs of disaster mitigation measures are integrated (COGTA & NDMC, 2023).

Two key funding mechanisms for infrastructure are available: the Municipal Infrastructure Grant (MIG) and the Integrated Urban Development Grant (IUDG).

The MIG was established to help municipalities address infrastructure backlogs, particularly in poor and rural areas. The IUDG grant supports municipalities to implement their integrated development plans – five-year strategic plans that coordinate municipal work with other government spheres to improve the quality of life for local communities (DPME, 2022).

Municipal conditional grants

Municipal infrastructure grant

The MIG aims to ensure that municipalities can deliver essential infrastructure services like water, sanitation, roads and electricity, to meet the basic needs of their communities.

Priorities: Basic infrastructure development, including water and sanitation, local road maintenance, stormwater drainage, waste management and community facilities.

Integrated urban development grant

The IUDG is a more flexible, needs-based grant that supports municipalities in implementing their integrated development plans. It is designed to complement existing resources and fill gaps in funding for broader development projects within municipalities.

- **Supports IDP alignment:** The IUDG is explicitly aligned with municipal integrated development plans, which are strategic plans developed by each municipality to address local development needs, improve service delivery and support socio-economic growth.
- **Flexibility:** Unlike the MIG, which has strict criteria for spending on physical infrastructure, the IUDG provides greater flexibility, allowing municipalities to target specific development objectives, including social infrastructure, job creation initiatives and other local priorities.
- **Targeted funding:** The IUDG is typically allocated to municipalities with weaker revenue bases or those struggling to meet certain service delivery and infrastructure benchmarks, making it an essential funding source for capacity building and sustainable development projects.

MIG had a utilisation rate of 49.3% and the IUDG 46.7% (National Treasury, 2024).

This stems from inadequate DRR planning and poor compliance with regulatory requirements. For instance, in 2021, the Department of Cooperative Governance and Traditional Affairs (COGTA) found that only 30% of local municipalities (60 out of 205) had submitted mandatory disaster management plans to the National Disaster Management Centre (COGTA, 2021).

Key challenges include:

- Poor coordination across government levels.
- Inconsistent disaster management strategies.
- Inadequate risk assessments.
- Ineffective disaster risk data management.

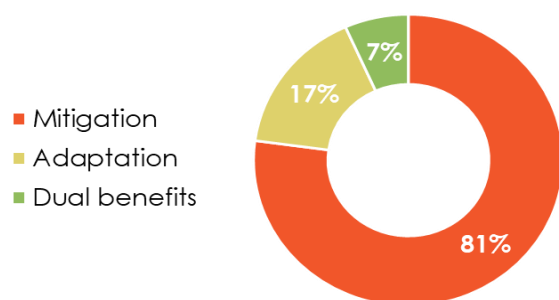
Adaptation and DRR: planning and financing

Climate finance for adaptation from domestic and international sources represent a potential funding stream to strengthen climate disaster preparedness. While adaptation finance is gaining more attention, to date, allocation is overshadowed by mitigation. Between 2019 and 2021, adaptation finance accounted for only 12% of tracked climate finance, with the bulk (81%) directed towards mitigation efforts (Aragão Fernandes et al., 2023).

While the private sector is the largest adaptation funder, several factors undermine its involvement. First, **there is a lack of data on successful projects**, which makes it difficult for potential investors to assess the viability and potential returns of adaptation initiatives. This information gap creates uncertainty and hesitation among private sector actors, who typically require clear evidence of success before committing significant resources.

However, municipalities are failing spend their MIG and IUDG allocations. For instance, in 2023/24, the

Figure 5: Climate finance end-uses South Africa (2019 - 2021)



Relatedly, a significant challenge is the **lack of clear, practical and investor-relevant impact measurement** frameworks for climate resilience. Adaptation projects are also inherently local, which means that vulnerability and resilience will look different across contexts, sectors and geographies (Dinshaw & McGinn, 2019). This requires local-level data, which can be patchy, inconsistent or unavailable. Furthermore, the benefits of adaptation may not be quantifiable. Societal benefits are rarely documented or quantified, which undervalues adaptation investments, as only financial benefits are considered and co-benefits such as reduced vulnerability or improved public health are mostly ignored (OECD, 2023).

There is also a **lack of innovative funding mechanisms** or incentives in place to catalyse private sector engagement in adaptation, specifically in comparison to mitigation. The South African government deployed a combination of policy and financial instruments to catalyse private sector spending on renewable energy. This included a National Treasury scheme for private renewable energy project investors (ITA, 2024) and tax incentives for businesses and households, as well as policy measures, such as removing the licensing cap of 100MW to allow for greater private sector power generation (Majola, 2024; Mbana, 2023).

Furthermore, the **integration of DRR and climate adaptation at the local level remains weak**. For instance, a recent study looking at how 20 local municipalities incorporate adaptation and DRR into their IDPs found that none had standalone adaptation strategies and only two had disaster management plans (DMPs), indicating non-compliance with legal mandates despite South Africa's commitments under the UN Framework

Convention on Climate Change (Matikinca et al., 2024). Thus, while funding for risk reduction is a key barrier in strengthening the country's climate resilience, more funding will not resolve implementation and planning issues.

In response to these challenges, South Africa's recently signed Climate Change Act introduces a comprehensive legal framework for integrating adaptation and DRR functions (Republic of South Africa, 2024). Similar to many other African countries that promulgated climate laws, the legislation places strong emphasis on adaptation measures, aligning with longstanding national priorities. Significantly, it establishes a formal, iterative process for developing and revising adaptation strategies and objectives, while mandating coordinated government action through "climate mainstreaming".

To bridge the implementation gap, the South African Local Government Association's Local Government Climate Change Support Programme has emerged as a crucial resource, providing assistance to local governments in meeting these new requirements. This support encompasses climate change response planning, vulnerability assessments and adaptation strategies through the "let's respond toolkit" (Let's Respond, n.d.).

Furthermore, recognising the need to strengthen adaptation, South African President Cyril Ramaphosa, in his 2024 state-of-the-nation address, announced plans to establish a Climate Change Response Fund targeting climate resilience investments (Creamer, 2024; Erasmus, 2024).

Planning and financing challenges in "building back better"

The "building back better" principle in DRM emphasises rebuilding in a way that reduces vulnerability to future disasters and enhances overall resilience (Dube et al., 2021). Provincial and municipal governments can access two conditional disaster grants alongside the MIG and IUDP: the disaster relief grant and the disaster recovery grant. In theory, the disaster recovery grant could be used to reduce disaster risk and strengthen climate resilience. Yet, this opportunity remains largely untapped.

As [Table 1](#) shows, the disaster recovery grant had a utilisation rate of only 12.7% – the lowest among

all conditional grants. In addition to gaps in planning and implementation, the World Bank's Disaster Financing Diagnostic for South Africa found that applying for the provincial and municipal recovery grant involves extensive bureaucratic procedures, including an independent verification of post-disaster damages. This process often results in significant delays, compromising the ability of provinces and municipalities to incorporate climate resilience considerations into recovery efforts (Maher et al., 2022; NDMC, 2016).

However, there are also **gaps in the DRF strategy** that inadvertently incentivise short-term responses over proactive investments in mitigation and preparedness (Botha & Van Niekerk, 2013; Coetzee et al., 2023; Maher et al., 2022; National Treasury & World Bank, 2024). When a state of disaster at provincial or local district levels, it triggers the release of additional funds from higher government tiers. These funds are otherwise inaccessible for disaster response efforts and can be accessed only if local resources are exhausted. By implication, municipal governments "self-insure" against disaster costs.

In theory, this means that they set aside their own funds to cover potential losses from disasters or unexpected events. Self-insurance is viable when assets have a relatively small value, and their exposure risks are not correlated. Correlated risks in this context means that assets are exposed to potential losses by the same disaster or event. When risks are correlated, multiple assets face damage or loss at the same time, creating a significant financial burden. In these instances, self-insurance can impose substantial shocks to governmental budgets (National Treasury & World Bank, 2024).

Furthermore, knowing that they can access relief funds if their own budgets are exhausted, sub-national governments often under-budget for

disaster response. As such, the grant framework inadvertently incentivises short-term spending over long-term resilience, as access to response financing is not contingent on proof of infrastructure maintenance or other risk-reduction measures.

Financial risk retention

South Africa's disaster risk financing strategy retains a substantial portion of disaster-related risk on the government's balance sheet, leaving it exposed to growing fiscal pressures as climate-related disasters intensify. Recent events such as the Knysna wildfires, KwaZulu-Natal floods and Cape Town drought have highlighted the financial and social costs of inadequate risk transfer mechanisms, with R113bn in damages recorded since 1980 and with disproportionate impacts on vulnerable communities. The average annual cost of disaster response in South Africa is estimated at R3.7bn, whereas the government's disaster risk financing strategy budgets only R1.4bn, leaving a significant funding gap as mentioned above (Maher et al., 2022). The disaster funding gap often renders National Treasury reliant on budget mechanisms to finance disaster response and recovery costs.

National Treasury uses several budgeting mechanisms to respond to disasters.

- Through **virements**, departments can shift up to 8% of their line-item allocations to fund emergency responses.
- The system also allows for **adjustment budgets**, which proved crucial during Covid-19 when two such adjustments were needed to provide additional funding.
- Departments can accelerate their annual spending through **cash flow amendments**, with the understanding that subsequent adjustment budgets will cover future months.

Table 1: Municipal conditional grant allocations and use, 2023

Grant	Allocated	Expenditure	%
Municipal infrastructure grant (MIG)	R15.6 bn	R 8.65bn	49.30%
Municipal disaster response grant	R744.7bn	R517m	60%
Municipal disaster recovery grant	R320m	R40.1m	12.7%
Integrated urban development grant (IUDG)	R1.172bn	R548m	46.7%

Source: National Treasury Estimates of National Expenditure 2023/24

- Additionally, **existing grant frameworks**, including conditional grants, can be modified to allow departments and municipalities to redirect funds for disaster response (Maher et al., 2022).

Furthermore, the **contingency reserve** serves as a key financing tool for moderate disasters, with annual allocations ranging from R5bn to R15bn, which can be used without prior parliamentary approval, and which has limited impact on other activities (Maher et al., 2022). However, these funds are not earmarked for natural disasters and are often depleted early in the budget cycle, leaving National Treasury and the budget exposed to the financial impact of shocks. For instance, during the 2015–2018 El Niño drought, the contingency reserve had been used for public sector pay increases, leaving it empty when funding was needed for the drought response. This caused significant delays, with relief efforts being financed only in 2018 through a full R6bn allocation from the next budget cycle's reserve (Maher et al., 2022).

National Treasury has recognised that these instruments are becoming inadequate in terms of the growing costs and intensity of climate disasters and is looking at ways to expand its suite of risk financing instruments, including the use of insurance to protect the government budget and vulnerable communities against the financial strain of natural disasters (Godongwana, 2024a). The section below discusses how the use of risk transfer such as insurance can strengthen the country's climate resilience financing.

Risk transfer: Opportunities and limitations of climate risk insurance

Given the annual disaster funding gap and the need to strengthen proactive and long-term resilience planning at the sub-national government level, there is an urgent need for risk transfer mechanisms to expand available climate and disaster risk funding and incentivise DRR efforts of municipalities. Risk transfer instruments such as insurance and catastrophe bonds can provide several benefits to South Africa's disaster risk management framework:

- Rapid payouts based on predefined triggers, addressing the delays often associated with traditional disaster relief funding.
- Swift access to funds can be crucial for immediate response and early recovery efforts, potentially reducing the overall economic impact of disasters (World Bank, 2023).
- Incentivising better risk management practices across all levels of government.
- Providing a relief against lower probability, high impact climate events that would be too costly or not possible to manage through

Meso and micro insurance

Governments can also play an important role in strengthening economic resilience by subsidising premiums for meso- and micro-level insurance policies (Buri et al., 2023). Examples include:

- **West Africa:** PlaNet Guarantee's index insurance products for smallholder farmers have been supported by government subsidies, enabling farmers to protect themselves against drought risks.
- **Philippines:** The government-run Philippine Crop Insurance Corporation offers fully subsidised special agricultural insurance programmes, which have been described as a safety net enabling agricultural producers, particularly the transient poor, to recover more quickly from shocks. These subsidised schemes not only provide direct financial protection but also facilitate access to credit, as seen in the Philippines where the insurance has promoted the flow of credit in rural areas (Schäfer & Waters, 2016).

adaptation measures.

For instance, the Caribbean Catastrophe Risk Insurance Facility, a regional catastrophe fund for Caribbean governments, has enabled Caribbean governments to pay public salaries after disasters, ensuring continuity of critical services and "keeping the wheels of government turning" (Schäfer & Waters, 2016). Likewise, the African Risk Capacity's sovereign insurance instruments have enabled the Malawian government to scale up its safety net programme. In other countries, such policies have been linked to greater budget stabilisation and protection as payouts provide immediate liquidity.

Perhaps the most promising pathway through which insurance instruments can strengthen climate resilience is by incentivising better risk management practices among local governments, which lead DRR and adaptation on the ground. By transferring risks to external insurers, municipalities and regional governments are often required to meet certain conditions, such as implementing risk-reduction measures, maintaining infrastructure and adhering to safety standards. These requirements promote better asset management and encourage investment in preventive measures, such as improved drainage systems or fire safety protocols. Furthermore, insurance policies that incorporate risk-based pricing highlight the financial benefits of reducing vulnerabilities, providing a tangible link between proactive strategies and cost savings. Over time, the integration of third-party insurance into climate resilience planning encourages sub-national governments to adopt forward-looking policies, build institutional capacity and leverage high-quality climate data.

South Africa's broader disaster risk financing strategy.

However, successful implementation of risk transfer mechanisms in South Africa will depend on overcoming several challenges. The insurance industry cannot be expected to take on a disproportionate level of risk, which many debt-laden municipalities in South Africa represent. The main risk drivers are inadequate data management on public assets as well as substandard infrastructure management, for example of roads and stormwater drainage systems. These shortcomings not only lead to higher exposure against climate risks but also drive up the costs of disaster recovery. Furthermore, planning, coordination and implementation challenges will have to be addressed for insurance to be linked to long-term climate resilience outcomes. The recently enacted Climate Change Act provides an opportunity to integrate risk transfer strategies into the broader climate adaptation and disaster risk reduction framework (Republic of South Africa, 2024).

The next section delves into the existing insurance market, examining its capacity, coverage and potential for expansion in the context of climate and disaster risk management. This analysis provides valuable insights into how risk transfer mechanisms can be effectively integrated into

South Africa's insurance landscape

South Africa has a well-established and competitive insurance industry, with many companies active internationally. The insurance industry accounts for 18% of South Africa's financial sector in terms of assets (IMF, 2022). It has one of the highest insurance penetration rates globally, around 10% (Atlas, 2022b) as well as a high insurance density of \$905 (AfricaRe, 2021).¹ Life insurance dominates, with a penetration rate of 9.1% compared with 2.2% for non-life insurance.

In 2024 there were 162 insurers operating in the country across three insurance classes: life, non-life and composite insurance (Prudential Authority, 2024b) Figure 6 below illustrates four types of insurers: primary, micro, cell captive insurers (a locally developed concept where licensed insurers create distinct cells that function as mini-insurance companies – see **Cell captive insurance**) and reinsurers, including three branches of foreign reinsurers. Microinsurance is offered only by life insurers, primarily driven by funeral cover, and is estimated to be worth between R15bn and R20bn annually (Mitchell, 2022).

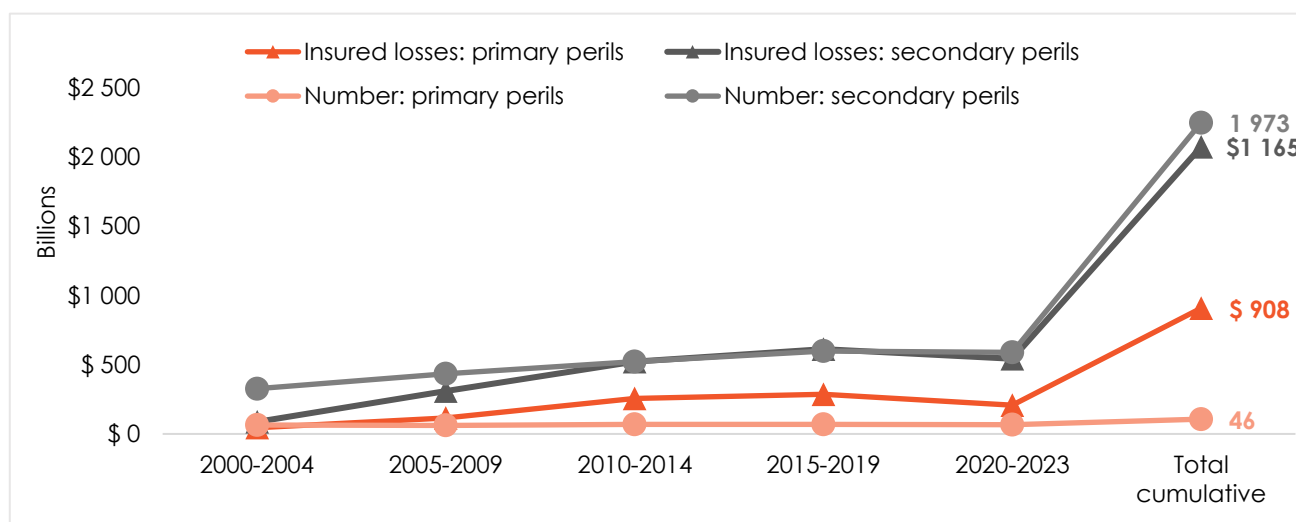
As discussed in the introduction, the growing frequency and intensity of extreme weather events has caused several challenges for the

insurance sector over the past few years. In particular, South Africa has experienced an increase in “secondary perils” – smaller-scale events that occur more frequently than major catastrophes such as the KwaZulu-Natal floods in 2022.

Since 2019, the international disaster database EM-DAT recorded 31 natural disasters in South Africa compared with 12 in both Kenya and Malawi. The disasters in Malawi and Kenya were mostly “primary perils” such as destructive cyclones and intense droughts. While some disasters in South Africa were major catastrophes – primary perils – the majority were smaller, localised events. These secondary perils pose significant risks to insurers' financial stability and operational models. While individual events may cause lower losses than primary perils, their cumulative impact over time can be substantial. Indeed secondary perils have consistently accounted for more than 50% of insured natural disaster losses in recent years (Clark, 2024; INSURICA, 2023).

One of the primary challenges insurers and reinsurance face with secondary perils is the difficulty in accurately modelling and pricing these risks (Knoesen, 2024). Unlike primary perils, which have been extensively studied and modelled over decades, secondary perils lack the same level of sophisticated risk assessment tools. This uncertainty in underwriting can lead to volatility in insurance

Figure 6: Primary and secondary perils: trends in globally insured losses and number of events from 2000 to 2023

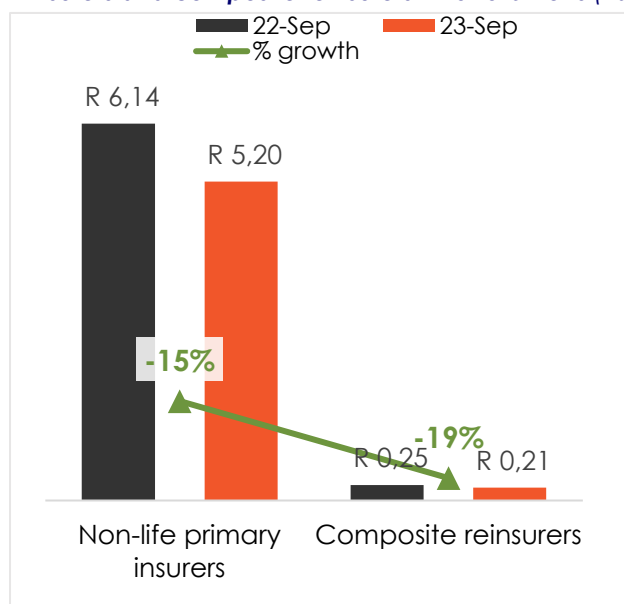


¹ Insurance density is a measure of insurance market development that represents the average amount of premiums spent per capita in a given country or region.

pricing and capacity constraints, making it harder for insurers to manage their exposure effectively.

The rise in secondary perils is a form of physical risks for insurers (see **Climate change impact on the South African insurance sector**). They have driven up insurance claims ratios, particularly for primary non-life insurers, which has hardened reinsurance renewal rates, including increases in reinsurance premiums and stricter terms and conditions. Furthermore, the growth in claims has contributed to a decline in underwriting profits for both composite insurers and primary non-life insurers, as Figure 7 shows (Naran, 2024; Prudential Authority, 2023).

Figure 7: Financial performance of **non-life primary insurers and composite reinsurers in rand billions (2023)**



Despite these challenges, the market has remained solvent and liquid (Naran, 2024). The life insurance sector saw a significant increase in net profits, from R4.03bn in 2022 to R4.8bn in 2023. The industry is increasingly turning to technological solutions to strengthen risk management and operational efficiencies (Danckwerts, 2023). This includes artificial intelligence and machine learning for data collection, underwriting and customer engagement. South African insurers are also using digital solutions for distribution channels, which speaks to the level of sophistication and capacity within the sector.

This section discusses the climate and disaster risk insurance products available in South Africa and assesses their reach and limitations. Focusing on

how insurance can be used to strengthen the climate resilience of vulnerable communities and businesses, it highlights existing social financing schemes, partnerships and social welfare programmes that could be leveraged as distribution channels.

Regulatory environment

The regulatory landscape for insurance in South Africa is shaped by several key institutions and legislative frameworks aimed at ensuring a stable, fair and inclusive insurance market. South Africa follows a "twin peaks" model, established by the Financial Sector Regulation Act of 2017, with the Financial Sector Regulatory Authority (FSCA) as the conduct peak and the Prudential Authority, housed within the SA Reserve Bank, being the systemic prudential regulator. The SARB's Financial Stability Department holds primary responsibility for maintaining financial stability, while the Prudential Authority supports this mandate as part of its broader supervisory role (FSCA, 2024; Republic of South Africa, 2018).

The Prudential Authority (PA) is responsible for supervising and regulating various financial institutions, including insurers. Its primary mandate is to:

- Promote and enhance the safety and soundness of financial institutions.
- Ensure institutions fulfil their obligations to customers.
- Contribute to maintaining financial stability.

This is achieved through setting prudential standards, conducting ongoing supervision and implementing risk management practices (SARB, 2020a, 2020b, 2021). It adopts a risk-based supervision approach that:

- Focuses supervisory resources on areas posing the greatest risks.
- Takes into account the nature of the insurer's business and specific risk profile.
- Requires insurers to play an active role in risk assessment and management.
- Aims to be pre-emptive and outcomes-focused in identifying and addressing risks.

The PA aligns this approach with internationally recognised principles set by bodies such as the International Association of Insurance Supervisors. In its supervisory role, the PA develops annual plans based on key priorities, risk assessments and emerging industry trends. Recognising the threats that climate-related risks pose to the insurance sector, the PA issued guidance notices on climate-related governance, risk practices and disclosures for insurers in 2024. (Deloitte, 2024)

Climate risk management: Prudential Authority regulatory guidance

The Guidance Notice on Climate-Related Disclosures For Insurers aims to promote market discipline and provide stakeholders with consistent and comparable information on insurers' climate risk exposures and management approaches (Prudential Authority, 2024a). A guidance notice is a regulatory tool designed to help insurers comply with Governance and Operational Standards for Insurers (GOI). While it lacks legal authority, it clarifies how these standards should be applied. This particular guidance notice focuses on assisting insurers in addressing climate-related risks within the frameworks of GOI 3 (Risk Management and Internal Controls) and GOI 3.1 (Own Risk Solvency

Assessment or ORSA). It outlines approaches for incorporating climate-related risks into insurers' governance, risk management and solvency assessments and should be read alongside the relevant GOI standards.

The guidance note covers four key thematic areas:

- **Governance:** Insurers are expected to disclose their board's oversight of climate-related risks and opportunities, as well as the role of senior management in assessing and managing these issues.
- **Strategy:** Requires insurers to describe the current and anticipated impacts of climate-related risks and opportunities on their business, including the use of climate-related scenarios to inform strategy and financial planning.
- **Risk management:** Insurers are expected to detail their processes for identifying, assessing and managing climate-related risks and how these are integrated into their overall risk management framework.
- **Metrics and targets** require the disclosure of the metrics used to assess climate-related risks and opportunities, including Scope 1, 2 and 3 greenhouse gas emissions, as well as the targets used to manage these risks and opportunities.²

Figure 8: PA's guidance on climate-related governance and risk practices for insurers



² **Scope 1 emissions:** Direct emissions that an organisation produces from sources it owns or controls. These include emissions from company-owned vehicles, on-site fuel combustion for heating or power generation and fugitive emissions such as refrigerant leaks.

Scope 2 emissions: Indirect emissions associated with the purchase of electricity, steam, heat, or cooling for use in an organisation's operations. **Scope 3 emissions:** All other indirect emissions along the

value chain, both upstream and downstream. These are emissions that the company doesn't directly produce or control but that result from its activities. Scope 3 includes a wide range of sources, such as emissions from purchased goods and services, business travel, employee commuting, waste disposal, transportation and distribution and the use and end-of-life treatment of sold products.

The PA recognises climate risk management as an evolving discipline and expects insurers to develop their capabilities in assessing, managing and disclosing climate-related risks and opportunities within existing frameworks. Although current climate-related disclosures do not require external assurance, insurers are expected to implement internal controls comparable to financial reporting standards and work towards external verification in the future (Deloitte, 2024; Prudential Authority, 2024a).

The guidance notice, focusing on governance, disclosures and risk management practices, have implications for other pillars in the PA's supervisory framework, specifically capital adequacy requirements.

Capital adequacy requirements and solvency assessment frameworks

This oversees insurers' capital adequacy through two main requirements: the solvency capital requirement (SCR) and minimum capital requirement (MCR) (IMF, 2022; Ndurinni, 2014).

Under the Solvency Assessment and Management (SAM) framework, the SCR requires insurers to maintain capital sufficient to cover risks at a 99.5% confidence level over one year (IMF, 2022). This equates to having enough capital to withstand adverse conditions expected once in 200 years. The SCR assessment incorporates various risk modules including underwriting, market and operational risks. Insurers must maintain eligible own funds above the SCR, with at least 50% being Tier 1 capital – the highest quality capital available.

The MCR is the minimum level of capital that insurers must maintain to avoid regulatory intervention (Prudential Authority, 2018a). This measure uses a linear formula with limits between 25% and 45% of the SCR. An absolute minimum capital amount applies, set at the higher of R15m or 25% of the insurer's previous year's annualised operating expenses. Quarterly MCR recalculations occur, with the PA empowered to take corrective actions, including licence suspension or withdrawal, if capital falls below this threshold.

These requirements have significant implications for climate risk management. The 99.5% confidence level necessitates robust climate risk

assessment through stress testing and scenario analysis. The framework encourages insurers to invest in climate adaptation measures and resilient infrastructure to reduce their climate risk exposure. Additionally, insurers are engaging with their investment companies to promote better climate practices (Campbell, 2024). Given South Africa's high transition risk exposure (see **Climate change impact on the South African insurance sector**), this framework incentivises portfolio diversification into higher-yielding assets while incorporating climate resilience considerations in investment strategies.

Yet, the climate risk management requirements add additional layers of regulatory compliance that could create barriers for new market entrants, particularly in the microinsurance sector. While Insurance Act 18 of 2017 introduced a more diverse licensing framework for insurers in South Africa, with lower capital requirements and simpler regulatory obligations aimed at promoting financial inclusion, regulatory compliance costs remain a significant barrier to entry for microinsurers (Ebrahim, 2022). The added climate risk management requirements could deter smaller players from entering the market, potentially limiting innovation in climate-resilient insurance products for lower-income segments.

South Africa's microinsurance sector is dominated by funeral service providers and burial societies. Despite the introduction of more enabling regulations, only nine microinsurance licences and one composite cell captive microinsurance licence have been issued. Indeed, despite the 2017 regulatory reforms and tiered licensing framework, regulatory costs of compliance pose substantial financial and operational hurdles.

New insurers must also overcome a lack of consumer trust and awareness, as many South Africans prefer informal risk-coping mechanisms over formal insurance products (Mahlangu, 2024). This potential barrier to entry is particularly relevant when considering that microinsurance often serves communities most vulnerable to climate risks. The section below focuses on the climate and disaster insurance products currently available in the market as well as potential innovations that can address this barrier to entry.

Climate and disaster risk insurance products in South Africa

South Africa's insurance landscape differs significantly from that of Malawi and Kenya, which have experience with targeted climate risk insurance programmes initiated and subsidised by governments or international NGOs. South Africa lacks such government-subsidised insurance schemes aimed at strengthening the resilience of households, businesses or sub-national government entities. Despite the financial strength and risk expertise of the country's insurance sector, insurance has not been widely used as a tool in sustainable development programmes.

Yet, the country has an extensive social welfare system, with a wide range of social grants aimed at alleviating poverty among the country's most vulnerable populations (The World Bank Group, 2021b). This includes social grants, a social relief grant (launched in response to Covid-19 and then extended), free basic services and public works programmes. This provides a strong foundation that could be leveraged to strengthen climate resilience.

Furthermore, collaboration between traditional insurers and InsurTechs opens up new avenues for reaching underserved populations, which is crucial for expanding climate risk coverage to vulnerable communities that are often most affected by climate change.

Private sector insurance products

South Africa offers a range of climate and disaster risk insurance products. For individuals and businesses, property insurance policies covering natural disaster risks such as earthquakes, strong winds, floods, hailstorms, landslides and subsidence are widely available. In the agricultural sector, farmers can access multi-peril crop insurance, credit life insurance and asset cover. The private sector also provides insurance for municipalities, while the state insurer, SASRIA, offers cover to the private sector and residential property owners against specialised risks.

Property insurance

Property insurance stands as the second-largest segment in South Africa's insurance market, consisting of roughly 40% of general insurance gross written premiums (Walker, 2024). The coverage protects buildings against structural damage from fire and smoke, storm damage, floods affecting walls, floors and ceilings and impact damage from vehicles or falling trees (GlobalData, 2024).

While traditional non-life insurers dominate this sector, several microinsurance providers have entered the market. GuardRisk, South Africa's leading cell captive insurer, offers property coverage through its microinsurance licence (GuardRisk, 2024) while companies like Monarch Insurance and Naked provide similar microinsurance products for buildings and contents. (Monarch Insurance, 2024; Naked, 2024).

Insurance brokers and banks are the main distribution channels for individual policyholders (Maher et al., 2022). However, there is a growing trend towards digital platforms, with companies like Naked offering mobile applications where policyholders can edit, update or make claims on their insurance policies (Naked, 2024). Several traditional South African insurance companies are also leveraging technology and partnerships with Insurtechs to reach South Africa's underserved populations. For example, Santam has partnered with MoyaApp to launch business insurance for South Africa's micro township enterprises, with premiums starting from R75 per month (approximately \$4) (Santam, 2023b). The insurance covers protection against stock and contents due to, among others, fire, explosion and acts of nature.

In 2024, property insurance premiums increased substantially to compensate for growing losses due to natural catastrophe events, which increased reinsurance costs (Walker, 2024). In response, insurers are implementing measures to improve underwriting practices for property insurance. This includes the rollout of geo-coding to enhance risk selection and rating and implementing segmented premium increases and higher excess amounts for selected risks, such as flooding (AON, 2023).

Combining insurance and early warning systems

Recognising the protection gap among low-income households and informal settlements, Lumkani has integrated early warning systems with insurance to protect informal settlement residents from fire-related disasters. At the heart of this solution is Lumkani's palm-sized fire protection device, which is triggered by a rapid rise in temperature in a confined space, rather than smoke. When activated, it sounds an alarm and communicates with other Lumkani devices within a 60-metre radius, creating a community-wide alert system. SMS warnings are also sent to residents' phones, with the aim of preventing small fires from spreading and causing more widespread destruction. (Hollard, 2024; Pretorius, 2024).

Lumkani partnered with Hollard to offer a low-cost fire insurance product bundled with the Lumkani fire detection device. For R80 per month, residents can insure their homes and belongings for up to R40,000 (Hollard, 2024; Lumkani, 2021). This tech-enabled insurance is designed to be accessible and affordable for low-income households, removing traditional barriers to entry. Homes are "formalised" for insurance purposes using GPS coordinates and flexible premium payment plans are available (Pretorius, 2024).

Lumkani's fire detection devices have been installed in more than 65,000 homes in high-risk informal settlements across South Africa. In the past five years alone, an estimated R142m worth of property has been saved from fire damage. The partnership with Hollard has insured properties for a total value of R440m, with about R19m in claims paid out to date (Hollard, 2024; Pretorius, 2024). This combination of early warning technology and accessible insurance provides residents of informal settlements with much-needed financial protection against fire disasters.

For example, Santam launched the Santam Underwriting Viewer, which combines geocoded addresses with scientific datasets. This GIS technology enables precise peril assessment at individual property locations, moving beyond

postal code-level analysis to provide more accurate risk categorisation (Els, 2024).

While comprehensive property insurance policies are available to individuals and businesses, as well as affordable microinsurance products, uptake among low-income households and microenterprises remains limited (Maher et al., 2022). Indeed, about 76% of South African adults do not have non-life insurance and only 12% of adults personally own insurance (Finscope, 2020). The main reason for this is **affordability** as the use of non-life insurance is influenced by disposable income, owning insurable items and insurable risk. However, some companies have developed tailored solutions to meet the needs of these high-risk areas. One example is Lumkani, a South African company that has combined early warning technology with affordable insurance to cover residents of informal settlements against fires (Hollard, 2024; Lumkani, 2021; Pretorius, 2024).

Cell captive insurance

Cell captive insurance, originating in South Africa, provides a unique insurance framework where licensed insurers create distinct cells that function as mini-insurance companies. These cells are leased to businesses (cell owners) who can insure their own risks or those of their customers. The cell captive insurer maintains the regulatory framework and licence, while individual cells operate independently with separate assets and liabilities (Dunn & Hougaard, 2019).

First-party cell captive structures enable companies to ensure assets and risks that may be challenging to cover through conventional insurance markets. GuardRisk, the market leader, has developed a Finite Risk Insurance Programme specifically for organisations facing difficult-to-insure risks, including those related to climate change (GuardRisk, n.d.). Companies make regular premium payments into their cell captive, creating a fund for potential losses, with the possibility of premium reductions or surplus returns if losses are lower than anticipated (PwC, 2022). This programme offers several advantages for managing climate risks:

- It provides stability in a volatile market, allowing companies to maintain consistent

coverage despite market fluctuations caused by intensifying climate change.

- It enables better budgeting and cash flow management, as companies can plan for regular premium payments rather than face unexpected, large losses.

Third-party cell captives involve the cell owner insuring the risks of its customers or members (PwC, 2022). This structure has been effective in driving retail innovation and providing insurance solutions for niche markets (Dunn & Hougaard, 2019).

Third-party cell captives, where cell owners ensure their customers' or members' risks, have driven retail innovation and served niche markets effectively. A growing trend in this sector is embedded insurance, where coverage is integrated into the purchase of goods or services by non-insurance companies. South African cell captive insurers partner with various businesses, such as retailers and motor manufacturers, to incorporate insurance products into the customer's purchase (Schoeman, 2023).

The **embedded insurance model** presents several opportunities for expanding climate risk coverage, including:

- Crop insurance can be bundled with the sale of seeds or agricultural equipment.
- Community-based insurance pools can be embedded into local government services or community organisations.
- Blockchain-based smart contracts could automate payouts for climate-related events.

Agriculture insurance

South Africa has a relatively developed agricultural insurance market, offering multi-peril crop insurance, livestock insurance as well as revenue or credit insurance. The country's insurance sector is unique in that it is the only nation that offers agriculture insurance products without government support (Partridge & Wagner, 2016). Currently, three insurers provide hail and multi-peril crop coverage, six offer livestock mortality and transit protection and one specialist covers forestry fire risks.

Distribution channels: leveraging digitalisation

The digitalisation of insurance in South Africa is rapidly transforming the industry, marked by significant investments in Insurtech solutions exceeding \$7bn globally since 2015 (Maharaj, 2019). This transformation is reshaping traditional distribution models through innovative technologies and strategic partnerships between established insurers and digital start-ups.

South Africa's Insurtech ecosystem features both emerging start-ups and established players like Naked, Inclusivity Solutions and Pineapple. These companies are forming strategic alliances with traditional insurers to expand market reach and improve service delivery. A prime example is Hollard's collaboration with NetcarePlus, which aims to provide affordable healthcare solutions to previously uninsured populations (NetcarePlus, 2024).

Furthermore, mobile-based applications are facilitating insurance access through streamlined processes for policy purchase, management and claims. For example, Capitec's innovative life insurance model demonstrates how digital solutions can enhance accessibility while maintaining transparency and affordability. By enabling clients to apply for life cover through a simple app-based process – without medical tests or complex paperwork – Capitec has reduced traditional barriers to entry. Clients can complete the application in minutes, manage their policies digitally and even submit claims via WhatsApp, ensuring convenience and efficiency. Expanding such models across the industry could significantly enhance financial inclusion and provide vital protection for underserved populations.

To address high costs associated with traditional distribution models, the authorities should incentivise the development of digital distribution channels for climate risk insurance. This could include offering regulatory relief or accelerating the approvals process for insurers, processes which would drive significant cost reductions. The Treasury, Prudential Authority and the Financial Sector Regulatory Authority should also work with the Department of Communications and Digital Technologies to improve digital infrastructure in underserved areas, ensuring these new distribution channels reach those most in need of affordable insurance.

Traditional agriculture insurance products include

- **Multi-peril crop insurance** operates similarly to a yield index in other countries, providing cover against the main risks that affect production. It can cover hail and wind as well as fire caused by lightning and droughts. This contrasts with single peril insurance which covers one or two perils of a non-systemic nature, such as hail or hail and fire (Ludolph, 2022; Partridge & Wagner, 2016).
- **Livestock insurance** typically forms part of agricultural asset policies, protecting against deaths from specific events such as veld fires and lightning strikes. Coverage can extend to include mortality from diseases, accidents, infertility, natural disasters and transit risks. However, livestock theft generally remains excluded due to its costly and complex verification requirements.

Credit life insurance safeguards farmer families' financial security when they take substantial agricultural loans. The coverage extends to death, permanent and temporary disability and terminal illness. In the event of a claim, the policy settles outstanding agricultural loans, potentially enabling the farmer's estate to retain assets without financial strain.

The Land Bank, a government owned agricultural bank, offers two types of credit life insurance policies:

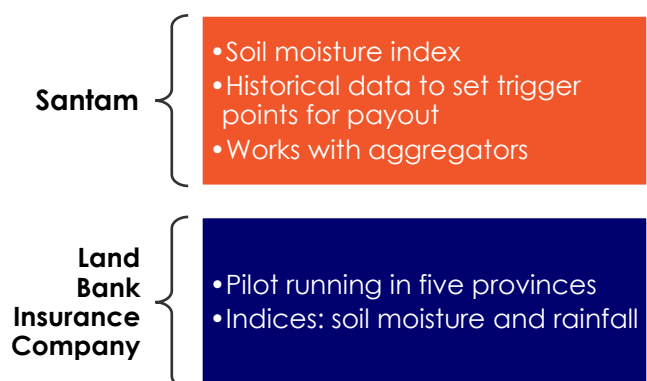
- **Level term**, which covers the full initial loan amount until repayment, with excess funds paid to nominated beneficiaries or the estate.
- **Declining term**, which covers the outstanding loan balance monthly, with premiums and coverage decreasing alongside the loan balance.

Both policies designate the loan financier as the primary beneficiary. These products serve individual farmers with active agricultural loans and credit providers requiring insurance on their debtors' lives (LBIC, 2018).

Index-based insurance

Though not formally legislated in the Insurance Act, index insurance products underwent testing in the Intergovernmental Fintech Working Group's

Figure 9: Features of agriculture index products, Santam and LBIC



Regulatory Sandbox Initiative (RSB). The pilot involved Santam collaborating with the World Bank, National Treasury and the Department of Agriculture, Land Resettlement and Rural Development (Stevens, 2023). Currently, the Prudential Authority handles index-based insurance products on a case-by-case basis, requiring explicit approval for insurers to offer such products.

Two companies offer index insurance products in South Africa, Santam and the Land Bank Insurance Company. Both use soil moisture indices to cover crop and livestock against drought (LBIC, 2024). These products aim to address challenges faced by smallholder and semi-commercial farmers in accessing affordable and effective agricultural insurance, potentially benefiting approximately 250,000 smallholder farmers and 1.5-million subsistence farmers.

Index-based agricultural insurance presents a promising avenue for extending financial protection to small- and medium-scale farmers while potentially reducing the burden on public finances. Recent studies have indicated a strong willingness among smallholder farmers to pay for such insurance products (Jiba et al., 2024; Mathithibane & Chummun, 2022; Mukwevho et al., 2023).³ For instance, Mathithibane and Chummun (2022) found that 86% of surveyed smallholder maize farmers were willing to pay for insurance to mitigate weather-related risks, with a significant

³ For the purposes of this report, smallholder farmers in the South African context typically refer to farmers that are, at least to an extent, market oriented. This is in contrast to purely subsistence

farmers who engage in agriculture for their own consumption (Neves, 2020).

portion prepared to pay premiums of 5%-10% of their crop harvest value.

Furthermore, these insurance products **overlap with national policy agendas** such as the National Development Plan 2030 and the Comprehensive Agricultural Support Programme (CASP). Launched in 2004 to support emerging farmers and promote agricultural development, CASP operates in all nine provinces and aims to provide information support, technical and financial assistance as well as infrastructure support (Department of Agriculture, 2004). Integrating insurance into CASP would work best as a public-private partnership, where private insurers provide coverage, and the government offers initial premium subsidies. This model has been effective in schemes like Uganda's Agriculture Insurance Scheme and Kenya's livestock insurance programmes. Bundling insurance with CASP services, such as credit and input support, could enhance its appeal to farmers. Similar bundling approaches in East Africa have successfully combined insurance with agricultural credit, farm inputs and additional services like weather information and farming advice.

The distribution of such a scheme could leverage CASP's existing networks and trusted local aggregators, including cooperatives and community leaders. Using digital platforms and mobile technology for enrolment and payments would minimise administrative costs and expedite claim settlements. Additionally, the scheme should integrate comprehensive risk management strategies, drawing from successful initiatives like the R4 Rural Resilience Initiative. This would position insurance as part of a broader risk management portfolio, complementing CASP's technical support and capacity building components to improve farmers' resilience and practices.

The gradual reduction in subsidies would need to be carefully structured and tied to demonstrable benefits for farmers, such as increased access to credit at lower interest rates or expanded agricultural services. Evidence from other markets suggests that this approach can lead to sustainable uptake when farmers recognise the tangible value of insurance coverage (Miranda & Mulangu, 2016).

Public products

This section examines public sector insurance arrangements in South Africa, focusing on three key areas: municipal insurance mechanisms, special risk coverage through Sasria and state asset protection strategies.

Municipal and state asset insurance schemes

Several metropolitan municipalities in South Africa have developed independent insurance solutions. The City of Cape Town's General Insurance Fund exemplifies this approach, protecting municipal assets, liabilities and select public infrastructure against various risks, including natural hazards (excluding subsidence and landslip) and business interruption. The fund, valued at R600m, maintains 5% annual premium increases across departments and secures reinsurance for losses above R15m (Maher et al., 2022).

Local and district municipalities are partially covered under a municipal insurance facility provided by GuardRisk, a cell captive insurer covering 233 out of 249 eligible municipalities. The insurance includes coverage for assets and liabilities (public, motor and municipal liability), with a total insured sum of R401bn. Premium rates are lower than market rates, ranging from 0.06% to 0.07% for assets, compared with 0.2 to 0.3% in the commercial sector (Maher et al., 2022).

However, GuardRisk faces challenges:

- Declining interest and capacity of reinsurers due to poor quality information from municipalities.
- Limited capacity, currently capped at R200m, leaving many municipalities underinsured.
- Insurance cover arranged through brokers via a tender system every three years.
- Public infrastructure not covered due to inadequate information, lack of maintenance, limited reinsurance capacity and high cost.

Most state assets are self-insured, meaning the state carries the cost of any damages (see page 16). As mentioned, self-insurance can impose substantial shocks to the budget with assets of greater value such as bridges, buildings or

stadiums, or when assets are exposed to correlated or catastrophic risks (National Treasury & World Bank, 2024). National Treasury is reviewing the DRM financing strategy and there has been some interest in municipal risk pools in recent years.

Municipal Risk Pool

The Western Cape province recently piloted a Municipal Risk Pool (MuRP) initiative through a collaboration between the Munich Climate Insurance Initiative, Western Cape Government and the International Development Research Centre. This project, running from 2019 to 2021, aimed to provide parametric flood coverage for several Western Cape municipalities through a special-purpose company jointly owned and managed by participating municipalities (CPI, 2023).

The initiative responds to significant climate vulnerabilities in the region, where flooding is projected to cause \$66m in annual urban damage and affect 19,000 people. By pooling resources across municipalities, the MuRP offers more competitive premiums than individual private insurance arrangements (CPI, 2023). The programme relies on donor funding for initial capital and may provide premium subsidies during its early stages.

The MuRP's operational framework combines detailed municipal flood risk modelling, parametric insurance policies and reinsurance coverage to transfer financial risks to the private market. The implementation of the MuRP faces several challenges, as revealed through stakeholder engagements involved in the project. These include:

- Uncertain legal environment surrounding the establishment of such an innovative pooled insurance facility under South African law.
- Time-consuming political and legal procedures requiring strong political commitment from regional and municipal leadership.
- Compliance with Public Finance Management Act regulations and the use of public funds in a funding vehicle like the MuRP.
- Systemic risks faced by municipalities, such as stretched budgets and competing priorities for municipal investment, which may hinder their

ability to participate without premium subsidies.

Insurance for special risks

Sasria is the sole non-life insurer in South Africa offering special risk coverage to individuals, businesses, and government entities with assets in the country. Established in 1979 due to the insurance industry's reluctance to cover politically motivated risks related to anti-Apartheid protests, Sasria is the only insurer authorised to cover special risks such as civil commotion, riots, terrorism and – since 1998 – strikes and labour disturbances (Maher et al., 2022; OECD, 2015).

Sasria operates through a distribution model where premiums are collected via regular insurance companies and brokers. All registered short-term insurance companies that underwrite fire peril must include Sasria coverage in their policies, with the Sasria premium built into regular insurance contracts for individuals, businesses, and government entities. These partner insurers handle day-to-day administration and premium collection, while Sasria only engages directly during claims settlement (PMG, 2021). To this end, Sasria is self-financing, using premium income to cover all claims and expenses. In 2019, its gross written premiums totalled R2.2bn and it has generally been profitable, maintaining a return on equity of about 10% in recent years. The company typically pays dividends of 3% of equity to National Treasury annually (Maher et al., 2022).

However, there are indications that Sasria is overcapitalised. In 2019, its assets were 400% of gross written premiums which, despite dropping to 282% in 2023, is still much higher than the industry average of 180% (Sasria, 2023). This gives Sasria significant capacity to write more business and it has plans to extend coverage to SMMEs.

Integrating social protection and climate resilience

South Africa could leverage its extensive social grant infrastructure to incorporate climate risk insurance, drawing inspiration from successful programmes like Kenya's Hunger Safety Net Programme and Malawi's Social Cash Transfer Programme. This approach aligns with the growing

recognition that social protection policies can play a crucial role in bolstering climate resilience.

Close to 30-million South Africans, representing 44% of the population, receive some form of grant (South African Government, 2024). In 2023/24, spending on social grants amounted to 3.6% of GDP at a cost of more than R250bn a year.

The existing grant distribution system, managed by the South African Social Security Agency (SASSA), provides a solid foundation for implementing climate-responsive elements. Potential strategies include:

- Incorporating weather-based index insurance into the current grant system.
- Automatic enrolment for recipients in high-risk areas.
- Government-subsidised premiums as part of the grant package.
- Payouts triggered by specific climate events to supplement regular grant amounts.

The SASSA infrastructure could efficiently distribute these insurance payouts and provide education on climate risks and insurance benefits, similar to the rapid deployment of the Social Relief of Distress (SRD) grant in response to the Covid-19 pandemic. Evaluations of the SRD grant suggest it reduced the number of people living in extreme poverty by roughly two million and led to a 52% reduction in the depth of extreme poverty (Orkin et al., 2023).

Integrated climate resilience and social protection programmes could be piloted in high-risk areas to enable testing and refinement before scaling up nationally. By combining the extensive reach of the social grant system with the expertise of private insurers and leveraging the experience of companies like Sanlam assessing climate risks, South Africa has the potential to develop an innovative, large-scale climate risk insurance programme.

Barriers in the use of insurance as a climate risk management tool

While climate risk insurance, combined with risk management strategies, has the potential to

strengthen climate resilience, several barriers hinder its widespread adoption in South Africa.

Market barriers

High concentration

The dominance of a few large insurers and high regulatory compliance costs make it difficult for new entrants, particularly those targeting the microinsurance market, to compete effectively. This is especially the case in the agricultural insurance market, which is characterised by less than five insurance providers and a heavy reliance on reinsurance. This structure limits competitive pressures to lower premium rates, potentially affecting affordability for farmers (Maher et al., 2022).

Volatility due to extreme weather events

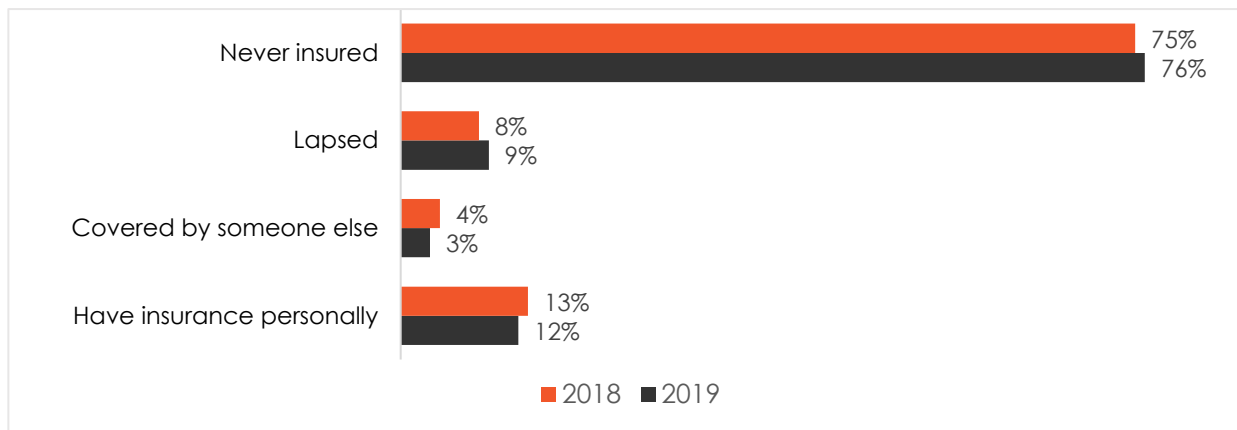
The agricultural sector has experienced significant volatility in recent years, with extreme weather events driving up premiums and causing a notable decline in insured maize production. For instance, multi-peril crop insurance coverage for the national maize crop dropped from 17% in 2013 to just 18% in 2018, primarily due to high premiums resulting from unsustainable loss ratios and increased climate-related risks (Maher et al., 2022).

Affordability and non-life uptake

Despite South Africa's advanced insurance sector, non-life insurance products that could offer protection against climate risks have limited uptake among the most climate-vulnerable households. While both life and non-life insurance have shown growth in recent years, non-life penetration has remained largely stagnant at around 2.5% of GDP since 2010, in contrast to 9.1% life insurance penetration (Atlas, 2022a).

Affordability is the primary barrier to insurance uptake. Traditional, indemnity-based insurance products are often priced beyond the means of many South Africans, particularly affecting those who most need financial protection against climate-related risks. The pricing structure typically reflects the high risks associated with climate events and the operational costs of insurance companies. (Finscope, 2020). Yet, given the country's high levels of unemployment, poverty and deep inequalities, affordability is by far the largest barrier.

Figure 10: Non-life insurance access in 2018 and 2019



Source: Finscope (2020)

In the agricultural sector, the affordability gap is particularly stark. Most agricultural producers in the country are smallholder and subsistence farmers who rely heavily on agriculture for income and food security. Traditional indemnity-based insurance products are often prohibitively expensive and ill-suited to these farmers' needs, as evidenced by the low penetration rate of less than 1% among smallholders (Mathithibane & Chummun, 2022).

Geographical disparities

The coverage disparity in South Africa's insurance landscape presents a significant challenge to climate resilience, particularly for vulnerable communities. This disparity manifests as a notable insurance protection gap between high-income and low-income households, as well as between different geographical areas.

As climate change intensifies, insurers are adjusting their risk models and pricing strategies, often resulting in higher premiums for areas deemed to be at higher risk. While logical from an actuarial perspective, this approach inadvertently exacerbates the vulnerability of communities that are already at risk. Many residents in these high-risk areas are often those least able to afford increased insurance premiums, creating a vicious cycle where those most in need of protection are the least likely to have it.

Distribution challenges

The insurance industry in South Africa has traditionally relied heavily on broker-driven distribution models, which often struggle to reach

low-income and rural populations cost-effectively. While digital and mobile channels offer promising alternatives for expanding insurance distribution, they come with their own challenges:

- The digital divide in South Africa presents a significant barrier to widespread adoption of these distribution channels.
- Many low-income and rural individuals lack access to smartphones, reliable internet connectivity, or the digital literacy required to navigate online insurance platforms.
- Issues of trust and understanding may arise when purchasing complex financial products online.

Public infrastructure maintenance

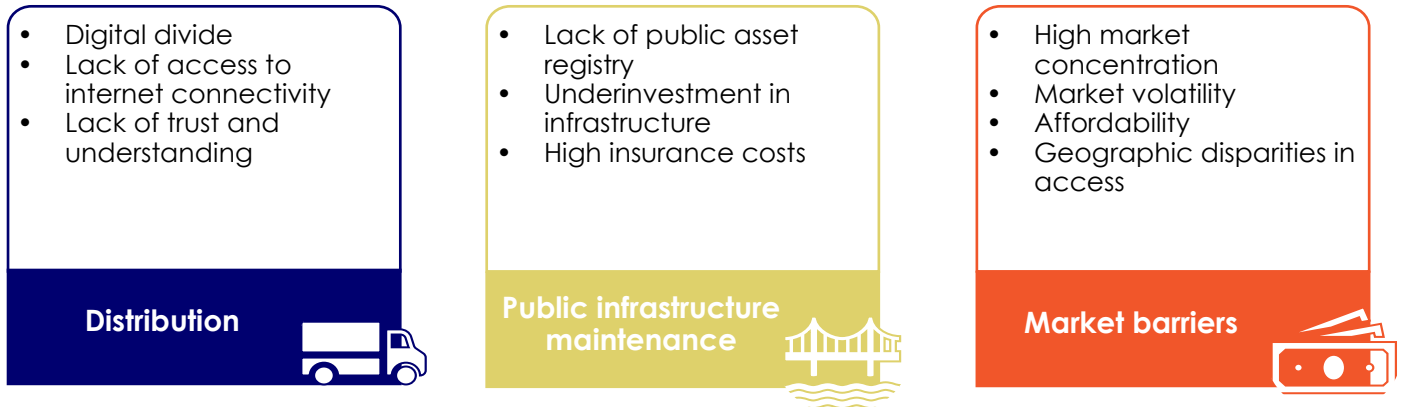
The inadequate maintenance of public infrastructure in South Africa poses a significant challenge to climate resilience and adaptation efforts. Key issues include:

- Lack of comprehensive, up-to-date records of public assets, making it difficult for insurers to accurately assess and price risks.
- Years of neglect and underinvestment have left many critical assets in a state of disrepair, increasing their vulnerability to climate-related damages.
- High costs associated with insuring public infrastructure, coupled with budget constraints, often lead to a deprioritisation of insurance coverage.

The impact of extreme weather events can be significantly amplified because of the above

factors, leading to prolonged recovery periods and placing substantial financial burdens on government entities in the aftermath of disasters.

Figure 11: Summary: barriers and limitations in using insurance for climate risk management



Insurance industry's engagement in climate adaptation

Insurance and reinsurance companies can play an important role in strengthening societies' climate resilience beyond what has been discussed so far, that is, as risk bearers. As institutional investors with more than \$30tn in invested capital, they hold significant potential for impact, particularly through the management of long-term capital pools that can be directed towards climate resilience and mitigation efforts. As demonstrated by initiatives like the Nairobi Declaration on Sustainable Insurance, there is growing momentum for insurers to leverage their investment capabilities for sustainable development.

Insurers can support climate resilience across the broader financial markets through three distinct areas:

- Considering resilience within their own investment activities.
- Promoting resilience indirectly across the broader financial markets.
- Fostering societal resilience to climate risk in general.

Yet, effectively strengthening resilience demands a comprehensive strategy that integrates both asset-level protections and broader systemic adaptations. At the individual asset level, insurers incorporate climate resilience and risk reduction measures into their investment decisions, but this alone is insufficient. A more holistic approach requires collaboration between the public and private sectors through Public-Private Insurance Programmes, which can leverage the strengths of both sectors (G7, 2024). Insurers bring their expertise in risk assessment and management, while governments can provide crucial data, regulatory frameworks and de-risking support.

Such a collaborative approach enables the development of more resilient infrastructure and systems, with an estimated \$71bn annual revenue opportunity for insurers through closing protection gaps (G7 Finance Track, 2024). The success of this strategy depends on establishing what the World

Economic Forum calls a new "societal risk compact", where insurers, regulators, policymakers and investors collectively work towards proactive risk management and resilience building (Belelue & Schwedel, 2020).

The sections that follow explore what elements of this compact are present in South Africa by examining how insurers, regulators and PPPs collaborate or not to strengthen climate resilience. The discussion covers specific examples of South African insurers' initiatives, such as Santam's Partnership for Risk and Resilience programme and Sanlam's involvement in Climate Investor Two. Additionally, it analyses the regulatory landscape for private sector participation in adaptation, including relevant policies and legislation. The section also addresses challenges and recent developments in public-private partnerships for climate-related projects in South Africa, highlighting both existing barriers and proposed regulatory changes aimed at enhancing private sector involvement in climate adaptation efforts.

Integrate resilience within investment activities

Incorporating resilience within insurers' own investment activities involves including climate resilience as a key factor in investment decisions and portfolio management. This approach includes selecting investments that directly enhance climate resilience or improve the insurer's own resilience to climate risks. Examples include investing in resilient infrastructure projects, in resilient assets such as property, in shares in climate-resilient companies or in businesses that enhance their clients' resilience. It also means integrating resilience considerations into overall asset allocation strategies and avoiding geographic concentrations in high-risk areas (Camargo, 2019; CISL, 2016; Fantini et al., 2023; Wagener, 2024).

South African insurers' initiatives

Santam has taken steps to improve portfolio resilience and integrate climate considerations into its decision-making processes. It has expanded its geocoding initiative to create a comprehensive risk-based view of property locations across South Africa, enabling better

assessment and management of geographic risk concentrations. Furthermore, Santam has implemented several underwriting actions, including enhanced risk assessments, segmented premium increases and increased security requirements for high-risk vehicles (Els, 2024).

Climate Investor Two (CI2), a financing facility managed by Climate Fund Managers (CFM) – a joint venture between the Dutch development bank FMO and Sanlam InfraWorks – has committed approximately \$205m to 15 projects. These include waste-to-energy platforms in South Africa and Thailand, desalination initiatives in Kenya and Thailand and green shipping companies in Africa and Asia. Notably, CI2 has also implemented the world's largest debt-for-nature conversion in Ecuador to protect the Galapagos Islands (GCF, 2022; Johnstone, 2023).

Promoting resilience indirectly across financial markets

Insurers can act as catalysts to shift how other investors, financial institutions and markets value and prioritise climate resilience. By supporting financial instruments such as green bonds, developing new resilience-focused investment products, sharing risk assessment expertise and signalling the importance of resilience through their own investment choices, insurers can help create a financial ecosystem that is more attuned to climate risks and rewards resilient assets and practices.

Sanlam, for instance, has embraced cutting-edge technology and data analytics to enhance its understanding of climate impacts and refine its risk models. By leveraging innovative data sources and AI-enabled analytics, Sanlam has developed a more comprehensive grasp of expected climate-related events and their potential consequences. The company uses satellite imagery to monitor emerging wildfire risks and location-specific flood data to inform its underwriting decisions, leading to more tailored and effective insurance products.

Promoting societal resilience to climate risk

The insurance industry can take a broader role in fostering a culture of resilience across society by using its expertise, influence and resources to encourage and support resilience-building efforts at all levels. This approach involves education and awareness initiatives, providing risk management expertise to policymakers, supporting resilience projects through corporate social responsibility programmes and developing innovative insurance products and services that incentivise resilient behaviours and investments.

Santam's Partnership for Risk and Resilience (P4RR) programme

Santam's P4RR programme has made significant strides in enhancing disaster risk management across South Africa (Santam, 2023). The initiative has supported 82 municipalities, positively affecting more than 12 million people. P4RR focuses on developing early warning systems, improving preparedness and implementing proactive risk management strategies. Key aspects of the programme include:

- Donating firefighting equipment worth R4m to eThekweni Municipality (Santam, 2022) (Santam, 2023a).
- Partnering with municipalities to provide risk management expertise and access to an online planning support tool.
- Collaborating with government departments, research institutions and other organisations to improve disaster preparedness.
- Working with the Council for Scientific and Industrial Research to promote the adoption by municipalities of the Green Book, a climate risk assessment tool (CSIR, 2024).
- Since 2012, Santam has invested more than R100m in helping municipalities better respond to fire and flood risks.
- Supporting vulnerable communities through risk awareness, management, skills development and equipment provision.

As climate change adaptation becomes increasingly crucial, Santam and other South

African insurers are prioritising it as a key component of their resilience programmes.

Regulatory landscape for private sector participation in adaptation

Adaptation policies play a crucial role in supporting and incentivising private sector participation in climate change adaptation efforts.⁴ These policies create a structured framework that encourages businesses to integrate climate resilience into their operations and strategic planning. By setting clear objectives and guidelines, adaptation policies provide the private sector with a roadmap for action, reducing uncertainty and facilitating long-term investment decisions.

South Africa's policy landscape has evolved significantly to encourage private sector participation in climate change adaptation:

- **The Climate Change Act of 2024** establishes the private sector as a crucial partner in the transition to a low-carbon and climate-resilient economy (Republic of South Africa, 2024). It encourages businesses to align their policies and actions with national climate objectives, participate in forums and provide input on climate change responses. The act also implies a role for insurance as part of broader financial mechanisms to support climate adaptation and mitigation efforts.
- **The National Climate Change Adaptation Strategy (NCCAS)** prioritises private sector involvement by encouraging businesses to integrate climate risks into their planning and operations (Republic of South Africa, 2021a). It promotes the relocation of businesses to less hazardous areas and investment in resilient infrastructure. The strategy also highlights the potential role of insurance in managing climate risks, recommending that the insurance sector develop products tailored to address specific climate risks faced by different sectors and communities.

- South Africa's **updated Nationally Determined Contribution (NDC)**, which spells out South Africa's commitment to reducing greenhouse gas emissions, emphasises the importance of private finance in supporting climate change adaptation and mitigation efforts. It expects the private sector to help meet funding requirements for adaptation projects and contribute to developing a climate change adaptation investment pipeline. The NDC also suggests that the financial sector, including insurance, should help address climate risks by developing products and services that support resilience and adaptation efforts. (Republic of South Africa, 2021b).
- Lastly, the **Disaster Risk Management Framework Act** (Republic of South Africa, 2005) emphasises an integrated approach that includes the private sector. It encourages private sector participation in reducing disaster risk through prevention, mitigation, preparedness, response and post-disaster recovery efforts.

These policy instruments are accompanied by efforts to catalyse private sector investment in climate projects. This includes efforts to issue green bonds as well as to develop a carbon pricing system that combines a carbon tax with carbon offsets (Business Tech, 2023). Additionally, the government is taking steps to enhance the public-private partnership (PPP) regulatory environment.

PPPs in climate adaptation

South Africa's private sector is expected to play a significant role in developing and funding climate-related projects due to the state's strained balance sheet and the country has developed a regulatory framework for PPPs. It has evolved over the past two decades to facilitate infrastructure development and service delivery across various sectors, including those addressing climate change mitigation and adaptation, but there are still shortcomings.

⁴ the private sector encompasses a diverse range of non-governmental entities engaged in economic activities for profit. This includes:

- Companies of various sizes, from large multinational enterprises to small and medium-sized enterprises (SMEs) and individual business owners.
- Financial institutions such as banks and investors.

- Insurance companies.
 - Private associations and cooperatives.
 - Entrepreneurs and farmers.
 - Non-governmental agencies involved in business activities.
- This broad definition encompasses all profit-oriented entities that are not part of the public sector or government.

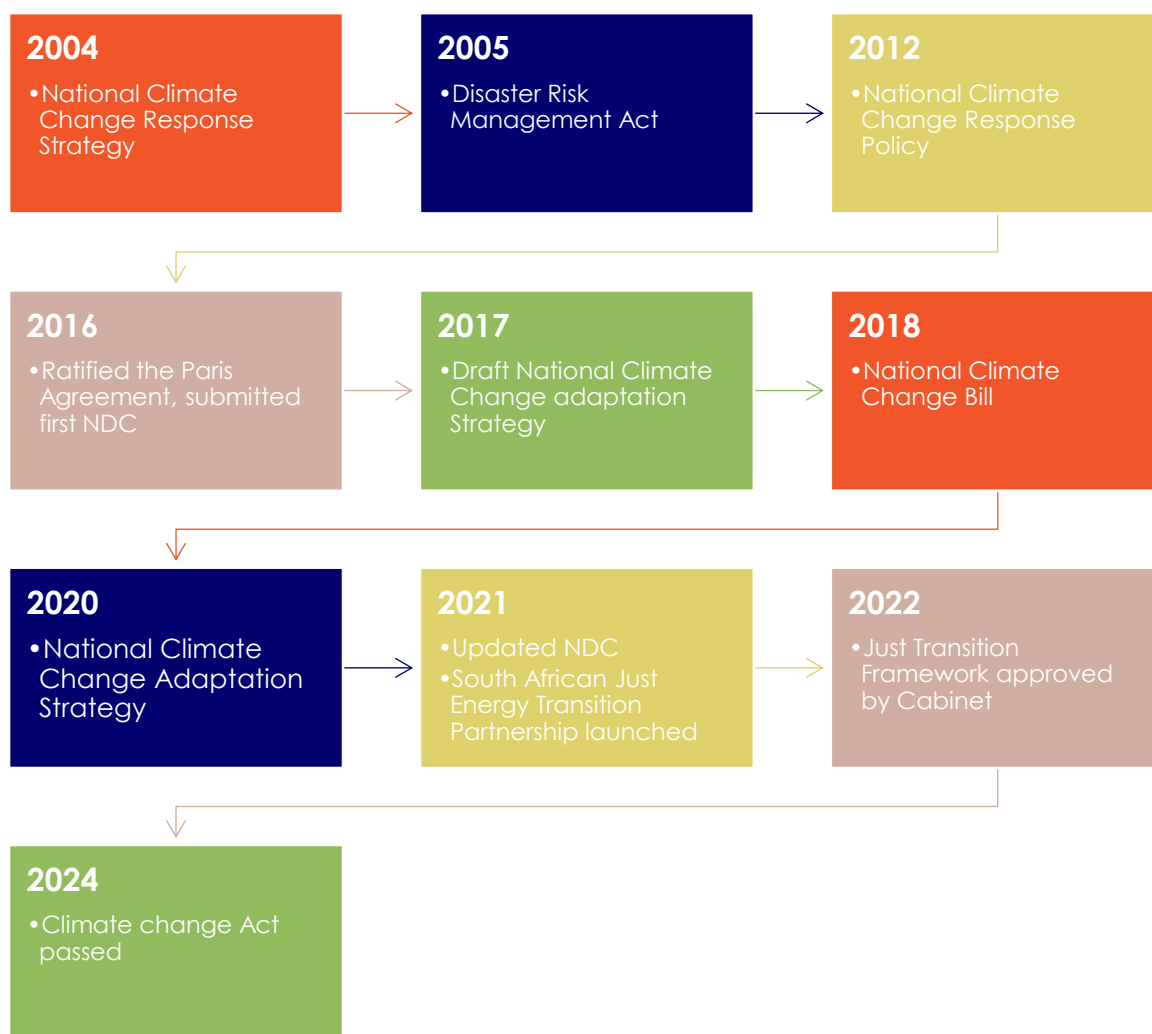
The PPP regulatory framework in South Africa is primarily governed by the Public Finance Management Act (PFMA) of 1999 (Republic of South Africa, 1999) and its associated Treasury Regulations. These regulations provide a structured approach to PPP implementation, requiring a four-step process that includes feasibility studies, procurement documentation and contract approvals from the National Treasury. This process aims to ensure value for money, affordability and appropriate risk transfer in PPP projects.

Barriers undermining PPPs in climate adaptation

Despite the established framework, there has been a notable decline in new PPP transactions in recent years. National Treasury reported a decrease from an estimated R10.7bn in 2011/12 to R7.7bn in 2022/23 (Feris & Seleka, 2024). Several factors undermine private sector initiatives:

- **Rigid and cumbersome processes:** The existing PPP processes are often described as inflexible and burdensome, particularly for smaller projects. This rigidity can deter private sector participation, especially for projects that might not fit neatly into the established framework
- **Lack of streamlined approvals:** The system requires multiple approvals from National Treasury at various stages of PPP projects, including feasibility studies, procurement documents and contracts. This multi-step approval process can lead to significant delays and increased costs for private sector partners
- **Insufficient calibration to project size:** The regulations do not adequately differentiate between large and small projects, applying the same rigorous processes to all PPPs regardless of their scale. This one-size-fits-all approach can be particularly discouraging for smaller private sector initiatives.

Figure 12: Evolution of South Africa's climate adaptation policies



- **Absence of prescribed timeframes:** There are no specific timeframes for approvals and decision-making processes. This lack of clear timelines can create uncertainty for private sector partners and potentially extend project timelines indefinitely
- **Insufficient alignment with broader infrastructure policy:** There is a lack of an overarching infrastructure policy framework that effectively integrates PPPs into the overall planning process for public investments (PMG, 2022; Ramolobe & Khandanisa, 2024).
- **Climate-specific risk allocation in PPPs** presents unique challenges that require careful consideration. The inherent uncertainty in climate impact projections creates significant complications for long-term PPP contracts, as traditional risk allocation frameworks struggle to account for the evolving nature of climate hazards. These uncertainties make it particularly difficult to price risks accurately and establish appropriate contractual safeguards.

In response to these challenges, the South African government has taken steps to enhance the PPP regulatory environment. On 19 February 2024, National Treasury published draft amendments to the current PPP regulations for public comment (Arnoldi, 2024). These proposed changes aim to simplify and expedite the approval process, particularly for smaller PPP projects.

A key amendment introduces two frameworks for PPPs: one for high-value projects and a simplified version for low-value projects (below R2bn). Notably, PPP projects with a cost of less than R2bn will be exempted from the requirement of obtaining National Treasury approvals, potentially accelerating the flow of smaller climate-related initiatives (Arnoldi, 2024).

The proposed amendments are expected to have a significant impact on climate projects as they align with the government's broader efforts to address climate change and promote sustainable development. South Africa's Just Energy Transition Investment Plan (JET IP) for 2023-2027 outlines the country's commitment to achieving a low-carbon economy and a climate-resilient society (Calland, 2023). The plan identifies key areas for investment including electricity infrastructure, new energy vehicles and green hydrogen, which could benefit

from increased private sector participation through streamlined PPP processes.

There is also a recognised need to mainstream climate finance in the country's infrastructure approach (Arnoldi, 2024). This suggests that future amendments to PPP regulations may need to explicitly incorporate climate considerations to ensure that private sector participation effectively contributes to South Africa's climate objectives. Additionally, they need to flexible adaptation mechanisms to respond to changing climate conditions over time. This flexibility is crucial as climate impacts may manifest differently than initially projected, requiring modifications to infrastructure specifications or service delivery methods. However, building such flexibility into contracts while maintaining bankability and value for money proves challenging, particularly when climate risks cannot be fully quantified at the project's outset.

The allocation of climate risks between public and private partners requires careful structuring to ensure optimal risk sharing. While private partners may be better positioned to manage certain climate-related risks through innovative design and operational solutions, some climate risks may be too uncertain or severe for private sector absorption. This necessitates a balanced approach to risk allocation that maintains project viability whilst ensuring adequate climate resilience.

Implications for strengthening private sector engagement in climate resilience

While insurers possess significant capabilities in risk assessment, investment management and resilience building, their efforts must be viewed as one component within South Africa's broader national climate resilience strategy. The insurance sector's investment capital and expertise in risk management represents substantial potential, but meaningful impact requires integration with wider governmental and societal initiatives.

The concept of a "societal risk compact" particularly emphasises this interdependence, where insurers' activities must be coordinated with regulators, policymakers and other stakeholders to

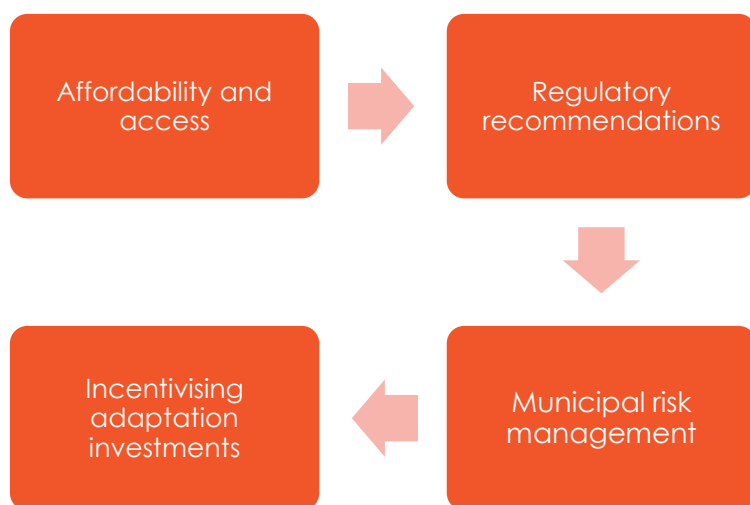
achieve effective risk management and resilience building. The regulatory landscape in South Africa is evolving to encourage private sector participation in climate adaptation, including the insurance industry. The Climate Change Act of 2024, the National Climate Change Adaptation Strategy and the updated Nationally Determined Contribution all recognise the importance of the private sector in managing climate risks and supporting resilience efforts. The success of initiatives such as Santam's P4RR programme also demonstrates how insurers' participation can go beyond financing to knowledge and information sharing that can inform climate resilience planning.

Realisation of these opportunities, however, will require insurers to actively participate in shaping the implementation of new regulations and potentially developing standardised approaches to climate risk assessment and management across the industry. The emphasis on public-private collaboration in recent policy frameworks suggests that insurers who proactively build partnerships with government entities and other stakeholders may be better positioned to capitalise on emerging opportunities in the adaptation space.

Recommendations

The following recommendations present a comprehensive framework to address the challenges of climate risk insurance and adaptation in South Africa. These proposals emphasise the critical need for collaboration between government entities, insurers and other stakeholders to create sustainable and accessible insurance solutions. The recommendations focus on several key areas, including affordability and access through financial support mechanisms, integration with social protection schemes, agricultural insurance development, digital distribution channels and regulatory frameworks. These strategies aim to enhance climate resilience while ensuring that insurance products remain both accessible and financially viable for all segments of society, particularly vulnerable communities and municipalities facing increasing climate-related risks.

Figure 13: Main recommendation categories



Affordability and access

Premium support

Addressing the challenge of affordability in insurance will require a multifaceted approach that balances the responsibilities of government, insurers and other stakeholders. Here, the first step would be to mobilise funding for subsidised

premiums to support vulnerable households and small businesses as well as municipalities. This funding can come from:

- Private sector CSR/ESG initiatives: Insurers and reinsurers can play a role in subsidising premiums as part of corporate social responsibility (CSR) initiatives or through PPPs. These partnerships could involve co-financing arrangements where private insurers match government contributions to make premiums more affordable. Similarly, the **Climate and Disaster Resilience Fund (CDRF)** provides a collaborative platform involving government, businesses and NGOs to fund disaster preparedness and resilience measures, particularly for climate-related risks such as fires and floods.
- International climate finance grant funding: The **Adaptation Fund**, which supports climate resilience projects in developing countries, has financed initiatives in South Africa such as the Community Adaptation Small Grants Facility. This programme channels resources directly to vulnerable communities to enhance their resilience to climate-induced risks like floods and droughts.
- International development organisations such as the **World Bank**, **African Development Bank** and **United Nations agencies** also play a significant role in financing disaster risk management and financial inclusion initiatives. For example, the International Development Research Centre (IDRC) has supported municipal risk pooling projects in South Africa to manage climate risks more effectively. These risk pools aggregate resources across municipalities, lowering costs and improving access to insurance for smaller entities. Additionally, innovative funding mechanisms like the sale of carbon credits under frameworks such as the Kyoto Protocol or Paris Agreement could provide sustainable revenue streams for premium subsidies.
- Proposed Climate Change Response Fund: In his 2024 state-of-the-nation address, South African President Cyril Ramaphosa announced plans to establish a Climate Change Response Fund targeting climate resilience investments, focusing on water security, infrastructure and capacity to respond to extreme weather events (Creamer, 2024; Erasmus, 2024). The fund is designed as a collaborative effort between the government and private sector, with the goal of pooling resources to address

climate vulnerabilities comprehensively. While the operational framework remains unclear to date, subsidising premiums for climate risk insurance fits within its proposed ambition and a portion of the funding could go towards premium support.

- Sasria's overcapitalisation presents an opportunity to extend subsidised coverage for small, medium and micro enterprises or to introduce innovative products that address emerging risks like climate change.

While premium subsidies may seem challenging initially, a familiar approach could be considered. Drawing inspiration from existing initiatives like the bounceback loan scheme, where public funds derisk banks' funding of solar installations, National Treasury could allocate funds from its existing disaster financing budget items to provide partial risk absorption or other forms of support for climate risk insurance. This support could be tailored based on the policyholder's income and risk exposure and tailored to the policyholder's income and risk exposure.

Additionally, the government should engage with international climate finance institutions to secure additional funding, ensuring a sustainable and scalable approach to enhancing climate resilience for vulnerable communities.

However, affordability cannot rely solely on premium subsidies; it must also involve proactive funding for risk reduction efforts, such as upgrading infrastructure, improving maintenance of public assets and implementing climate adaptation measures. These initiatives reduce the likelihood and severity of losses, thereby lowering long-term insurance costs. Insurers cannot be expected to absorb all the financial risks associated with systemic or catastrophic events, as this would undermine their sustainability and capacity to provide coverage. Instead, a shared-risk model should be adopted, where governments invest in preventative measures while insurers focus on innovative product design and risk transfer mechanisms. This collaborative approach ensures that risks are managed holistically, promoting both affordability and resilience.

Integrating insurance with social protection schemes

Related to the above, insurance can also be integrated into existing social protection schemes, which in South Africa includes several grants on which nearly 30-million South Africans rely. This integration can draw on successful examples from Kenya and Malawi. South Africa's existing social welfare system provides a robust foundation for implementing climate-responsive measures. This approach would align with the growing recognition that social protection policies can play a critical role in enhancing resilience to climate risks.

One key recommendation is to incorporate **weather-based index insurance** into the current grant system. This could involve automatic enrolment for grant recipients living in high-risk areas, ensuring they are covered against climate-induced shocks such as droughts, floods, or extreme storms. Premiums for these insurance products could be subsidised by the sources mentioned above as part of the grant package, making them affordable for vulnerable populations. Payouts would be triggered by pre-defined climate events, such as rainfall thresholds or temperature extremes, and distributed through SASSA's infrastructure, supplementing regular grant amounts during times of crisis. This model mirrors Kenya's Hunger Safety Net Programme, which provides emergency cash transfers during severe droughts, a programme that could be adapted to South Africa's unique context.

The implementation strategy could be divided in two phases:

Phase 1: Programme design

- National Treasury and SASSA should map vulnerable populations against climate risk data.
- Develop standardised risk assessment metrics.
- Create cost-sharing mechanisms between government and the private sector.
- Establish clear protocols for emergency payment triggers.
- Establish clear trigger mechanisms for emergency payments based on predefined climate indicators.

- Design scalable payment mechanisms that can rapidly expand during climate emergencies.

Phase 2: Pilot programmes

To ensure feasibility, **pilot programmes** should be launched in high-risk areas, such as flood-prone regions in KwaZulu-Natal or drought-affected areas in the Eastern Cape. These should include:

- Capacity for rapid scaling to reach additional households during severe weather events.
- Monitoring and evaluation focusing on:
 - Speed of emergency payment deployment
 - Coverage rates in vulnerable areas
 - Impact on household resilience
 - Cost-effectiveness of the programme.

Additionally, integrating climate risk insurance with grants requires **education and awareness campaigns** to help recipients understand the benefits of insurance and how it works. SASSA could collaborate with private insurers and NGOs to provide training and resources on managing climate risks and using insurance effectively. This would build trust in the system and encourage uptake among communities that may be unfamiliar with such products.

Agriculture index insurance and national policy agenda

The National Treasury and Department of Agriculture should establish a structured public-private partnership for index-based agricultural insurance through the following framework.

First, Treasury, together with the Prudential Authority should create clear regulatory guidelines for index-based insurance products, including standardising requirements for product design, risk assessment and claims processes.

Second, the Department of Agriculture should integrate index-based insurance into the Comprehensive Agricultural Support Programme (CASP) through a phased approach, starting in three provinces with the highest concentration of smallholder farmers. The integration should include a declining premium subsidy structure, such as

starting at 70% in year one and reducing the premium by 20% annually. The department should mandate that all CASP beneficiaries receiving input support or credit must participate in basic weather index insurance coverage, with premiums capped at 5% of expected crop value. To facilitate this, the department should establish a dedicated unit to coordinate between insurers, agricultural extension officers and local farming cooperatives.

Insurance companies can support this by creating an agricultural insurance pool to share risks and resources. This pool should develop standardised index products based on soil moisture and yield data, with automated satellite-based verification systems to reduce costs. Insurers should commit to investing in digital infrastructure for remote enrolment and claims processing, with a requirement to maintain combined expense ratios below 25%. The pool should also partner with agricultural input suppliers and cooperatives to

Figure 14: Summary of affordability and access recommendations



Premium support

- Mobilise funding for premium support for vulnerable households, businesses and municipalities
- Needs to be incorporated with risk reduction efforts
- Integrate insurance with social protection, weather insurance pilots in vulnerable regions



Agri index insurance

- Integrate into CASP
- Phased approach to subsidies
- Support pool for insurance companies



Distribution

- Digital infrastructure
- Partnerships with InsurTechs

bundle insurance with tangible benefits like discounted inputs and technical advisory services.

Success metrics for this programme could include reaching 100,000 smallholder farmers in the first three years, maintaining loss ratios below 75% and achieving at least 40% retention rates after subsidy reduction. The programme should prioritise regions where research shows high willingness to pay for insurance, such as areas where farmers are prepared to pay premiums of 5%-10% of crop value.

Regulatory framework

Index and microinsurance

To promote the development and adoption of microinsurance and index-based insurance in South Africa, updated regulations and a clear framework are essential. These regulatory reforms should address the unique characteristics of these insurance products while fostering innovation, financial inclusion and consumer protection. For microinsurance, the regulatory framework should continue to build on the principles established by the Insurance Act of 2018, which reduced capital requirements and simplified governance standards for microinsurers.

However, further refinements are needed to ensure that these products effectively meet the needs of low-income populations. This could include streamlining licensing processes for new entrants, incentivising partnerships with community-based organisations for distribution and mandating simplified policy terms to improve transparency and accessibility.

A comprehensive legal framework for index-based insurance is critical to provide clarity on its recognition as a formal insurance product. Index insurance relies on pre-determined triggers such as weather indices, rather than traditional loss assessments. This approach can benefit farmers, small businesses and vulnerable communities by providing faster payouts for climate-related events. However, this does introduce regulatory challenges, including basis risk (where payouts may not align with actual losses) and consumer understanding of complex triggers. To address these issues, South Africa should adopt specific index insurance regulations similar to those

implemented in countries like Kenya and Uganda. These regulations could include provisions for standardising index design to reduce basis risk, ensuring independent verification of indices and mandating consumer education initiatives to improve understanding.

Municipal risk management

The implementation of a Climate Risk Insurance Pool, as demonstrated by the IDRC Municipal Risk Pooling (MURP) project in the Western Cape, is vital to address the growing climate-related risks faced by local governments (MCII, 2019). The National Treasury, in collaboration with the FSCA, PA and COGTA, should spearhead this initiative.

This municipal-focused pool is necessary due to the unique challenges faced by South African municipalities in managing climate risks. Many municipalities, especially smaller ones, lack the financial resources and technical capacity to adequately prepare for and respond to climate-related disasters. The current system of disaster relief funding often leads to delays in response and recovery, as municipalities must wait for provincial or national government assistance. A dedicated insurance pool would provide more immediate access to funds, enabling faster and more effective disaster response.

To implement this, National Treasury should update the municipal risk tool developed by the CSIR – the GreenBook – ensuring up-to-date risk assessments for all municipalities, with accurate categorisation of exposure to floods, droughts and wildfires. This can be conducted in partnership with the Department of Cooperative Governance and Traditional Affairs (COGTA) and the South African Local Government Association, leveraging their understanding of municipal challenges and capacities.

Based on this assessment, National Treasury should develop a tiered premium structure that considers both the risk profile of each municipality and its financial capacity. This could include subsidised premiums for high-risk, low-capacity municipalities, funded through a combination of national budget allocations and contributions from lower-risk municipalities. The FSCA should work on creating a regulatory framework that allows for this type of

risk-sharing arrangement while ensuring the pool's financial stability.

Funding for this pool could come from blended funding arrangements or by leveraging Sasria's substantial capitalisation (currently at 282% of written premiums) to create a special climate risk division. This division should focus on providing reinsurance support for municipal risk pools and community-based insurance schemes, particularly in areas where private reinsurance is unavailable or prohibitively expensive. The programme could start with an initial allocation of R500m from Sasria's existing capital base, focusing first on supporting municipal risk pools in the country's most climate-vulnerable provinces.

Regulatory mandates proposed by the Climate Change Act can also support integration of insurance into municipal asset management frameworks (see **Reducing risk: the need for integrated climate and disaster risk management**). Indeed, a critical aspect of this pool's success would be its integration with existing disaster risk reduction (DRR) efforts. The Department of Forestry, Fisheries and the Environment should develop guidelines linking insurance payouts to the implementation of specific DRR measures. For instance, municipalities could receive premium discounts for implementing flood mitigation infrastructure or drought-resistant water systems.

To ensure the pool's long-term sustainability, National Treasury could explore innovative financing mechanisms, such as issuing catastrophe bonds or partnering with international reinsurers to transfer some of the risk. Additionally, Treasury should work with the Department of Science and Innovation to incorporate cutting-edge climate modelling and risk assessment technologies into the pool's operations, improving its ability to accurately price risks and adjust to changing climate patterns.

Recommendations to strengthen private sector engagement in adaptation

Incentivise adaptation investments

National Treasury, in collaboration with sector-specific departments (eg, Agriculture, Water and

Sanitation), should design targeted incentive programmes to encourage private sector involvement in high-risk sectors. These could include:

- **Innovative financial instruments:** Introducing new financial instruments, such as resilience bonds, that allow insurers and other private sector entities to invest in risk reduction measures.
- **Adaptation PPPs:** Establishing a dedicated "adaptation PPP" category with streamlined approval processes and clear guidelines on risk-sharing mechanisms between public and private entities.
- **Tax incentives in PPPs:** Consider revitalising and expanding the use of PPPs, with a specific focus on incorporating climate adaptation components. Given that there hasn't been a significant new PPP for nearly a decade, substantial work is needed to make even standard PPPs viable. To address this, the Treasury could offer tax incentives or preferential treatment for infrastructure projects, not limited to PPPs, that incorporate significant climate adaptation components. This approach would encourage both public and private sector entities to prioritise climate resilience in all infrastructure developments.
- **Metrics and reporting:** Develop standardised metrics and reporting requirements for measuring the adaptation benefits of all infrastructure projects – public, private and PPPs – to attract impact investors and green finance.
- **Resilience premium:** Implementing a "climate-resilience premium" in project evaluation criteria, giving additional weight to proposals that enhance adaptive capacity. This could entail the following scoring components:
 - Projects receive baseline evaluation on standard criteria (financial viability, implementation capacity, etc).
 - Additional points are awarded for demonstrable climate resilience features.
 - The premium applies to projects that help communities or infrastructure adapt to climate risks.
- **Capacity building:** Establishing capacity building programmes to train government officials and private sector partners on

structuring and implementing adaptation-focused PPPs.

- **Contract arrangements:** Encouraging innovative contractual arrangements, such as performance-based contracts tied to specific resilience outcomes, to align incentives for long-term adaptive management.

These measures would help create a more enabling environment for private sector participation in climate adaptation efforts, while ensuring that public interests and climate resilience goals are met through carefully structured PPP arrangements.

Establish an adaptation project valuation framework

The DEFF, working with the CSIR and economic experts, should develop a standardised framework for valuing adaptation projects. This tool would help quantify direct and indirect benefits of adaptation initiatives, assisting private sector entities in building stronger business cases for investment.

These recommendations also illustrate the need for a comprehensive and coordinated approach to enhancing the role of insurance in climate risk management. A country-led platform, potentially hosted within a dedicated structure like South Africa's Presidential Climate Commission, could be well-positioned to drive the country's climate agenda through various implementation measures, facilitating a more coordinated, inclusive, and effective approach to building resilience. For instance, this platform could incorporate the Just Adaptation and Resilience Investment Plan (JARIP) as one of its mechanisms, which includes a focus on enhancing collaboration with the insurance sector in managing climate risk.

Mainstream infrastructure resilience

The Department of Public Works and Infrastructure should lead a comprehensive programme to assess and upgrade critical infrastructure for climate resilience, focusing primarily on on-budget public infrastructure projects. This initiative should involve collaboration with local governments, state-owned enterprises and the private sector, including insurers. The programme should include risk assessments, with prioritisation of upgrades and

funding mechanisms for resilience projects across all public infrastructure investments. Insurers could provide risk assessment expertise and potentially offer more favourable terms for well-adapted infrastructure.

To support broader risk reduction, municipal grants such as the MIG, IUGD and disaster recovery grant should mandate climate adaptation requirements. While the Budget Facility for Infrastructure requires infrastructure planning and appraisal to identify climate resilience properties of projects, it does not mandate adaptation and resilience in its funding criteria. The same applies to municipal conditional grants.

Create an insurance industry climate adaptation task force

The South African Insurance Association, in partnership with the FSCA, should establish a dedicated task force to drive the insurance industry's involvement in climate adaptation. This task force would develop industry-wide strategies for supporting adaptation efforts, create new insurance products tailored to climate risks and engage with policymakers to ensure supportive regulatory frameworks. It should also work on developing parametric insurance solutions for climate-vulnerable sectors and explore ways to extend affordable coverage to high-risk areas.

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