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REPUBLIC OF SOUTH AFRICA

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Disaster Risk Finance Diagnostic

SOUTH AFRICA

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Abbreviations

AfDB	African Development Bank
CMS	Council for Medical Schemes
COGTA	Department of Cooperative Governance and Traditional Affairs
DALRRD	Department of Agriculture Land Resettlement and Rural Development
DRF	Disaster Risk Finance
DRM	Disaster Risk Management
FCI	Finance, Competitiveness and Innovation
FSCA	Financial Sector Conduct Authority
FY	Fiscal Year
GDP	Gross Domestic Product
GEMS	Government Employees Medical Scheme
GGP	Gross Geographic Product
GoSA	Government of South Africa
GP	Global Practice
GPURL	Global Practice of Urban, Resilience, and Land
IFC	International Finance Corporation
IFI	International Financial Institution
IMF	International Monetary Fund
LSM	Living Standards Measure
MPCI	Multi-Peril Crop Insurance
MSMEs	Micro, Small, and Medium Enterprises
MTREF	Medium Term Revenue and Expenditure Framework
NCFE	National Consumer Financial Education
NDMC	National Disaster Management Centre
NHI	National Health Insurance
PMB	Prescribed Minimum Benefit

POLMED	South African Police Medical Service Scheme
RADAR	Risk and Development Annual Review
RFI	Rapid Financing Instrument
SADC	Southern African Development Community
SAIA	South African Insurance Association
SASAS	South African Social Attitudes Survey
SASSA	South Africa Social Services Agency
SMEs	Small and Medium Enterprises
SP	Social Protection
SRD	Social Relief of Distress
TEU	Twenty-Foot Equivalent Unit
UI	Unemployment Insurance Fund
y/y	Year Over Year

Executive Summary

Drafted by the World Bank Group in partnership with the Government of South Africa

This disaster risk finance (DRF) diagnostic was prepared as part of a broader engagement between the World Bank and the Government of South Africa (GoSA) on strengthening national and municipal resilience. The diagnostic was led by the World Bank Finance, Competitiveness and Innovations (FCI) Global Practice (GP) in collaboration with Global Practice of Urban, Resilience, and Land (GPURL). The diagnostic was delivered with financial support from the Sovereign Disaster Risk Financing and Insurance Program for Middle-Income Countries, a partnership between the World Bank and Swiss State Secretariat for Economic Affairs (SECO), managed by the Crisis and Disaster Risk Finance global team in the FCI GP.

The objective of this DRF diagnostic is to assess South Africa's financial preparedness to disasters and crises. South Africa is highly vulnerable to shocks, including droughts, floods, wildfires, and social violence. Between 1952 and 2019, South Africa experienced US$9 billion in economic losses due to disasters, with an acceleration in losses due to the increasing frequency and severity of shocks. This assessment analyzes (i) the scale of economic losses following disasters; (ii) pre-arranged funding available to the government and existing ex post sources of funding; (iii) key legal and institutional arrangements relevant to DRF; and (iv) the funding gap (the difference between the pre-arranged funding available and government liability driven by disaster losses). Based on this analysis, the diagnostic proposes some measures to strengthen the financial preparedness of South Africa to disasters and crises.

South Africa has a large and diversified economy that has faced deepening economic challenges in recent years, compounded by COVID-19. Although South Africa is an upper-middle-income country with a gross domestic product (GDP) per capita of US$4,145 a year, economic growth has slowed over the last decade. The annual GDP growth rate remained below 1.5 percent during the 2014-2020 period.[1] By early 2020, South Africa's credit rating had been downgraded by Fitch, leaving the country without an investment-grade rating for the first time in 25 years. Thus South Africa's macroeconomic and fiscal situations were weakened before the COVID-19 pandemic even began.

The country is highly exposed to climatic shocks, particularly droughts, which undermine efforts to stimulate growth. Of the US$9 billion in total losses experienced over the last 51 years, less than US$1.5 billion was insured, which has put immense financial pressure on the fiscus. The Day Zero drought cost the Western Cape over R5 billion by shrinking production of deciduous fruit, wine, and citrus, and it was a driving factor behind the loss of 25,000 jobs.[2] The Eastern Cape, Limpopo, the Northern Cape, and Free State have experienced significant agricultural losses during recent drought years, with widespread culling and harvest losses. The 2015/16 El Niño drought saw regional maize and corn prices rise steeply-by more than 50 percent-compared to the preceding five-year average.[3] Key economic sectors are also crippled during shocks, including for example tourism. Amid the COVID-19 pandemic, the share of the tourism sector in the Western Cape's regional GDP declined-from R15 billion in 2019 to R6 billion 2020-and over 75,000 jobs were lost.

Over the last two years, South Africa has been distressed by compounding shocks, including COVID-19, drought, and social unrest. This diagnostic defines disasters as including both natural disasters and social disasters, such as displacement and social unrest. In March 2020, South Africa declared two back-to-back states of disaster in an 11-day period, first for drought and then for the pandemic. Amid the third wave of the COVID-19 pandemic in July 2021, a national state of disaster was declared for drought, marking the third such declaration in just three years (2018, 2020, 2021). The compounding shocks have put a substantial strain on the macroeconomic and fiscal position of the country. When the pandemic began, President Cyril Ramaphosa announced a relief package of R500 billion (US$30 billion), or roughly 10 percent of GDP.[4] By

1 World Bank statistics.

2 Statistics South Africa, "Quarterly Labour Force Survey-Quarter 3: 2017," Statistical Release P0211, October 2017, *https://www.statssa.gov.za/publications/P0211/P02113rdQuarter2017.pdf*

3 Care International, "El Nino Drought Crisis in Southern Africa Fact Sheet," 2016, *https://www.care-international.org/files/files/18082018SouthernAfricaRegionalFactsheet.pdf.*

4 World Bank national accounts data, *https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=ZA*. The annual GDP growth was -6.4 percent.

the end of 2021, all nine provinces had experienced floods, and large wildfires had occurred.[5] The national government estimated the cost of the January 2021 floods alone to be over R50 million. In July 2021, KwaZulu-Natal experienced violent social unrest; damages were estimated at R20 billion and the overall economic impact at R50 billion. These shocks, and the responses from GoSA, helped raise the debt-to-GDP ratio from 57 percent in 2018 to 80 percent in 2021.[6]

South Africa is the most unequal country in the world-and evidence shows that climatic shocks deepen inequality.[7] Compared to the nonpoor, the poor are more exposed to the adverse effects of climate change (i.e., have less ability to pay for increasing food costs during drought years); they are more susceptible to damage incurred by climatic shocks (due to housing that is highly vulnerable to floods, wildfires, and droughts and is substantially less likely to be insured); and their lower levels of financial resilience make it harder for them to recover from shocks. Strengthening the financial resilience of the poor and vulnerable is therefore a critical part of the Just Transition in South Africa, which seeks to ensure that the transition to a low-carbon economy serves to address present and historical inequality, strengthen resilience, create jobs, and relieve poverty.

South Africa has a strong legal and institutional framework as well as instruments for disaster risk financing, but gaps do exist, and challenges with implementation remain. DRF is governed by four pieces of legislation: the Constitution (1996); the Disaster Management Act (2002); the Municipal Finance Management Act (2003); and the Public Finance Management Act (1999). Disaster risk management (DRM) is among the responsibilities of the state that pose a significant challenge to the devolved system of government in South Africa, as it requires coordination and mobilization of resources across all three tiers of the government (national, provincial, and local). The main source of funds available to municipal and provincial disaster management centers is through two conditional grants, the Disaster Relief Grant and Disaster Recovery Grant, administered by the National Disaster Management Centre in consultation with National Treasury. These disaster grants are meant to be utilized exclusively for post-disaster financing and have different allocation and utilization parameters. There are numerous areas where the coordination of different levels of government could be improved. They include faster allocation of funds, improved coordination and trust, elimination of duplicating tasks, and creation of an incentive system that prioritizes preparedness over response.

The Government of South Africa, and specifically National Treasury, have established a robust system to finance disaster response. The structure is built on three pillars: National Treasury's risk-layering strategy for financing disaster response, which deploys multiple financing instruments depending on the severity of a shock; the large and diversified South African economy, which does not suffer large drops in GDP due to shocks; and National Treasury's high levels of transparency and openness in budget preparation, which strengthen the credibility of the budget and support National Treasury's access to financing (the country has received a high transparency score of 87 out of 100 from the Open Budget Survey).[8]

Although National Treasury has established a complex risk-layering strategy, it is overly reliant on budget reallocations for financing shock response (Figure 1). While these budget reallocations are conducted in a robust and transparent manner, they disrupt the budget process, are time-consuming, and carry an expensive opportunity cost (see the fiscal gap analysis in the paragraph below). For example, the 2020 budget statement included a provision of R500 million "for disaster management to respond to the impact of recent floods and ongoing drought." This R500 million could have been used to support other economic and social development objectives. Additionally, a central financing instrument for shock response-the contingency reserve-can respond to a wide range of unforeseen expenditures and is often depleted early in the budget cycle. If disasters occur later in the budget cycle-as was the case for example with the 2016 El Niño drought-no funding is available in the contingency reserve to respond, and so National Treasury must wait for the following budgetary cycle.

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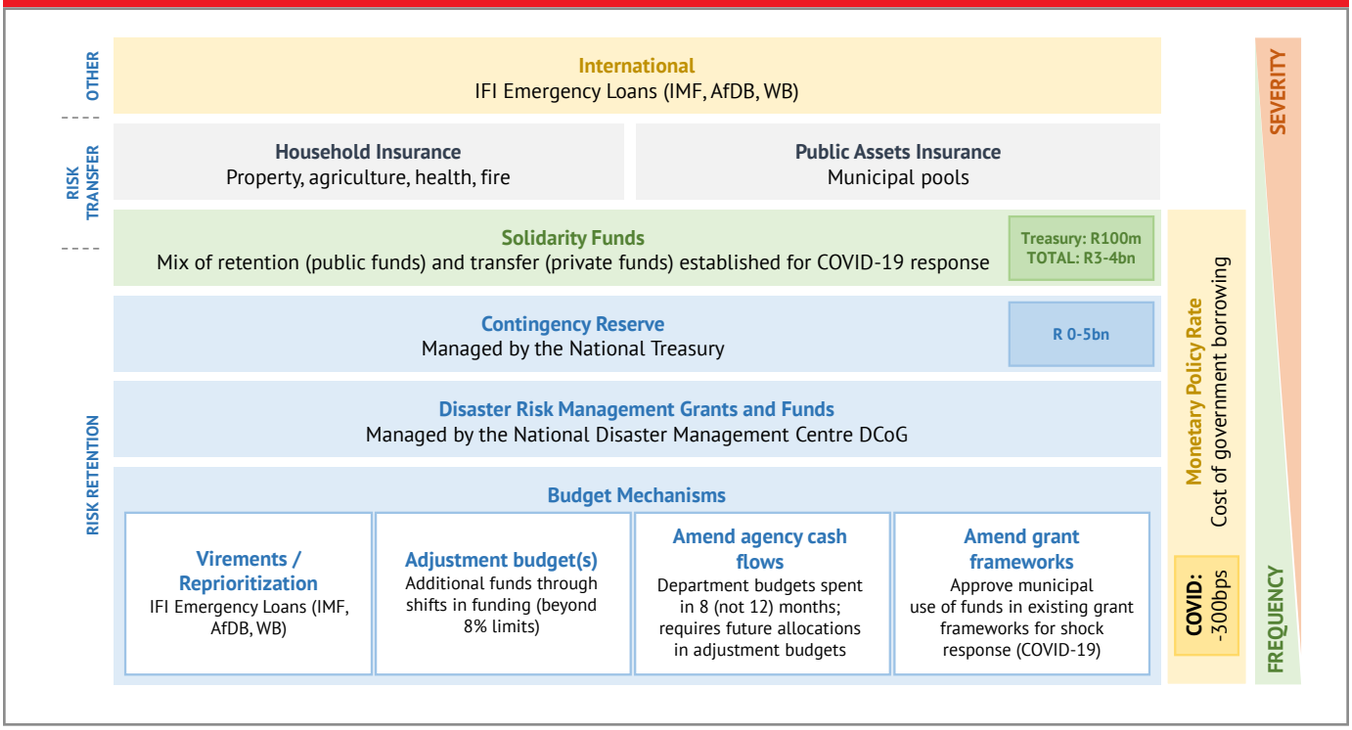
5 A. Roux, "Urban South Africa Is Ill-Prepared for the Coming Climate Change Storm," Institute for Security Studies, June 4, 2021, *https://issafrica.org/iss-today/urban-south-africa-is-ill-prepared-for-the-coming-climate-change-storm.*

6 Paddy Harper, "Riots, Looting Cost the KwaZulu-Natal economy R20 Billion," Mail and Guardian, July 20, 2021, *https://mg.co.za/news/2021-07-20-riots-looting-cost-the-kwazulu-natal-economy-r20-billion/; Corné van Zyl*, "Police Recovered a Looted Casket in KwaZulu-Natal," The South African, August 22, 2012, *https://www.thesouthafrican.com/news/breaking-police-recovered-a-looted-casket-in-kwazulu-natal/.*

7 S. N. Islam and J. Winkel, "Climate Change and Social Inequality," DESA Working Paper 152, October 2017, *https://www.un.org/esa/desa/papers/2017/wp152_2017.pdf.*

8 Open Budget Survey, "Open Budget Survey 2019: South Africa," *https://www.internationalbudget.org/open-budget-survey/country-results/2019/south-africa*.

Figure 1: Risk-layering financing instruments of National Treasury



Source: World Bank.

Note: AfDB = African Development Bank; DCoG = Department of Cooperative Governance; IFI = international financial institution; IMF = International Monetary Fund; WB = World Bank.

There is a substantial gap between available disaster funds and the average annual cost of disaster response. Findings from the funding gap analysis undertaken by the World Bank team estimate the average annual cost of disaster response is R3.7 billion, with a 1-in-50-year shock costing up to R22.5 billion. With only R1.4 billion available from existing instruments to finance disaster response, an annual funding gap of 2.3 billion exists.[9] The funding gap increases as the losses increase, given that the availability of finance remains constant (as seen in Figure 2). Notably, there is no funding gap for the median loss; this suggests that existing financing for disaster response is likely to adequately meet relief costs one year in two but is insufficient for mild events of 1-in-3-year severity or higher.

9 The funding gap is the difference between the available budget and the probable loss for a given event size.

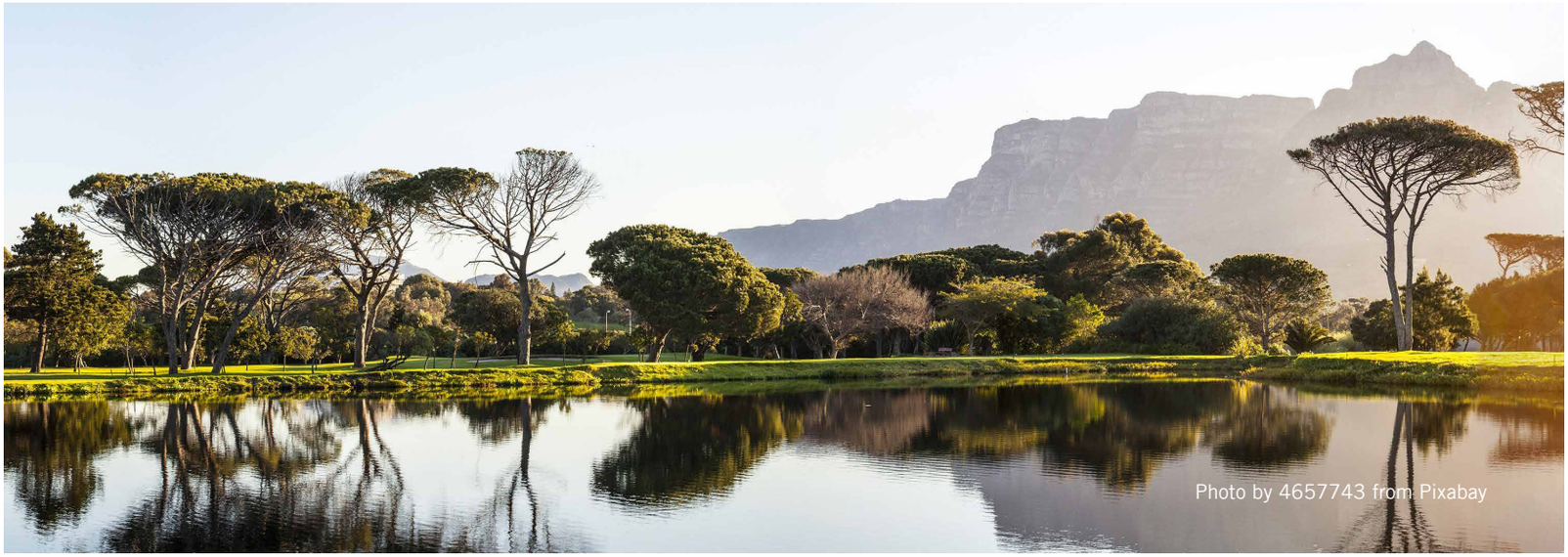
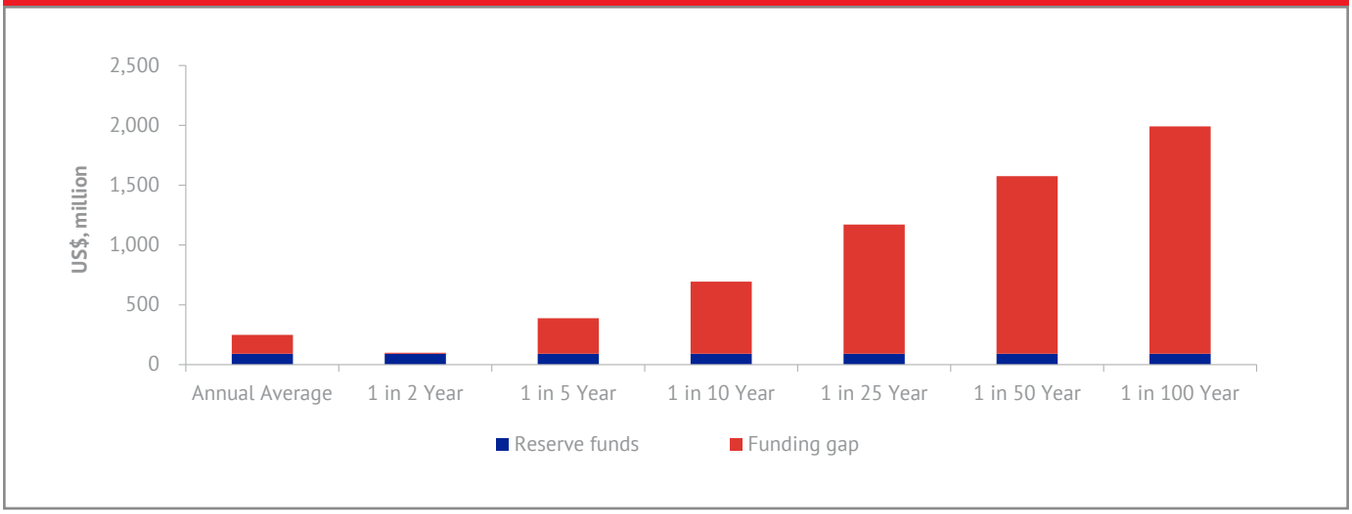


Figure 2: Funding gap at various return periods assuming reserve funds of US$91 million



Source: World Bank analysis.

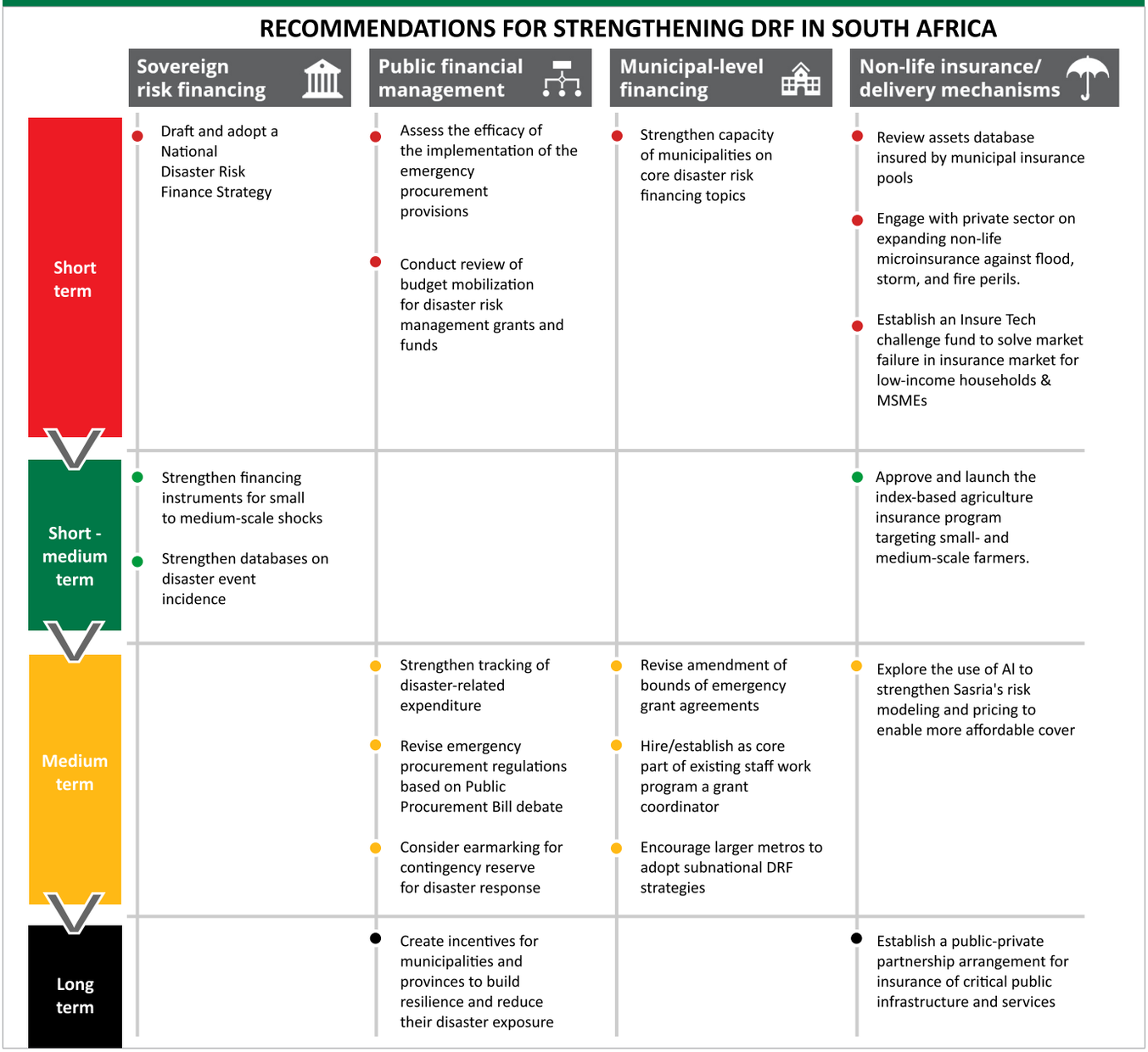
Expanding National Treasury's suite of risk financing instruments could generate savings of about R105 million (US$7 million) on average, and up to R7.5 billion (US$500 million) for extreme shock events, based on indicative analysis carried out by the World Bank. Under this analysis, the current risk-layering strategy-which consists of reserve funds of R1.3 billion (US$91 million) and budget reallocations-is compared against two more robust risk-layering strategies. The first (Strategy B) consists of a reserve fund of R3 billion (US$200 million), contingent credit of R7.5 billion (US$500 million), and sovereign insurance with a maximum payout of R13.1 billion (US$876 million) and a ceding share of 50 percent. The second strategy (Strategy C) is the same as Strategy B but with a ceding share of 100 percent for the insurance. On average these strategies save up to R135 million (US$9 million); for more extreme shocks, however, the savings increase considerably. The cost savings of Strategy C for a 1-in-50-year event (loss size of about R22.5 billion) are approximately R7.5 billion (US$500 million). Based on these indicative results, a more in-depth financial modeling and technical analysis should be carried out to rightsize the potential financial instruments that National Treasury could consider.

The non-life insurance markets in South Africa present a viable opportunity for the GoSA to transfer risk off budget to the private sector. South Africa has the largest and most mature insurance market of all middle-income countries, with total gross written premium of US$44.7 billion in 2019.[10] That said, insurance markets cater to the wealthy, leaving low-and middle-income households unprotected. While property insurance is widely available, and while the most comprehensive policies cover natural disaster risk (including earthquake, strong wind, flood, hailstorm, landslide, and subsidence), policies are tailored to and bought by middle-and upper-income households. This is indicative of trends for other insurance products, including agriculture insurance, which is currently available only to commercial farmers. Most public infrastructure is uninsured, placing a large contingent liability on the GoSA. While some large municipalities, such as Cape Town and eThekwini, have municipal insurance pools, the amount of cover offered tends to be limited due to poor data quality and poor asset maintenance records. There is a significant opportunity to build on these facilities to increase asset cover and expand cover to important public infrastructure.

The diagnostic makes several recommendations for strengthening the country's financial preparedness to shocks moving forward. These are summarized in Table 1 and detailed in the recommendations section of this report. These measures are not mutually exclusive and can be implemented in parallel.

10 Axco data, 2020.

Table 1: Recommendations for strengthening DRF in South Africa



Note: MSMEs = micro, small, and medium enterprises.

Assessing Disaster Risk and the Impact of Past Disasters

Occurrence of Past Disasters

This diagnostic considers "disasters" to include both natural and human-caused disasters. This is in line with the definition of disaster in the South African Disaster Management Act, which cites "a progressive or sudden, widespread or localised natural or human-caused occurrence."

In terms of natural disaster risk, South Africa is ranked in the middle globally, at 92nd out of 180 countries.[11] It experienced total economic losses of US$9 billion between 1952 and 2019 (Table 2). Drought is the most severe peril and of medium frequency, occurring once in six years. Flood and storms are low-severity but high-frequency perils, occurring once in two years. Wildfire is a medium-severity, medium-frequency peril, occurring once in six years and having a disproportionately high impact on rural and poor communities. Social violence has intensified over the last decade, becoming a low-severity, low-frequency peril. Epidemics and earthquakes are very low-severity, very low-frequency events, occurring once in 10 years and once in 13 years, respectively. Extreme temperatures, which include cold waves, heat waves, and severe winter conditions like snow or frost, occur once in 22 years. Finally, landslides are rare, occurring once in 67 years.

Table 2: Historical losses in South Africa by type of peril

Peril	Occurrences	Deaths	Affected	Economic losses US$ (million)
Storm	41	368	680,317	2,063
Flood	49	1,382	599,757	3,015
Drought	11	0	21,675,000	2,585
Earthquake	5	37	3,112	136
Wildfire	15	137	12,880	916
Landslide	1	34	NA	NA
Extreme temperature	3	63	20	NA
Epidemic	7	336	112,385	NA
Social violence	15	665	318,552	341
Total	**147**	**3,022**	**23,402,023**	**9,056**

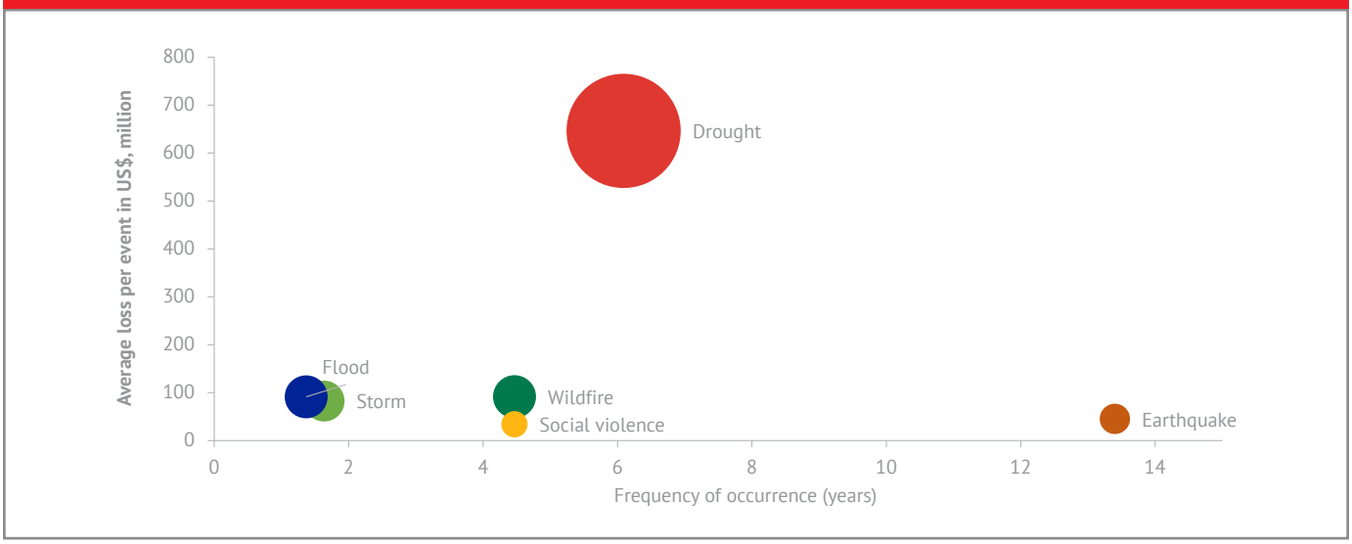
Sources: EM-DAT database (1952-2019): The Emergency Events Database, Université catholique de Louvain (UCL), CRED, D. Guha-Sapir, Brussels, Belgium, www.emdat.be; Swiss Re Sigma reports (2008-2020); Risk and Development Annual Review (RADAR); National Disaster Management Centre/government reports; academic (peer-reviewed) reports.

Note: The table presents aggregate impacts across different disaster events. NA = data not available.

11 The World Risk Index score for South Africa is 6.4, reflecting a combination of high susceptibility with medium exposure and vulnerability, lack of coping capacities, and lack of adaptive capacities. Bündnis Entwicklung Hilft and RUB, World Risk Report, 2019, *https://reliefweb.int/sites/reliefweb.int/files/resources/WorldRiskReport-2019_Online_english.pdf.*

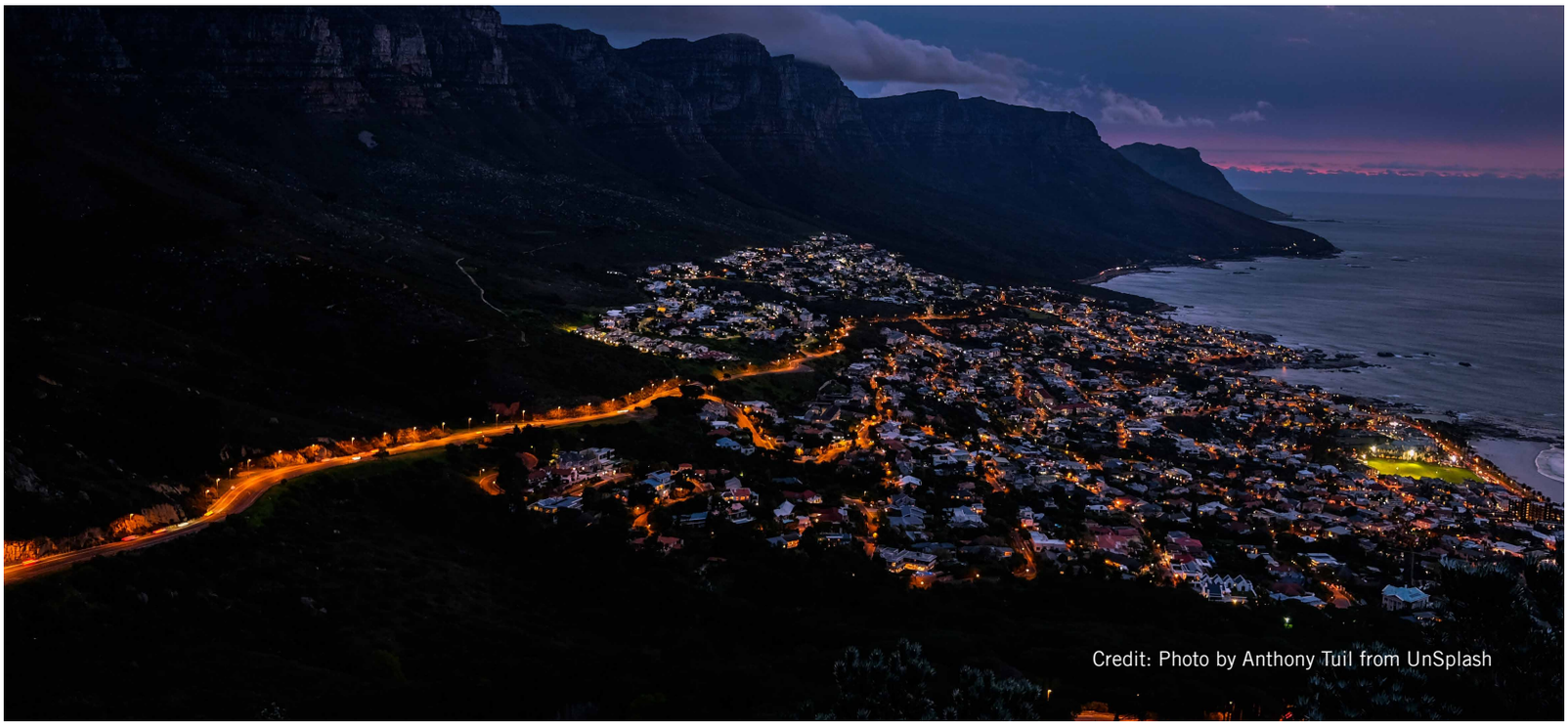
Drought is the most costly of all perils; it occurs once every six years and costs an average of US$650 million (R9.7 billion). Drought is a high-severity, medium-frequency peril that tends to have extensive financial impact mainly due to loss of productivity and livelihoods. Flood and storm are low-severity, high-frequency perils with localized impact, mainly through damage to property. Wildfire is a medium-severity, medium-frequency peril that disproportionately affects the rural and poor population. Social violence is a low-severity, low-impact peril that disproportionately affects small and medium enterprises (Figure 3).

Figure 3: Frequency and severity analysis of disasters in South Africa



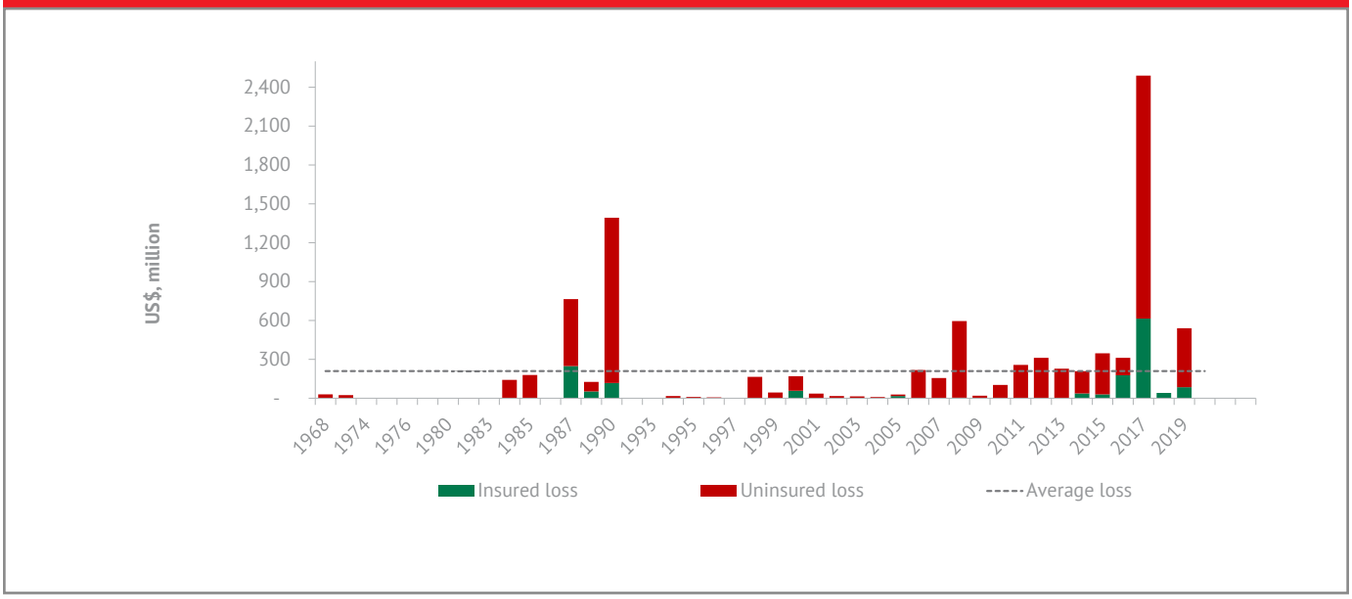
Sources: EM-DAT database (1952-2019): The Emergency Events Database, Université catholique de Louvain (UCL), CRED, D. Guha-Sapir, Brussels, Belgium, www.emdat.be; Swiss Re; Risk and Development Annual Review (RADAR); National Disaster Management Centre/government reports; academic reports.

Of the US$9 billion in total losses experienced over the last 51 years, less than US$1.5 billion was insured, which left an overall insurance gap of 84 percent (Figure 4). As shown in Figure 5, the insurance gap tended to be lower for more infrequent perils like earthquake and wildfire, and highest for drought and flood. The average annual loss has been US$240 million, but extremely high losses of over US$1 billion in 1990 and 2017 heavily skew the data. These two years account for 46 percent of the total losses recorded.



Credit: Photo by Anthony Tuil from UnSplash

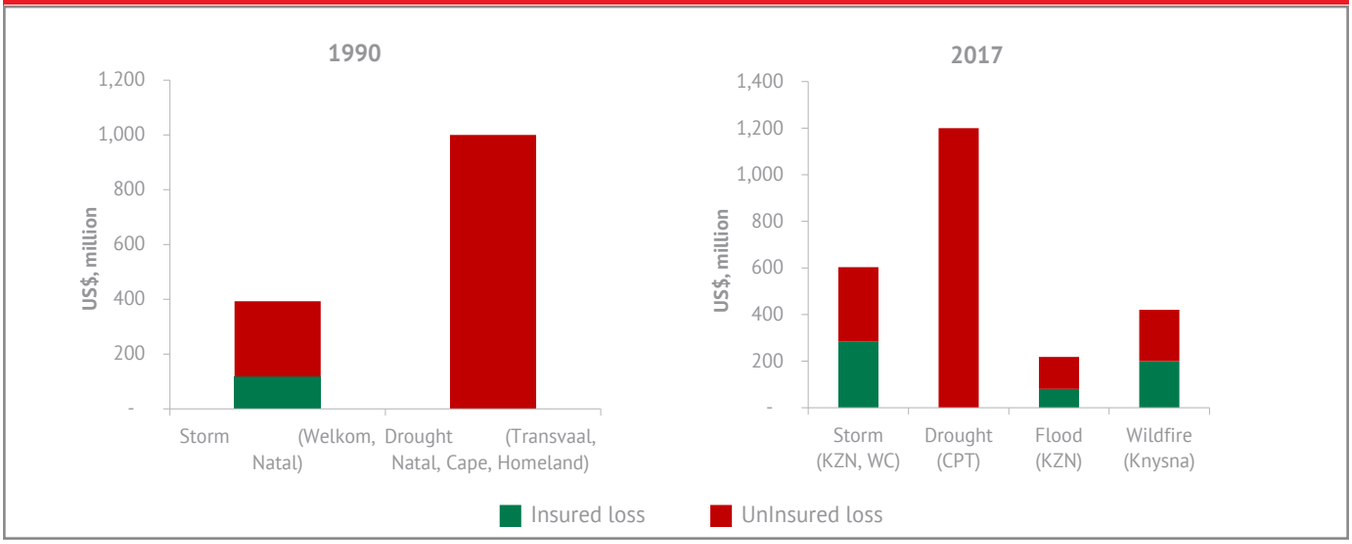
Figure 4: Financial cost of disasters, 1968-2019



Sources: EM-DAT database: The Emergency Events Database, Université catholique de Louvain (UCL), CRED, D. Guha-Sapir, Brussels, Belgium, www.emdat.be; Swiss Re; Risk and Development Annual Review (RADAR); government reports; academic reports.

The costliest year on record is 2017 at US$2.5 billion, of which only US$556 million was insured, mainly in respect of storm and wildfire (Figure 5). The second costliest year was 1990 at US$1.4 billion. Notably, the droughts recorded were long-duration events; the 2017 drought lasted from May 2017 to June 2018, while the 1990 drought lasted until March 1992. These two years demonstrate the high financial costs of shocks for the government, which in the absence of insurance often steps in as insurer of last resort.

Figure 5: The costliest disaster years in South Africa



Sources: EM-DAT database: The Emergency Events Database, Université catholique de Louvain (UCL), CRED, D. Guha-Sapir, Brussels, Belgium, www.emdat.be; Swiss Re; Risk and Development Annual Review (RADAR); government reports; academic reports.

Note: CPT = Cape Town; KZN = KwaZulu-Natal; WC = Western Cape.

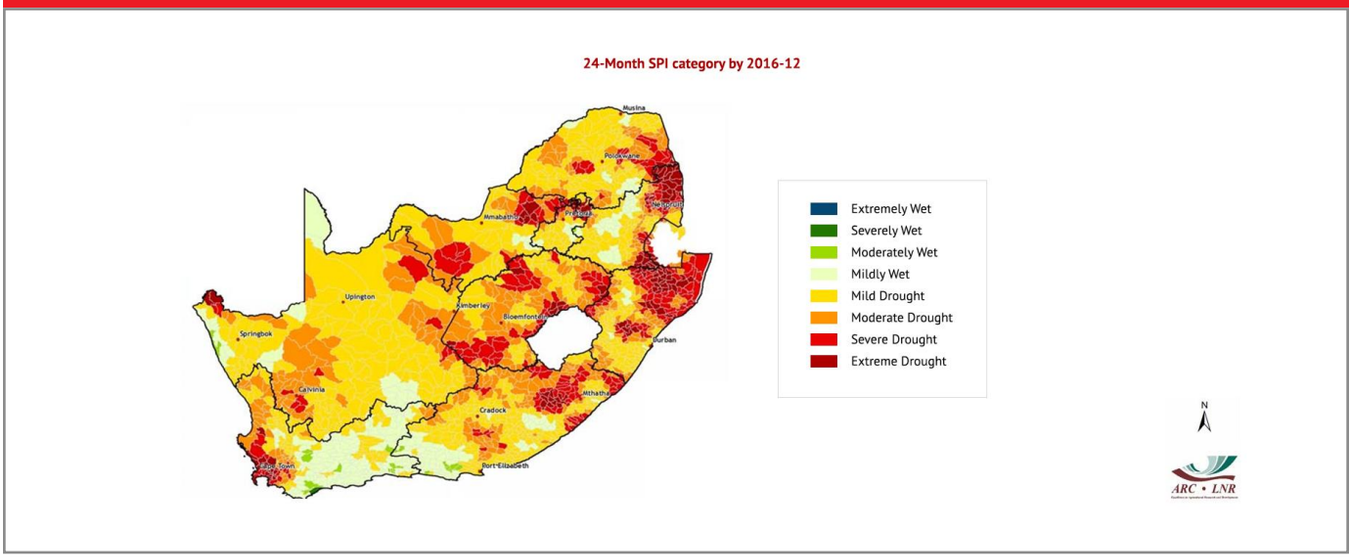
In aggregate, drought has affected nearly 22 million South Africans; every year on average, disasters result in 63 deaths and affect more than 500,000 people. The deadliest year was 1987, in which the sole disaster was a flood in KwaZulu-Natal that killed 506 people and resulted in economic losses of US$765 million. Meanwhile, 2004 recorded the highest number

of people affected; in that year, floods in Cape Town left 15,000 homeless, and a widespread drought across KwaZulu-Natal, Eastern Cape, Northern Cape, North West, Mpumalanga, Limpopo, and Free State affected over 15 million. In aggregate, drought has had the most extensive impact, while flood and storm have had intensive impact.

Overview of Disasters in South Africa

Nearly every part of South Africa is highly vulnerable to drought (Figure 6). In March 2020, the second national state of disaster in three years was declared for drought, which enabled the government to activate broad powers to deliver relief and facilitate access to emergency funds.[12] In October 2019, the Eastern Cape invoked Section 41(1) of the Disaster Management Act, and a provincial state of disaster was declared in response to back-to-back droughts between 2015 and 2019. In January 2020, after five years of compounding droughts in the Northern Cape, a provincial state of disaster was declared there as well. The agricultural sector tends to be the most affected by drought; a report released by the South African Insurance Association (SAIA) indicates that 42 percent of farmers' losses result from droughts, compared to 29 percent resulting from storms and 28 percent from floods.[13]

Figure 6: Impact of drought over 24-month period



Source: Agricultural Research Council.

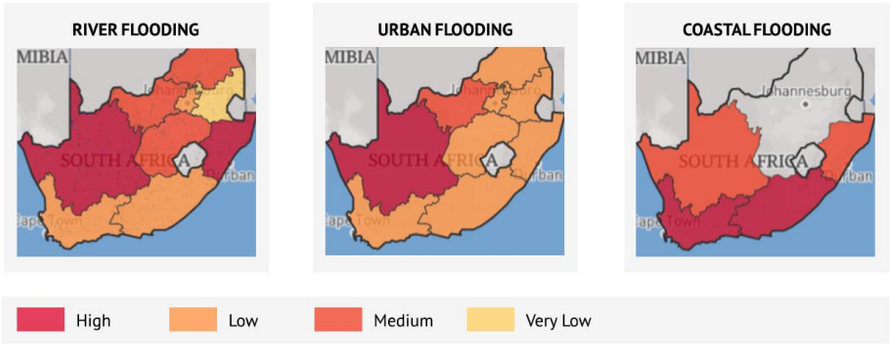
Flood hazard is high for all three types of flooding (river, urban, and coastal), as shown in Figure 7. This is the maximum hazard level and translates to high expected frequency of flood damage.[14] Note that the hazard level does not account for flood protection. The Northern Cape has the highest exposure to flooding; this includes high exposure to both river and urban flooding, and medium exposure to coastal flooding. KwaZulu-Natal follows, with high exposure to river flooding, medium exposure to coastal flooding, and low exposure to urban flooding. The Eastern Cape and Western Cape have high exposure to coastal flooding. The South African National Space Agency (SANSA) has developed a flood risk map that contributes to disaster early warning systems and post-planning events. This system allows the public to see whether their areas of residence are within the demarcated flood risk zones.

12 "The state of disaster was declared after prolonged droughts in four of the country's nine provinces—Limpopo, Northern Cape, Western Cape, and Eastern Cape. Some of these provinces have declared provincial states of disaster over the last two years..

13 Santam, "2019 Integrated Report," *https://www.santam.co.za/media/2685862/2019-integrated-report.pdf.*

14 The Global Facility for Disaster Reduction and Recovery (GFDRR) provides the following definitions: Urban flood describes surface flooding of impermeable surfaces and overflow of saturated urban drainage systems and channels resulting from sustained or intense rainfall. River flood describes the overflow of river channels resulting from sustained or intense rainfall. Coastal flood describes onshore flooding due to high tides, storm surge (due to high winds and low pressure), and wave setup (energy transfer from offshore waves to the coast).

Figure 7: Hazard levels for various types of flooding in South Africa



Source: Source: Global Facility for Disaster Reduction and Recovery, ThinkHazard! tool, https://thinkhazard.org/en/.

In recent years, South Africa has seen a rising incidence of public protests, including student protests, service delivery protests, and xenophobic outbreaks, collectively referred to as social violence (Figure 8). The Fees Must Fall movement resulted in property damage of R600 million between March 2015 and September 2016. Since 2008, more than 2 million people have taken to the streets in service delivery protest every year.[15] Most protests occur in informal settlements in the largest metropolitan areas, namely, Johannesburg, Ekurhuleni, and Cape Town.[16] Perceived horizontal inequality also drives rates of social unrest. The perception of inequality is higher among residents of informal settlements, who are visually exposed to the wealth of nearby affluent neighborhoods.[17] South African cities are home to more than two-thirds of South Africa's population (the highest share of urban population in Africa), so the exposure of poor communities to the affluent is particularly high.[18] Since 1997 there have been nearly 8,000 protests; and since 1994 there have been 796 violent xenophobic incidents that resulted in looting of 4,693 shops and displacement of over 120,000 people.

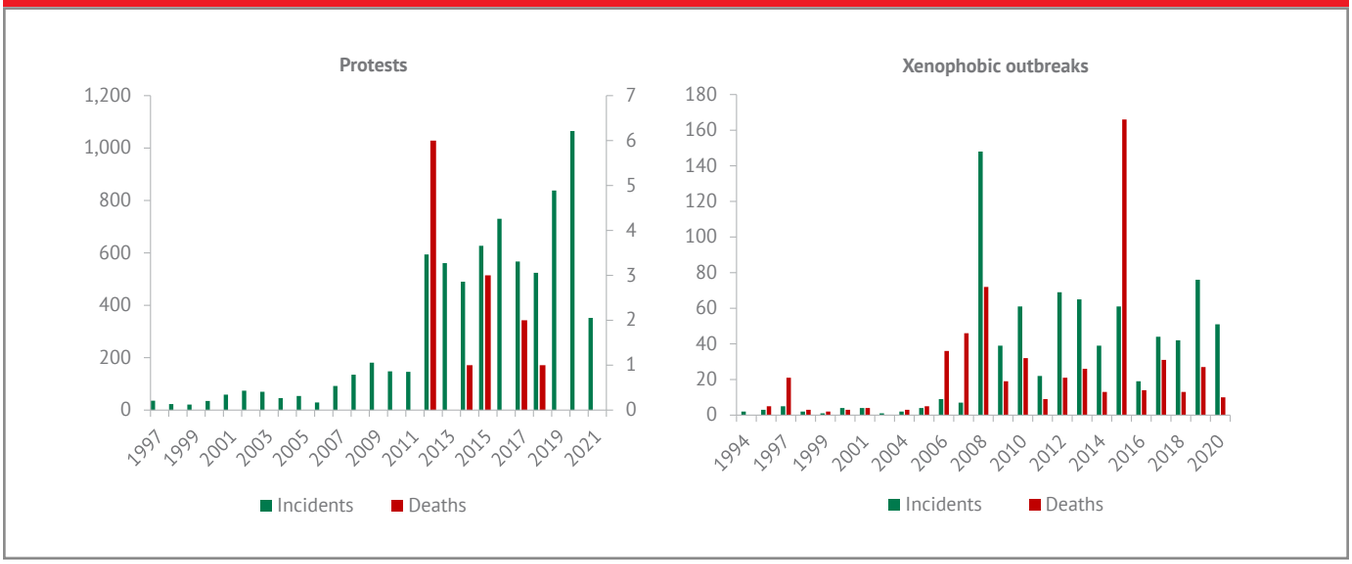
15 M. Plaut, "Behind the Marikana Massacre," New Statesman, August 20, 2012, *https://www.newstatesman.com/blogs/world-affairs/2012/08/behind-marikana-massacre.*

16 Data are from Municipal IQ, a data and intelligence service that monitors and assesses South Africa's municipalities. See the website at *http://www.municipaliq.co.za/index.php.*

17 United Nations and World Bank, Pathways for Peace: Inclusive Approaches to Preventing Violent Conflict (Washington, DC: World Bank, 2018); N. Metz and M. Burdina, "Neighbourhood Income Inequality and Property Crime," Urban Studies 55, no. 1 (2018), *https://doi.org/10.1177/0042098016643914.*

18 Priscilla B. Monyai and Shylet Chivanga, "Overcoming Inequalities in Fractured Cities in South Africa: Implications for Sustainable Development," Academy of Entrepreneurship Journal 26, no. 2 (2020): 1-9; Ashley Gunter and Ruth Massey, "South Africa's Urban Future: Challenges and Opportunities," in Urban Geography in South Africa, ed. Ashley Gunter and Ruth Massey (Cham: Springer, 2020), 283-92.

Figure 8: Total incidents and deaths due to protests and xenophobic outbreaks in South Africa



Sources: ACLED, https://acleddata.com/#/dashboard; Xenowatch, www.xenowatch.ac.za.

Note: ACLED is a global database of reported political violence and protest events. Xenowatch is an open source platform created by the African Centre for Migration & Society (ACMS) at the University of the Witwatersrand to monitor occurrences of and responses to xenophobic violence in South Africa.

The annual cost of violence to South Africa is estimated at US$45.6 billion, or 13 percent of gross domestic product (GDP), and this figure is expected to increase given that the risk of social violence is compounded by other factors such as climate change and urbanization.[19] At the same time, however, the way these risks manifest is informed by the multi-causal nature of vulnerability, which is determined not solely by geographic location, but also by various social, economic, political, and biophysical aspects.[20] The historical nature of how these risks evolve, how they are perceived, which communities they disproportionately affect, and how these factors are dynamically configured are underexplored. Emerging technology could be deployed to build an evidence base to strengthen response to social violence.[21]

The combination of certain climate and vegetation characteristics with growing human exposure results in substantial wildfire risk across the country, particularly in the southern and eastern regions.[22] The worst wildfires to date occurred in the Southern Cape in June 2017. More than 15,000 hectares were burnt in an area spanning Knysna to Sedgefield in the west and to Plettenberg Bay in the east. Over 5,000 hectares of forest plantations, 1,000 structures, and 500 houses were burned down. Seven people were killed, thousands were evacuated, and 1,533 families and 134 businesses were directly affected.[23] Critical infrastructure (such as power lines) was damaged or destroyed. The risk of

19 Institute for Economics & Peace, Global Peace Index 2020: Measuring Peace in a Complex World (Sydney: June 2020), *https://www.visionofhumanity.org/wp-content/uploads/2020/10/GPI_2020_web.pdf.*

20 David Williams, Maria Costa, Catherine Sutherland, Louis Celliers, and Jurgen Scheffran, "Vulnerability of Informal Settlements in the Context of Rapid Urbanization and Climate Change," Environment & Urbanization 31, no. 1 (2019): 172.

21 Chris Mahony, Eduardo Albrecht, and Murat Sensoy, "The Relationship between Influential Actors' Language and Violence: A Kenyan Case Study Using Artificial Intelligence," Background Paper, LSE-Oxford Commission on State Fragility, Growth and Development, International Growth Centre, 2019, *https://www.theigc.org/publication/the-relationship-between-influential-actors-language-and-violence-a-kenyan-case-study-using-artificial-intelligence/.*

22 The relevant climate and vegetation characteristics are long dry seasons and natural vegetation that produces high quantities of fuel.

23 Santam, University of Stellenbosch, and CSIR (Council for Scientific and Industrial Research), "The Knysna Fires of 2017: Learning from This Disaster," 2019, *http://www.riskreductionafrica.org/assets/files/Knynsa%20Fires%20Report%202019.pdf.*

severe fires will worsen given that climate change will result in more frequent and longer-lasting high-fire-danger periods. **As shown in Table 3, over 86 percent of South African settlements face medium, high, or extremely high economic riskfrom fire.**[24] Two key factors that determine the ability to recover from a fire are financial resources (e.g., savings, insurance) and the skills and equipment required for protection from fires. Areas with low-income households (such as informal settlements) are the most vulnerable. Households in informal settlements are additionally vulnerable because an entire settlement, including all the possessions of residents, can be destroyed by a single fire.

Table 3: Settlements categorized by economic risk

Economic risk category	Number of settlements	Percent of total
Extreme	57	3.6
High	1042	65.3
Medium	282	17.7
Low	215	13.4
Total	**1596**	**100.0**

Source: G. Forsyth, D. Maitre, A. Le Roux, and C. Ludick, "Green Book: The Impact of Climate Change on Wildfires in South Africa," 2019, https://pta-gis-2-web1.csir.co.za/portal/apps/GBCascade/index.html?appid=a726c58f435141ba80b57fe21d3ec744.

Economic Impact

Over the last two years, South Africa has been distressed by compounding shocks, including COVID-19, droughts, and social unrest. In March 2020, South Africa declared two back-to-back states of disaster in an 11-day period, first for drought and then for the pandemic. Amid the third wave of the COVID-19 pandemic in July 2021, a national state of disaster was declared for drought, marking the third such declaration in just three years (2018, 2020, 2021). The compounding shocks have put a substantial strain on the macroeconomic and fiscal position of the country. When the pandemic began, President Cyril Ramaphosa announced a relief package of R500 billion ($30 billion), or roughly 10 percent of GDP. The economy contracted by 6.4 percent in 2020.[25] By the end of 2021, all nine provinces had experienced floods, and large wildfires had occurred in the Western Cape.[26] The national government estimated the cost of the January 2021 floods alone to be over R50 million. In July 2021, KwaZulu-Natal experienced violent social unrest; damages were estimated at R20 billion and the overall economic impact at R50 billion. These shocks, and the responses from the Government of South Africa (GoSA), helped raise the debt-to-GDP ratio from 57 percent in 2018 to 80 percent in 2021.[27]

Natural disasters, social unrest, and pandemics alike can have a heavy economic impact. The 1991-1992 drought in South Africa is the second most expensive weather-related disaster in African history, having caused US$1.9 billion in damages.[28] As cities grow, there will be more demand for service delivery, and built structures will cover the landscape

24 G. Forsyth, D. Maitre, A. Le Roux, and C. Ludick, "Green Book: The Impact of Climate Change on Wildfires in South Africa," 2019, *https://pta-gis-2-web1.csir.co.za/portal/apps/GBCascade/index.html?appid=a726c58f435141ba80b57fe21d3ec744.*

25 World Bank national accounts data, *https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=ZA*. The annual GDP growth was -6.4 percent.

26 A. Roux, "Urban South Africa Is Ill-Prepared for the Coming Climate Change Storm," Institute for Security Studies, June 4, 2021, *https://issafrica.org/iss-today/urban-south-africa-is-ill-prepared-for-the-coming-climate-change-storm.*

27 South African Government, "South Africa: Statement on the Floods and Rains Causing a Disaster in the Province," January 26, 2011, *https://reliefweb.int/report/south-africa/south-africa-statement-floods-and-rains-causing-disaster-province*; Paddy Harper, "Riots, Looting Cost the KwaZulu-Natal economy R20 Billion," Mail and Guardian, July 20, 2021, *https://mg.co.za/news/2021-07-20-riots-looting-cost-the-kwazulu-natal-economy-r20-billion/; Corné van Zyl*, "Police Recovered a Looted Casket in KwaZulu-Natal," The South African, August 22, 2012, *https://www.thesouthafrican.com/news/breaking-police-recovered-a-looted-casket-in-kwazulu-natal/.*

28 EM-DAT database: The Emergency Events Database, Université catholique de Louvain (UCL), CRED, D. Guha-Sapir, Brussels, Belgium, *www.emdat.be*.

more densely. Overall this creates greater risk and larger scope for losses, given that climatic perils and social unrest present a compounding shock. There is need for more work on understanding drivers of social unrest, including supporting dynamic machine learning models that the World Bank has developed in other Sub-Saharan African countries with significant efficacy.

Table 4: Total cost of select floods during the 1990s

Event	Date	Total Cost (R, million)
Merriespruit Slime Dam	February 1994	45
Northern Province floods	January and February 1996	105
Lady Smith floods (damage to infrastructure)	January-February 1996	25
Western Cape floods (damage to infrastructure and agriculture)	November 1996	36
Mpumalanga floods	January and February 1996	500

Source: Risk Reduction Africa.

In 2012, there were over 25,000 claims for flood damage, at a total cost in excess of R1 billion.[29] In 2014, the Johannesburg Roads Agency (JRA) estimated that it would cost R23 million to repair flood-induced damage to the road infrastructure network (including potholes and stormwater drains); the repair and rehabilitation of bridges and culverts was expected to cost an additional R37 million. Flood damage to other provinces and cities was also substantial in 2014: over R100 million in the North West Province, over R124 million in Pretoria, and over R315 million in Limpopo Province.[30]

Despite being among the five top improvers in peacefulness in 2020, the cost of violence to South Africa-at around 13 percent of GDP, or US$2,533 per person-is notably high.[31] Violent incidents drive property damage, physical injury, and psychological trauma that shapes economic behavior, including investment patterns, consumption patterns, and labor productivity. A recent survey found that 53 percent of South Africans from high-risk locations were mentally impacted by violence, while 81 percent were late for work and 72 percent missed work altogether due to violence or crime.[32]

Globally, 2017 was the costliest year on record for natural disasters. The Aon Weather, Climate and Catastrophe Insight Report costed natural disasters that year at US$353 billion.[33] South Africa was hit by a series of disasters-the Knysna wildfires, storms in Durban, a major drought in Cape Town, and flooding in KwaZulu-Natal (Figure 5). Each of these events had a profound economic impact, leading to a rise in expenditures from both implicit and explicit contingent liabilities coupled with a loss of revenue generation from a slowdown in economic activities in key sectors such as agriculture and tourism.

Tourism: Droughts can have an adverse effect on the tourism industry, as many tourists prefer spending their money and time in places without drought-induced limitations. According to one study, the near-zero and negative growth rate in

29 Aon South Africa data; cited in BusinessTech, "Counting the Cost of Natural Disasters," March 26, 2014, *https://businesstech.co.za/news/trending/54891/counting-the-cost-of-natural-disasters/.*

30 Ibid.

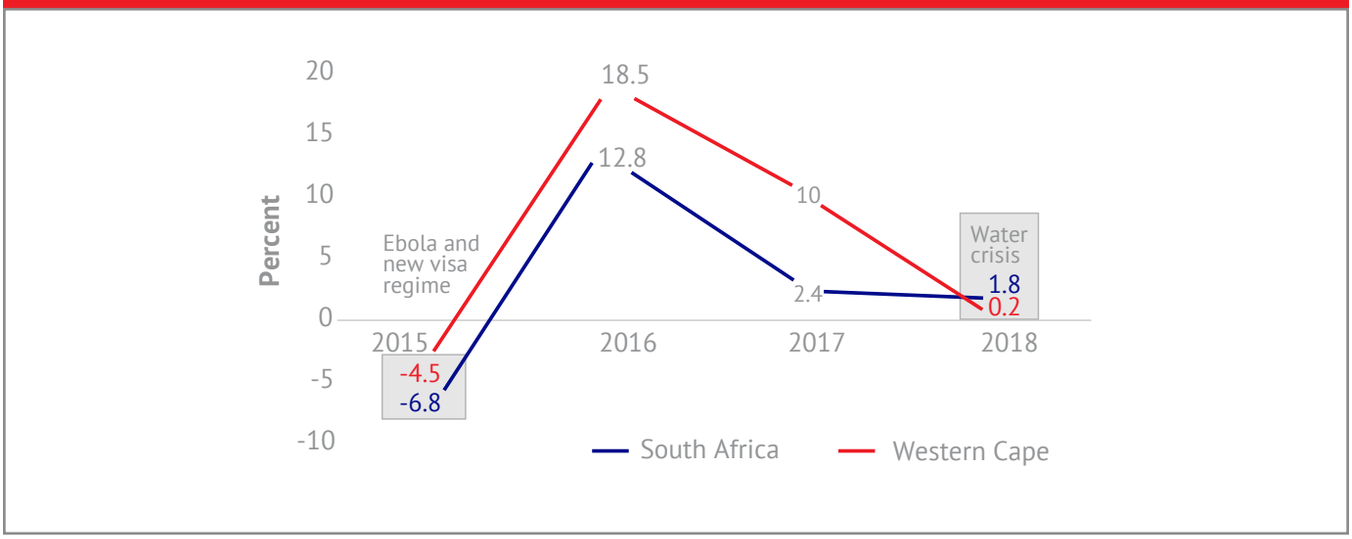
31 Institute for Economics & Peace, Global Peace Index 2020: Measuring Peace in a Complex World (Sydney: 2020), h*ttps://www.visionofhumanity.org/wp-content/uploads/2020/10/GPI_2020_web.pdf*. The index ranks 163 countries.

32 BNP Paribas and Whitaker Peace Initiative, "BNP Paribas South Africa, with the Support of Whitaker Peace and Development Initiative, Unveils a New Study on the Impact of Violence on Communities & Business in South Africa," press release, November 20, 2020, *https://www.wpdi.org/news/bnp-paribas-south-africa-with-the-support-of-whitaker-peace-and-development-initiative-unveils-a-new-study-on-the-impact-of-violence-on-communities-business-in-south-africa/.*

33 Aon Benfield, "Weather, Climate & Catastrophe Insight: 2017 Annual Report," *https://reliefweb.int/sites/reliefweb.int/files/resources/20180124-ab-if-annual-report-weather-climate-2017.pdf.*

arrivals between 2014 and 2015 could be attributed to the drought, Ebola, and the new visa regime introduced by the South African government.[34] In 2016, rainfall somewhat improved (although levels remained slightly below average); this led to double-digit growth in tourism. A decline in growth rates followed again in 2017 and 2018 as the drought reached its peak, with Cape Town recording a 0.2 percent growth rate-below the 1.8 percent national growth rate for the year (Figure 9). Given Cape Town's dominance in South Africa's tourism market, the weak performance there affected the national growth rate. During this time, South Africa's tourism growth was below the regional growth rate. In 2018, when South Africa recorded a 1.8 percent growth rate, the growth rate for Africa was 4.3 percent. In particular, car hijackings, sexual crimes, murder, and kidnapping have been shown to have both long-run and short-run negative impacts on inbound tourism. Conditions in tourists' home countries also affect the inclination to travel to destinations with comparatively high levels of violence. Tourists to South Africa, therefore, are likely to come from countries with similarly higher levels of violence and hence to have a higher tolerance for insecurity.

Figure 9: Annual growth rate in tourism



Source: Kaitano Dube, Godwell Nhamo, David Chikodzi, "Climate Change-Induced Droughts and Tourism: Impacts and Responses of Western Cape Province, South Africa," Journal of Outdoor Recreation and Tourism, 2020, https://doi.org/10.1016/j.jort.2020.100319.

Agriculture: The impact of drought on agriculture can be felt both locally, in agriculture-intensive areas, and across the country through the resulting increase in food prices. Droughts have a significant impact on staple foods such as maize, and this increase affects low-income households the hardest. In South Africa, poor households spend as much as 34 percent of their income on food.[35] Drought also affects those who are employed in the agriculture sector. The 2017 third Quarterly Labour Force Survey showed that approximately 25,000 jobs were lost from the agricultural sector nationally, many of these droughts related.[36] Drought also has a significant impact on agricultural revenue; the 2017/18 drought cost the Western Cape Province more than R5 billion, largely because of shrinkages to the deciduous fruit, citrus, and wine industries.[37]

34 Kaitano Dube, Godwell Nhamo, David Chikodzi, "Climate Change-Induced Droughts and Tourism: Impacts and Responses of Western Cape Province, South Africa," Journal of Outdoor Recreation and Tourism, 2020, *https://doi.org/10.1016/j.jort.2020.100319*.

35 Mmatlou Kalaba, "How Droughts Will Affect South Africa's Broader Economy," The Conversation,

36 Statistics South Africa, "Quarterly Labour Force Survey–Quarter 3: 2017," Statistical Release P0211, October 2017, *https://www.statssa.gov.za/publications/P0211/P02113rdQuarter2017.pdf*.

37 Ibid.

The COVID-19 pandemic has also had a heavy impact on the agriculture sector. Although citrus exports increased from 127 to 140 million tons between 2019 and 2020, producers of red meat, poultry, milk, and potato were left with large stockpiles amid declining demand, largely as a result of the closure of the restaurant industry.

Fiscal Impact

Responding to shocks can put immense strain on the fiscus. For example, between 2015 and 2018, National Treasury allocated over US$600 million to disaster response, the bulk of which came in 2018, after a national emergency was declared.

The compounding shocks of 2020 put significant strain on this fiscus. The 2020 budget included a provision of R500 million for "disaster management to respond to the impact of recent floods and ongoing drought." This was followed by a relief package of R500 billion, or US$30 billion (roughly 10 percent of GDP) to deal with the COVID-19 pandemic.

The government's contingent liabilities increase when droughts occur. For example, a 2016 study found that approximately 80 percent of agriculture-dependent formal and informal businesses lost more than half of their employees due to the drought in the Free State. Additionally, 87 percent of these businesses lost over half their revenue.[38] A drought of this magnitude would lead to an increase in social grant distribution as well as sectoral support.

In recent years, the government has also had to increase its spending to counteract the effects of drought. In 2019, Minister of Water Lindiwe Sisulu stated that the government's drought response would include borehole drilling and/or rehabilitation, water tankering from additional resources, rainwater and fog harvesting, protection and use of springs, cloud seeding, evaporation suppression, desalination of brackish groundwater or sea water, and effluent treatment and reuse. Additionally, in the long term, the government would develop water storage and transfer solutions as well as water infrastructure (including dams and conveyance pipelines to distribute water over time and space), and it would develop and integrate water sources with surface systems to enhance water security.[39] Each of these adaptive measures would require substantial fiscal resources, particularly desalination plants. As Table 5 shows, the Cape Town municipal government has in recent years spent between R114 million and R319 million annually on a handful of projects to strengthen the supply of clean water.

Table 5: City of Cape Town expenditures on water resilience projects (R 000s)

	2017/18	2018/19	2019/20	2020/21 (Actual YTD)
Temporary desalination	114,488	168,795	222,361	31,965
Cape Flats aquifer	0.00	789	1,717	11,206
TMG aquifer	0.00	3,249	17,067	18,698
Zandvliet reuse	63	13,328	78,390	56,130
Total	**114,551**	**186,161**	**319,535**	**117,999**

Source: City of Cape Town.

38 B. M. Hlalele, I. M. Mokhatle, and R. T. Motlogeloa, "Assessing Economic Impacts of Agricultural Drought: A Case of Thaba Nchu, South Africa," Journal of Earth Science & Climatic Change 7, no. 1 (2016), *http://dx.doi.org/10.4172/2157-7617.1000327.*

39 South African Government, "Minister Lindiwe Sisulu: Response to Drought," December 3, 2019, *https://www.gov.za/speeches/response-drought-3-dec-2019-0000.*

Legal and Institutional Framework and Financial Instruments for Disaster Risk Finance

Background

South Africa is a unitary state with three distinct spheres of government: national, provincial, and local (or municipal). The country's Constitution outlines the division of powers and defines specific functions that either become the responsibility of a single sphere or are managed concurrently. While the principle used to distribute responsibilities between spheres of the government is described in the Constitution,[40] specific legislation follows to ensure that the mandate of each sphere corresponds with its territorial coverage and capacity.

Disaster risk management (DRM) is among the responsibilities of the state that pose a significant challenge for a multi-tier system. Effective reduction of impact often requires the engagement of resources managed by all three tiers of the government, as shocks may develop dynamically, with local to widespread events moving between responsible jurisdictions. For example, during the COVID-19 outbreak in 2020, defense forces under the authority of the national government were deployed to enforce lockdowns;[41] the provincial government assumed the bulk of the responsibility for treating patients by establishing dedicated field hospitals for COVID-19;[42] and municipalities supported their vulnerable communities and upgraded transport infrastructure.[43]

The 2005 Policy Framework for Disaster Risk Management in South Africa recognized that financing DRM at lower levels of government could undermine the objective of promoting preparedness over response. To promote a consistent and efficient approach to DRM at all levels of government, it would be necessary to introduce changes in the way disasters are financed so that municipalities are able and appropriately incentivized to improve their disaster management strategies.

This chapter provides an overview of the existing legal and institutional framework shaping disaster risk funding in South Africa, with a special focus on South African municipalities. It further provides an overview of existing financial instruments used by the national and local governments to finance disaster preparedness and response. The findings of this chapter are based on a desk review of existing literature, databases, and stakeholder interviews with the staff of National Treasury of South Africa, the National Disaster Management Centre, the City of eThekwini, and the City of Cape Town.

Laws Governing Disaster Risk Finance in South Africa

The Constitution of South Africa recognizes the role of the state in responding to disasters. It regulates the conditions for the establishment of a state of emergency.[44] It also emphasizes that DRM is a concurrent responsibility of the national and provincial governments. While the act does not explicitly mention local governments as stakeholders in disaster risk management, their role can be derived from the establishment of shared responsibility of all spheres of governance to secure the well-being of citizens.

The Constitution requires an equitable share of revenue between spheres of government. This provision is implemented through the annually approved Division of Revenue Act, and the allocations take place through equitable share or conditional grants. The former mechanism uses a periodically revised formula to allocate funds across all local governments based on the size of their vulnerable population and their ability to finance the provision of basic services to this group. It is designed

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40 South African Government, "Constitution of the Republic of South Africa," Chapters 3, 6, and 7, *https://www.gov.za/documents/constitution/constitution-republic-south-africa-1996-1.*

41 Reuters, "South Africa to Keep 20,000 Soldiers on COVID-19 Duty until September," July 2, 2020, *https://www.reuters.com/article/us-health-coronavirus-safrica/south-africa-to-keep-20000-soldiers-on-covid-19-duty-until-september-idUSKBN2433CP.*

42 Maverick Citizen, "What To Do With Field Hospitals as Covid-19 Numbers Decline," August 26, 2020, *https://www.dailymaverick.co.za/article/2020-08-26-what-to-do-with-field-hospitals-as-covid-19-numbers-decline/.*

43 Government of South Africa, "Treasury on Coronavirus COVID-19 Support for Municipalities," May 12, 2020, *https://www.gov.za/speeches/treasury-coronavirus-covid-19-support-municipalities-12-may-2020-0000.*

44 Note that this is different from the "state of disaster" as described in the Disaster Management Act, 2002.

to allow municipalities to provide free basic services for poor households and cover basic administrative costs, and to ensure that transfers are predictable and stable over time.[45]

Further to the Constitution, three acts create the framework within which national and local governments make decisions regarding disaster risk finance (DRF). These documents outline specific duties and budgeting procedures for all three spheres of government, aiming to incentivize the most efficient and equitable disaster risk management possible.

Table 6: Key legislation governing the DRM budgetary process of local governments

Relevant legislation	Importance in the context of municipal DRF
Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)	• Introduces and sets up the structure of a three-sphere government and outlines how cooperation should take place. • Specifies responsibility in terms of governance and powers for managing the budget at the national, provincial, and municipal levels. • Defines emergencies and defines when a state of emergency can be introduced.
Public Finance Management Act, 1999 (Act No. 1 of 1999)	• Specifies how revenue can be raised and how the budgeting process takes place at each level of government. • Specifies rules for the allocation of funds to municipal governments. • Creates rules of emergency reallocations for the national and provincial governments.
Municipal Finance Management Act, 2003 (Act No. 53 of 2003)	• Grants extensive supervisory powers over municipalities to the national and provincial governments. • Defines conditions for the issuance of debt by municipalities. • Specifies conditions for reallocations of resources during emergencies.
Disaster Management Act, 2002 (Act No. 57 of 2002)	• Defines roles of different spheres of government concerning DRM. • Defines disasters as either natural or human-caused. • Emphasizes the importance of ex ante measures in DRM. • Introduces punitive measures that can be used against municipalities that do not introduce adequate preparedness and mitigation measures.

Public Finance Management Act of 1999 and the Role of Municipalities in DRF

The Public Finance Management Act No. 1 of 1999 governs how public money is spent to manage disaster response in South Africa. In response to disasters, the act allows for extrabudgetary expenditures up to a threshold limit, assuming reporting processes are followed. According to the act, the National Treasury may authorize expenditures that have not been planned for and cannot be postponed; this expenditure cannot exceed 2 percent of the annual appropriation and must be attributed to a vote. It must subsequently be included in the next budget adjustment. These criteria apply to both national and provincial governments.[46] The act provides limited guidance on how municipalities should govern their revenue collection and expenditure.

Additional regulations guide the public procurement process. There are strict requirements regarding the number of bids that need to be submitted, the selection process, and the minimum time limit for the receipt of tenders. These processes, which favor fairness and transparency, are often mentioned as a challenge in events of disasters. The part of the act that has met with most criticism is the low and infrequently updated financial thresholds for the use of most restrictive

45 National Treasury, "Explanatory Memorandum to the Division of Revenue," *http://www.treasury.gov.za/documents/national%20budget/2016/review/Annexure%20W1.pdf.*

46 Public Finance Management Act No. 1 of 1999, *http://www.treasury.gov.za/legislation/pfma/Public%20Finance%20Management%2041534.pdf.*

forms of competitive bidding. However, work is currently underway to revise these thresholds upward, making post-disaster procurement easier even without using special procurement legislation.

Municipal Finance Management Act of 2003

The act gives municipalities the power to authorize extrabudgetary spending. This power is exercised by mayors, and-in contrast to the situation for higher tiers of government-the amount of the allocation is not capped.[47] A municipality's ability to reallocate funds may however be limited in the case of revenue received from the national government in the form of conditional grants; this limitation is due to strict guidelines on eligible expenses as stipulated in grant framework documents. Conditional grants define the measurable outputs that need to be achieved, allocation criteria, and monitoring framework, all of which are either nonnegotiable or (for established grants) have limited scope for negotiation.

The Municipal Finance Management Act gives extensive mandate to the national and provincial governments in terms of auditing and intervening in the budgeting process of municipalities. For example, higher-tier levels of government have the authority to stop allocations to municipalities and transfer disaster response funds to higher levels of government.

Higher levels of government become responsible for administering nationally raised disaster funds when municipalities fail to deliver services or to adhere to good budgeting practices. The power to conduct such allocation is often used in the case of smaller municipalities and results in the shift of responsibilities for budget management to upper tiers of government. In 2017 the Minister of Finance transferred the allocated budget of four municipalities to higher levels of government when the municipalities failed to implement infrastructural projects and showed poor governance.[48]

According to the act, municipalities can issue debt for response to disasters (among other purposes). Short-term debt (with maturity of less than one year) can be an issued to finance operational expenditure that follows disasters. During the COVID-19 pandemic, cities used loans to cushion the impact of decreasing revenues, which followed widespread default among citizens on utility payments and the significant expenditures incurred to control the spread of the disease.[49]

Municipalities can also issue long-term debt (beyond one- year maturity), but only for capital expenditures such as the recovery of assets affected by disasters. When issuing long-term debt, municipalities must consult with provincial and national governments. Long-term debt can be issued only for the purchase of physical capital, so cannot be utilized for capacity building or risk assessments. The trend of increasing municipal debt (Figure 10) may not be sustainable, given interest rates higher than growth and the increasing gap that cities see between their operational revenue and cost. These factors have in turn led to the downgrade of South Africa's municipal credit rating and increase in the future cost of borrowing. As pointed out by credit agencies, however, with high natural risk exposure of cities, investment in resilience is among the best ways to improve the credit score and reduce the cost of financing. Thus, while local governments in South Africa need to become more cautious in their borrowing plans, resilience building is among the investments with potentially the highest rate of return.[50]

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47 South African Government, "Local Government: Municipal Finance Management Act 56 of 2003," *https://www.gov.za/documents/local-government-municipal-finance-management-act-0.*

48 National Treasury, "Stopping and Re-allocation of Municipal Infrastructure Grant

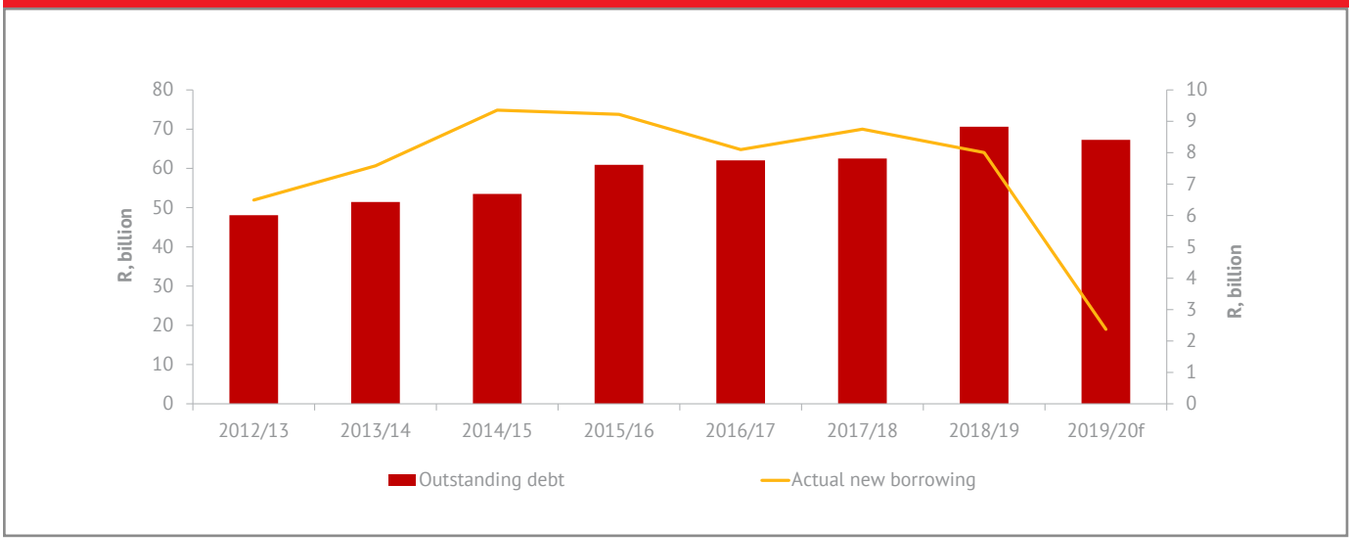
Allocation and Transfer for Disaster in Terms of Division of Revenue Act," October 25, 2017, *https://www.gov.za/sites/default/files/gcis_document/201710/41197gon1127.pdf.*

49 Bloomberg, "South African Towns Struggle to Collect $11.1 Billion Debt," August 20, 2020, *https://www.bloomberg.com/news/articles/2020-08-20/south-african-towns-struggle-to-collect-11-1-billion-debt.*

50 YahooFInance, "Tshwane, City of-Moody's Downgrades City of Tshwane´s Rating to B1; the Outlook Remains Negative," April 21, 2021, *https://www.yahoo.com/video/*

Credit: Photo by Trevor Samson from World Bank Flickr

Figure 10: Long-term debt of municipalities



Source: National Treasury, Municipal Borrowing Bulletin 16 (2020), http://mfma.treasury.gov.za/Media_Releases/Municipal%20Borrowing%20Bulletin/Pages/default.aspx.

The act specifies emergency procurement procedures, giving mayors of cities the ability to speed up the process that is normally governed by strict procurement and competitiveness procedures in South Africa. However, the act imposes a limit on such expenditures and continues to require that framework agreements are honored. This means that preparation, especially through a priori approval of a robust framework agreement, is important. City officials frequently report, however, that framework agreements are not appropriately utilized, and one of the reasons for that is lack of capacity. Furthermore, numerous municipalities report that despite their existing legislation permitting emergency procurement, they prefer not to use it for fear of disciplinary consequences and accusations of misconduct.

Disaster Management Act of 2002

The Disaster Management Act of 2002 (amended in 2015) is the main act referring specifically to disaster risk management and risk financing in South Africa. The act requires all levels of government, including municipalities, to prepare contingency strategies that include pre-planned measures to finance a post-disaster response.[51] Further, the act puts the responsibility for the rehabilitation and recovery of infrastructure and public services on the government responsible for their maintenance.[52]

The act defines disasters as both "human-caused" and "natural." It defines a disaster as a progressive or sudden, widespread or localized, natural or human-caused occurrence which-

a. causes or threatens to cause-
   i. death, injury or disease
   ii. damage to property, infrastructure or the environment; or
   iii. disruption of the life of a community; and
b. is of a magnitude that exceeds the ability of those affected by the disaster to cope with its effects using only their own resources.[53]

According to the act, disaster risk should be mitigated by undertaking adequate ex ante measures that minimize the financial impact of disasters. The act allows higher levels of government to consider the level of preparedness of

tshwane-city-moodys-downgrades-city-170506651.html.

51 South African Government, "Disaster Management Act 57 of 2002," Section 52, *https://www.gov.za/documents/disaster-management-act.*

52 Ibid., Section 56.

53 Ibid., Chapter 1.

a municipality when allocating post-disaster funds.[54] This provision was intended to incentivize investment in disaster preparedness at the provincial and municipal level, yet it has not been used in practice.

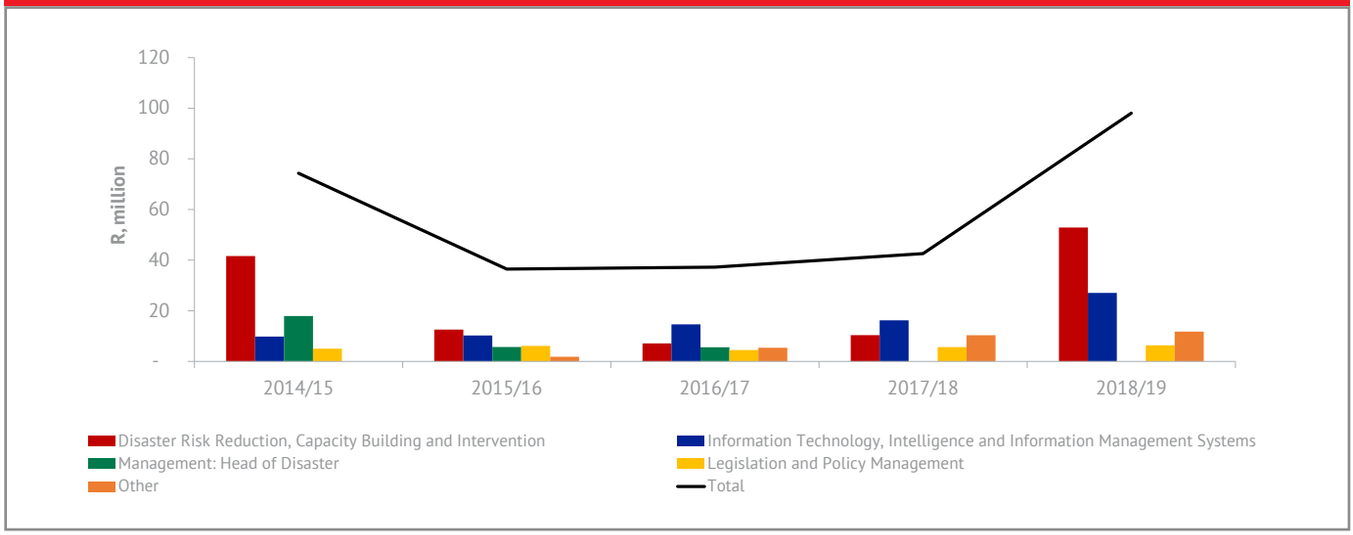
The act was followed by the Policy Framework for Disaster Risk Management,[55] which addresses some of the act's weaknesses. It recognizes that the municipal and provincial governments may be able to fulfill the requirement related to preparedness measures only with the substantial support of the national government. Without adequate funding from the national government, the requirements related to preparedness may be unrealistic. Given that such funding is not forthcoming, municipalities are justified in expecting that the national government will provide them with resources to respond to a disaster, and the incentive to prioritize response-focused DRM is likely to prevail at the municipal level.

Institutional Setup for Disaster Risk Management and Finance

The National Disaster Management Centre is the most important institution overseeing DRM in South Africa (Annex 1: Responsibilities of National Disaster Management Centre (NDMC) across DRM 1). It is located within the Ministry of Cooperative Governance and Traditional Affairs. The placement within this ministry reflects the country's multi-tier approach to disaster management. At the central level, the center has a comprehensive DRM mandate that includes capacity building, risk assessment, risk reduction, and oversight of response and recovery. Its management structure reflects the emphasis on preparedness and mitigation rather than post-disaster activities, with three of the four main directorates focused on ex ante activities.

The National Disaster Management Centre has substantial resources that it utilizes for capacity building and implementing preparedness measures. Further to the organization of its departments, the preparedness focus is also supported by budgetary allocation to programs such as disaster risk reduction and capacity building and by information technology development (Figure 11). These funds are however primarily utilized at the national level; only a small fraction is transferred for preparedness measures at the provincial level, and no such support exists for municipalities. Funds that are administered to lower levels of governments are predominately in the form of post-disaster relief and recovery grants.

Figure 11: National Disaster Management Centre's expenditures



Source: World Bank, South Africa BOOST platform, https://datacatalog.worldbank.org/search/dataset/0038088.

Note: Excludes disaster grant transfers.

54 Ibid., Section 57.

55 South African Government, "Disaster Management Act: Policy Framework for Disaster Risk Management in South Africa," *https://www.gov.za/documents/disaster-management-act-policy-framework-disaster-risk-management-south-africa.*

Disaster risk management centers are established in South Africa at each level of governance: local, provincial, and national. These centers are guided by disaster management policy frameworks that they themselves develop. At all levels of government, the centers should be guided by the principle of collaboration and leveraging of local expertise. Therefore, each of the centers is supported by a multi-stakeholder forum of advisors. In many cases, disaster management centers also exist within key ministries; examples include the Ministry of Agriculture and the Ministry of Health. It was not clear from the desk review carried out for this chapter how effectively ministry-based disaster centers cooperate with the city- or province-based centers.

The main source of funds available to municipal and provincial disaster management centers is through two conditional grants: Disaster Relief Grant and Disaster Recovery Grant, administered by the National Disaster Management Centre in consultation with National Treasury. These disaster grants are meant to be utilized exclusively for post-disaster financing. The Relief Grant must be spent within three months from reallocation[56] and originates from the government's contingency reserve. The Recovery Grant is allocated following the normal annual budgeting process.

No past conditional grants designed to support preparedness measures of municipal or provincial disaster centers were identified.[57] Municipal and provincial disaster management centers are therefore financed through a normal budgeting process that utilizes revenue raised by the city/province or through equitable share allocation. For example, the City of Johannesburg budgets R38 million for its disaster preparedness program, which finances the operations disaster center,[58] and it plans to increase the funding in the future by 5 percent a year. eThekwini consistently allocated a similar amount-approximately R40 to R48 million-in the years 2015-2020.[59] At the same time, Cape Town does not have a dedicated program in the budget that supports the disaster management center's operation and promotes preparedness.

Disaster Risk Financing Instruments

The Government of South Africa, and specifically National Treasury, have established a robust architecture to fund disaster response. The strength of the structure builds on three pillars: (i) the National Treasury's complex risk-layering strategy for financing disaster response, which is aligned with best practice and incorporates multiple financing instruments that are deployed depending on the severity of the shock; (ii) the large and diversified South African economy, which helps ensure that despite high exposure to economic shocks, there is no widespread impact on GDP when shocks occur; and (iii) the National Treasury's high levels of transparency and openness in budget preparation, which strengthen the credibility of the budget and support access to financing for National Treasury (the country has received a high transparency score of 87 out of 100 from the Open Budget Survey).[60]

The remainder of this section focuses on the array of DRF instruments that National Treasury has established to finance disaster response. An overview of the instruments is in Figure 12.

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56 National Disaster Management Center, *http://www.ndmc.gov.za/.*

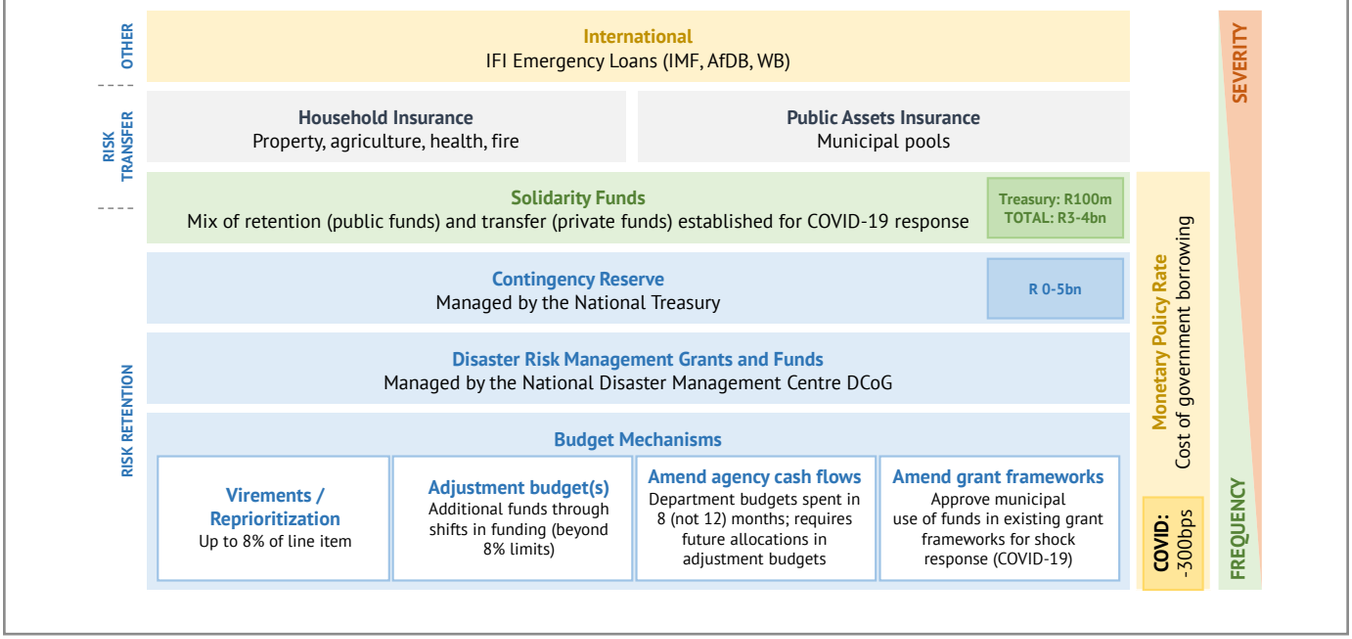
57 The disaster risk reduction, capacity building, and intervention subprograms are expected to build capacity at lower spheres of the government, but are administered by the National Disaster Management Centre.

58 City of Johannesburg, "Medium-Term Budget 2020/21 to 2022/23," July 2020, *https://www.joburg.org.za/documents_/Documents/Budget/Budget%202020/Budget%202020%20Final/Item%20A%20Operating%20BUDGET%20BOOK%202020-21.pdf.*

59 eThekwini Municipality, "Medium Term Revenue and Expenditure Framework 2019/2020 to 2021/2022," *http://mfma.treasury.gov.za/Documents/03.%20Budget%20Documentation/2019-20/Tabled%20budgets/01.%20Metros/ETH%20eThekwini/Ethekwini%20Municipality%2020192020%20Medium%20Term%20Revenue%20and%20Expenditure.pdf.*

60 Open Budget Survey, "Open Budget Survey 2019: South Africa," *https://www.internationalbudget.org/open-budget-survey/country-results/2019/south-africa.*

Figure 12: Risk-layering strategy of National Treasury to finance disaster response



Source: World Bank.

Note: AfDB = African Development Bank; DCoG = Department of Cooperative Governance; IFI = international financial institution; IMF = International Monetary Fund; WB = World Bank.

Budget Mechanisms

The National Treasury has multiple mechanisms built into the budget that allow it to mobilize funds for disaster response. They include virements, which enable departments to reallocate up to 8 percent of a line item and which can be used to fund response; adjustment budgets, which allow for more flexibility by providing additional funding to a budget line following a more severe shock (two adjustment budgets were completed to finance response to COVID-19); amending of agency cash flow, which allows departments to spend a year of funding in a shorter time period to respond to a shock (with the assurance that an adjustment budget will provide additional funding to cover the following months in the budget cycle); and amendments to existing grant frameworks, including conditional grants, which allow departments and municipalities to use funding allocated through a well-understood and implemented grant framework for disaster response.

When funds available in the contingency reserve are depleted, the budget mechanism that the country uses to internally finance disaster response is reallocation. In fiscal year 2020/21, the government suspended and reallocated over 5 percent of the national budget; some suspensions affected funds previously allocated to lower levels of government, in turn affecting grants such as the municipal infrastructure grant and urban settlement development.

Disaster Grants

Grants, conditional and unconditional, are the mechanism used to allocate money to various spheres of government. They are defined by the purpose of the grant, which may either be narrow, as in the case of conditional grants, or provide general budgetary support, as in the case of unconditional transfers. Approximately 50 percent of nationally raised revenue is then transferred through a system of grants to lower tiers of the government, including through conditional disaster grant allocation. Two such grants with a specific disaster response mandate exist to finance response at the municipal and provincial levels respectively. Annex 2: Municipal Financing Instruments provides an extensive analysis of disaster relief and disaster recovery provisions as well as more details on the use of the grant mechanisms in the context of disaster response.

The COVID-19 shock led to changes in the grant allocations, as transfers to lower spheres of government were reduced in favor of the central government, with the most significant reduction to municipal infrastructure and transport-related allocations. These reductions were then compensated with unconditional allocations, which allowed municipal governments greater freedom financing response. Similarly, in some cases where funds had already been allocated, conditions specified in conditional grant frameworks were eased to allow for the diversion of the money to COVID-19 response efforts.[61] Both alterations were received positively by local governments interviewed for this report.

Contingency Reserve

At the national level, South Africa has a contingency reserve that is allocated an annual amount of approximately R5 billion. The reserve is among the instruments that the government can use to respond to a variety of unexpected financing needs, including disasters, without prior parliamentary approval, which is needed for significant reallocations or additional expenditure through adjustment budgets. Using the reserve has a limited impact on the operations of other activities. Notably, however, the reserve is not earmarked for natural disasters and is frequently used to support other budgetary items, including bailouts of parastatals, or to meet the public wage bill. For example, in 2019 the utility provider Eskom was granted liquidity from the fund. Similar allocations have been made to other companies, including South African Airways and the public broadcasting agency.[62]

The openness of the contingency reserve gives National Treasury flexibility in deciding how to deploy its funds. However, this approach introduces challenges. First, it can create expectations in departments that they are entitled to resources from the reserve and can thus lead to multiple overtures to National Treasury for access to the reserve; these can become overwhelming and politically difficult to manage. In addition, if the contingency reserve is depleted early in the budget cycle it leaves National Treasury, and the budget, exposed to the financial impacts of shocks. Expert interviews suggest that this happened with the 2015-2018 El Niño drought: the contingency reserve was used to fund pay increases for the public sector, so when requests were made to National Treasury to finance a response to the shock, the fund was empty. This led to a significant delay in mobilization of the drought response, which was eventually financed (in 2018) through a full allocation of R6 billion from the reserve in the next budget cycle. While the reserve can serve as a source of financing for disasters, its broad purpose may undermine its value. Currently the only guidance regarding use of the reserve is included in the policy document accompanying the budget, the Budget Review. In every given year the document provides information on the intended use of the fund, such as funding of the uncertain cost of the vaccination rollout in fiscal year 2020/21. In previous years, the regulation guiding the fund was changed in anticipation of requests from distressed parastatals.

Solidarity Fund

As a tool to raise finance to cover a part of the COVID-19 response costs, GoSA established a solidarity fund with both public and private contributions. This was supported by a community engagement platform, where citizens, private sector actors, philanthropic organizations, and nongovernmental organizations could come together and contribute with donations. The solidarity fund, which benefited from a strong media campaign, was designed as a rapid response vehicle with a humanitarian mandate that sought to support various governmental and nongovernmental organizations in the public health response (infection prevention and control). It also supported efforts of government and business to help households cope through the pandemic by ensuring access to food, health care, and other interventions to alleviate the impact of economic disruption.

This short-term, immediate relief intervention was designed to be a stopgap measure to allow time for the more systemic government grant solutions to come on stream. It proved a successful instrument in the early days of the crisis, and it is currently being used again in the mass vaccination rollout campaign.

Monetary Policy Rate

Central banks can reduce interest rates to stimulate growth during periods of economic decline. The reduction in the policy rate makes borrowing cheaper and leaves consumers with more spending money, which supports aggregate demand.

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61 National Treasury, "Budget Review 2021," February 24, 2021, *http://www.treasury.gov.za/documents/national%20budget/2021/review/Prelims.pdf.*

62 Parliamentary Monitoring Group, "Special Appropriation Bill [B10-2019]: National Treasury Briefing," September 17, 2019, *https://pmg.org.za/committee-meeting/28901/.*

Entering the COVID-19 pandemic, the South African Reserve Bank had a policy rate of 6.25 percent. This steadily declined by 275 basis points to 3.5 percent.[63]

Insurance

With the sophistication of the non-life insurance markets in South Africa, the GoSA could explore how to better utilize their capital and expertise to transfer risk off budget. The assessment of the short-term insurance market in Section C shows that limited affordability and low awareness constrains use of insurance by low-and middle-income households, while declining data systems and asset maintenance records limit use by municipalities. The GoSA could consider support to agriculture insurance, property insurance, microinsurance, and InsurTech to strengthen provision of insurance to households (more detail is in Section C). In addition, municipal asset maintenance and registry systems could be strengthened to enable better transfer of risk to the financial markets.

Ex Post Borrowing

National Treasury has traditionally been able to rely on post-disaster borrowing-from capital markets for minor shocks and from international financial institutions (IFIs) for extreme shocks. National Treasury has access to deep capital markets; thus, for minor shocks it can readily raise additional debt to fund a disaster response if needed (subject of course to fiscal policy). However, to fund response to the most severe shocks, National Treasury has turned to IFIs to leverage concessional finance. Like all International Monetary Fund (IMF) member countries, South Africa has access to the IMF's Rapid Financing Instrument (RFI), which it has used to respond to the COVID-19 crisis. Upon approval from the bank, the country drew against its full allocated amount of US$4.3 billion. This was the largest single disbursement by the IMF to a country facing the epidemic. In addition to funds obtained through the RFI, the African Development Bank issued a loan of US$288 million. The government has not yet reached an agreement with other international lenders such as the World Bank.

Going forward, borrowing on capital markets amid widespread disasters may be increasingly difficult. Following the outbreak of COVID-19, and for the first time in 25 years, the credit rating of South African bonds was reduced to junk by all major agencies. The decision was justified by the country's poor fiscal position, which worsened due to the pandemic and led to a sell-off of South Africa's bonds, making new issuance, especially in the local currency, expensive.[64] In the medium term, South Africa's debt service cost will oscillate at around 20 percent of the government revenue, creating a significant burden on the fiscus.

South Africa will now attempt to reenter the path of fiscal consolidation to reduce the debt burden. This will imply reduction in spending on social programs and may impact the heavily indebted parastatals. While these measures are necessary to ensure sustainability of the country's debt, they also imply an increase in socioeconomic vulnerability to disasters, as state-owned companies may need to reduce their infrastructure investment plans, and some vulnerable groups will see their access to safety net programs reduced. At the same time, South Africa's ability to finance response to disaster with debt will remain reduced over the medium term. The increase in vulnerability that will follow consolidation measures, combined with the reduced access to capital markets for financing response, needs to be addressed to ensure that the country is able to mobilize adequate resources should another shock occur.

Municipal Risk Financing

Disaster risk financing at the metropolitan level builds on revenue raised by municipalities themselves, unconditional allocations from higher tiers of government, and conditional, disaster-specific grants. The extent to which any of these sources of funds prevails in the DRF strategy of a specific municipality depends on its financial means and the capacity of municipal finance teams. As a rule, large metropolitan areas rely on locally raised funds and manage a wider range of financial instruments as part of their DRF strategies, while smaller local governments depend on national support in both raising funds and managing operations.

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63 Global-rates.com, *https://www.global-rates.com/en/interest-rates/central-banks/central-bank-south-africa/sarb-interest-rate.aspx.*

64 Jonathan Wheatley, "Investors Are Getting Pickier in Emerging Markets," Financial Times, September 21, 2020, *https://www.ft.com/content/eaaa204c-f762-4ce3-ae68-99a82afe8104.*

Municipalities rely on a range of financing instruments to finance disaster response, including grant funds, reserve funds/ savings, and various debt instruments:

- **Grants constitute 23 percent of the total revenue of South Africa's municipalities, and hence are an important source of funding for them.** However, the restrictions placed on the grant funds make them unsuited to finance a disaster response. Among conditional grants, two are designed to support post-disaster expenditures of cities: the Municipal Disaster Relief Grant and the Municipal Disaster Recovery Grant. The total amount paid out under these grants to local communities in fiscal year 2019/20 was R335 million and R194 million, respectively.[65] Both grants are allocated based on strict criteria, and municipalities must fulfill specific conditions to qualify. The Disaster Relief Grant is designed to enable a timely response to immediate needs, and it finances expenditures such as emergency repair of critical infrastructure and emergency provision of goods and services. The Disaster Relief Grant is not routinely used by municipalities and includes distinct application and reporting procedures.
- **With significant freedom to generate income and administer funds, some metropolitan municipalities in South Africa create reserves that can be utilized in the event of a disaster.** Municipalities with wealthier populations and more effectively run services may be able to accumulate savings. However, even the municipalities that accumulate savings do not operate dedicated and regulated disaster reserve funds. While larger and wealthier municipalities may be able to build savings by charging additional premiums on services they provide, the overall trend on the service markup in cities is negative.
- **Short-term borrowing can be used to bridge liquidity gaps in a city's operation and (unlike long-term debt) to finance operations, to the extent the instrument is not used to finance the permanent operating deficit.** Reliance on short-term debt for financing response may be risky given that borrowing becomes more difficult and costlier during a crisis, as demonstrated by the recent credit downgrades of the sovereign.
- **A skewed picture emerges for long-term borrowing, with 87 percent of long-term municipal debt issued by metropolitan cities.** Most of the public sector lending to municipalities originates from the government-owned Development Bank of South Africa. Thus this is not an instrument used by smaller municipalities. The majority of long-term lending finances infrastructural projects that are fundamental to building disaster resilience, as they finance water and sanitation networks, electrical infrastructure, roads, public transport systems, and other urban infrastructure.
- **Bonds are also an instrument used by metropolitan municipalities to fund financing needs.** However, only metros with strong financial management capacities can use this financing instrument.

Further details on municipal financing mechanisms are in Annex 2: Municipal Financing Instruments.

65 National Treasury, "2019-20 Municipal Emergency Housing Grant Framework," *https://vulekamali.gov.za/datasets/frameworks-for-conditional-grants-to-municipalities*; National Treasury, "2019-20 Municipal Disaster Recovery Grant Framework," *https://vulekamali.gov.za/datasets/frameworks-for-conditional-grants-to-municipalitie*; National Treasury, "2019-20 Municipal Disaster Relief Grant Framework," *https://vulekamali.gov.za/datasets/frameworks-for-conditional-grants-to-municipalitie.*

Credit: Photo by John Hogg from World Bank Flickr

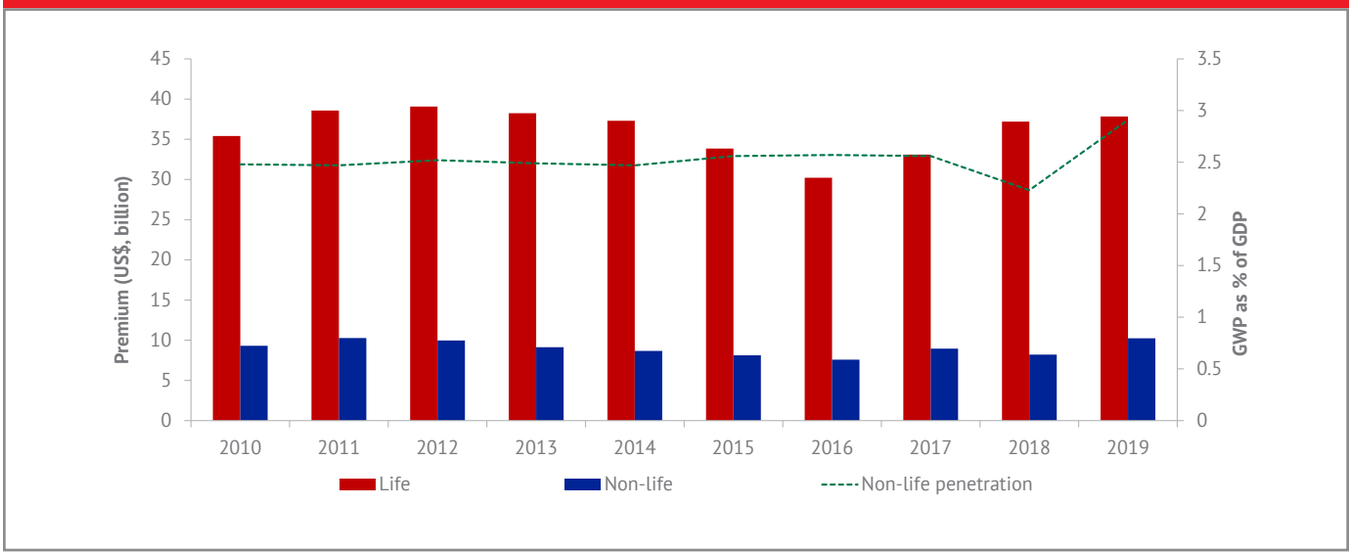
Domestic Insurance Market Review

This section reviews the state of the domestic insurance industry and the relevant legal and regulatory environment governing the sector. It assesses the availability of disaster-related insurance products and the extent to which households, farmers, businesses, and municipalities use insurance. By absorbing risk faced by households and businesses, the insurance market can be an effective mechanism to reduce government contingent liability for disasters.

Insurance Penetration

South Africa has the largest and most mature insurance market in Africa, with total gross written premium of US$44.7 billion in 2019. The life sector dominates, while the non-life sector accounts for 20 percent of premium at US$9.8 billion**.** Although the non-life sector grew by 8 percent from 2015 to 2019, insurance penetration has remained stagnant at around 2.5 percent of GDP since 2010 (Figure 13). Notwithstanding, South Africa is a regional leader in Sub-Saharan Africa and compares favorably to other middle-income countries in both insurance density-at almost US$170 per person-and insurance penetration. For example, South Africa has a higher penetration than Australia, an upper-income country with a similar economic structure (Figure 14).

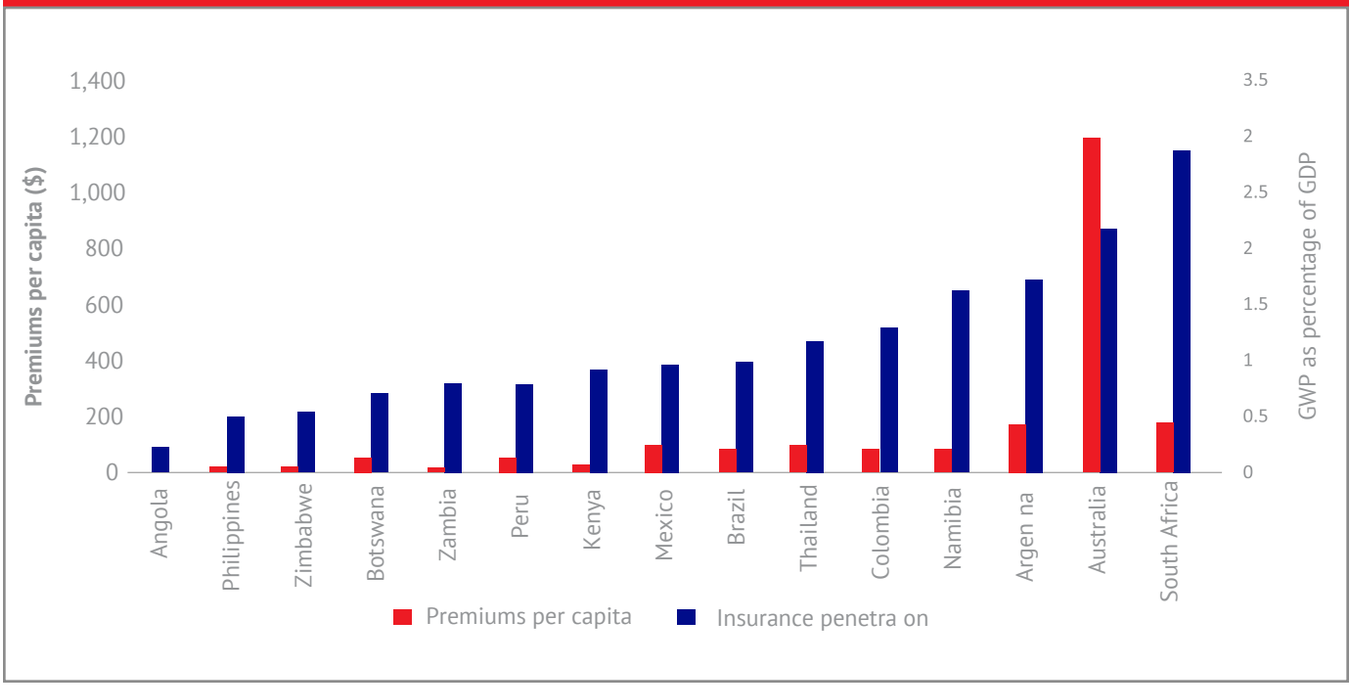
Figure 13: Trend in insurance premium per sector and non-life penetration



Sources: Axco; Fitch Solutions. Note: GWP = gross written premium.

Credit: Photo by Trevor Samson from World Bank Flickr

Figure 14: Non-life insurance density and penetration for selected countries, 2019



Source: Axco. Note: GWP = gross written premium

Non-life Insurance Market

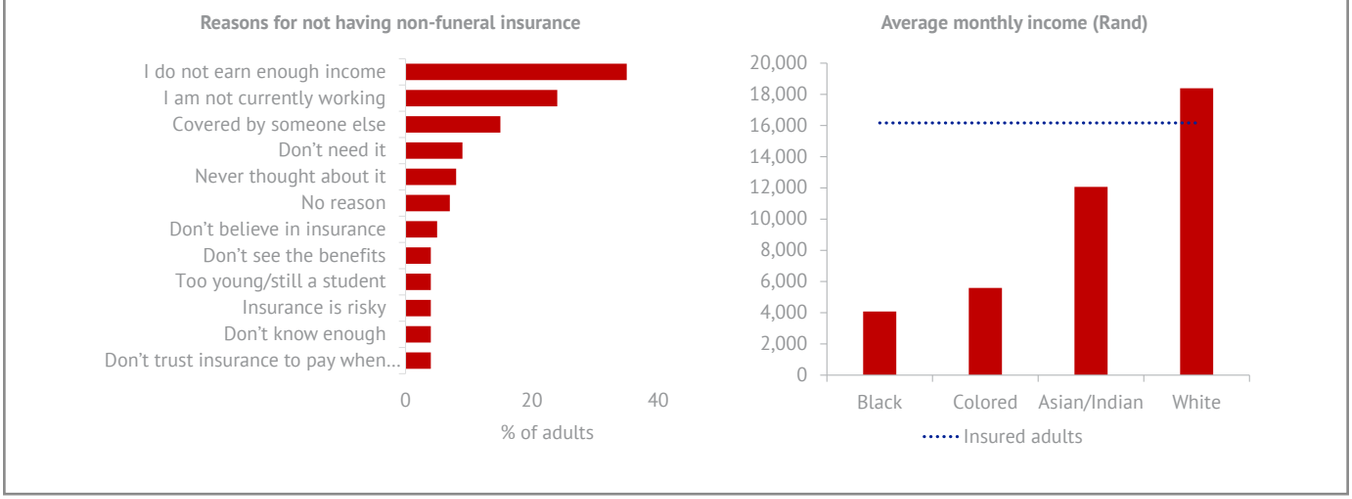
South Africa has a well-capitalized, competitive, and profitable non-life insurance market that offers a range of insurance products. Motor and property insurance dominate the market, accounting for over 75 percent of total premium. Other disaster-related products like health and agriculture insurance are also available, but access is unequal. Microinsurance is available, and the market has collectively developed microinsurance standards and products covering fire, lightning, storm, flood, and theft. However, affordability remains challenging due to the indemnity-based insurance model, broker-driven distribution, and legacy administration systems of traditional insurers. Introduction of a specific license, industry standards, and lower capital requirements for microinsurance under the new regulatory framework of 2017 is expected to facilitate development of more affordable microinsurance products, but index-based models and InsurTech could be deployed to increase access and affordability for low-income households and micro, small, and medium enterprises (MSMEs). (By the end of 2019, there were a total of 92 non-life insurers, including three state-owned insurers). The non-life insurance market has sufficient capacity to offer financial protection against natural disasters, with total assets growing from R114 billion to over R147 billion between 2013 and 2018. See Annex 3: Non-life Insurance Market for further details.

About 85 percent of adults do not use non-life insurance and the main reason remains affordability (Figure 15). Despite high levels of financial inclusion, about 9 in 10 adult South Africans own or use formal financial products or services, only 15 percent have non-life insurance cover (compared to 53 percent of life insurance). Use of non-life insurance is determined by disposable income, insurable items/appropriate products, and insurable risk. Of the 35 million uninsured, 18 million have insurable assets and risk. Trust is not a barrier for the uninsured and levels of understanding and behavior with regards to financial products are high especially amongst the middle-income segments.[66] However among low-income segments. Other reasons for low insurance use include there is low trust in the insurance industry, and limited appreciation of the value of short-term insurance.[67]

66 FINSCOPE. 2020. Short Term Insurance Report, Prepared for SAIA; *https://www.saia.co.za/index.php?id=2205*

67 B. Roberts, J. Struwig, S. Gordon, and T. Radebe, Financial Literacy in South Africa: Results from the 2017/18 South African Social Attitudes Survey Round, prepared by the Human Sciences Research Council on behalf of the Financial Sector Conduct Authority (Pretoria: Financial Sector Conduct Authority, 2018).

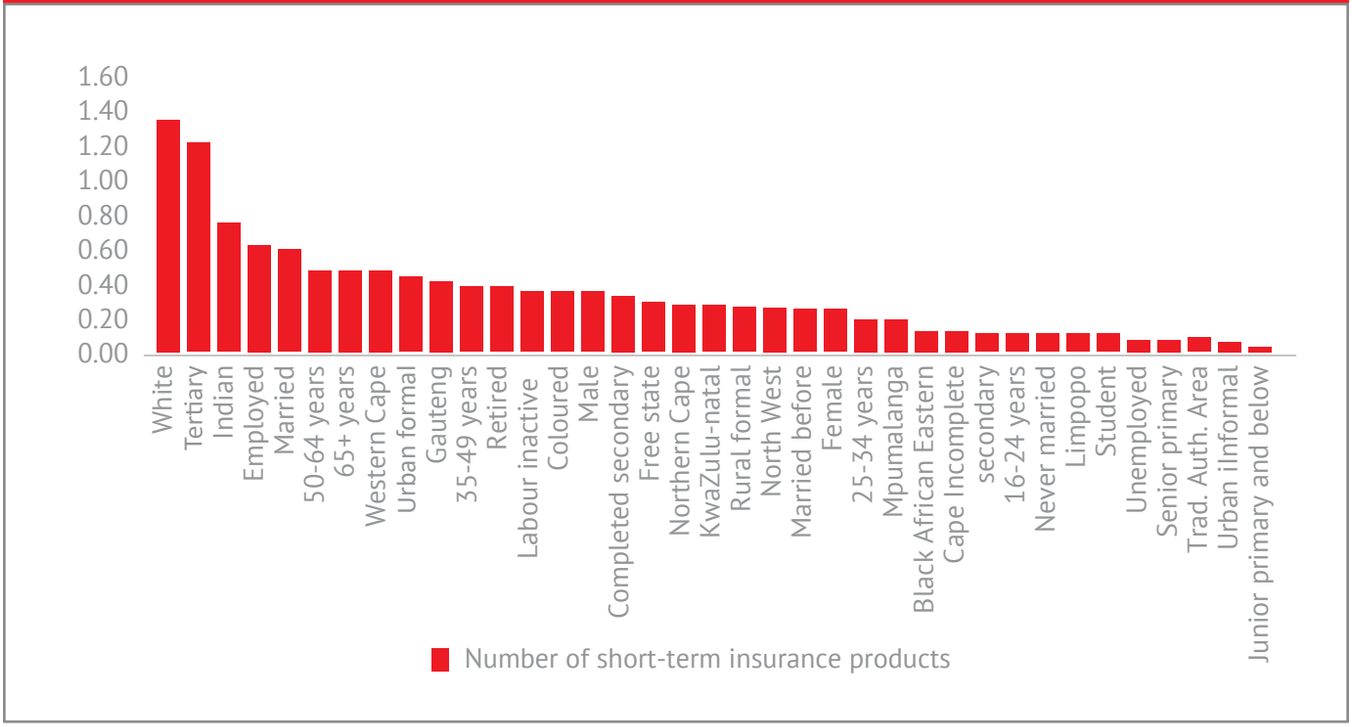
Figure 15: Reasons for not using non-life insurance



Source: FinScope 2020

Studies on financial literacy show a large variation in insurance awareness and insurance uptake depending on socioeconomic status (Figure 16). Utilization also varies by province. In the Western Cape and Gauteng, more than 40 percent have short-term insurance, while in Eastern Cape and Limpopo insurance utilization rates are lowest, at 15 percent and 10 percent, respectively.

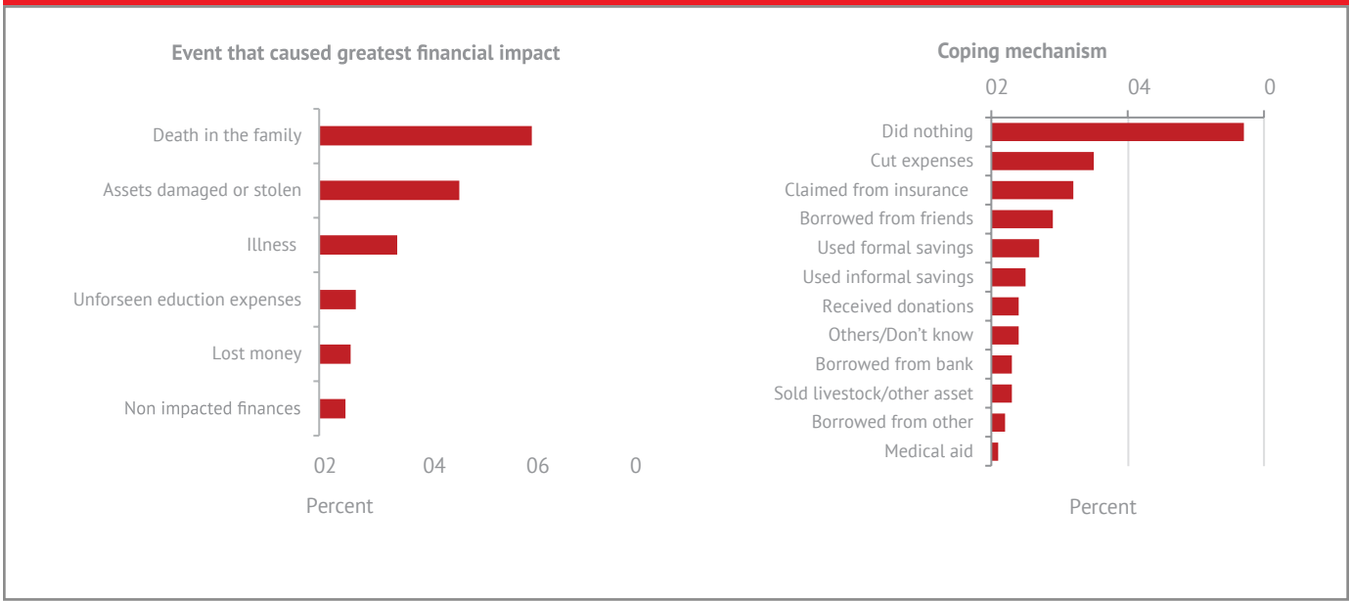
Figure 16: Average number of short-term insurance products by socioeconomic and demographic attributes



Source: South African Social Attitudes Survey (SASAS) 2012, 2017, http://curation.hsrc.ac.za/doi-10.14749-1575000020.

On average about 33 percent of adults experience a shock each year and most use negative coping mechanisms (Figure 17). Activities like cutting expenses, selling productive assets, borrowing from informal lenders at exorbitant rates as well as doing nothing exacerbate already existing vulnerability and reduce ability to cope with future shocks.

Figure 17: Shocks experienced by households and coping mechanisms used



Source: FinScope 2020

Disaster-Related Insurance Products

This section explores key products that offer disaster protection and could be used to enable multiple policy objectives, for example, to increase risk transfer to the private sector, to increase insurance penetration, and to deepen financial inclusion.

Property Insurance

Property insurance is widely available, and most comprehensive policies cover natural disaster risk, including earthquake, strong wind, flood, hailstorm, landslide, and subsidence. As shown in Table 7, residential property sums insured are relatively high, covering the middle- to upper-income market. Property cover for the low-income market is available but take-up is low. Corporate covers are also available, including insurance for municipality assets; but notably, most public infrastructure is not insured. Some metropolitan municipalities like Cape Town and eThekwini have in-house insurance funds (see Box 1). Local and district municipalities are mainly insured under a municipality facility underwritten by one insurer. However, the amount of cover offered is limited due to the poor quality of information on municipalities, including poor asset maintenance records; hence there are significant insurance gaps, as described in Box 1. Notwithstanding, there is an opportunity to build upon this facility to increase asset cover and to expand cover to critical public infrastructure. Furthermore, ongoing work by the GoSA and the World Bank's GPURL unit to strengthen municipal-level asset management systems could be included as a key activity under a national DRF strategy.

Table 7: Property insurance: Average sum insured and average premium		
	Average sum insured	**Average annual premium**
Residential	R1.5 million	R7,500
Commercial	R30 million	R75,000
Catastrophe reinsurance	R8 trillion[a]	Rate on line: 3 percent

Source: Interviews with insurance market participants by World Bank Staff.

a. Refers to personal and commercial lines.

Affordability is a key constraint on the use of property insurance, which the South African Insurers Association (SAIA) feels could be addressed through deploying parametric insurance models.[68] Fiji's experience is relevant: in 2019, in partnership with the International Finance Corporation, Fiji began establishment of an index-based cyclone insurance product for disadvantaged families and farmers, whose homes would normally be considered uninsurable.[69] Developing index-based property insurance at scale will require facilitative regulation. At policy level, government could create incentives for insurers to invest in technologies that create more efficient and cost-effective underwriting processes and claims settlement processes. In the short term, a FinTech/InsurTech innovation challenge fund could be established to promote innovative methods for collecting data for product development, devising more cost-efficient delivery channels, and creating more engaging financial education mechanisms.

Box 1: Insurance cover for municipalities in South Africa

The City of Cape Town General Insurance Fund

Cape Town municipality established a General Insurance Fund over a decade ago. For line department, the fund insures all assets, liability, and some public infrastructure against all risks, including business interruption and damage due to natural hazards and excepting only subsidence and landslip. Each line department is responsible for payment of premium. Reinsurance cover is used to protect the fund from losses in excess of R15 million. As at the most recent valuation, the fund was valued at R600 million. This significant capacity enables the fund to limit premium increases annually to 5 percent and in this way to ensure continuing affordability for line departments.

The fund is administered by the Insurance Unit within the Treasury Department. This unit is responsible for underwriting, setting contract terms and conditions, and claims assessment and settlement. The unit is empowered by a robust, 24-hour live insurance administration IT system, which was purpose-built for the City of Cape Town and is linked to the city's asset registry.

Municipality Insurance Facility

GuardRisk, a cell captive insurer, provides bespoke insurance to district and local municipalities in South Africa. The facility currently covers 233 out of 249 eligible municipalities. Cover includes assets and liabilities (public, motor, and municipal liability), and the total sum insured presently stands at R401 billion. Premium rates are more competitive than the market; rates on assets range between 0.06 percent and 0.07 percent, compared to the 0.2-0.3 percent rate of commercial lines. Because it is a cell captive insurer, the facility is heavily reliant on reinsurance, but over the years reinsurers' appetite and capacity has been decreasing due to the poor quality of information provided by municipalities. Capacity is currently limited to R200 million per risk location, which leaves municipalities severely underinsured. For example, Mbombela Stadium is valued at R1.2 billion, so the local

68 Based on interviews with SAIA staff.

69 International Finance Corporation, "Fiji Signs MOU for Cyclone Insurance to Cover Most Vulnerable Citizens," press release, October 16, 2019, *https://www.preventionweb.net/news/view/68264.*

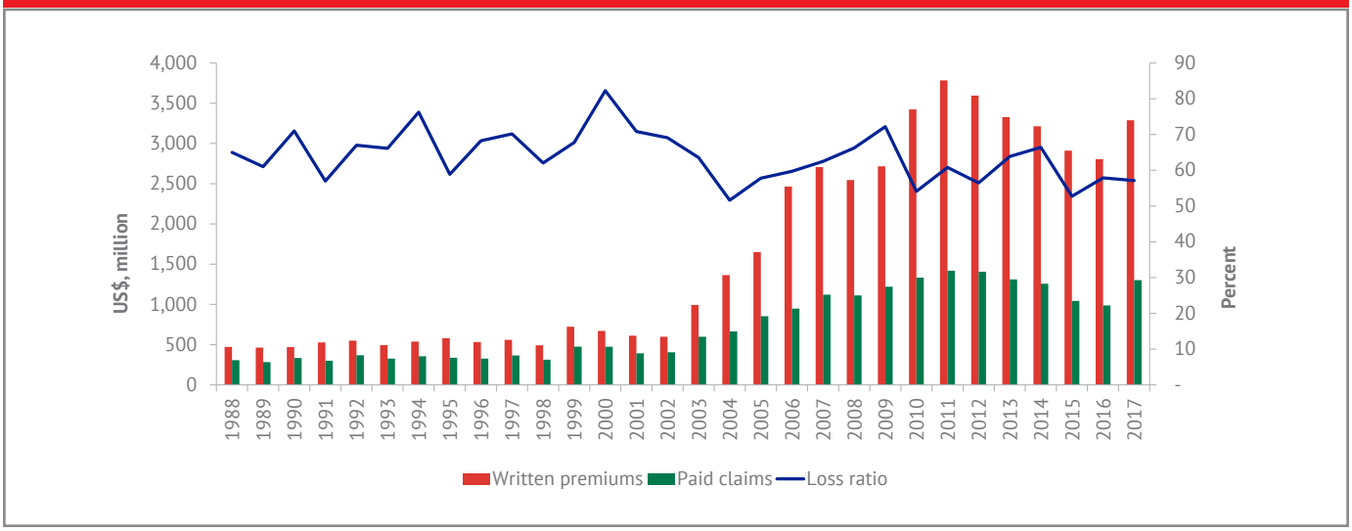
municipality has an insurance gap of R1 billion. Public infrastructure is not covered due to the combination of poor information, lack of proper maintenance, limited reinsurance capacity, and high cost.

Operationally, cover is placed through brokers via a tender system every three years. The tender process is price driven rather than risk-management driven. In addition, administration is often cumbersome and inefficient, in part because municipal officials have limited appreciation of the critical value of insurance as a risk management tool and view it rather as a compliance exercise. Overall, there is an opportunity to enhance the use of insurance by municipalities.

Source: World Bank staff.

Analysis of the performance of the property insurance portfolio demonstrates that some disaster risk is being transferred to the insurance market. The year 2017 was the costliest disaster year, with close to US$2.5 billion in losses in South Africa. The sharp increase of 32 percent in property claims demonstrates risk transfer to the insurance market (Figure 18). However, only 21 percent of the loss was insured. Given that the loss ratio in 2017 was below the 30-year average of 64 percent, the insurance sector had capacity to finance a more significant proportion of this risk.

Figure 18: Performance of property insurance in South Africa

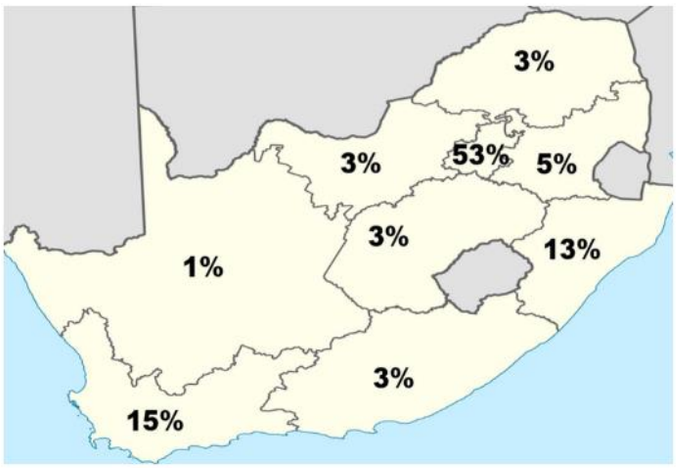


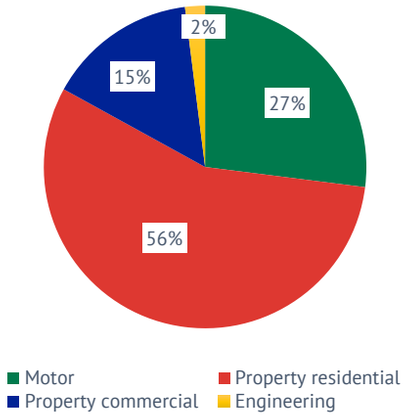
Source: Axco.

There are no regulatory requirements for property owners to have disaster insurance, but SAIA is working to strengthen the capacity of the sector.[70] As shown in Figure 19, the bulk of disaster risk cover is for residential property, accounting for 56 percent of the total insured value, followed by motor, despite commercial property being of significantly higher economic value. More than half of disaster cover is in Gauteng Province. The Western Cape and KwaZulu-Natal account for 15 and 13 percent of total insured value respectively, which is disproportionate considering that Gauteng Province contributes 34 percent of the national GDP while Western Cape contributes 14 percent and KwaZulu-Natal 16 percent. This suggests significant gaps in coverage, particularly in relation to KwaZulu-Natal's large economic infrastructure, including an oil refinery, the busiest port in Southern Africa, and the Richard Bay Coal terminal.

70 Insurers no longer consider South Africa a low-disaster-risk country after the events of 2017, when storm and wildfire in Western Cape and floods in KwaZulu-Natal and Gauteng led to a record insured loss exceeding US$560 million and economic loss of US$2.5 billion.

Figure 19: Share of catastrophe insured value in South Africa by province (left) and insurance class as a share of total catastrophe insured value (right), 2018





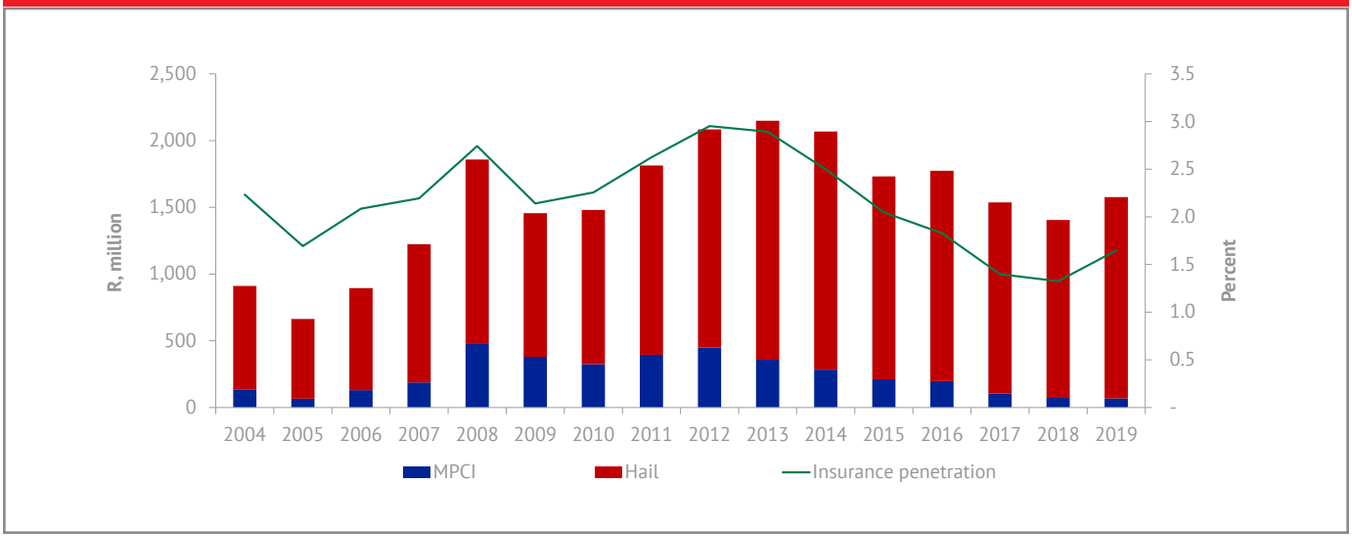
Source: Prudential Authority.

Agriculture Insurance

Agricultural insurance is well developed albeit heavily dependent on reinsurance and dominated by three insurers, which limits scope for competitive forces to drive down premium rates. Premiums have been declining, but the market remains profitable (Figure 20). Products include crop, livestock, and forestry insurance, but coverage is low and largely focused on commercial farmers (Table 8). Crop products include multi-peril and hail insurance and are sold mainly through agricultural co-operatives. Hail constitutes about 85 percent of the crop insurance market and has been on an upward trend. The rapid rise in hail premiums between 2005 and 2012 was due to increases in commodity prices and planted area, while the sharp increase in 2019 was due to a change in crop mix that increased insured values. Meanwhile, multi-peril crop insurance (MPCI) increased nearly threefold in 2008, peaked at R300 million in 2012, and declined rapidly since then to under 70 million. In 2013, MPCI covered 17 percent of the planted surface area in the commercial sector, and in 2018 only 8 percent of the national maize crop was insured.[71] The low penetration of MPCI is largely due to high premiums driven by unsustainably high loss ratios and to high volatility driven by the increasing frequency and intensity of adverse climate events, particularly drought and excessive rainfall.

71 MPCI coverage is negligible in the small-scale sector.

Figure 20: Total agricultural insurance premium and penetration as percentage of agricultural GDP



Source: World Bank analysis. Note: MPCI = multi-peril crop insurance.

Table 8: Indicative portfolio, 2018/19 season

	Hail	MPCI	Forestry
Total premium (R, millions)	1,502	66.2	160
Claims incurred (R, millions)	1,138	12.9	45
Premium rates (Percent)	2-3	6-10	0.9-3.5
Hectares	4,582,094	162,314	650,000
Coverage (Percent of planted area)			59

Source: World Bank analysis.

Parametric agricultural insurance presents an opportunity to extend financial protection to small- and medium-scale farmers while protecting the fiscus. The World Bank, National Treasury, and Department of Agriculture Land Resettlement and Rural Development (DALRRD) are collaboratively working on solutions for small and medium farmers. DALRRD has developed a proposal for a pilot index-based agricultural insurance program targeting these smaller-scale farmers. It is critical that GoSA expedite the launch of this program. In addition to protecting farmers, it would also protect the fiscus by limiting government's contingent liability in the face of increasingly serious droughts.

Microinsurance

Although disaster-linked property microinsurance is available, microinsurance usage is dominated by life and funeral cover. By 2013, over 40 percent of households categorized as LSM 1-7 had microinsurance cover **(Error! Reference source not found.)**, almost all of which was funeral cover.[72] This is largely attributed to low-cost distribution channels like funeral societies and the cultural significance of offering loved ones a dignified send-off. While the market is innovating to cover the protection gap, for example through InsurTech-driven products (see Box 2), there has been limited take-up due to low

72 Fin Mark Trust. 2014. Regaining momentum? Update on microinsurance in South Africa. LSM, or Living Standards Measure, is a system of categorizing the population into socioeconomic groups. It calculates a composite indicator of living standards using location, asset ownership, and access to services. The indicator is correlated with income and used to classify individuals into 10 categories, ranging from LSM 1, the poorest, to LSM 10, the wealthiest.

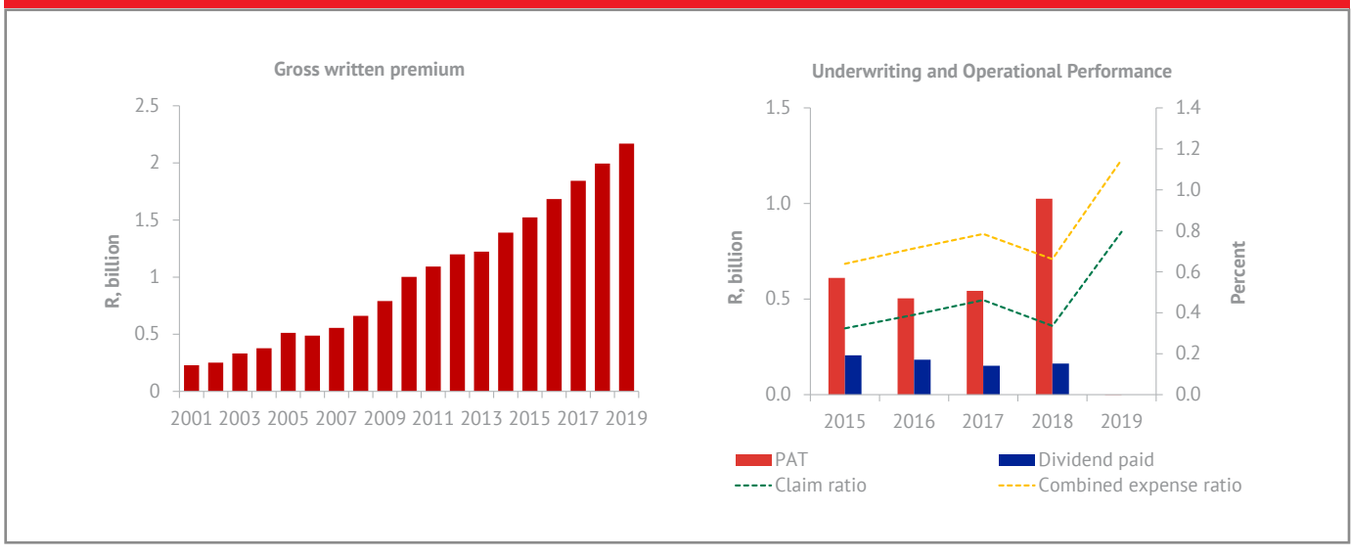
levels of financial literacy and product awareness. Therefore, there is a need for increased and targeted financial education to enhance the use of non-life insurance.

Insurance for Special Risks

In South Africa, insurance for human-caused risks is offered by Sasria, a state-owned insurer and the only insurer authorized to offer special risks cover.[73] Special risks include civil commotion, public disorder, strikes, riots, lockout, rebellion and revolution, and terrorism.

Sasria's fiscal position continues to strengthen; in 2019, gross written premiums reached R2.2 billion (Figure 21, left), while assets and equity reached R8.5 billion and R6.6 billion respectively. With a return on equity of about 10 percent over the last few years, Sasria is profitable and has paid on average 3 percent of equity in dividends to National Treasury nearly every year except for 2019, when claims tripled from an average of R600 million to nearly R1.7 billion (Figure 21, right). With assets at 400 percent of gross written premiums (compared to 120 percent for the industry) and a higher retention ratio than the industry (91 percent versus 81 percent), Sasria is overcapitalized and has capacity to write significantly more business.

Figure 21: Sasria written premium and performance



Source: Sasria. Note: PAT = profit after tax.

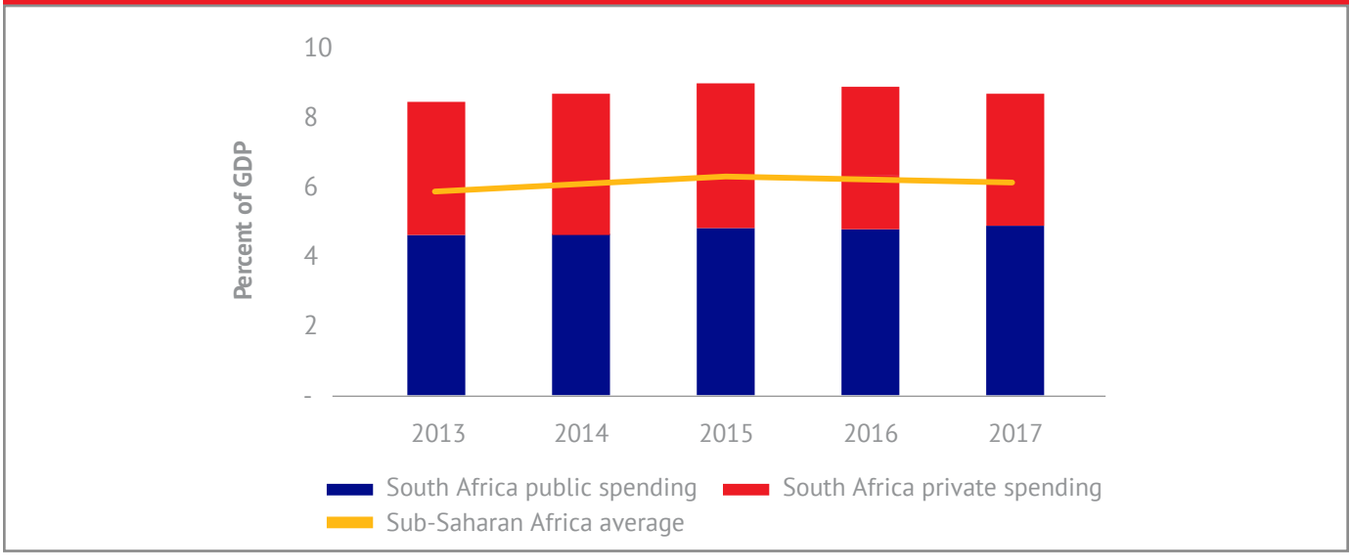
The difficulty of forecasting social phenomena renders Sasria vulnerable to shocks, but artificial intelligence presents an opportunity to increase Sasria's resilience. Service delivery protests are the major driver of claims over the past five years, accounting for 80 percent of claims, while labor strikes account for the balance. Given its strategic plan to extend cover to MSMEs, Sasria needs to better understand social phenomena that drive violent outbreaks. The MSME subsector is heavily exposed to the risk of xenophobic violence. Sasria's current risk-modeling and pricing approach are based on traditional actuarial techniques that use historical quantitative data. However, the availability of more voluminous data sources on social phenomena enables artificial intelligence-driven capacity to more accurately forecast and more rigorously explain phenomena that drive social violence. Use of artificial intelligence would enhance Sasria's modeling and risk-based capital management in line with Solvency and Asset Management (SAM) practices. Better forecasting would also improve pricing to enable Sasria to offer more affordable cover, particularly to its new target market.

Health Insurance

The South African health system consists of a large public sector and smaller private sector as measured by the number of beneficiaries, but the two have approximately equal spending levels (see Figure 22). Health care varies from the most basic primary health care offered free of charge by the state through a centralized health system, to highly specialized health services available in the private sector for those who can afford it.

73 Authorization is under the Conversion of the Sasria Act No. 134 of 1998.

Figure 22: Health expenditure as share of GDP: Public versus private sector, 2013-2017

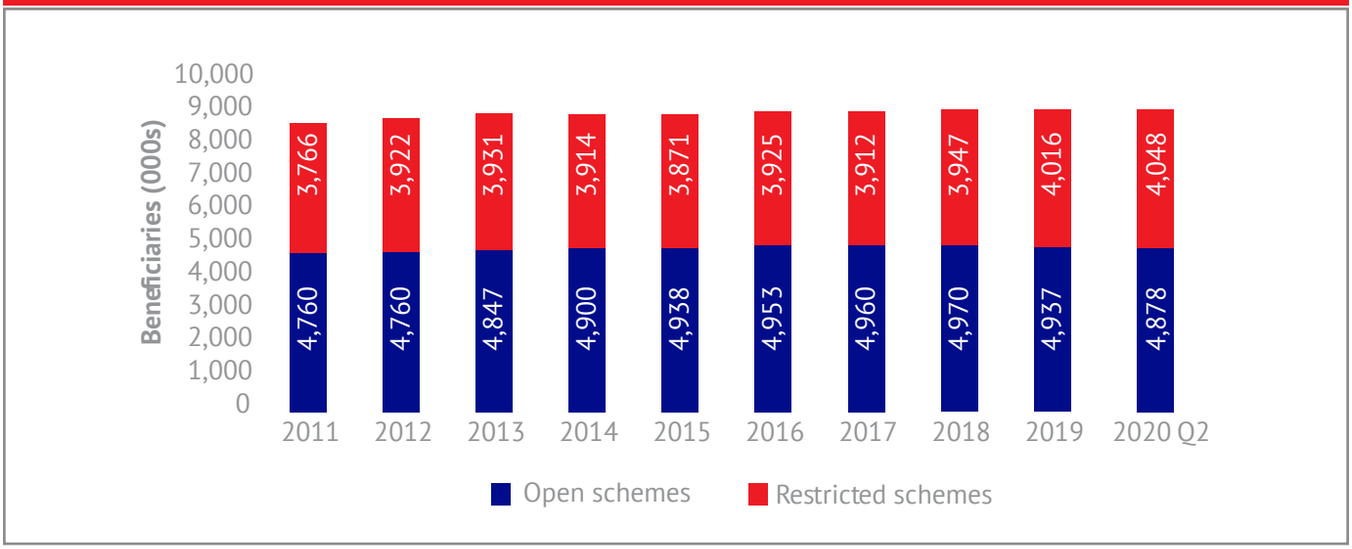


Source: World Development Indicators Database.

Almost all the private medical insurance in South Africa is written by the medical aid societies. Around 50 percent of the employed population is covered by medical aid schemes (the provision of medical cover is a normal market-driven employee benefit); market sources suggest that corporate membership accounts for around 80 percent of the total market.

Primary membership is stable at around 4 million and total membership (including beneficiaries) at around 9 million (approximately 15 percent of the population). Medical aid schemes providing reimbursement benefits may be closed or open (Figure 23). Closed schemes restrict membership to employees of an employer, usually large companies or particular industries such as the South African Municipal Workers' Union (SAMWU). Open schemes are typically for employees of small to medium employers and self-employed individuals.

Figure 23: Distribution of beneficiaries between closed and open schemes



Source: AXCO, "Life and Benefits Insurance Market Reports," 2020

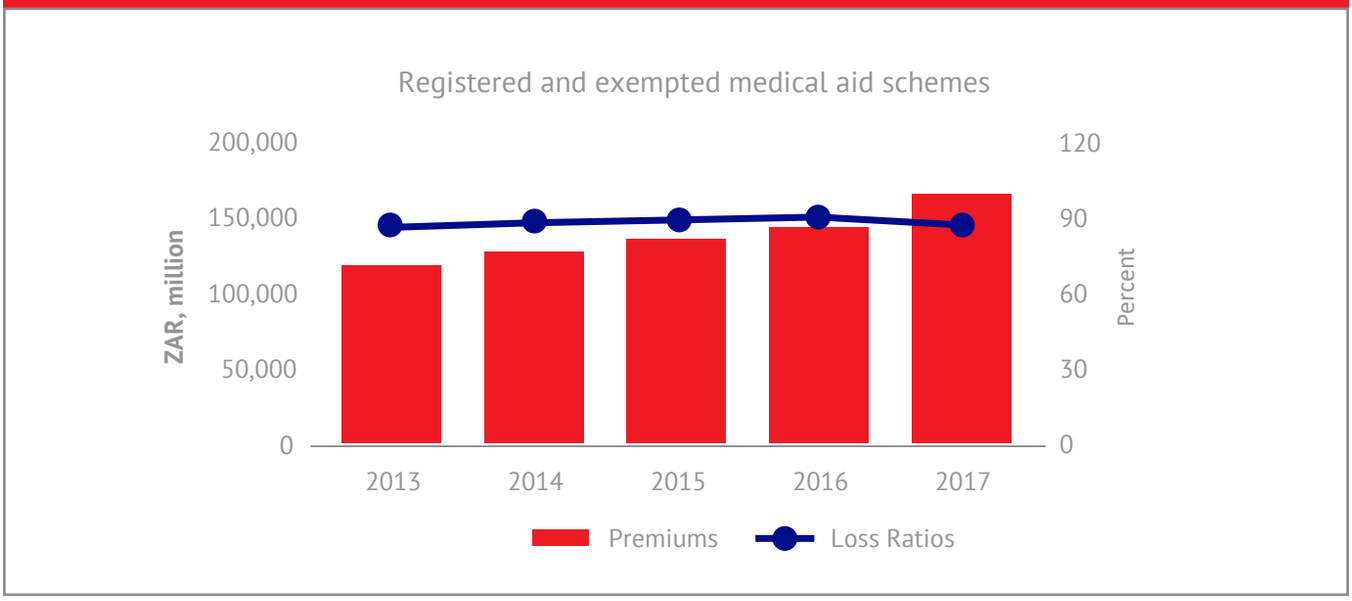
Health care coverage under medical aid schemes is comprehensive and may cover all medical costs, from normal general practitioner visits and routine dental and optical care to full hospitalization and emergency treatment, depending on the level of cover purchased. Although greater benefits may be offered, all medical aid schemes must cover at least all life-

threatening conditions, also called prescribed minimum benefits (PMBs). These must be covered in full, with no deductible applying. PMBs are legislated and cover the diagnosis, treatment, and care of 270 diseases (including TB and cancer), any emergency condition, and 25 chronic conditions.

Contributions to medical aid schemes are on a capitation basis, closely monitored by the Council for Medical Schemes (CMS); although medical aid schemes are by law not for profit, they are still required to demonstrate a regulated level of solvency. The minimum solvency level required is 25 percent, to ensure that at least three months of claims can be paid. Each medical aid scheme calculates its required annual contribution increase based on expected price increases for each individual claim type and expense element.

Loss ratios have been stable for a number of years. This may be attributed to the interaction of the medical schemes with the CMS when contribution increases are decided. As just indicated, each medical aid scheme calculates its required increase based on expected price increases for each individual claim type and expense element; these assumptions are submitted to the approval of CMS before the beginning of each calendar year. Under exceptional conditions, the medical aid schemes can increase the premiums during the year, following "major" eligible events that significantly increase the cost of health care claims during the year.

Figure 24: Evolution of premiums and loss ratios for medical aid schemes, 2013-2017

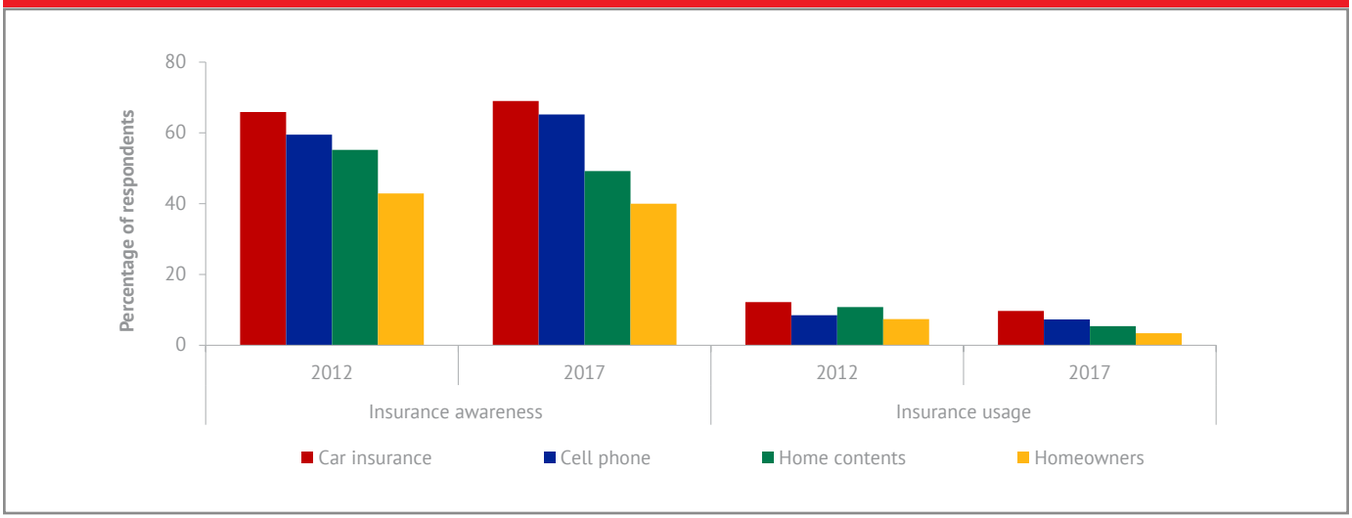


Sources: Axco Global Statistics; industry associations; regulatory bodies.

Financial Awareness

There is a need for more targeted and evidence-based financial education programs, and for the regulator and the insurance sector to work more closely on sending a coordinated message to consumers to increase trust in and appreciation of short-term insurance. The GoSA recognizes the value of financial capability, and it committed to a National Consumer Financial Education (NCFE) Strategy in 2013. Since then, several consumer education programs have been implemented. The Financial Sector Conduct Authority (FSCA) continually monitors the effectiveness of these financial literacy programs through the South African Social Attitudes Survey (SASAS), which is administered every two years. The most recent SASAS found a significant gap between insurance awareness and usage (Figure 25). Meanwhile there is limited targeting and evaluation of consumer education programs run by SAIA; hence their impact is uncertain.

Figure 25: Short-term insurance awareness and utilization



Source: South African Social Attitudes Survey.

Box 2: Disaster-related insurance for low-income households and informal settlements

Lumkani is an InsurTech startup focused on closing the protection gap for low-income households and small businesses. It primarily offers a fire insurance product bundled with a heat detector, fire warning system, and funeral cover. The product is underwritten by Hollard Insurance, and premiums cost as little as R60 for property cover up to R40,000 and funeral cover for up to six dependents. In July 2020, Lumkani introduced a more comprehensive product, which also covers contents against theft and natural disaster damage. The premium for R50,000 of fire cover and R10,000 of theft and natural disaster cover is R149. Given the high rates of noncompliance with construction and maintenance regulations and standards, the product does not cover the building structure against natural disasters. There could also be an opportunity to expand coverage for human-caused risk (e.g., social unrest) if better modeling and forecasting data was available.

The combination of distribution channel and technology positions the product well for this market. The company distributes the product through a network of local agents, which brings the service provider close to clients. In addition, the fire warning detector makes the product more tangible. The company's technology also enables closer contact with clients, flexible payments, and quick, proactive claims settlement. **However, despite the custom design and low premium rate, uptake has been low due to the public's limited appreciation of the benefits of insurance.**

Source: World Bank staff.

Fiscal Cost and Funding Gap Analysis

Statistical analysis was conducted to estimate the costs of disaster relief to the budget in South Africa. The analysis was based on the data presented in Section A, "Assessing Disaster Risk and the Impact of Past Disasters," which presents the economic loss due to disasters in South Africa between 1959 and 2019.[74] First the historical cost of relief was estimated. Then statistical analysis was conducted to estimate indicative expected future relief costs, which were compared to the available funding to determine the funding gap.

Modeling the Fiscal Cost

In the first step of the analysis, two distinct estimation methods were used to derive relief costs from the economic losses: one for impact to human livelihoods, the other for physical damage to property and assets. The estimation method for drought (impact to livelihoods) multiplied the number of lives affected in past drought years by an average cost of relief per person. The number of lives was as reported by EM-DAT and government entities like the South African Social Services Agency (SASSA).[75] The estimation method for flood, storm, wildfire, and earthquake (damage to assets) multiplied the uninsured economic loss value by an emergency relief factor. The uninsured loss was based on data from multiple sources, including EM-DAT, government reports, and insurance reports. See Annex 7: Fiscal Gap Analysis: Estimation of Historical Fiscal Relief Costs for further details. The relief factors were estimated using data collected from South Africa, and sense checked against those used by international reinsurance markets.

A statistical distribution was fitted to the historical relief costs and Monte Carlo simulation used to produce an indicative distribution of future relief costs. The fitting exercise assessed a range of different distributions and selected the one that best fits the relief costs data. Then, using this fitted distribution, Monte Carlo simulation was carried out to simulate 15,000 years of losses. These simulated relief costs indicate the frequency and severity of future relief costs.

The simulated average annual cost of disaster response is US$249 million (R3.7 billion) while the median cost (1-in-2-year event) is estimated at US$83 million (R1.2 billion). However, the costs of response could be much higher with the impact of climate change. Based on the median, 50 percent of the time the relief cost is less than R1.2 billion. However, the average loss of R3.7 billion, which is 40-75% of the Contingency Reserve, demonstrates that the distribution has a large positive skew; thus, based on the fitted distribution there is a meaningful probability of having very large relief costs. For example, the 1-in-50 year[76] relief cost is estimated at US$1.5 billion (R22.5 billion), which is approaching the 2020/21 annual expenditure for agriculture and rural development.[77] This is comparable to the highest historical relief cost of 1.6 billion (R23.1 billion), which is a 1-in-53-year loss event based on the selected distribution (Figure 26). The costs of response could be much higher with the impact of climate change. The latest Intergovernmental Panel on Climate Change (IPCC) report notes that the impact of climate change on highly vulnerable populations is contributing to humanitarian crises, exposing millions to acute food insecurity and reduced water security. Approximately 50-75 percent of the global population could be exposed to periods of life-threatening climatic conditions due to extreme heat and humidity by 2100.[78]

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74 The costs of relief to GoSA in response to the COVID-19 pandemic are excluded from this analysis, as the pandemic is still ongoing at the time of writing this report and as the costs incurred by the GoSA are an extreme outlier and skew the data.

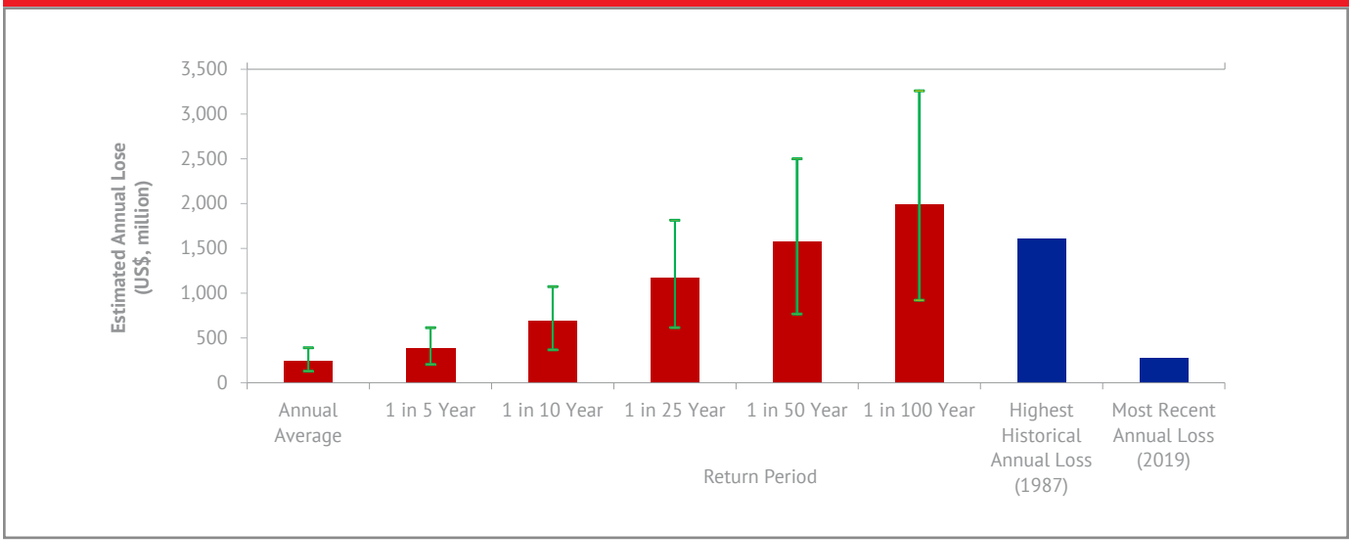
75 EM-DAT provides the number of lives affected for 10 of the 11 drought years, and the number of beneficiaries of the Social Relief of Distress grant administered by SASSA is used for one of the drought years. The SRD grant is provided to individuals who have insufficient means and have been affected by a disaster as defined in the Disaster Management Act.

76 The return period is the time over which one should expect to see a loss of the same or greater magnitude. For example, a 1-in-5-year return period is the estimated annual loss expected to be exceeded once every five years on average; in other words, in any given year there is a 20 percent probability of a loss at least as great as this.

77 National Treasury. Budget 2021 Estimates of National Expenditure. *http://www.treasury.gov.za/documents/national%20budget/2021/ene/FullENE.pdf*

78 IPCC (Intergovernmental Panel on Climate Change, "Summary for Policymakers," ed. H.-O. Pörtner et al., in Climate Change 2022: Impacts, Adaptation, and Vulnerability, Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, ed. H.-O. Pörtner et al. (Cambridge University Press: In press), 13, 11.

Figure 26: Simulated average relief costs due to disasters in South Africa for different return periods



Sources: Calculations by World Bank staff based on

EM-DAT database (1952-2019): The Emergency Events Database, Université catholique de Louvain (UCL), CRED, D. Guha-Sapir, Brussels, Belgium, www.emdat.be; Swiss Re; Risk and Development Annual Review (RADAR); National Disaster Management Centre/ government reports; academic reports.

Note: The error bars show the 95 percent confidence interval.

Funding Gap Analysis

The indicative distribution of fiscal costs of relief presented in the preceding sections was then compared to the current risk finance available to National Treasury to assess the funding gap at various return periods. The analysis also compared relief costs and potential coverage provided by alternative risk financing strategies that GoSA could consider. When the GoSA develops a National Disaster Risk Finance Strategy, it will be important to decide on how much risk it can retain as well as how much it will transfer to private financial markets, which will be limited by the costs of the various instruments, including premium on insurance.

The analysis illustrates the following trade-offs that GoSA would need to consider:

1. **Different risk financing instruments have different costs and differ in cash flows; reserves incur a delayed opportunity cost while insurance has an up-front cost of premiums.**
2. **Holding large reserves entails an opportunity cost, but if a major event occurs in the absence of reserves, mobilizing funding through budget reallocation and borrowing can result in avoidably high disaster costs.**
3. **Budget reallocations carry a high opportunity cost, as resources are channeled away from planned high-yielding social and capital investments.**
4. **Ex post borrowing is especially costly for states with unsustainably high debt ratios, and many countries face challenges raising debt after a shock, leading to high time costs.** Furthermore, a disaster event can result in a credit downgrade and trigger a debt crisis.
5. **Insurance is suited for extreme events-that is, events occurring less frequently than every 5-10 years, on average. It is more cost-effective for insurance to cover only a share of the costs.**

The analysis demonstrates how the GoSA could strengthen its risk financing strategy by adding financial instruments that balance risk retention and risk transfer (risk layering). Two alternative risk financing strategies (Strategy B and Strategy C) are compared to the current financing approach (Base Strategy) to determine potential cost savings.

- **The Base Strategy is the status quo, which consists of reserve funds of US$91 million,[79] budget reallocation of US$5.5 billion, and ex post borrowing.[80]** This Base Strategy is only illustrative, as South Africa does not have a defined financing strategy in place.
- **Strategy B consists of a reserve fund of US$200 million, contingent credit of US$500 million, and sovereign insurance with a maximum payout of US$876 million and a ceding share of 50 percent.** The instruments are layered. The reserve fund covers losses of up to a 1-in-1.5-year event. Contingent credit covers losses of up to a 1-in-10-year event, while insurance covers up to 1-in-50-year events. We assume that the reserve fund is solely dedicated to natural disaster relief and incurs small administrative costs. The contingent credit instrument used for illustrative purposes is a World Bank CAT DDO (Catastrophe Deferred Drawdown Option), of which the maximum amount for South Africa is US$500 million. The sovereign insurance is assumed to cover all perils and has a 50 percent ceding share, which means 50 percent of all losses in the sovereign insurance layer are protected. The attachment is set such that insurance pays out when costs of relief exceed US$693 million, which is the cost of a 1-in-10-year loss event. Insurance would cover losses above those covered by the other two funding instruments (reserve fund and contingent credit). Any losses beyond the insurance exhaustion point, which has been set at a 1-in-50-year loss of about US$1.5 billion, would not be covered by the insurance. In such a rare event, GoSA would raise additional funds through ex post borrowing.
- **Strategy C consists of a reserve fund of US$200 million, contingent credit of US$500 million, and sovereign insurance with a maximum payout of US$876 million and a ceding share of 100 percent.** This means all the losses in the sovereign insurance layer are protected. For more extreme losses GoSA would resort to ex post borrowing.

Figure 27: Funds available under each risk-layering strategy (US$ million)

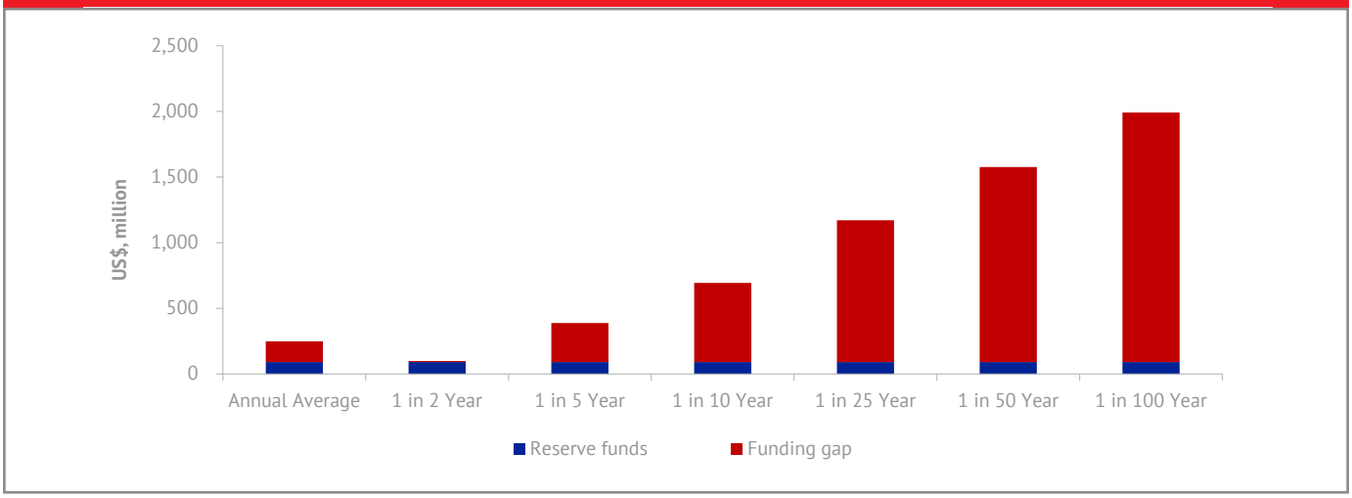
Source: World Bank analysis.

With the current pre-arranged funding of US$91 million, the annual funding gap is estimated to exceed US$157 million on average. The funding gap is the difference between the available government budget and the probable loss for a given event size. The funding gap increases as the losses increase (with higher return periods) because the reserve funds are constant. Notably, there is no funding gap for the median loss, which suggests that the reserves are likely to adequately meet relief costs most years but are insufficient for mild events having a 1-in-3-year return period or higher (Figure 28).

79 This assumes that 30 percent of the contingency reserve administered by National Treasury is ring-fenced for natural disasters and includes the disaster relief grants administered by the National Disaster Management Centre.

80 National Treasure reallocated R70 billion for COVID-19 response. Thus, it was assumed that reallocations up to approximately US$5.5 billion are possible.

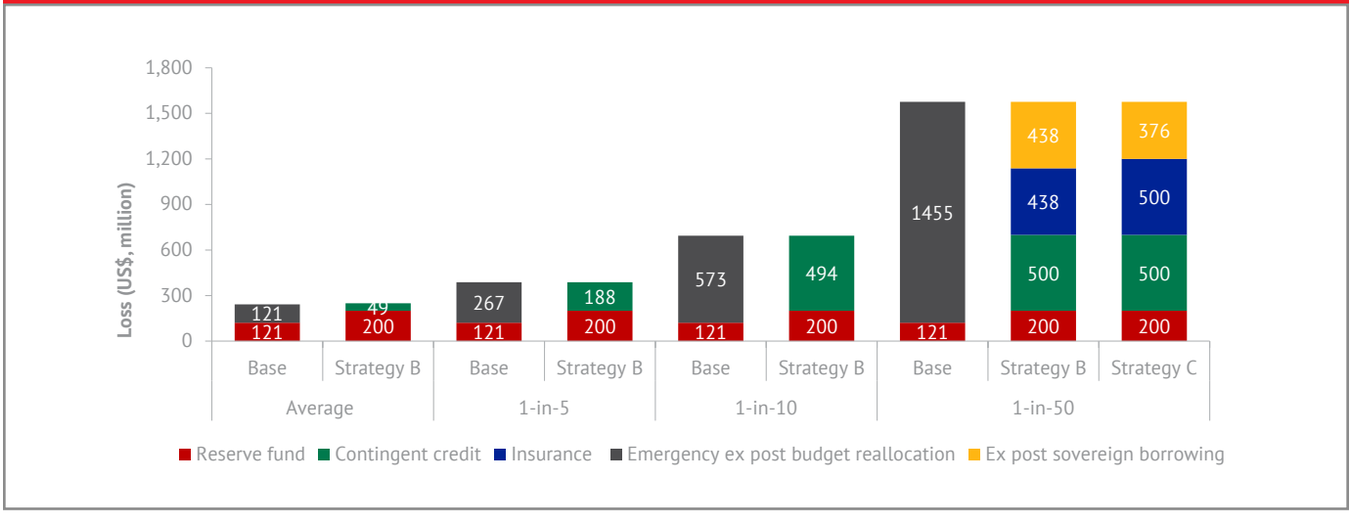
Figure 28: Funding gap at various return periods assuming reserve funds of US$91 million



Sources: Calculations by World Bank staff based on EM-DAT database (1952-2019): The Emergency Events Database, Université catholique de Louvain (UCL), CRED, D. Guha-Sapir, Brussels, Belgium, www.emdat.be; Swiss Re; Risk and Development Annual Review (RADAR); National Disaster Management Centre/government reports; and academic reports.

Under the Base Strategy South Africa resorts to budget reallocation for small (around 1-in-3-year) events. Figure 29 illustrates a breakdown of instruments used under the base and alternative strategies for annual average loss events, 1-in-5-year events, 1-in-10-year events, and 1-in-50-year events. The gray layer could be interpreted as the funding gap; no prearranged funding exists for this layer, and instead emergency ex post funding is required.

Figure 29: Breakdown of instruments used to fund different magnitudes of loss under each DRF strategy

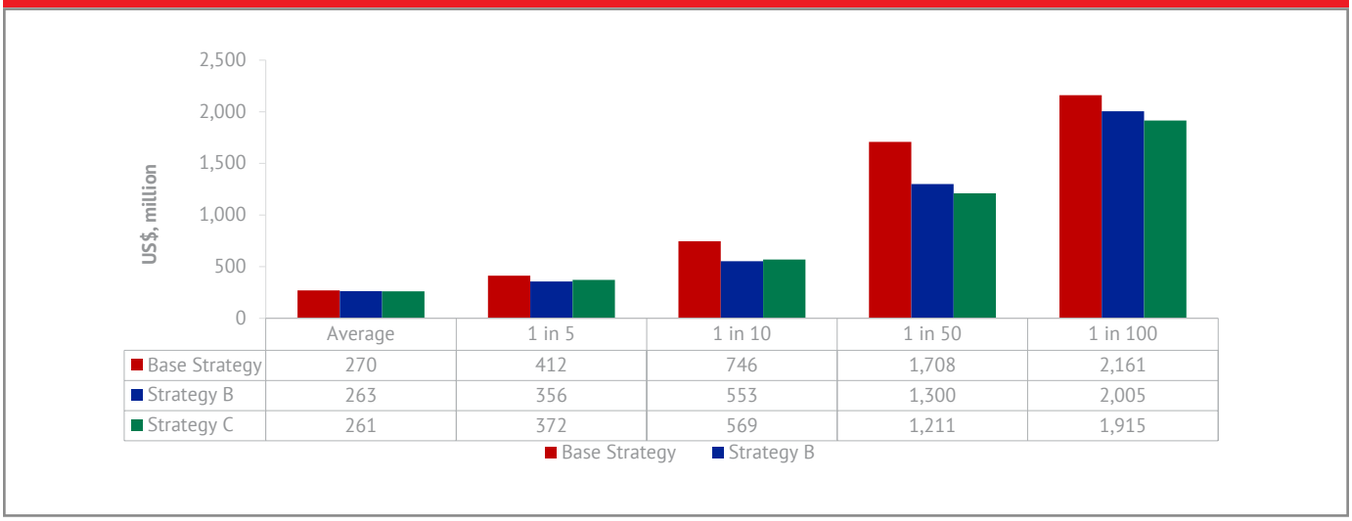


Source: World Bank analysis.

Expanding National Treasury's suite of risk financing instruments could generate savings of US$7 million (R105 million) on average, and up to US$500 million (R7.5 billion) for extreme shock events, based on indicative analysis carried out by the World Bank (Figure 31). On average, Strategy B and Strategy C could respectively create savings of US$7 million (R105m) and US$9 million (R135m) versus the status quo. However, for more extreme shocks the savings increase

considerably. When looking at a 1-in-50-year event (loss size of about R22.5 billion), Strategy B and C respectively save R6.1 billion (US$408 million) and R7.5 billion (US$500 million) versus the status quo, demonstrating the effectiveness of an expanded risk-layering approach for severe disasters. More in-depth financial modeling and technical analysis should be carried out to rightsize potential financial instruments National Treasury could consider.

Figure 30: The potential opportunity cost of funding different loss events per year under each DRF strategy

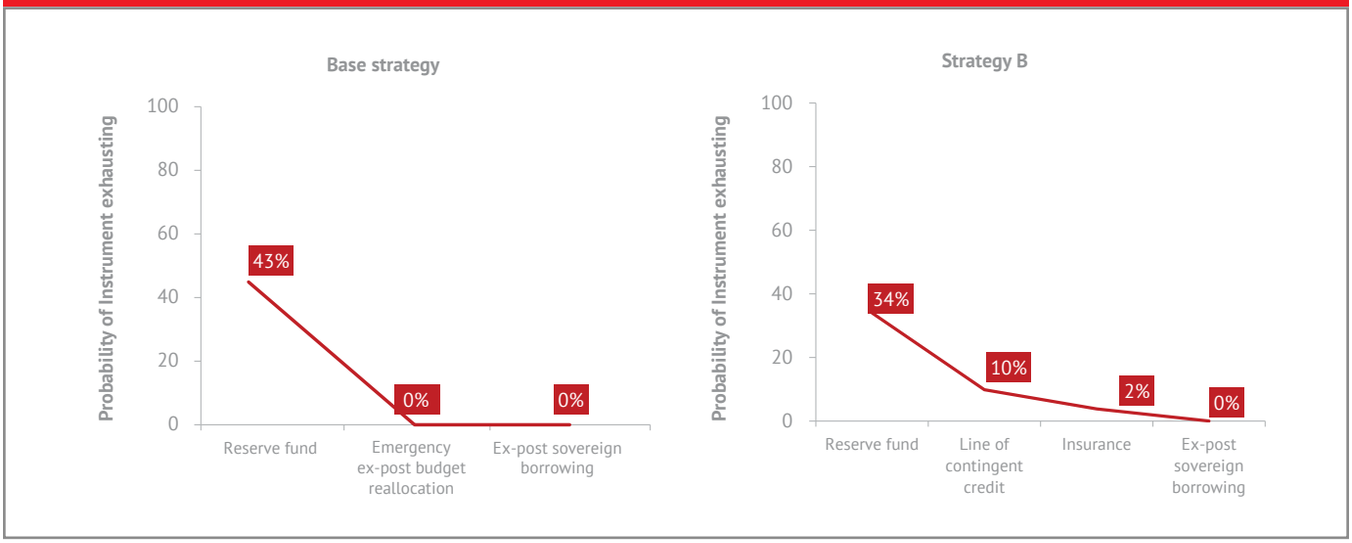


	Average	1 in 5	1 in 10	1 in 50	1 in 100
Base Strategy	270	412	746	1,708	2,161
Strategy B	263	356	553	1,300	2,005
Strategy C	261	372	569	1,211	1,915

Sources: Calculations by World Bank staff based on EM-DAT database (1952-2019): The Emergency Events Database, Université catholique de Louvain (UCL), CRED, D. Guha-Sapir, Brussels, Belgium, www.emdat.be; Swiss Re; Risk and Development Annual Review (RADAR); National Disaster Management Centre/government reports; academic reports.

The GoSA use budget reallocation for mild (1-in-3-year) losses, which significantly increases the cost of the Base Strategy. The Base Strategy assumes that 20 percent of the National Treasury contingency reserve of R5 billion is ring-fenced for disasters and that existing relief grants (R466 million) are used to fund relief efforts. Based on the simulated relief cost, there is a 43 percent chance that these instruments will be exhausted in a year (see Figure 31), after which budget reallocations are required to fund response. Notably the large capacity for reallocation means that the GoSA can finance extreme loss (1-in-100 year) events using this instrument. Meanwhile, under Strategy B, the probability that reserves are exhausted is lower, at 34 percent. In addition, combining the large reserve funds with the contingent credit plus insurance reduces the probability of budget reallocation to 4 percent. Budget reallocation is a relatively expensive risk financing instrument, as diverting funds from high-yielding social and physical investments increases the cost of the base strategy. Consequently, limiting use of this instrument reduces the cost of Strategy B and Strategy C. Strategy C is more costly than Strategy B for moderate events (1-in-5-year to 1-in-10-year loss events) because the premium cost is higher (100 percent of the losses are ceded to the insurer), while the losses indemnified are low. Strategy C is more cost-effective for severe to extreme (1-in-50-year) events because the losses indemnified are large, while under Strategy B only 50 percent of the losses are indemnified.

Figure 31: Probability of instrument exhausting under each DRF strategy



Source: World Bank analysis.

Disaster risk reduction should be strengthened to ensure sustainability of the disaster risk finance strategy. Disaster risk reduction and disaster risk financing are complementary. Risk reduction can reduce the total expected loss under each of the above strategies. Studies show that investing in infrastructure resilience results in cost savings and helps to mitigate impacts and disruption of critical public services. A 2019 World Bank study found that every US$1 invested in infrastructure resilience could result in US$4 in benefits.[81] In addition, risk reduction can lower the cost of insurance by reducing the required cover or the risk that insurance will be triggered.

The analysis is limited by the absence of a national or central source of data on disaster-related losses, damages, and expenditures. While the analysis collated a significant volume of data to ensure credibility of the analysis, the data were from disparate sources, and the judgment involved in consolidating the data introduces subjectivity into the assessment. To strengthen fiscal loss data moving forward, the GoSA could develop a national database on impact and expenditure related to disaster. Such data are critical for informed government decisions about allocating funds ex ante.

81 Stephane Hallegatte, Jun Rentschler, and Julie Rozenberg, Lifelines: The Resilient Infrastructure Opportunity (Washington, DC: World Bank, 2019), *https://openknowledge.worldbank.org/handle/10986/31805.*

Case Studies

This section presents three case studies-the eThekwini flooding in April 2019, the Day Zero drought in Cape Town, and the COVID-19 pandemic[82]-to assess the extent to which municipal governments are able to clarify and meet obligations arising from shocks caused by disasters while minimizing threats to development progress and fiscal stability. In an effort to ultimately to strengthen municipalities' financial resilience, the case studies seek to identify both strengths and weaknesses of municipalities' performance.

Case Study 1: Heavy Rains and Flooding in eThekwini-April 2019

In April 2019, eThekwini was affected by heavy rainfall and flooding. Beginning on April 22, eThekwini Metro was pelted with heavy rainfall and high winds, due to a cutoff lower pressure system. Over 165 mm of rain fell-the heaviest rainfall in a 24-hour period since 1985. Water flooded low-lying areas, and informal settlements were frantically evacuated as the banks of the Umgeni River began swelling. Nearly 100 people were killed and over 1,000 displaced as a result of rapid-onset flooding and landslides, collapsed buildings, and sinkholes in KwaZulu-Natal.

Cost of Responding to the Disasters

Different damage assessments yielded different estimates. According to the interim assessment (conducted by the municipality), the damage costs were R1.1 billion, while the provincial disaster management center from the KwaZulu-Natal Department of Cooperative Governance and Traditional Affairs (COGTA) had a much higher estimate of R1.9 billion. Only R34.3 million was allocated for response, however, creating a budget shortfall in excess of R1.8 billion, equal to a funding gap of 98.16 percent. The funds that were received came from the education infrastructure grant, provincial roads maintenance grant, and human settlements development grant.

Even for the most urgent of needs, a substantial funding shortfall exists. The FY 2019/20 operating budget for the Disaster Management and Emergency Control Unit was R7.1 million. Clearly, in the event of major incidents or disaster, such as the 2017 and 2019 storms, the budget allocation cannot meet the relief needs of affected individuals across the affected wards.

Going Forward

The eThekwini Disaster Management Level 2 Plan notes three priorities to improve budgeting for disaster response and recovery. First, the city is to review the budget allocation to disaster management based on response and recovery operations. Second, emergency funding for emergency rehabilitation is to be allocated. Third, Treasury is to look into 2017 and 2019 storm damages to be able to forecast budget allocations. Without further discussions with the finance department, however, it is not possible to tell whether these priority steps have been taken.

There have been substantial delays in conducting assessments, which are a prerequisite to disbursing funds. According to an update from the national COGTA in mid-2020, the assessments for the April 2019 floods had yet to be completed. The update noted that the National Disaster Management Centre, a branch of the Department of Cooperative Governance (DCoG), is reinstating the process regarding previous disaster occurrences that were reported by KZN [KwaZulu-Natal] province. These are regarding the damages due to inclement weather in April 2019. The process was halted due to the COVID-19 pandemic and the lockdown in the country. Engagements are underway with the province and relevant national organs of state to determine the funding already disbursed to the province by various organs of state to and the shortfall identified in addressing the damages. Upon receipt of the information from sectors, the NDMC [National Disaster Management Centre] will be engaging the independent assessors to conduct the damage assessment on damaged infrastructure by mid-August 2020.[83]

However, based on the guidance we received from the eThekwini government, the assessments restarted only in November 2020, and had not been finalized as of November 2021. This indicates a significant delay in assessing damages (over 18 months) and mobilizing the funds to rebuild.

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82 For more detail on the eThekwini floods and Zero Day drought, see Annex 8; for more detail on the COVID-19 pandemic, see Annex 5.

83 Presentation by the National Disaster Management Centre (a branch of the Department of Cooperative Governance).

As discussed earlier, the Municipal Disaster Relief Grant is designed to enable a timely response to immediate needs after a disaster-but the eThekwini government stated it does not apply for the grants due to the challenges associated with utilizing funds and meeting reporting requirements. For example, the grant requires detailed assessments of damages conducted by all three spheres of the government: National Disaster Management Centre conducts a preliminary cost verification; the provincial disaster management center monitors the implementation of disaster funds; and the municipality conducts disaster assessment reports, expenditure reports, and performance reports. The complexity of the process and a relatively low level of experience with the grant leads some municipalities to either not initiate the application process or fail to complete it.

Case Study 2: Cape Town-Day Zero

Overview

Cape Town's demand for water has been growing faster than its water treatment capacity. Cape Town, a metropolitan coastal city of more than 4 million people, has been close to water scarcity for years, as the effects of a slow-onset disaster ramped up. A dry climate coupled with high population growth (and thus demand) and high per capita water consumption led to a mounting water shortage. Although dam levels had been declining since 2015, they dropped to 15-30 percent capacity by late 2017. In early 2018, after three consecutive winters with little rainfall, the concept of "Day Zero" emerged-the triggering of severe water restrictions when water levels in the city's supplier dams dropped below 13.5 percent. This level of restriction would mean the shutting off of municipal water supplies, in turn forcing residents to wait in lines for their daily water ration (25 liters of water, in line with the World Health Organization's minimum short-term emergency survival recommendation for washing, cooking, and hygiene). Thanks to a suite of water saving initiatives, Day Zero never arrived-but there were many lessons learned through the effort to avoid it.

Cost of Responding to the Disaster

During the Day Zero drought, Cape Town's financial resilience was tested through two key avenues: a substantial decline in revenue and the additional costs required to respond to the drought. The decreased revenues resulted from a decline in water and sanitation service charges and larger macroeconomic impacts from the loss of 25,000 Western Cape jobs in agriculture and tens of thousands more in the service, hospitality, and food sectors. The increased costs required to respond to the drought related to implementing various initiatives to ensure sustainability and resilience in water provision for the city, including investment in desalination, underground extraction from aquifers, and water reclamation/reuse initiatives. The reduction in revenue and increase in costs are explored in turn below.

Reduction in Revenue

The decline in revenue was driven by a reliance on water service charges. For the 2018/19 financial year, the total municipal budget was R47.7 billion, including R8.4 billion for capital expenditure and R39.3 billion for operating expenditure. Electricity charges are the most substantial contributor to municipal revenue, bringing in R12.6 billion, or 32 percent of the city's total revenue. This is followed by property rates, which bring in R9.3 billion, or 23.8 percent of revenue. Water service charges generate a revenue of R3.5 billion; when added to the revenue generated from sanitation charges (R1.8 billion), water service-related revenue contributes 13.7 percent of total revenue. This makes water services the third largest source of own revenue for the City of Cape Town.

The City of Cape Town's financial approach is encapsulated in the Medium-Term Revenue and Expenditure Framework (MTREF). A review of the MTREFs shows that there are shifts in the consumption of both electricity and water-and by extension, shifts in the revenue the City of Cape Town is able to raise from the sale of these services. The decline in consumption is led by an increase in load-shedding in the electricity sector and water restrictions linked to the drought. For electricity, many households and firms have invested in alternate sources of energy, particularly solar photovoltaic (PV) panels. This change, coupled with increasing efficiencies, leads to residents purchasing less electricity from the state and to a consistent decline in revenue for the city.[84] The MTREFs show a consistent decline in consumption of 1-1.5 percent over the four-year period leading up to the 2017/18 MTREF. The 2017/18 MTREF[85] indicated that the rate of electricity

84 City of Cape Town 2018g.

85 Ibid.

consumption decline will double to 2.68 percent for the 2018/19 financial year, with a predicted shrinkage of 2 percent for the following two financial years.[86]

This downturn had fiscal implications given that revenue from the sale of water accounted for 15.8 percent of total revenue for Cape Town during the 2017/18 financial year.[87] Cape Town initially forecasted revenue from water and sanitation tariffs for the 2017/18 financial year to be approximately R6.02 billion.[88] This estimate came in early 2017 when dam levels sat above 40 percent and demand for water was 900 million liters per day. But the 2017 rainy season brought in less than half of the expected rainfall, and there was not enough water to bring in the forecasted R6.02 billion. By December 2017, the city had received 24.8 percent less revenue from water service charges year-on-year (y/y), which amounted to a shortfall of R483 million and 30.8 percent less revenue from sanitation service charges y/y, adding a shortfall of R316 million.[89] The substantial revenue shortfall led to an adjustment to the predicted revenue from these service charges.

The adjusted budget in January 2018 revised the revenue expected from water and sanitation services down from R6.02 billion to R4.17 billion to account for the under-recovery and forecasted impact of Level 6 restrictions.[90] This revision meant that expected revenue from sale of water and sanitation services declined by 31 percent, accounting for just 9.6 percent of total municipal revenue-far below the expected 15.8 percent.[91] This decreased revenue "necessitated budget reprioritization and immediate internal cost-cutting directives on various expenditure items."[92]

The City of Cape Town's budgeting model did not take into account severe water shortages. Cameron and Katzschner note an important assumption that underpinned the "shock within a shock": Cape Town municipality's budgeting is built on the structure and pricing of its water system, which in turn "is based on the assumption that there will be a constant supply of available and easily accessible freshwater."[93] Thus, although the city accounted for long-term decline in electricity consumption, it did not apply conventional approaches such as contingency reserve to buffer water scarcity shocks.[94]

Support from Provincial and National Governments

During the first years of the drought (2015-2017), the City of Cape Town largely self-financed the response. This was likely partially due to a deficit within South Africa's Department of Water and Sanitation, which revealed June 2020 that it had overspent on its budget by R110 million at the end of the 2016/17 financial year. The Department of Water and Sanitation also stated that it had no funds allocated for drought relief in the 2017/18 financial year. A report released by South Africa's auditor-general toward the end of 2017 concluded that the Department of Water and Sanitation was guilty of "fruitless and wasteful" spending.

To mitigate the impact of the water crisis on government services, the Western Cape government has established a Joint Operations Committee to coordinate the provincial response. In the 2017 Adjusted Estimates, funding of R165.331 million for 2017/18 and R157.031 million for 2018/19 was made available for drought relief and mitigation initiatives.

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86 City of Cape Town 2018a.

87 City of Cape Town 2018c:17.

88 City of Cape Town 2018b.

89 City of Cape Town 2018h.

90 City of Cape Town 2018b, 2018c.

91 City of Cape Town 2018h.

92 City of Cape Town 2018c:14.

93 R. Cameron and T. Katzschner, "Every Last Drop: The Role of Spatial Planning in Enhancing Integrated Urban Water Management in the City of Cape Town," South African Geographical Journal 99, no. 2 (2017): 196-216, doi:10.1080/03736245.2016.1231622.

94 N. S. Grigg and E. C. Vlachos, "Drought and Water-Supply Management: Roles and Responsibilities," Journal of Water Resources Planning and Management 119, no. 5 (1993): 531-41; H. J. Bruins, "Proactive Contingency Planning vis-à-vis Declining Water Security in the 21st Century," Journal of Contingencies Crisis Management 8, no. 2 (2000): 63-72, doi:10.1111/1468-5973.00125.

The city has adopted a steep progressive financing structure. During the peak of the crisis, the heaviest consumers (those using more than 35 kiloliters) in Cape Town had their tariffs increased from R52.04 per kiloliter to R341.72 per kiloliter. Though the water tariffs have declined because Cape Town is no longer in an emergency, tariffs in Cape Town have remained steeper than in other parts of South Africa. For consumption between 6 and 10 kiloliters per month, Cape Town charges R20.75 per kiloliter, while Johannesburg charges R18.99, a difference of 8.5 percent. That charge increases as consumption goes up. Cape Town's highest bracket, assuming no water restrictions, charges R52.05 per kiloliter (for consumption higher than 35 kiloliters per month). In Johannesburg, usage of more than 30 kiloliters per month incurs a cost of R42 per kiloliter, nearly 20 percent less.

The new fixed service charge model has been designed to support financial sustainability. The 2018/19 budget depicts a restructured water tariff, with a revision from the six-step tariff to a four-step tariff structure; this allows for a higher rate of recovery at the lower usage levels, given that the higher usage levels are no longer a viable source of revenue.[95] In addition, Cape Town City Council agreed upon the introduction of a fixed service charge for both electricity and water and sanitation services, which is independent of consumption levels.[96] The intention behind this fixed service charge is to recover the cost of maintaining the service connection and the grid infrastructure necessary to deliver the service. Previously this cost was built into the unit price for electricity and water, with the assumption that those using fewer units of these services were more vulnerable, and those using more were higher-income households who could afford to contribute more to the upkeep of the infrastructure.[97] However, it is now evident that the consumption of electricity and water is no longer closely aligned to income, as more affluent households and businesses are able to leave the grid by making the capital investments necessary to generate their own electricity and secure their own water supply.[98] Therefore, this assumption cannot underpin the tariffing structure, and a more equitable means of recouping the costs of service delivery is required. The introduction of a fixed service charge is an attempt at creating a more equitable means of distributing the costs of infrastructure maintenance.

Case Study 3: COVID-19

South Africa is ranked as the African country most prepared to deal with a pandemic, according to a Global Health Security (GHS) Index.[99] This is largely attributed to a high level of political will and technical commitment. Another strength of South Africa's health care system is the strong efficient link between public health and security authorities, which is critical for effective and timely outbreak response. Yet significant challenges remain in the public health sector, including underfunding and human resource shortages.

COVID-19 Outbreak Development

The South African government's response to COVID-19 started on March 15, 2020 (10 days after the first reported case), with the declaration of a state of disaster. By the end of March 2020, the GoSA had already implemented strong containment measures (stay at home requirements; closure of workplaces, schools, and public transport). Most GoSA measures remained in place until at least July 1, 2020, when the curve of daily new cases showed a decreasing trend. A second wave started at the beginning of 2021, which meant the government had again to declare a national state of disaster, which extended to May 15, 2021, and included limiting international travel and stay at home orders.

To devise vaccine strategies, the Ministerial Advisory Committee on COVID-19 Vaccines was introduced, and South Africa's participation in the World Health Organization's COVID-19 Global Vaccine Access Facility was announced. South Africa's vaccine strategy, released on January 3, 2021, targeted a minimum of 67 percent of the population to achieve herd immunity in three phases by the end of 2021.

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95 City of Cape Town 2018c, p. 7.

96 City of Cape Town 2018f.

97 City of Cape Town 2018f.

98 Nicholas Philip Simpson, Kayleen Jeanne Simpson, Clifford D. Shearing, and Liza Rose Cirolia, "Municipal Finance and Resilience Lessons for Urban Infrastructure Management: A Case Study from the Cape Town Drought," International Journal of Urban Sustainable Development 11, no. 3 (2019), *https://www.tandfonline.com/doi/full/10.1080/19463138.2019.1642203?scroll=top&needAccess=true.*

99 Global Health Security Index, 2021, *https://www.ghsindex.org/country/south-africa/*

To support and enforce the response to the pandemic, GoSA passed several legislative amendments that had an impact both on social security grants and on the cost of COVID-19-related insurance claims in South Africa. These included amendments designating COVID-19 as a prescribed minimum benefits condition and as an occupational disease and designating specific benefits as employment-related benefits to be paid as such.

COVID-19 Response

In addition to containment measures to curb infection, the GoSA launched on April 21, 2020, an ambitious stimulus package to support the economy, costing up to R500 billion (US$35.7 billion), the equivalent of 10 percent of GDP. This was the highest percentage in the Southern African Development Community (SADC) region. Health received priority, but the social protection support for the poor and the unemployed accounted for more than 30 percent of the planned spending for a range of measures that included an increase in the social grant and billions of rands in subsidies for business and wages. Credit guarantee schemes also accounted for a significant part of the response package (approximately 40 percent) and the investment in job creation accounted for 20 percent.

To finance its Strategic Response Plan to COVID-19, South Africa used reprioritization (47.6 percent), IFI loans (25 percent), and adjustment budgets (25 percent). However, a funding gap of more than R200 million persisted.

Given the unprecedented nature and cost of the event, National Treasury borrowed from IFIs (IMF and African Development Bank, AfDB) the equivalent of R70 billion, of which 90 percent had been disbursed by Q1 2021. The entire funding was received in the form of loans.

The main funder was the IMF, which provided 93 percent of the total amount received by South Africa. Until September 2020, the only amount entirely disbursed was the one received from the IMF. The IMF instrument used to finance the loan to South Africa was the Rapid Financing Instrument.[100] Funds were provided in the form of budget support.[101]

The AfDB, under its US$10 billion COVID-19 Response Facility,[102] committed US$288 million[103] in the form of budget support. This represents the AfDB's first ever budget support to the country. The support was designed as a Crisis Response Budget Support Operation. The majority of the IFI funding came in during June-July 2020 (see Figure 32, left side), three months after the response package was launched, and the spending had started.

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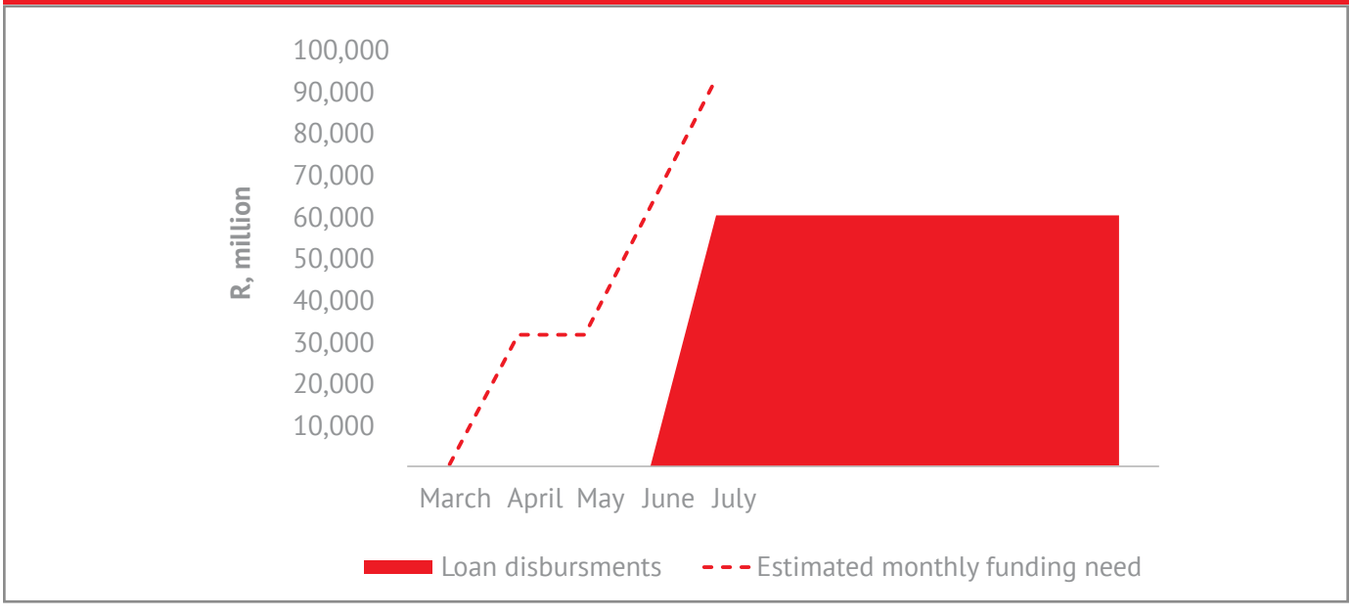
100 International Monetary Fund, "The IMF's Rapid Financing Instrument (RFI)," March 1, 2022, *https://www.imf.org/en/About/Factsheets/Sheets/2016/08/02/19/55/Rapid-Financing-Instrument.*

101 International Monetary Fund, "IMF Executive Board Approves US$4.3 Billion in Emergency Support to South Africa to Address the COVID-19 Pandemic," press release no. 20/271, July 27, 2020, *https://www.imf.org/en/News/Articles/2020/07/27/pr20271-south-africa-imf-executive-board-approves-us-billion-emergency-support-covid-19-pandemic.*

102 African Development Bank Group, "COVID-19 Response Facility (CRF)," *https://www.afdb.org/en/news-keywords/covid-19-response-facility-crf.*

103 African Development Bank Group, "South Africa: African Development Bank Approves First Ever Crisis Response Budget Support of R5 Billion to Fight COVID-19," July 22, 2020, *https://www.afdb.org/en/news-and-events/press-releases/south-africa-african-development-bank-approves-first-ever-crisis-response-budget-support-r5-billion-fight-covid-19-36964.*

Figure 32: Timing of disbursed IFI loan funds for COVID-19, 2020



Source: Centre for Disaster Protection, "Global Covid-19 Humanitarian and Development Funding," https://public.tableau.com/views/Covid-19FinancialFlows_16014756245770/Covid19Dashboard?:embed=y&:showVizHome=no&:host_url=https%3A%2F%2Fpublic.tableau.com%2F&:embed_code_version=3&:tabs=no&:toolbar=yes&:animate_transition=yes&:display_static_image=no&:display_spinner=no&:display_overlay=yes&:display_count=yes&:language=en-GB&:loadOrderID=0; World Bank staff calculations of monthly allocation of COVID funding needs; World Bank staff calculations of monthly allocation of COVID funding needs.

COVID Impact on Insurance Industry

Based on reported results as of June 30, 2020, there was no significant impact on either solvency levels or net assets ("free capital") of medical insurance schemes in South Africa. The overall industry average solvency level increased by 10.9 percent from the audited solvency level of 35.6 percent as of December 31, 2019, reaching 39.5 percent as of June 30, 2020.

The Council for Medical Schemes quarterly report as of June 30, 2020, shows substantially better operating results than budgeted. Discussions with CMS revealed that the main reason for the savings in claims cost is that elective surgeries were postponed for 2021, so the full impact of the COVID-19 outbreak was still not fully captured in the quarterly reports available.

For life insurers, the COVID-19 outbreak is not expected to have any substantial impact on the annual claims experience, except for claims related to insured clients presenting preexisting health conditions at underwriting (comorbidities).

The main impact of COVID-19 for the non-life insurance industry in South Africa is not as clearly quantifiable as it is for the life and health insurance industries. In keeping with the international experience from other jurisdictions, the non-life insurance sector is dealing with numerous non damage business interruption litigations initiated by SMEs, especially from the hospitality sector. This is similar to the international experience, where COVID-related business interruption claims account for the main increase in insurance payouts.

Recommendations

This section provides recommendations on how to strengthen the disaster risk financing agenda in South Africa. These recommendations draw from the analysis in this DRF diagnostic report. Recommendations have been grouped into four sections: sovereign risk financing, non-life insurance and delivery mechanisms, public financial management, and municipalities. For each recommendation, an indicative timeline is given to support the Government of South Africa with prioritization.

Sovereign Risk Financing

Draft and adopt a National Disaster Risk Finance Strategy (short term). As an immediate next step, the GoSA can focus on drafting and adopting a national DRF strategy that sets out its strategic priorities for financing disaster response; this is a critical first step to strengthen the efficiency and efficacy of public expenditure. The strategy would highlight the segments of society whose support the government would prioritize in the event of future shocks; the current (and potentially new) financing instruments upon which it intends to draw to support these households; and the delivery mechanisms through which it intends to disburse funds. Moving forward, the strategy would support National Treasury in prioritizing the allocation of funds to different segments of society impacted by shocks.

Based on the fiscal gap analysis, the risk-layering approach of National Treasury could be strengthened for small- to medium-scale shocks (short to medium term). While not acutely exposed to the financial impacts of shocks, South Africa remains vulnerable to the occurrence of future shock events, which past experience has demonstrated can drain budgetary resources. Supporting the economy through the COVID-19 pandemic required the government to breach the spending ceiling and expand its borrowing. The strain of higher debt can significantly damage a country's long-run growth prospects. A study by the World Bank found that in emerging markets, the loss of annual real growth is 0.02 percentage points for each percentage point over a 64 percent debt-to-GDP ratio.[104] The deteriorating fiscal position of the country played a key role in Moody's downgrade, which left South Africa without an investment-grade rating for the first time since the advent of its democracy. This move put pressure on domestic capital markets and reduced confidence in the South African economy, manifested in higher bond yields, exchange rate depreciation, and by extension increased borrowing costs.[105]

As South Africa begins the process of emerging from COVID-19, National Treasury has stated the importance of proceeding on a path of fiscal consolidation, looking to first level the deficit and then over time reduce it. This is a response to the sharp increase in the debt-to-GDP ratio, from 57 percent in 2018 to 80 percent in 2021. The occurrence of costly disasters could derail this process. Strengthening the risk-layering strategy now to ensure the budget remains robust to the impacts of future shocks would be an effective way to protect the fiscal consolidation exercise. Based on the fiscal gap analysis, GoSA could explore strengthening the governance of the contingency reserve to enable greater focus on climatic shocks, using sovereign risk transfer instruments (such as catastrophe bonds), and improving efficiency of existing instruments (more below).

Improve the understanding of risk and the tracking of post-disaster expenditure (medium term). The GoSA could develop a national database on the financial and human impact of disasters; this could serve as an evidence base for continuous assessment of government contingent liabilities due to disasters and for refinement of the DRF strategy. Understanding the risk profile is critical to making informed decisions about allocating funds ex ante. The national database could be developed in partnership with academia and enabled to collect, process, and update geospatial information from private and public authorities to better understand what assets and people are exposed to disasters. The database could also track disaster expenditures (disaggregated by response, recovery, and reconstruction) and detail funding sources used. This information could be used as a basis to produce a regular annual or biannual national state of disaster report. Such a report could be disseminated widely and used to drive public awareness of and responsibility for DRM.

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104 Mehmet Caner, Thomas Grennes, and Fritzi Koehler-Geib, "Finding the Tipping Point–When Sovereign Debt Turns Bad," Policy Research Working Paper 5391, World Bank, Washington, DC, July 2910, *https://documents1.worldbank.org/curated/en/509771468337915456/pdf/WPS5391.pdf.*

105 G. Baskaran and H. Bhorat, "From Stimulus to Debt: The Case of South Africa," Brookings Institution, February 2, 2021, *https://www.brookings.edu/blog/africa-in-focus/2021/02/02/from-stimulus-to-debt-the-case-of-south-africa/.*

Non-life Insurance / Delivery Mechanisms

Approve and launch the index-based agriculture insurance program targeting small- and medium-scale farmers (short term). The World Bank and the GoSA have been working to strengthen agriculture insurance provision for emerging farmers in South Africa since 2015. This effort includes demand assessment for agriculture insurance among small- and medium-scale market-orientated farmers, as well as analytical and policy work on a national agricultural insurance scheme policy framework, including options for smallholder crop and livestock insurance. Drawing on this extensive foundational work and international experience, two insurance products are recommended: area yield index insurance (AYII) for emerging farmers and satellite-based pasture drought index insurance (SPDII) for livestock producers. In addition to smart premium subsidies, several key areas require public support to enable scale and sustainability: (i) data collection for product design and pricing, (ii) farmer registration and awareness creation to facilitate outreach and distribution, (iii) risk financing through investing in the coinsurance pool company and/or acting as reinsurer of last resort, and (iv) strengthening of the enabling environment, particularly relating to consumer protection. Further details on the proposed institutional arrangement, the roles of the public and private sector, and indicative costs are detailed in "South Africa: Agricultural Insurance Policy Note," forthcoming by the World Bank.

Strengthen municipal insurance utilization (short to medium term). In the short term, the focus could be to reduce the current gap in insurance of assets. In the medium to long term, focus could be expanded to financial protection of critical public infrastructure and services.[106] With the latter, the objective is to ensure continuity of critical services, not just repair and replacement of assets, in the aftermath of a disaster. The costs are usually large and ongoing, hence the need to quantify and manage them proactively. Governments often have an implicit contingent liability for continuance of service even if the owner or operator is private or a state-owned enterprise.

In the short term, the following could be considered to address the asset insurance gap:

1. **Review database of assets insured by municipal insurance pools.**
2. **Strengthen data quality of municipal information systems to increase insurance capacity.**
3. **Strengthen oversight of municipal asset maintenance programs, possibly with a link to a financial incentive.** For example, National Treasury could fund a small percentage of premium for municipalities whose asset maintenance programs meet a minimum defined standard.
4. **Revise the insurance services tender system to incorporate a focus on risk management.**
5. **Incorporate municipal insurance in capacity-building and knowledge-exchange programs targeting key municipal officials.**

In the medium to long term, the government could consider establishing a public-private partnership arrangement for insurance of critical public infrastructure and services. GoSA could build up the existing municipal facility into an insurance fund and leverage support from international partners. In addition to providing funding in a more timely and transparent manner, a public-private partnership would convert the ex post unknown contingent liability to an ex-ante known and limited amount while ensuring continuity of critical services.

Example: In Japan, local governments establish agreements with private companies in advance to initiate relief and recovery work immediately following a disaster. After the Great East Japan Earthquake, damaged major motorways were repaired within the first week through such pre-arranged contracts.

Example: In the United States and Caribbean, private energy infrastructure operators have established mutual assistance agreements, backed by pre-arranged finance. When Hurricane Sandy left 8.5 million customers without power in New York and New Jersey, electric utilities executed mutual assistance agreements to deploy over 70,000 workers to the affected areas and enabled air transportation of 229 power-restoration vehicles and 487 personnel to restore power.[107]

106 Critical infrastructure is defined as assets, systems, and networks that provide essential services for economic functioning as well as the health and safety of a nation. Critical sectors may include energy, water, transport, health, finance, ICT, and education.

107 FEMA, "Hurricane Sandy FEMA After-Action Report," July 1, 2013, *https://www.fema.gov/media-library-data/20130726-1923-25045-7442/sandy_fema_aar.pdf.*

Establish a FinTech/InsurTech challenge fund to solve market failure in insurance for low-income households and MSMEs (short term). This innovation challenge could enable the industry to harness innovative methods to collect data for product development, devise more cost-efficient delivery channels, and create more engaging financial education mechanisms.

Aligning with the objectives of the National Disaster Risk Finance Strategy, the GoSA could consider developing an MSME database to strengthen the delivery mechanisms for disaster expenditures, thereby increasing speed, reducing costs, and increasing transparency of disaster expenditures (medium term). The GoSA established a partial credit guarantee scheme targeting support to vulnerable MSMEs impacted by COVID-19, but due to a series of challenges, disbursement from the partial credit guarantee was only about US$20. Moving forward, an MSME database could be established by the Ministry of Small Business focused on all formal and informal MSMEs in South Africa, and MSMEs could be given incentives to register. The database could include basic information on the MSMEs, including annual revenue, number of employees, sector/core activity, bank account details, etc. With the database established, identifying affected MSMEs following a shock and disbursing funds/grants/loans to them would be more rapid and effective.

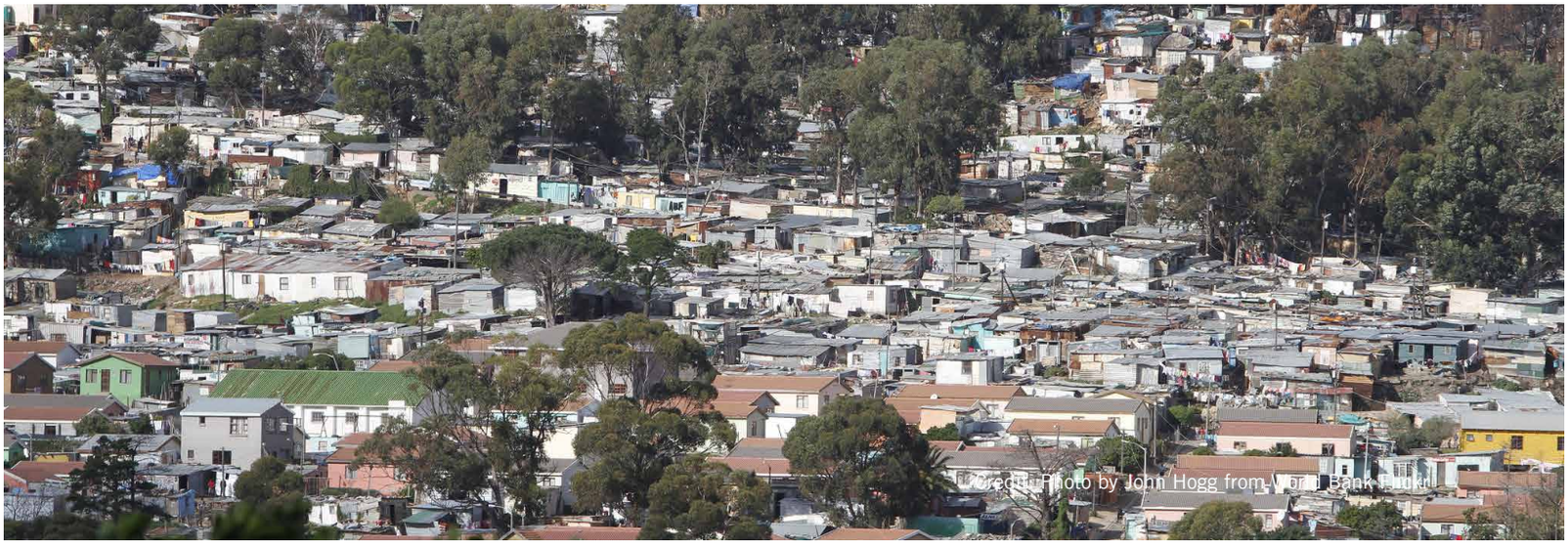
Development of multidimensional social risk models could inform extension of social unrest-related insurance coverage. As discussed in the report and in Annex 3, Sasria's aspirations to provide social unrest-related cover to MSMEs requires advanced risk forecasting. Advanced artificial intelligence methods and increasing availability of data sources enable higher levels of predictive accuracy, better risk measurement, and more precise understanding of the factors most associated with risk.

Public Financial Management

Improvements in public finance management have the potential to significantly improve the efficiency of DRF in South Africa. This diagnostic has identified seven areas in three categories: availability and design of DRF instruments, procurement regulations and practices, and efficiency of post-disaster budgetary transfers.

The contingency reserve management regulations and practices should be strengthened (medium term). The reserve is a powerful instrument for financing response to high-frequency shocks having low to moderate impact. For example, it is proving to be a useful tool to ensure the availability of funds for the COVID-19 vaccination program, which will almost certainly take place in South Africa during fiscal year 2021/22, but whose cost remains uncertain. However, the fund's value for DRF could be undermined by its very broad mandate, which includes funding of state-owned enterprises and non-disaster events. Regulations that would increase the value of the fund in the DRM context include earmarking a portion of funds for response efforts, establishing clear triggers and guidelines for accessing the reserve, and defining rules for immediate recapitalization of the fund following disbursement.

A cross-governmental understanding of existing emergency procurement laws and procedures should be strengthened (medium term). The diagnostic identified a significant knowledge gap related to the use of emergency procurement clauses.



Credit: Photo by John Hogg from World Bank Flickr

This results in a reluctance to use these clauses-often due to fear of administrative consequences-and hence in delays. Similarly, stakeholders reported a low level of knowledge about, and consequently limited use of, framework agreements in the context of disasters. While legal challenges regarding these procurement formats were also reported, the main reason they are not much used is the lack of expertise within departments, and especially within lower spheres of government.

Conduct a full review of the budget mobilization process for the disaster risk management grants and funds managed by the National Disaster Management Centre (short term). This review would assess the data requirements, timelines, application processes, procurement rules, financial management controls, record keeping, and auditing of funds mobilized through these grants. The review would identify options for the GoSA to consider for streamlining and improving the efficiency of this process, removing potential duplicative data collection, and reviewing expenditures. The objective of the review would be to improve the speed, accessibility, and transparency of funds mobilized using these grants while maintaining financial management controls at an acceptable level. The review would also address how to utilize the existing response finance system to incentivize lower spheres of government to prioritize preparedness over response, for example by complementing the existing system of response and recovery grants with conditional preparedness funding.

Analyze the efficacy of easing conditions on conditional grants allocated to cities and provinces as a response to disasters (medium term). Following COVID-19 outbreaks, the otherwise strict conditions of conditional grants to municipalities have been eased. The increased flexibility and familiar reporting procedures when using the funds led to a positive response from cities. Allowing flexibility in some or all conditional grants following agreed triggers, such as the establishment of a state of disaster, could be considered for all future budgets.

Municipalities

Revise amendment of bounds of emergency grant agreements (medium term). Include a clause in existing grants to widen the parameters for use of the funds during a clearly defined shock.

Hire/establish a grant coordinator as a core part of the existing staff work program (medium term). This role would strengthen awareness at the municipal level of various grants, application processes, and financial management and audit requirements of relief funding. The coordinator would oversee the entire grant process and liaise with various government entities, including the National Disaster Management Centre.

Strengthen capacity of municipalities in core disaster risk finance topics, and provide a platform for cross-fertilization of capacity (short term). This step could include (i) organizing a capacity-development series to strengthen understanding of the benefits of financial protection for municipalities; and (ii) convening municipal-to-municipal knowledge-sharing events (one for metros, medium municipalities, and small municipalities)

Larger metropolitan areas could consider adopting a subnational DRF strategy, prioritizing funding of disaster response, and expanding the range of DRF instruments at the metro level to finance disaster response (medium term). Given capacity and exposure to shocks (drought, flood), Cape Town and eThekwini are potential candidates for this recommendation. The municipalities could quantify the cost savings achieved by expanding the suite of financing instruments, including contingent credit, funds from the contingency reserve, and risk transfer, and could assess the role of non-life insurance in transferring key risks (flooding, drought) off budget.

Annex 1: Responsibilities of National Disaster Management Centre (NDMC) across DRM Pillars

The National Disaster Management Centre (NDMC) promotes an integrated and coordinated system of disaster management with special emphasis on prevention and mitigation, by national, provincial and municipal organs of state, statutory functionaries, and other role players involved in disaster management and communities (Section 9 of Disaster Management Act (Act 57 of 2002).

Organ of State (sector department/municipality)

Has a constitutional mandate and responsibilities in the following areas:

Disaster management plans/planning and contingency arrangements:	**Institutional capacity for disaster risk management arrangements within organizations:**	**Implementation and enforcement of existing legislation and frameworks by relevant authorities, such as:**
Conduct of disaster risk assessment.	The knowledge and capacities developed by governments, professional response and recovery organizations, communities, and individuals to effectively anticipate, respond to, and recover from the impacts of likely, imminent, or current hazard events or conditions.	The Municipal Finance Management Act, Integrated Development Plans, National Water Act, Conservation and Agricultural Resources Act, etc.
Identification and mapping of risks, areas, ecosystems, communities, and households that are exposed or vulnerable.		
Preparation of a disaster management plan, setting out roles and responsibilities regarding emergency response and post disaster recovery and rehabilitation, capacity to fulfil roles and responsibilities, and contingency strategies, including measures to finance these strategies.		

Annex 2: Municipal Financing Instruments

Grant Funding

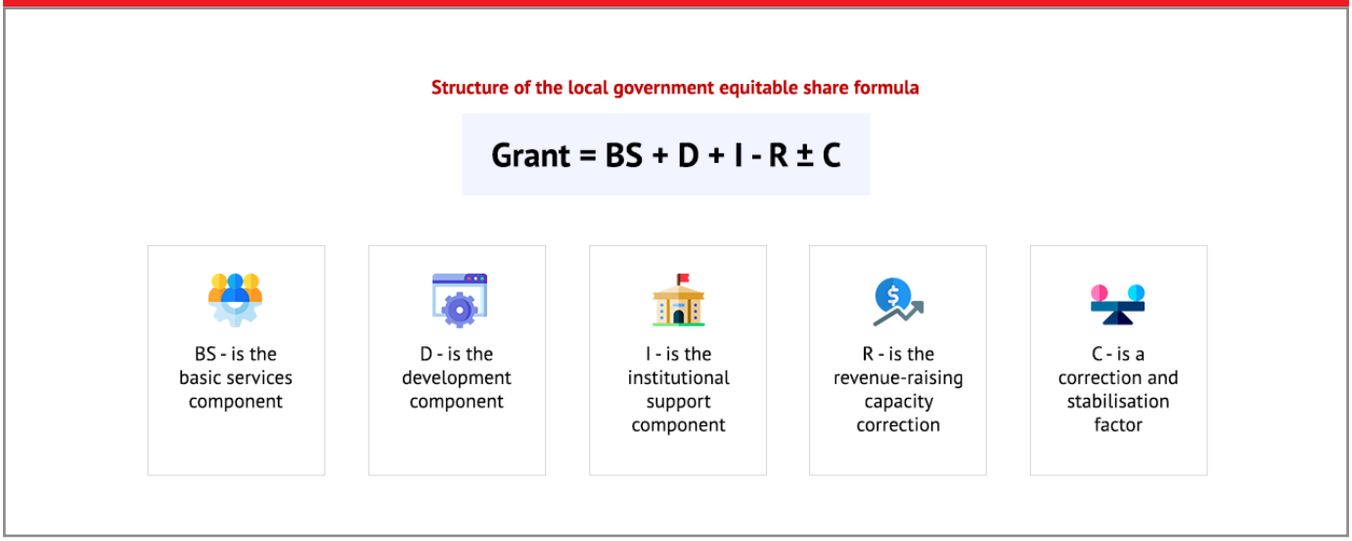
Grants are an important source of funding for South Africa's municipalities, constituting 23 percent of the total revenue. For metropolitan areas, this share is lower, but at 13 percent the instrument remains an important source of funds. Over half (about 55 percent) of grants received by municipalities are unconditional. These allocations are based on a formula that distributes a portion of the nationally raised income based on cities' demography and the number of people eligible for the provision of free basic services. These grants are administered by the city, and their reallocation within the city in the event of a disaster can be executed by the local council.

The equitable share formula in its current form predominately focuses on the number of poor people eligible for free basic services. In fact, in the case of metropolitan cities, the number of poor households that are eligible for free services is a near-exclusive driver of the size of the allocation. In the case of metropolitan cities, the amount of funds they receive is reduced due to their capacity to raise their own revenue.

The current formulae for the equitable allocation for municipalities and provinces do not include provisions for the risk exposure of cities' populations. The formula used for provinces has a health component that constitutes approximately 27 percent of the allocation and is reduced based on the number of people in the municipality with private insurance. The percentage of the population with medical insurance is deducted from population estimates to estimate the uninsured population per province. Such setups may disincentivize the promotion of private insurance.

Incorporating disaster risk exposure into the equitable share formula (Figure 33) could improve the sustainability of funding. Supply of basic services such as water and electricity is highly sensitive to climate change; and with increasing temperature and changing rainfall patterns, cities-especially those with increasing populations and located in arid or semi-arid parts of the country-will be facing an increasing cost to provide the minimum of 6 kl of water per household, as is currently assumed under the equitable share allocation.[108] Therefore, in the long run and without substantial resilience-building mechanisms, the national government will face a rapidly increasing cost of providing free basic services to the poor.

Figure 33: Equitable share grant formula used for local governments



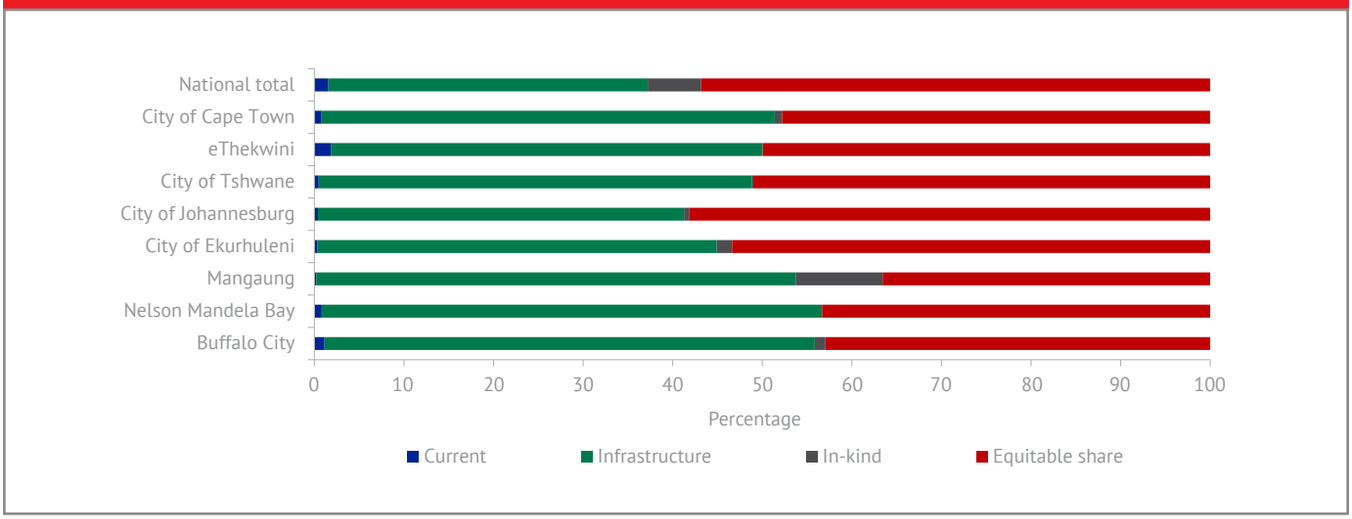
108 Pierre Mukheibir, "The Potential Economic Impact of Climate Change on Equitable Water Access in Small Towns: A South African Case Study," International Journal of Water 5, no. 3 (January 2010), DOI:10.1504/IJW.2010.030588.

Conditional Grants

Conditional grants are coordinated by the national government departments, upon consultation with lower levels of government. Each of the grants is defined by a framework that stipulates conditions that must be met by the recipient as well as a list of measurable outputs. Strict conditions regulate the type of expenditures that are allowed under a grant and time framework for expenditures. Inevitably, the reporting and monitoring requirement that is part of the grant results in an extra administrative load for the receiving municipalities.

Conditional allocations can be divided into three categories: (i) infrastructure grants (82 percent of total conditional grants allocated to cities in FY2019/20), by far the largest allocation; (ii) capacity-building grants (3.6 percent in FY2019/20); and in-kind grants (13.7 percent in FY2019/20) (Figure 33). The last ones are operated and administered by the national government and not the municipality. In the case of metropolitan cities, the infrastructure grants are the largest allocation and outweigh the equitable share allocation.

Figure 34: Contribution of grant transfers to municipalities by share (based on the 2019/20 budget)

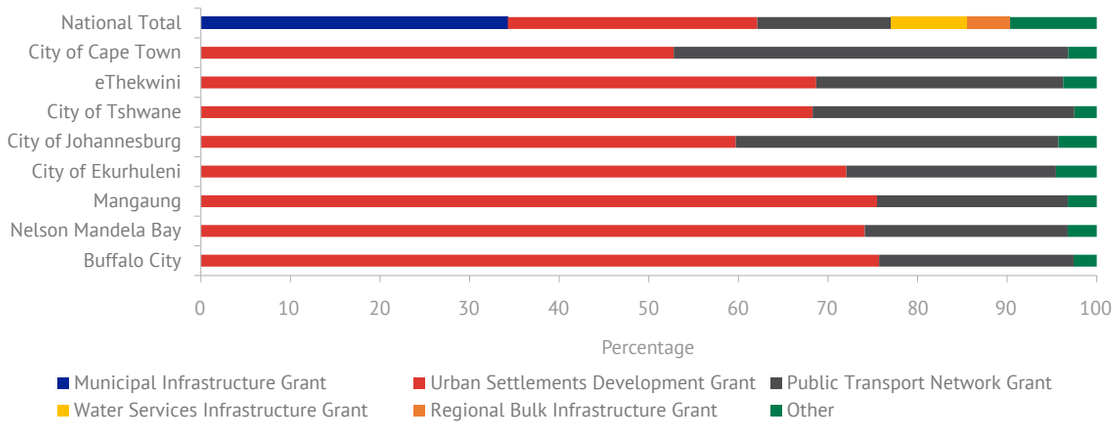


Source: Division of Revenue Bill, https://www.gov.za/sites/default/files/gcis_document/201902/b5-2019division-revenue-bill_0.pdf

The composition of grants received by metropolitan cities is different from that of other municipalities. While seven grants constitute a significant contribution to cities in South Africa, only two are significant for metropolitan cities: the Urban Settlements Development Grant and Public Transport Network Grant. Grants such as infrastructure grants or the water infrastructure grant are allocated only to the lower-tier cities. The fact that existing conditional grants target different tiers of municipalities creates an opportunity to incorporate into them DRF mechanisms that address the diverse needs of cities.

Neither of the large grants that constitute metropolitan conditional grant provisions (Figure 35) addresses disaster risks. The Urban Settlements Development Grant addresses issues of housing conditions among poor communities (crucial from the perspective of resilience building), and seeks to deliver increased quantity and quality of infrastructure in poor settlements, but it does not include explicit provisions for resilience building. An aspect of improving the living conditions of poor people in South Africa that could be addressed through the grant is the high exposure of vulnerable populations to perils. The government could therefore consider including DRF considerations when defining the framework for the grant and include aspects such as fast response to the crisis as an outcome for the grant.

Figure 35: Share of conditional grants in total grant allocation for all local governments and metros

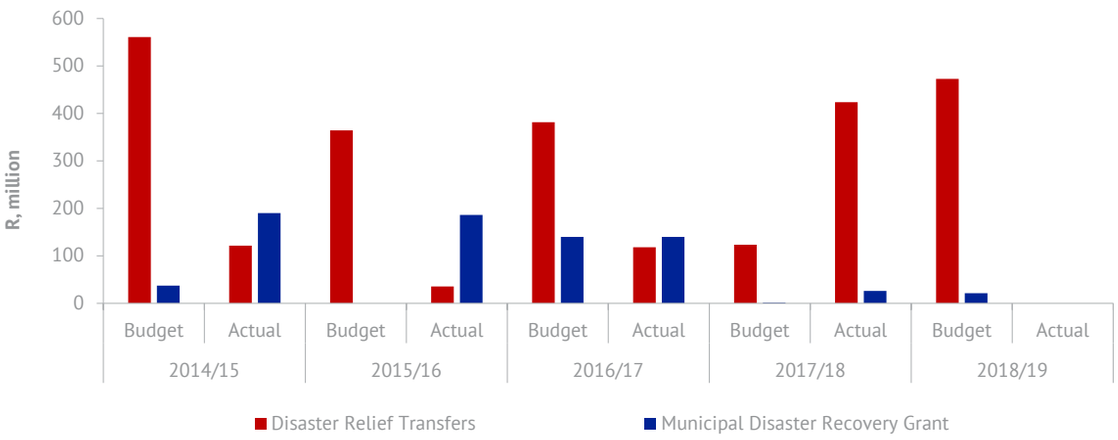


Source: Division of Revenue Bill, https://www.gov.za/sites/default/files/gcis_document/201902/b5-2019division-revenue-bill_0.pdf

Disaster Relief and Recovery Grants

Among conditional grants, there are two that are designed to support post-disaster expenditures of cities: the Municipal Disaster Relief Grant and the Municipal Disaster Recovery Grant. The total amount paid out under these grants to local communities in fiscal year 2019/20 was R335 million and R194 million, respectively (Figure 36).[109]

Figure 36: Actual and budgeted transfers to lower tiers of the government



Source: World Bank, South Africa BOOST platform, https://datacatalog.worldbank.org/search/dataset/0038088.

Both grants are allocated based on strict criteria, and municipalities must fulfill specific conditions to qualify. The conditions for application in the case of these grants include detailed planning and post-expenditure reporting as well as strict guidelines regarding the timing and subject of the expenditure. Interviews with municipalities reveal that municipalities are

109 National Treasury, "2019-20 Municipal Emergency Housing Grant Framework," *https://vulekamali.gov.za/datasets/frameworks-for-conditional-grants-to-municipalities*; National Treasury, "2019-20 Municipal Disaster Recovery Grant Framework," *https://vulekamali.gov.za/datasets/frameworks-for-conditional-grants-to-municipalitie*; National Treasury, "2019-20 Municipal Disaster Relief Grant Framework," *https://vulekamali.gov.za/datasets/frameworks-for-conditional-grants-to-municipalitie.*

reluctant to apply for disaster grants due to the high human cost of learning the unfamiliar application and implementation procedures specific to disaster grants and resulting fear of personal liability in case of unintended misconduct.

The Disaster Relief Grant is designed to enable a timely response to immediate needs after a disaster and to finance expenditures such as emergency repair of critical infrastructure and emergency provision of goods and services. This grant is budgeted for but not allocated. Allocations are made based on the assessment of needs. The relief grant is envisioned as a rapid response instrument, but the multi-layer assessment procedures that are required, and that include proof that a municipality is unable to respond by its means, lead to delays in disbursements. Moreover, representatives in metropolitan cities stated in interviews that they are disincentivized from applying for this grant by the low chances of receiving funds under it, its relatively low value, and its high bureaucratic load. In fiscal year 2017/18, out of 23 projects supported by the municipal relief grant, 20 were allocated to local municipalities.[110] In the allocation of the Disaster Relief Grant that took place in response to the COVID-19 pandemic and amounted to R354 million, none of the eight metropolitan cities was included.[111]

The Disaster Relief Grant is not routinely used by municipalities and includes distinct application and reporting procedures. During stakeholder conversations, municipalities reported that lack of experience with the grant makes the application process and administration of the grant difficult. For example, the grant requires detailed assessments of damages by all three spheres of the government: National Disaster Management Centre conducts a preliminary cost verification, the Provincial Disaster Management Centre monitors the implementation of disaster funds, and the municipalities are responsible for disaster assessment reports, expenditure reports (which include evidence), and performance reports (which include evidence of implementation). The complexity of the process and a relatively low level of experience with the grant lead to many municipalities either not initiating or failing to complete the application process.

Increased Flexibility of the Conditional Grant Framework as a Response Tool

Amid the COVID-19 pandemic, the Government of South Africa implemented a new funding measure by allowing reallocation of the already allocated but not yet contracted conditional grants for disaster response. The largest reprioritization at the city level was allowed for the Urban Settlements Development Grant (R2.4 billion) and the Municipal Infrastructure Grant (R1.4 billion). The reporting requirement in the case of reallocated funds builds on the standard reporting procedure, with an additional requirement that municipalities are responsible for ring-fencing and classifying their COVID-19 funding and expenditure correctly.[112] Interviewed officials thought that this additional flexibility and use of the standard procedures allowed them to use funds more effectively.[113]

The success with this mechanism largely depends on cities' capacity to identify investments that could be postponed at the lowest cost to the long-term development. Interviewed cities reported that up-to-date project status systems and strong personal relationships with project managers allowed them to identify projects for budget reduction. For example, the City of Cape Town was able to utilize its SAP-based project portfolio management system, which it was one of the first local governments in the country to implement.[114]

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110 "Municipal Disaster Relief Grant," Government Gazette No. 42464, May 17, 2019, 398-400, *https://data.vulekamali.gov.za/dataset/869b310e-6067-4d4d-bf1e-40598fd12730/resource/6364fe1e-0178-49e8-abc6-c62a911b552c/download/municipal-disaster-relief-grant.pdf.*

111 Government Gazette, September 11, 2020 p. 43, *https://search.opengazettes.org.za/text/37383?dq=september%2011%202020&page=1*

112 National Treasury, "Revisions to In-Year Spending Plans and the Division of Revenue," chap. 2 of 2020 Supplementary Budget Review, *http://www.treasury.gov.za/documents/national%20budget/2020S/review/Chapter%202.pdf.*

113 South African Government, "Treasury on Coronavirus COVID-19 Support for Municipalities," May 12, 2020, *https://www.gov.za/speeches/treasury-coronavirus-covid-19-support-municipalities-12-may-2020-0000.*

114 SPPrac, "Case Study of Cape Town," *http://spprac.com/case-study-city-of-cape-town/.*

Contingency Reserve and Savings

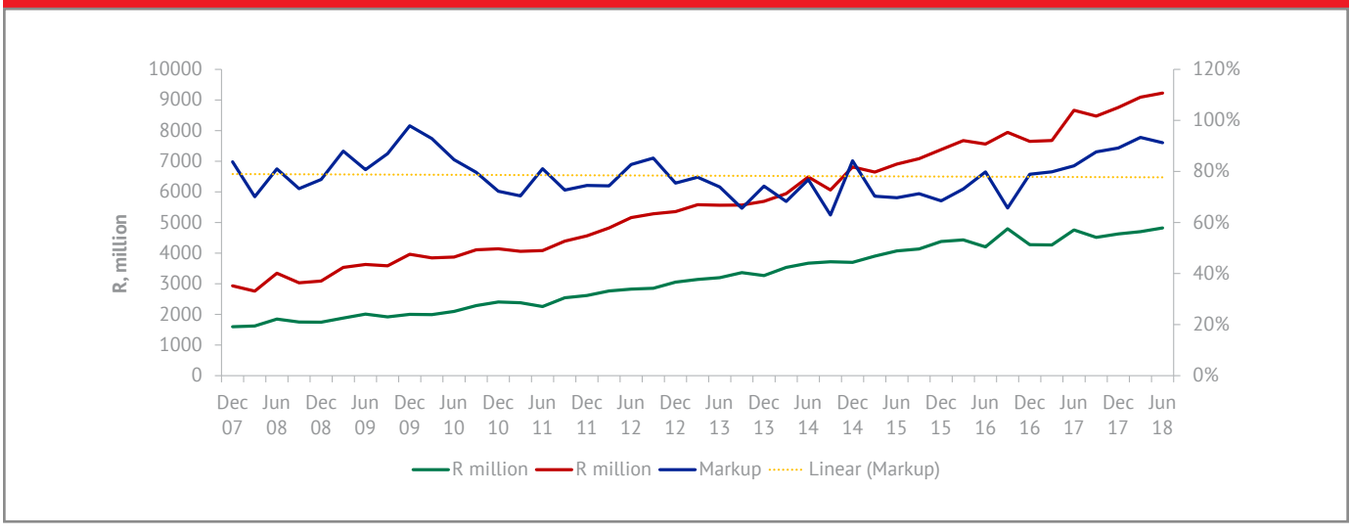
With significant freedom to generate income and administer funds, municipalities in South Africa create reserves that can be utilized in the event of a disaster. Municipalities can use the surplus funds either to create dedicated and ring-fenced funds or to maintain savings on their bank accounts that provide general liquidity. Municipalities are also free to invest their savings in liquid assets.

Municipalities with wealthier populations and more effectively run services may be able to accumulate savings. By charging a premium on the provision of services such as water and electricity, metropolises like Cape Town run a surplus that can be utilized to swiftly respond to shocks. The liquidity from the surplus helped Cape Town provide immediate funds during the Day Zero drought and hedge some of the losses from the default during the COVID-19 pandemic.

Even the municipalities that accumulate savings do not operate dedicated and regulated disaster reserve funds. Interviewed cities reported that they instead deposit additional funds with banks and use them for unexpected expenditures, including response to shocks.

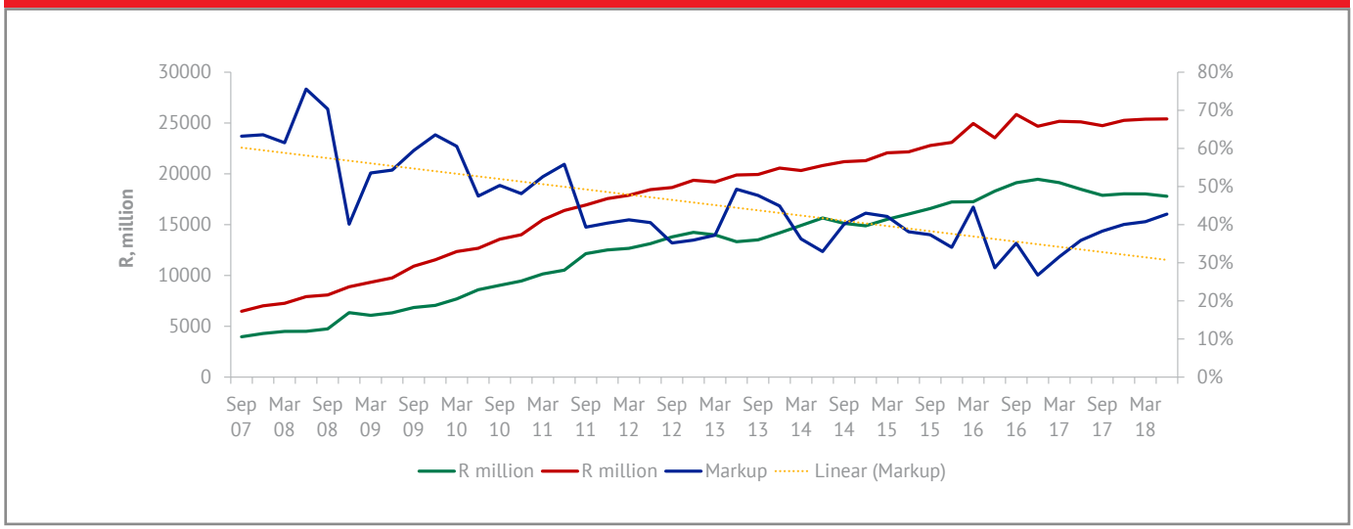
While larger and wealthier municipalities may be able to build savings through additional premiums on services they provide, the overall trend on the service markup in cities is negative. While the markup on the provision of water remained largely unchanged over the past decade (Figure 37), the premium charged on the provision of electricity-a more important source of revenue-decreased from 66 percent in FY2007/08 to 40 percent a decade later (Figure 39). At the same time, climate change and increasing urban population have placed increasing pressure on the infrastructure, especially in larger cities and metropolises.

Figure 37: Seasonally adjusted municipal purchase and sale of water



Source: Statistics South Africa, "Quarterly Financial Statistics of Municipalities," Statistical Release P9110, June 2018, http://www.statssa.gov.za/publications/P9110/P9110June2018.pdf.

Figure 38: Seasonally adjusted municipal purchase and sale of electricity



Source: Statistics South Africa, "Quarterly Financial Statistics of Municipalities," Statistical Release P9110, June 2018, http://www.statssa.gov.za/publications/P9110/P9110June2018.pdf.

Notably, this valuable DRF instrument is not transparently communicated to citizens. Given that disasters often affect basic services such as transport, water, and electricity provision, metropolises could consider establishing a fund financed through a levy charged to service users. Without a transparent levy, municipalities are risking the accusation of leveraging their monopoly in power provision to charge unjustified markups.[115]

Debt

In the context of disaster risk financing, debt can be used to provide immediate liquidity and act as a bridge for the funds that take longer to mobilize, thus allowing investment in recovery that contributes to long-term resilience. The extent to which cities can use debt to finance their DRF is defined by the law, which provides an equal legal framework for all municipalities. To ensure that cities do not operate under constant operational deficit, the law limits their ability to finance their day-to-day operation from the long-term debt; but cities do have a significant amount of freedom to use debt as part of their DRF strategy.

Further to the legal framework, the financial standing and the capacity of local treasuries are the key determinants of cities' access to the credit market. Metropolitan cities have a generally better financial standing than other local governments and can maintain dedicated departments staffed with experts, allowing them to take advantage of complex financial instruments and to negotiate more favorable rates. Nonetheless, differences in the level of access to the credit market remain significant even between metropolitan cities.

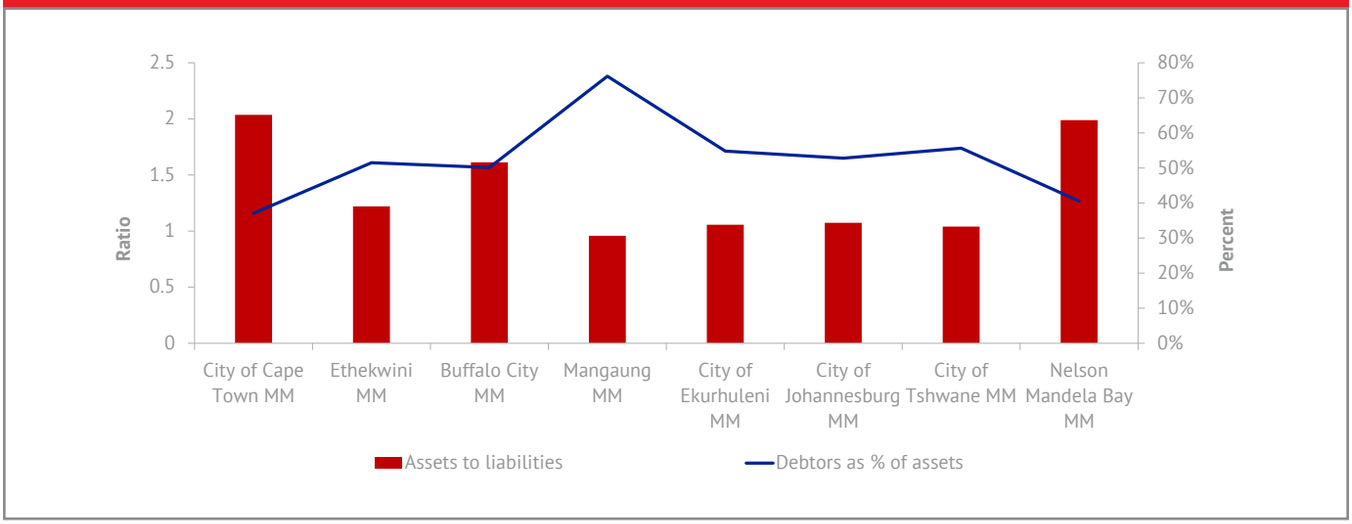
Short-Term Debt

Short-term borrowing can be used to bridge liquidity gaps in a city's operation and unlike long-term debt can be used to finance operations, though not to finance the permanent operating deficit. This instrument can be used as part of the disaster response-for example, to allow for the postponement of utility payments for households affected by a disaster. This approach was used by the city of eThekwini to offer debt relief to citizens struggling to pay for utility services amid the COVID-19 pandemic.[116] However, a large number of citizens defaulting on their utility bills is the major threat to the ability of cities to service their current obligations. Four out of eight metropolitan cities would not be able to service their current obligations if their utility revenue fell by just 10 percent. Among the eight, the City of Cape Town shows the highest resilience to shocks affecting its utility collections (Figure 39).

115 Global Africa Network, "Top 20 Default Municipal Debt Is Regretted," May 27, 2020, *https://www.globalafricanetwork.com/company-news/top-20-default-municipal-debt-is-regretted/.*

116 eThekwini Municipality, "Extension of Covid-19 Relief for Residents and Business Owners," press release, July 2, 2020, *https://floridaroaduip.co.za/site/extension-of-covid_19-relief-for-residents-and-business-owners/.*

Figure 39: Current liabilities versus current assets and the percentage of utility debtors as the percentage of current assets



Source: Statistics South Africa, "Quarterly Financial Statistics of Municipalities," Statistical Release P9110, June 2018, http://www.statssa.gov.za/publications/P9110/P9110June2018.pdf.

Note: MM = Metropolitan Municipality.

Reliance on short-term debt for financing response may be risky, as borrowing becomes more difficult and costlier during a crisis. The short-term debt of municipalities is held by private banks and the Development Bank of South Africa. Following the COVID-19 outbreak and the downgrade of South Africa's credit score, all the municipalities rated by Moody's were moved to subprime levels (Figure 9). Until April 2020, when the pandemic was only beginning to unfold in South Africa, three cities-the City of Cape Town, City of Ekurhuleni, and City of Johannesburg-were all still considered Prime-3, reflecting their acceptable ability to repay short-term obligations.

Table 9: Credit score ratings of South African metropolitan cities in October 2020

Issuer	Long-term	Short-term	National scale rating
City of Cape Town	Ba1	NP	Aaa.za
City of Ekurhuleni	Ba3	NP	A2.za
City of Johannesburg	Ba1	NP	Aa1.za
Metropolitan Municipality of Mangaung,	Caa1	NP	B2.za
Metropolitan Municipality of Nelson Mandela	Ba1		Aaa.za
Municipality of Rustenburg	B1		Baa3.za
City of Tshwane	Ba2	NP	Aa3.za
City of uMhlathuze	Ba2		A1.za

Widespread disasters tend to undermine the ability to borrow, but building financial resilience to climate shocks can help maintain it. In justifying the downgrade, Moody's emphasized the exposure to droughts by South African municipalities and the resulting risk to the major source of revenue and liquidity. The agency noted, however, that metropolitan cities have budgeted for significant capital investments in water infrastructure, which should lead to future de-risking of municipal debt and therefore improved access to credit.[117]

Municipal ability to borrow, especially for the short-term, is strongly linked with the fiscal position of the national government and its efficiency in meeting its financial commitments to municipalities. Low readiness to provide liquidity to distressed municipalities reduces the ability of cities to self-finance, as their liquidity risk increases. Extraordinary support is among the main pillars used for assessing cities' ability to service debt obligations; it is defined as the likelihood that a higher-tier government would aid a regional-level government if it faced acute liquidity stress or would otherwise act in such a way as to help avoid a default of its debt obligations.[118] The dependence on finance from higher tiers of the government emphasizes the compounding negative effect on cities' ability to respond to shocks resulting from delays in transfers such as relief grants.

Long-Term Debt

Of all long-term municipal debt, 87 percent has been issued by metropolitan cities. The stock of debt has been constantly rising in the last 10 years, averaging 5 percent growth a year. At the same time, the average revenue growth seen by municipalities stood at 15 percent, showing the general sustainability of the borrowing policy. Therefore, a significant interest in investing in the long-term debt of municipalities prevails among private sector lenders, who now hold over 50 percent of municipal debt. Most of the public sector lending to municipalities originates from the government-owned Development Bank of South Africa.

The majority of long-term lending finances urban infrastructural projects that are fundamental to building disaster reliance, including water and sanitation networks, electrical infrastructure, roads, and public transport systems. Considering climate change and the increasing risk of climate-related disasters affecting urban areas, resilience-building considerations must be included in the project planning process. The limited availability of well-designed and investable projects at the municipal level currently appears to be a more significant constraint to project development than the availability of funds. Thus, if the project preparedness process-a minor part of general project cost-strengthens and presents a strong case for resilience building, municipalities are likely to increase the number of interested funders and further boost their long-term return on investment.

Issuance of Bonds

The ability to issue bonds by municipalities can be an indicator of the strength of cities' treasury departments. Bonds tend to be a cheaper way of financing projects than loans, but only when projects are well designed and the fiscal position of a city remains healthy. The historical clearance of municipal bonds in South Africa stood above government bonds,[119] however below amounts charged by banks on loans.

Among all cities that use bonds to finance their capital investments, bonds have become a major long-term debt instrument. The City of Ekurhuleni and City of Cape Town finance 39 percent and 44 percent of their debt with bonds, respectively; Cape Town relies very little on bank loans to finance any of its long-term investments (Figure 40). In contrast, eThekwini, which despite recent attempts has not yet issued bonds to finance infrastructural investments, has an outstanding commercial debt owed to banks of R4.7 billion, 36 percent of its long-term borrowings.

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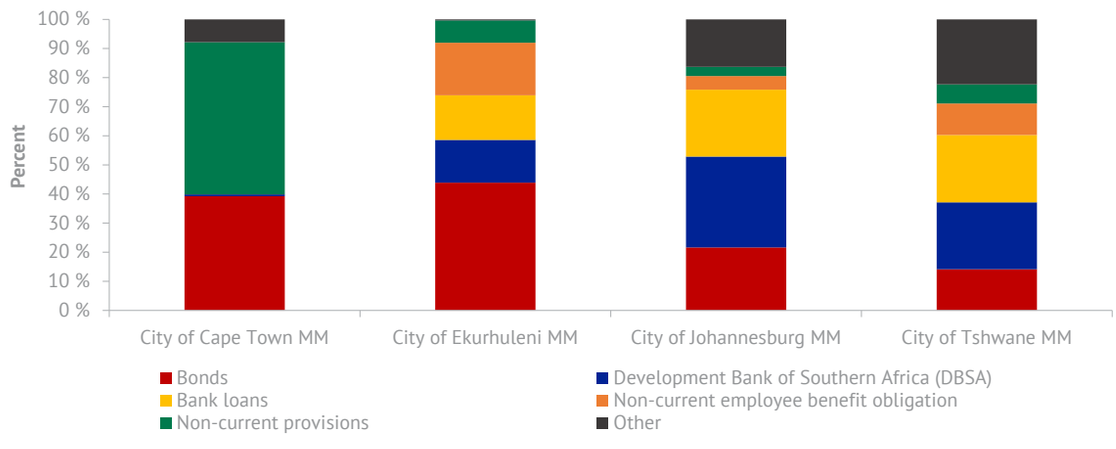
117 Moody's Investors Services, "Rating Action: Moody's Takes Action on 8 South African Sub-sovereign Issuers," April 1, 2020, *https://www.moodys.com/research/Moodys-takes-action-on-8-South-African-sub-sovereign-issuers--PR_421850.*

118 Moody's Investors Services, "Regional and Local Governments (RLGs) Moody's Approach," presentation at South African Local Government Association (SALGA)-Municipal Innovative Infrastructure Financing Conference, June 2018, *https://www.salga.org.za/dev/miif/Presentations/2%20Moodys%20RLGs%20Rating%20Approach%20June%202018.pdf.*

119 Moody's Investors Services, "Rating Action: Moody's Takes Action on 8 South African Sub-sovereign Issuers," April 1, 2020, *https://www.moodys.com/research/Moodys-takes-action-on-8-South-African-sub-sovereign-issuers--PR_421850.*

Figure 40: Long-term liabilities of bond-issuing municipalities



Source: National Treasury, Financial census of municipalities for the year ended 30 June 2019.

Note: MM = Metropolitan Municipality.

Green Bonds

Some South African metropolises finance their resilience-building investments with green bonds. The four South African metropolises that use such instruments became the continent's frontrunners in the utilization of modern financial solutions to fund sustainable resilience building. R1.46 billion in green bonds, issued by the City of Johannesburg in 2014, and R1 billion in green bonds, issued by the City of Cape Town in 2017, were the first green bonds issued in Africa; both saw huge interest with significant oversubscriptions and relatively low interest rates of 185 and 133 basis points above treasury bonds respectively.[120]

Where green bonds were issued, they made a significant contribution to municipal resilience and created an opportunity to finance the recovery of destroyed assets by adhering to the Build Back Better principle. The bond issued by Johannesburg in 2014 was used to create solar power infrastructure with the capacity of 22.5 GWH and to upgrade public transport infrastructure by purchase of hybrid buses and construction of bike lanes.[121] The Cape Town issuance was even more directly related to disaster management, as the funds were used to fund and refinance projects in response to the Day Zero drought, including emergency water-supply schemes designed to address the severe water shortage that had led to the city's dams reaching worryingly low levels.[122] The success of Cape Town's green bond was marked by Moody's GB1 rating, the top rating awarded to this class of assets by the agency, and by a significant oversubscription.[123]

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120 JSE, "The Johannesburg Stock Exchange Lists Its First Green Bond," June 9, 2014, *https://www.jse.co.za/news/the-johannesburg-stock-exchange-lists-its-first-green-bond.*

121 Sustainia and C40, "100 Solutions for Climate Action in Cities," 2015, *https://issuu.com/sustainia/docs/cities100.*

122 Water Network, "Cape Town Addresses Drought, Climate Change with SA's First True Green Bond," *https://thewaternetwork.com/_/urban-water-security/article-FfV/cape-town-addresses-drought-climate-change-with-sas-first-true-green-bond-PZLCrNeyMw5vlj4G94laoQ.*

123 Bonds and Loans, "Case Study: Cape Town Wins Race to Issue Africa's First Municipal Green Bond," November 1, 2017, *https://bondsloans.com/news/case-study-cape-town-wins-race-to-issue-africas-first-municipal-green-bond.*

Annex 3: Non-life Insurance Market

Overview of the Market

By the end of 2019, there were a total of 92 non-life insurers, including three state-owned insurers. As shown in Table 10, four insurers folded in 2018 for prudential reasons. Sasria-the South African Special Risk Association SOC Ltd.-provides insurance for man-made disasters, including war risks, riots, strikes, terrorism, civil commotion, and public disorder. Preparations are underway to amend the Sasria Act to permit Sasria to underwrite natural disaster risk. The second state-owned insurer, Khula Credit Guarantee, provides counter-guarantees for small business loans. Finally, Export Credit Insurance Corporation provides political and commercial risk insurance for exporters. There is no state-owned reinsurance company.

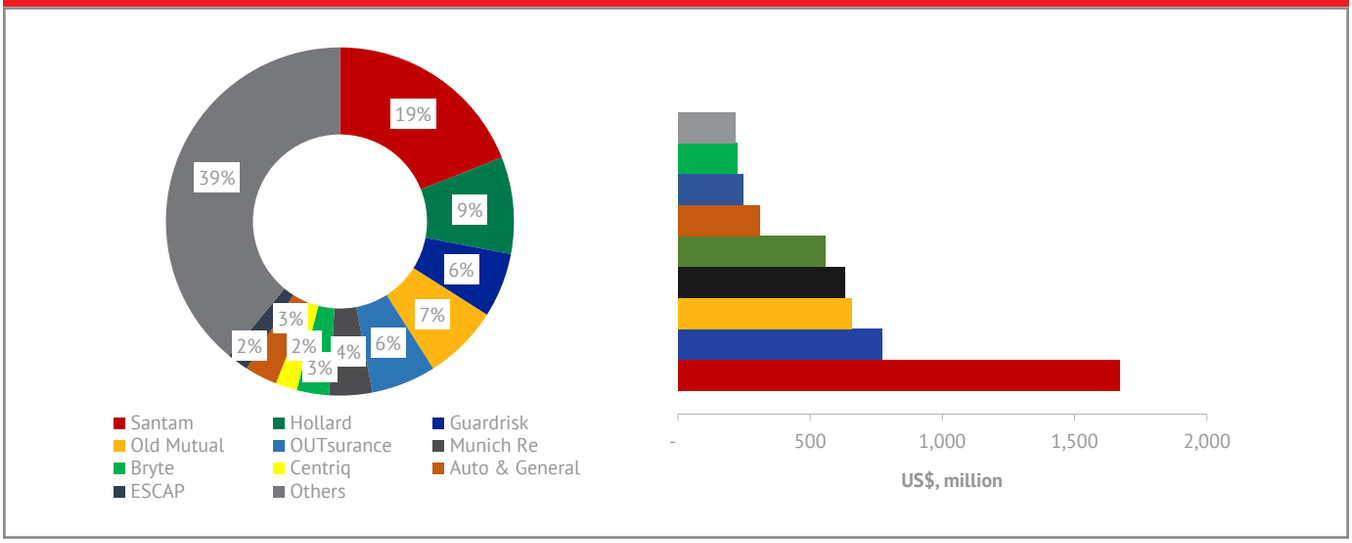
Table 10: Non-life Insurance entities in South Africa

Type of company	No. as of December 2018	No. as of December 2019
Primary insurers	70	66
Cell captives	8	9
Captives	9	8
Reinsurers	2	2
Composite reinsurers	5	5
Other	2	2
Total	**96**	**92**

Source: South African Reserve Bank. Prudential Authority. Selected South African insurance sector data December 2019

Although dominated by Santam, the short-term insurance sector is highly competitive and fragmented, with several top-10 players writing less than 5 percent of total premium. Santam accounts for almost a fifth of written premiums, followed by Hollard, Old Mutual, Guardrisk, and OUTsurance, as shown in Figure 41. In 2018, the top 10 insurers wrote about 58 percent of total premium, marginally down from 61 percent in 2017. The main players in the non-life sector are part of major and diversified South African financial institutions. Four of the top five companies share ownership with the top four life insurance players. Although some foreign insurers have a presence in the market, heavy dominance by local financial services groups creates higher barriers to entry for foreign firms than in most developing markets.

Figure 41: Market share by percentage (left) and premium written (right) for top 10 insurers, 2017



Sources: SARB; Fitch Solutions.

The non-life insurance market is well capitalized and has sufficient capacity to offer financial protection against natural disasters, despite negative impact from recent credit rate downgrades. Between 2013 and 2017, total assets grew from R114 billion to over R147 billion, and technical provisions and retention ratios were relatively high, indicating a strong solvency position and considerable risk appetite by insurers. The performance of the sector has been improving in terms of profitability, largely driven by downward-trending claims ratios, while the expense ratio has been relatively stable (Table 11). As a regional financial hub-part of a financial system ranked 19th out of 141 by the World Economic Forum[124]-the insurance market has relatively easy access to capital through domestic financial markets and global institutional investors. However, the recent downgrading of South Africa's credit rate to non-investment grade has negatively affected several insurers and reinsurers and consequently could result in higher costs of capital and higher insurance premium rates.

Table 11: Various ratios of the non-life insurance sector

Ratio	2013	2014	2015	2016	2017
Total asset growth (percent)	12.0	7.0	8.7	4.6	6.4
Rate of technical provisions [a]	72.0	75.5	71.7	74.2	71.8
Premium retention ratio	71.3	70.5	71.4	70.7	69.5
Claims ratio	43.4	43.8	37.4	42.0	40.9
Expenses ratio	30.8	32.0	31.0	29.9	30.2
Combined ratio	74.2	75.8	68.4	71.9	71.1
Assets profitability ratio	8.7	7.6	13.6	11.5	12.4

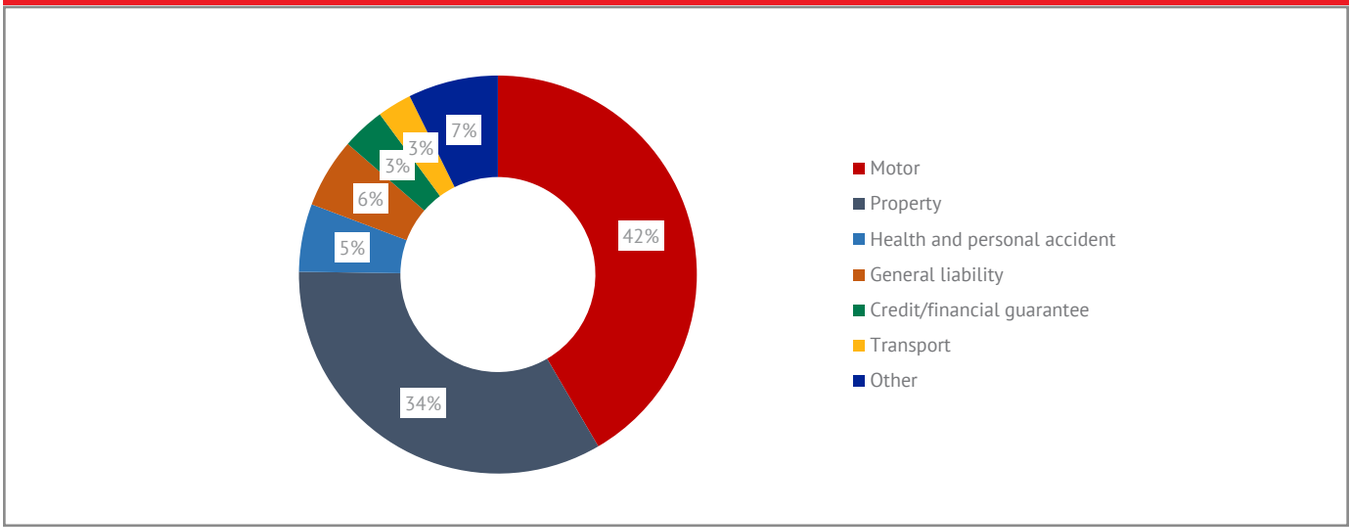
Source: Axco Global statistics database

a. Reserves as percentage of net written premium.

124 World Economic Forum, Global Competitiveness Report 2019 (Geneva: World Economic Forum, 2019), *https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf.*

The non-life sector offers a variety of products, but motor and property are the most common, making up over three-quarters of total premiums written (Figure 42). Neither motor nor property insurance is mandatory by law; rather demand is driven by loan financing. Vehicle loans and mortgages are conditional on the borrower taking out the relevant insurance. Health and personal accident insurance is growing rapidly due to increases in private health care costs and high numbers of first-time buyers of personal accident insurance. Health insurance is set to grow further following the national health insurance scheme, which government aims to launch in 2026. Growth of other classes has been hindered by limited awareness of insurance and minimal appreciation of the value of insurance.

Figure 42: Non-life premium by business class, 2018



Source: Fitch Solutions. FitchConnect database

A robust regulatory environment with cooperation between authorities and insurers helps to reduce systematic risk, which should help with premium affordability. Insurance regulations are set domestically, with the National Treasury responsible for developing the overarching regulatory framework. Most recently, the Financial Sector Regulation Act of 2017 introduced the "Twin Peaks" model, which created the Prudential Authority and the Financial Sector Conduct Authority, both of which are under the oversight of the South African Reserve Bank.[125] The short-term insurance industry association, South African Insurance Association (SAIA), is vibrant and engaged with the regulator on prudential and supervisory matters.[126]

Microinsurance

The new regulatory framework of 2017 introduced a specific license, industry standards, and lower capital requirements for microinsurance. The resultant reduction in costs, commensurate to their product offering, is expected to facilitate the development and promotion of affordable microinsurance products to the lower-income market, namely, households within categories 1 to 7 of the LSM.[127] The microinsurance subsector was historically served by funeral service providers and burial

125 The Twin Peaks model of financial system regulation employs two specialist peak regulators: one charged with the maintenance of financial system stability, and the other with market conduct and consumer protection

126 SAIA is a voluntary membership-based organization. It currently consists of 58 members who represent over 90 percent of the industry by premium income, including reinsurers.

127 LSM, or Living Standards Measure, is a system of categorizing the population into socioeconomic groups. It calculates a composite indicator of living standards using location, asset ownership, and access to services. The indicator is correlated with income and used to classify individuals into 10 categories, ranging from LSM 1, the poorest, to LSM 10, the wealthiest.

societies; however, the adoption of the Financial Sector Charter in 2004 led to increased participation by formal insurers.[128] In pursuit of their charter goals, non-life sector participants collectively developed microinsurance product standards and products covering fire, lightning, explosion, storm, flood, and theft. However, their indemnity-based insurance model and legacy systems have kept cover beyond the affordability of this market segment.

Agricultural Insurance

There are currently no regulations governing the conduct of parametric insurance, though insurers may apply to the regulator to conduct pilot schemes. Several insurers are working on index-based insurance solutions targeting emerging farmers-for example, Land Bank Insurance, which pending regulatory approval will pilot area yield index insurance and pasture forage index insurance targeting a total of 19,000 farmers over two years. The maximum sum insured is R120,000 in line with microinsurance regulations.

Agricultural insurance is well developed, albeit heavily dependent on reinsurance and dominated by three insurers. Santam, Land Bank Insurance Company, and Old Mutual Insure control about 90 percent of the agricultural insurance market,[129] which limits scope for competitive forces to drive down premium rates. The market depends on reinsurance for balance sheet protection against high volatility due to the systemic nature of agricultural risks. Approximately 70 percent of the crop insured value, estimated at R15-18 billion, is reinsured.[130] Reinsurance adds to the cost of insurance and follows pricing cycles that respond to major losses. The resultant price instability makes it further difficult for underwriters to grow the insurance portfolio.

Although agricultural insurance premiums have been declining, the market is profitable and offers crop, livestock, and forestry insurance; but coverage is low and largely focused on commercial farmers. Crop covers include multi-peril and hail insurance and are predominantly sold through agricultural co-operatives. Hail constitutes about 85 percent of the crop insurance market and has been on an upward trend. The rapid rise in hail premiums between 2005 and 2012 was due to increases in commodity prices and planted area, while the sharp increase in 2019 was due to a change in crop mix that increased insured values. Meanwhile MPCI increased nearly threefold in 2008 and peaked at R300 million in 2012, but it declined rapidly since then to under R70 million. In 2013, MPCI covered 17 percent of the planted surface area in the commercial sector, and in 2018 only 8 percent of the national maize crop was insured.[131] The low penetration of MPCI is largely due to high premiums that are driven by unsustainably high loss ratios and due to high volatility driven by the increasing frequency and intensity of climate events, particularly drought, excessive rainfall, and flooding.

Special Risk Insurance

Sasria's fiscal position continues to strengthen; in 2019, gross written premium reached R2.2 billion, while assets and equity reached R8.5 billion and R6.6 billion respectively (Figure 43). Except for 2019, balance sheet strengthening has been driven by strong investment performance and a good underwriting margin. The return on equity has been about 10 percent over the last few years. With assets at 400 percent of gross written premium compared to 120 percent for the industry and a higher retention ratio than the industry (91 percent versus 81 percent), Sasria is overcapitalized and has capacity to write significantly more business.

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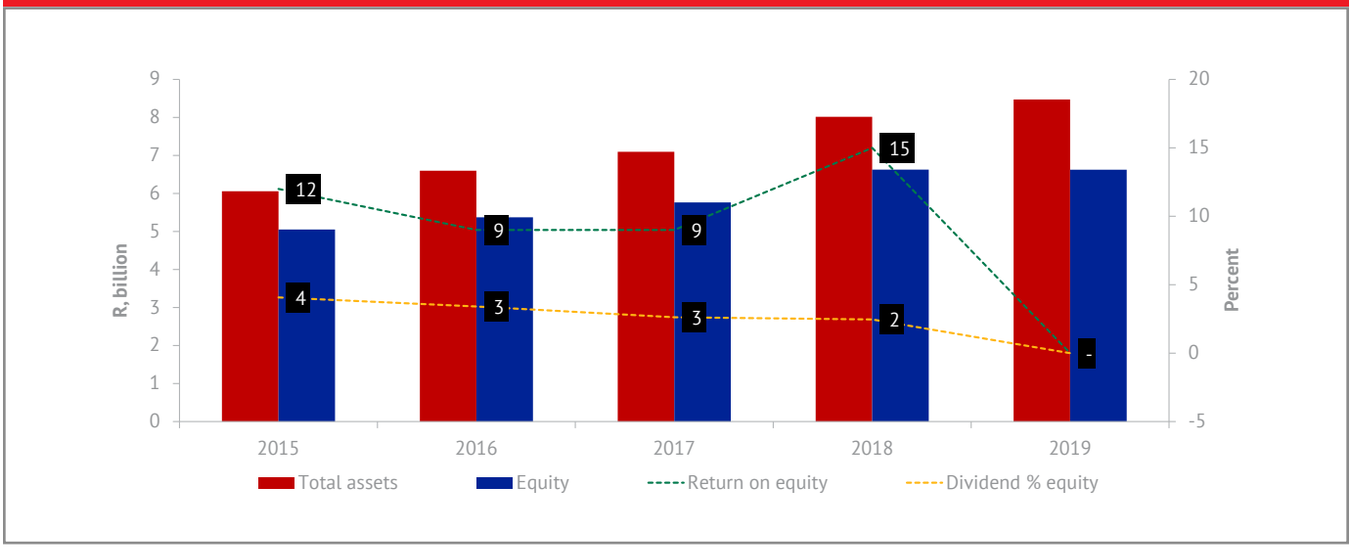
128 The Financial Sector Charter was a voluntary agreement between the financial sector, labor, the community, and government in which the financial sector committed to black economic empowerment targets, such as increasing access to financial services (banking, insurance, credit, and other financial services) for households within the LSM 1-7 categories. In 2012 the charter was revised and gazetted as the Black Economic Empowerment Code under Section 9 of the Broad-Based Black Economic Empowerment Act (52 of 2003).

129 World Bank interviews. 2020. Effective from the 2020/21 farming season, Old Mutual discontinued underwriting agriculture due to poor performance.

130 World Bank interviews. 2020

131 World Bank interviews. 2020. MPCI coverage is negligible in the small-scale sector.

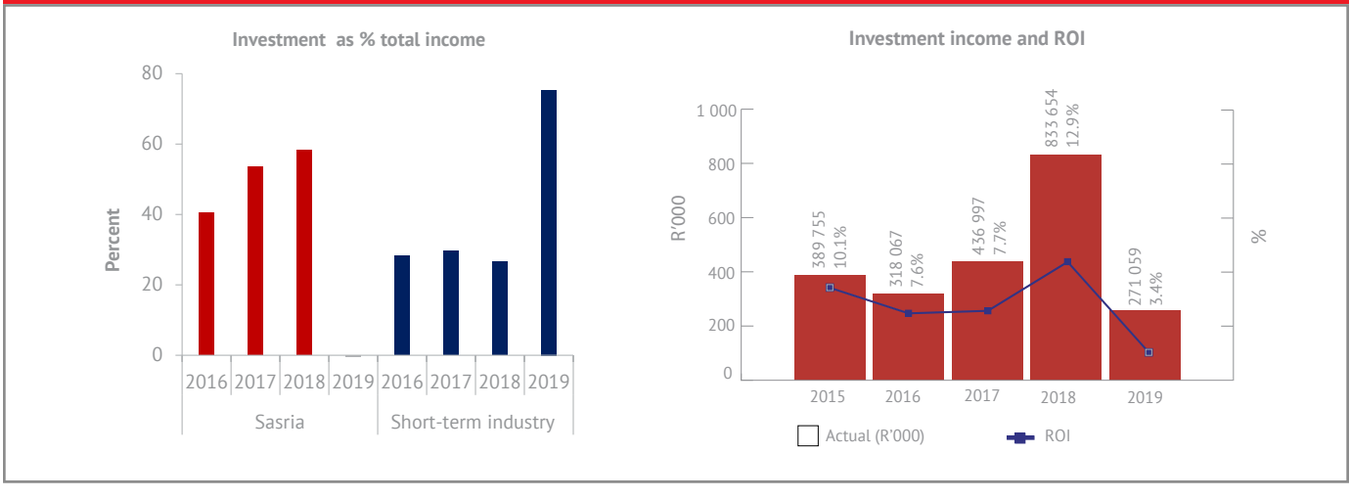
Figure 43: Financial performance of Sasria



Source: Sasria, "Sasria Integrated Report 2019," https://www.sasria.co.za/wp-content/uploads/2020/02/Sasria-Integrated-Report-2019.pdf.

Sasria is profitable and has paid on average 3 percent of equity in dividends to National Treasury nearly every year except for 2019, when claims tripled from an average of R600 million to nearly R1.7 billion. Notably, the contribution of investment to total income is higher than the industry, increasing from 43 percent of total income in 2015 to 58 percent in 2018 (Figure 44). This further suggests the availability of excess capital not currently being used to underwrite risk. The decline in investment income in 2019 was due to strategic portfolio rebalancing to increase liquidity.[132]

Figure 44: Investment performance of Sasria



Source: Sasria, "Sasria Integrated Report 2019," https://www.sasria.co.za/wp-content/uploads/2020/02/Sasria-Integrated-Report-2019.pdf. Note: ROI = return on investment.

Sasria's unique status and the unique nature of the risks covered enable performance disparate to the industry. Although it is profitable, the difficulty of forecasting social phenomena renders Sasria vulnerable to shocks that prompt significant increase in claims. Service delivery protests are the major driver of claims over the past five years, accounting for 80

132 This involved doubling the cash and cash equivalents from R1.9 billion to R4.2 billion, and reducing bonds from R5.6 billion to R3.8 billion. The cash and cash equivalents assets class is a low-return but high-liquidity class, while bonds are a high-return illiquid asset class.

percent of claims, while labor strikes account for the balance.[133] After its first underwriting loss in 2019, driven by the unforeseen tripling of claims, Sasria increased premium rates for some classes and introduced risk mitigation measures targeting conflict resolution in municipalities. Given the scarcity of knowledge relating to the drivers of violence, the extent to which mitigation measures will curtail violence is unclear, which exacerbates levels of fiscal risk accompanying this line of insurance. There is scope to enhance Sasria's risk mitigating measures to support metropolitan municipalities in becoming more inclusive, productive, and resilient.

Given its strategic plan to extend cover to MSMEs, Sasria needs to better understand social phenomena that drive violent outbreaks. This economic subsector is dominated by foreign business owners and is particularly exposed to the risk of xenophobic attacks, but also currently lacks financial protection. Sasria's current risk-modeling and pricing approach are based on traditional actuarial techniques that use historical quantitative data. There is opportunity to add value to Sasria's modeling and risk-based capital management in line with Solvency and Asset Management (SAM) practices by incorporating measures of risk-associated social phenomena. More voluminous data sources representing both real phenomena and perceptions of them enable artificial intelligence-driven capacity to both more accurately forecast and more rigorously explain social phenomena like social unrest and violence.[134] Enhanced evidence explaining the drivers of violence would also enable better targeting, scale, location, timing, and communication of preventive interventions to drive down levels of violence. Improved forecasting and evidence would also improve pricing to enable Sasria to offer more affordable cover, particularly to its new target market.

Financial Awareness

The GoSA recognizes the value of financial capability and is an early member of the International Network on Financial Education, through which it committed to a National Consumer Financial Education (NCFE) Strategy. The NCFE Strategy was developed after a mapping of financial literacy across the population in response to high observed debt levels that were attributed to financial illiteracy. Following the mapping, several consumer education programs were developed and implemented. The Financial Sector Conduct Authority (FSCA) continually monitors the effectiveness of these financial literacy programs through the South African Social Attitudes Survey (SASAS).

The most recent SASAS found that awareness of short-term insurance is related to asset ownership, which in turn depends on socioeconomic status. Notwithstanding, there is a significant gap between insurance awareness and usage. In the low LSM group about 44 percent were aware of motor insurance, compared to 89 percent in the high LSM group. Car insurance is the most known and most used product, while homeowners' insurance is the least known. Furthermore, awareness of motor and cell phone insurance rose marginally between 2012 and 2017, while awareness of household contents and homeowners' insurance declined. Over the same period, usage of insurance declined across all products. Home contents and homeowners' insurance experienced the most significant decline (Figure 26).[135]

More targeted and evidence-based financial education is needed to drive non-life insurance usage. Insurance companies are responsible for consumer education and required by law to spend 0.4 percent of net profit after tax on financial education. Broad-Based Black Economic Empowerment scorecards are further used to incentivize compliance.

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133 Sasria, "Sasria Integrated Report 2019," *https://www.sasria.co.za/wp-content/uploads/2020/02/Sasria-Integrated-Report-2019.pdf.*

134 For example, one study was able to predict increase and decrease in levels of violence in Kenya with 85 percent accuracy. See Chris Mahony, Eduardo Albrecht, and Murat Sensoy, "The Relationship between Influential Actors' Language and Violence: A Kenyan Case Study Using Artificial Intelligence," Background Paper, LSE-Oxford Commission on State Fragility, Growth and Development, International Growth Centre, 2019, *https://www.theigc.org/publication/the-relationship-between-influential-actors-language-and-violence-a-kenyan-case-study-using-artificial-intelligence/.*

135 South African Social Attitudes Survey (SASAS) 2012, 2017, *http://curation.hsrc.ac.za/doi-10.14749-1575000020.*

Alternatively, SAIA members can "delegate" this function to SAIA. Current consumer education programs run by SAIA focus on risk management for individuals and small and medium enterprises (SMEs). However, there is limited monitoring and evaluation, and without an evidence base to target and optimize the programs their impact is uncertain. There is opportunity to strengthen financial education programs and so enhance insurance use for protection against natural disaster by low- and middle-income households. Therefore, there is need for the regulator and the sector to work more closely on sending a coordinated message to consumers to increase trust in and appreciation of short-term insurance.

Annex 4: Health Insurance Market

Under South Africa's Constitution, all South African citizens living in South Africa at the time of applying have the right of access to social security and, depending on revenue, to social assistance. The enactment in July 2004 of the National Health Act 61 of 2003 (NHA03) marked the beginning of the creation of a national health service to cover the whole population.

Public health care is the mandate of the National Department of Health within the Ministry of Health. The Health Act 63 of 1977 was replaced by the National Health Act 61 of 2003, which provides the legal framework for the National Health Insurance (NHI) system. The main legislation regulating private health care in South Africa is the Medical Schemes Act 131 of 1998, with an amendment to the main act in 2001 limiting the use of reinsurance.

The government aims to implement a new NHI system by 2026. The discussions around the new NHI were initiated in 2018. The main amendments are the setup of an NHI Fund, a mandatory prepaid health care system for all South African citizens and permanent residents that also provides emergency health care services for temporary residents. Among the funding sources are unspecified payroll deductions (employer and employee) and unspecified personal taxation surcharges. The proposed legislation is also silent on the role of existing medical aid societies. The amended bill also drastically changes the basis for service provision, removing many of the functions that were to have been under provincial control, in some cases without a clear indication of where the function would be performed.

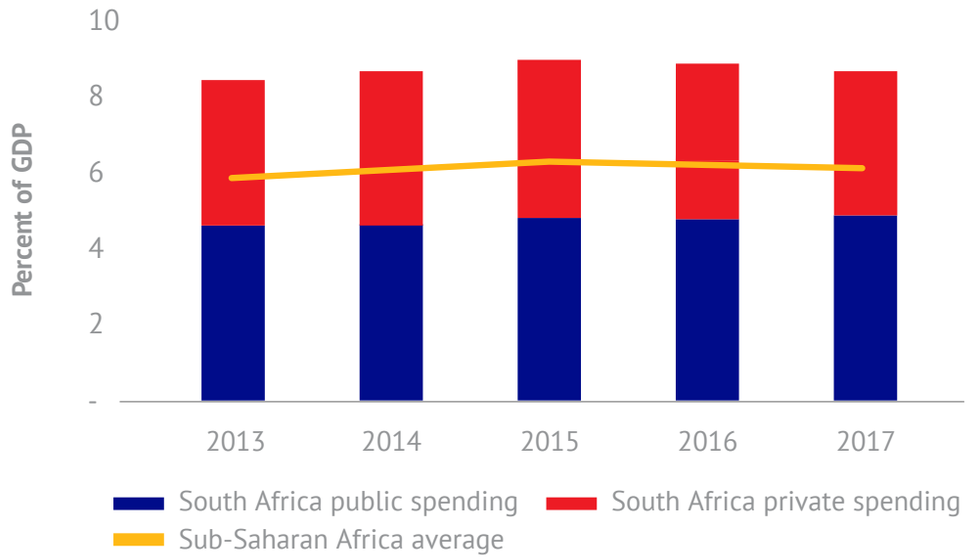
Health Care Insurance Supervision

The "Twin Peaks" model of supervision was implemented in April 2018. The two main regulators are the new Prudential Authority in respect to prudential regulation and the new FSCA for regulating market conduct. The two bodies are expected to also regulate the medical aid industry, although these functions have been maintained with CMS until at least 2024. The CMS is the statutory body established by the Medical Schemes Act 131 of 1998 to provide regulatory supervision of private health financing through medical aid schemes, and it reports directly to the Department of Health.

Health Care Market

The South African health system consists of a large public sector and smaller private sector as measured by the number of beneficiaries, but the two have approximately equal spending levels (see Figure 45). Health care varies from the most basic primary health care, offered free of charge by the state (through a centralized health system), to highly specialized health services available in the private sector for those who can afford it.

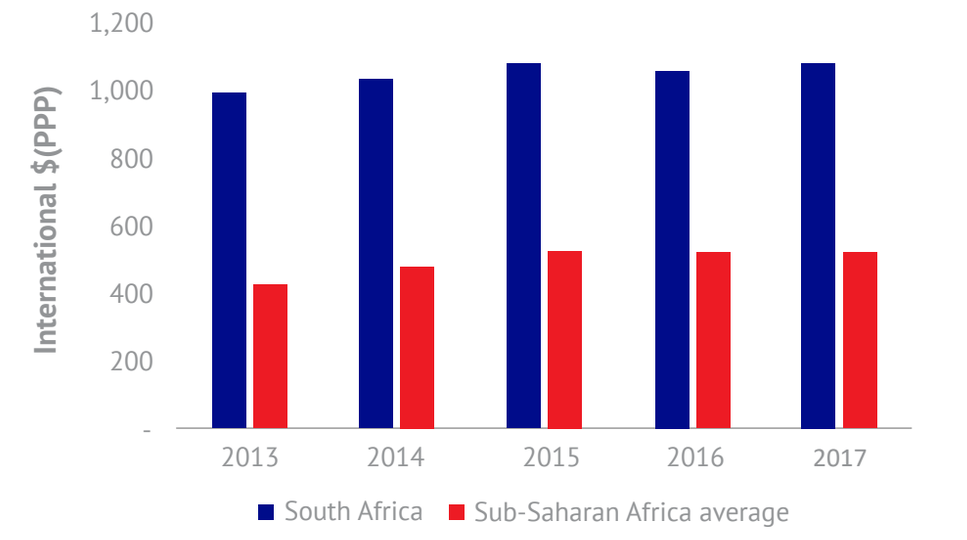
Figure 45: Health expenditure as share of GDP: Public versus private sector



Source: World Development Indicators Database, 2020

Although a full NHI plan is still being developed, health services available to lower-income groups and subsidized by the government have been available for many years. These services were made free in 1998; administration is by the provincial governments. The government is in the process of restructuring the system by increasing the delivery of primary health care through a clinic-building program (providing free primary care) and the establishment of a district-based health system. The current health expenditure per capita is presented in Figure 46 as compared to a lower Sub-Saharan Africa average.

Figure 46: Health expenditure per capita, 2013-2017 (current international $, PPP)



Source: World Development Indicators, 2020. Note: PPP = purchasing power parity.

Private Health Care

The number of private hospitals and clinics continues to grow. Statistics for 2015 (the latest available) for Health Systems Trust (HST) suggest there were 313 private hospitals and 269 private clinics, predominantly in urban areas.[136] The mining industry also provides its own facilities with hospitals and clinics around the country. Private beds continue to be estimated to constitute over 25 percent of total hospital beds in South Africa.

Standards in the private hospitals are considered very high both by African and world standards. Most private hospitals and clinics are part of service provider groups, which together own about half of all private hospitals (either outright or with significant equity).

Almost all of the private medical insurance written in South Africa is by the medical aid societies. Life company involvement in private medical insurance is limited to long-term disability (LTD) income replacement (permanent health insurance, PHI), critical illness, and hospital plan riders to other life policies. The involvement of non-life insurance companies includes disability linked to personal accident insurance, hospital plans, and so-called gap cover that is supposed to cover the difference between what the medical aid society will pay and what is charged by the medical service provider (MSP).

Primary membership is stable at around 4 million and total membership (including beneficiaries) at around 9 million.[137] Membership as an employment benefit continues to be the largest part of the market.

By law medical aid schemes are not for profit, but they are still required to demonstrate a regulated level of solvency. The minimum solvency level required is 25 percent, to ensure that at least three months of claims can be paid. Medical aid schemes are not allowed to discriminate on the basis of age, and so the aging of the population creates the need to build up reserves to allow for an older, medically more expensive average membership.

Private Health Care Providers

Medical aid schemes providing reimbursement benefits may be closed or open:

- **Closed.** These are restricted schemes for the employees of an employer (usually registered by large companies). Restricted schemes may also be set up for particular industries such as the South African Municipal Workers' Union (SAMWU) medical aid, as well as for groups including banks, coal miners, or diamond workers.
- **Open.** These are for individuals and employees of many medium or small employers and self-employed individuals.

The distribution between open and closed schemes is shown in Figure 47.

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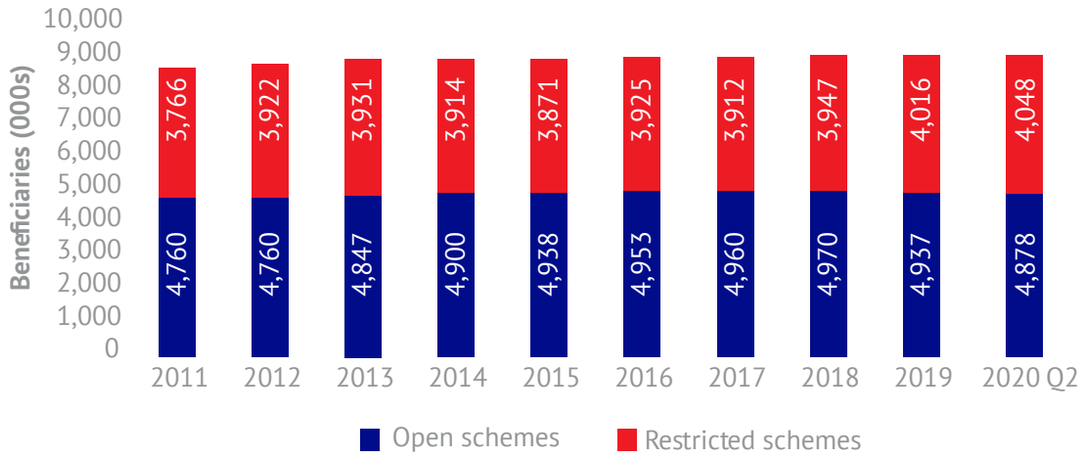
136 *https://www.hst.org.za/healthindicators/*

137 Source: Council for Medical Schemes, "Quarterly Reports for the period ending June 30, 2020", *https://www.medicalschemes.co.za/publications/#2009-3487-wpfd-2020-quarterly-reports-archive*

Figure 47: Distribution of beneficiaries between closed and open schemes



Source: Axco, "Life and Benefits Insurance Market Reports", 2020

The main market players are Discovery Health and GEMS. Discovery Health has been the market leader for some time: market sources suggest that it may have reached a saturation point. Discovery Health was the originator of the Vitality program encouraging individuals through a range of discounts (including for health club membership) to adopt a healthy lifestyle (measured by activities, diet, and other lifestyle measures). This program has successfully been transferred to Discovery operations in other countries and is being sold as a product to other insurers in other countries. Government Employees Medical Scheme (GEMS) and South African Police Medical Service Scheme (POLMED) are government-sponsored restricted schemes.

Table 12: Leading medical aid schemes in South Africa

Leading medical aid schemes	Market share (Percent as of 2017)
Discovery Health Medical Scheme	30
GEMS	21
Bonitas Medical Fund	9
POLMED	5
Bestmed Medical Scheme	3

Private Medical Insurance Coverage

Health care coverage under medical aid schemes is comprehensive and may cover all medical costs, from normal GP visits and routine dentistry or vision care up to full hospitalization and emergency treatment, depending on the level of cover purchased.

Although greater benefits may be offered, all medical aid schemes must cover at least all life-threatening conditions, also called prescribed minimum benefits (PMBs). These must be covered in full, with no deductible applying. PMBs are

legislated and cover the diagnosis, treatment, and care (but not preventive treatment or care) of 270 diseases (including TB and cancer), any emergency condition, and 25 chronic conditions (including epilepsy, asthma, and hypertension).

Around 50 percent of the employed population is covered by medical aid schemes; market sources suggest that corporate membership accounts for around 80 percent of the total market.

The provision of medical cover is a normal market-driven employee benefit, although there is no legal obligation for the employer to make such provision. As there is no comprehensive functioning social security system, employers usually include all employees under such schemes.

The needs of the individual are catered for by membership in the open medical aid schemes not tied to any particular employer; benefits provided will be similar to those under a closed scheme. Therefore, individual risk rating for pricing as such is not applied, as the community rating applying to the open scheme applies to any individual members joining it.

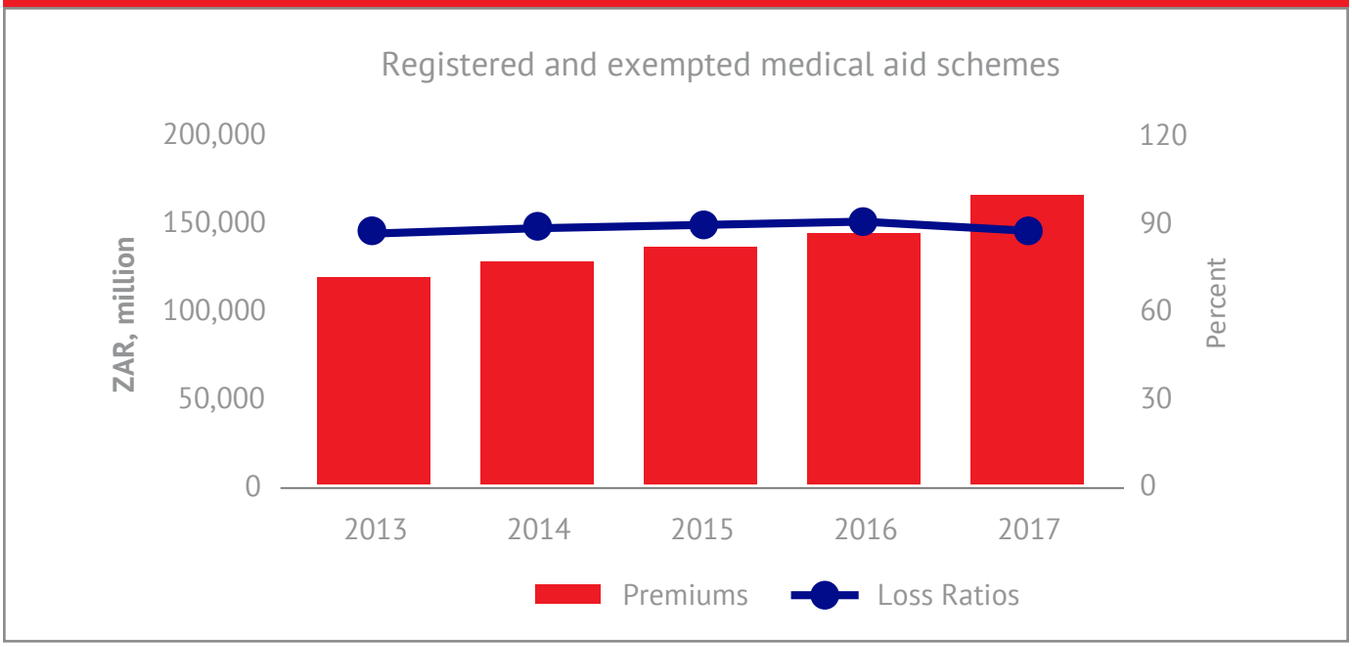
Contributions to medical aid schemes are on a capitation basis, closely monitored by the CMS. Each medical aid scheme calculates its required annual contribution increase based on expected price increases for each individual claim type and expense element.

Claims Experience

Medical schemes appear to be well financed from the perspective of direct health care costs, although the increases in medical expenses and employee expectations give cause for concern. A growing problem lies in the costs not related to health care, including administration.

No statistics are available that show the difference between group and individual business. Restricted (closed) schemes are all group business, although a substantial part of open scheme business is also group. Loss ratios in 2017 for pure risk benefits were 88.3 percent for open schemes and 90.6 percent in restricted schemes.

Figure 48: Evolution of premiums and loss ratios for medical aid schemes, 2013-2017



Sources: Axco Global Statistics; industry associations; regulatory bodies.

Loss ratios have been stable for a number of years. This may be attributed to the interaction of the medical schemes with the CMS when contribution increases are decided. Each medical aid scheme calculates its required increase based on expected price increases for each individual claim type and expense element; these assumptions are submitted to the approval of CMS before the beginning of each calendar year. Under exceptional conditions, the medical aid schemes can increase the premiums during the year, following "major" eligible events that significantly increase the cost of health care claims during the year. Almost no reinsurance of the medical aid schemes is written by way of proportional treaties; a small amount of business is arranged by way of stop-loss arrangements. Hospital plans are not usually reinsured.

Annex 5: COVID-19 Response

South Africa is ranked as the African country most prepared to deal with a pandemic, according to a Global Health Security (GHS) Index.[138] According to the JEE (Joint External Evaluation) assessment tool,[139] South Africa has achieved fairly high scores for the majority of technical areas. This is largely attributed to a high level of political will and technical commitment. The areas where the country got the maximum scores are surveillance and national laboratory systems. Another strength of South Africa's health care system is the strong efficient link between public health and security authorities, which is critical for effective and timely outbreak response. Yet significant challenges remain in the public health sector, including underfunding and human resource shortages. One noted gap was the country's health workers predominant focus on HIV/AIDS and TB in the recent past, to the exclusion of other communicable diseases.

COVID-19 Outbreak Development

The South African government's response to COVID-19 started on March 15, 2020 (10 days after the first reported case), with the declaration of a state of disaster. By the end of March 2020, the GoSA had already implemented strong containment measures (stay at home requirements and closure of workplaces, schools, and public transport, as shown in Figure 49).

Figure 49: Timeline for imposition of COVID-19 restrictions

Source: Oxford Stringency Index, https://ourworldindata.org/covid-stringency-index. Line thickness is reflective of the intensity of the measure in place (strong or mild containment measure).

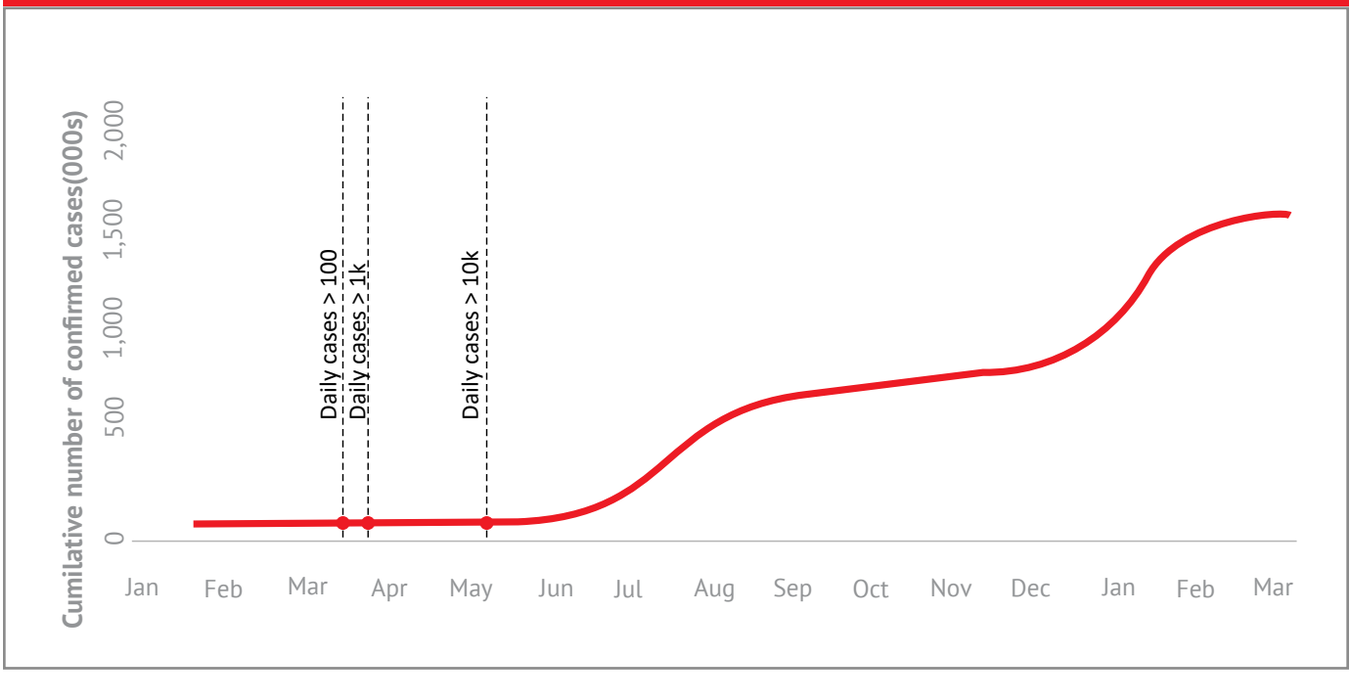
Note: The Oxford COVID-19 Government Response Tracker (https://www.bsg.ox.ac.uk/research/research-projects/covid-19-government-response-tracker) provides a comprehensive internationally comparable daily time series, comprising 19 indicators on the nature and extent of relevant government policy measures implemented since the beginning of the COVID-19 outbreak in March 2020 and up to the present day. It uses the indicators to calculate a composite Stringency Index.

138 Global Health Security Index, 2021, *https://www.ghsindex.org/country/south-africa/*

139 World Health Organization, Joint External Evaluation of IHR Core Capacities of the Republic of South Africa (Geneva: World Health Organization, 2018), *https://extranet.who.int/sph/sites/default/files/jeeta/WHO-WHE-CPI-REP-2018.10-eng.pdf.*

Most GoSA measures remained in place until at least July 1, 2020, when the curve of daily new cases showed a decreasing trend. A second wave started at the beginning of 2021 (see figure 50 below); this meant the government had again to declare a national state of disaster, which extended to May 15, 2021, and which included limited international travel and stay at home orders.

Figure 50: Cumulative number of confirmed COVID-19 cases, January 2020-March 2021



Source: World Bank using data on COVID-19 from Our World in Data, https://ourworldindata.org/.

To devise vaccine strategies, the Ministerial Advisory Committee on COVID-19 Vaccines was introduced in September 2020. On November 3, 2020, South Africa's participation in the World Health Organization's COVID-19 Global Vaccine Access Facility was announced. South Africa's vaccine strategy, released on January 3, 2021, targets a minimum of 67 percent of the population to achieve herd immunity in three phases by the end of 2021, beginning with the most vulnerable.

COVID-Specific Legislation

To support and enforce the response to the pandemic, GoSA passed the following main legislative amendments. These had an impact both on social security grants and on the cost of COVID-19-related insurance claims in South Africa.

1. **Circular No. 25 of 2020 issued by the CMS on March 26, 2020, declared COVID-19 a PMB condition and indicated that medical aid schemes should cover the screening, testing, and treatment of the disease.** Statistics show that of the over 3.5 million tests administered, 56 percent were performed by the private sector (typically funded by medical aid schemes).
2. **Under a notice issued under the Compensation for Occupational Injuries and Diseases Act 130 of 1993 (COIDA) by the Compensation Commissioner on March 20, 2020, which was subsequently replaced by a directive on June 30, COVID-19 was declared an occupational disease.** This implied that medical benefits were provided for a maximum of 30 days from the date of diagnosis (and could be extended following assessment). The full temporary disability benefit may be payable for a maximum of 30 days in case of prescribed COVID-19 disablement (the payment period may be extended following assessment), and reasonable funeral expenses and widow(er)s' and orphans' pension may be payable where the cause of death is COVID-19 related.
3. **Effective March 26, 2020, until August 15, 2020, under COVID-19 measures a Reduced Work Time Benefit or a Temporary Employer Relief Scheme (COVID19TERS) benefit was payable, as follows:**
    a. **COVID19TERS.** Qualifying employers may apply for COVID19TERS, which is payable to employers for distribution to employees; the monthly benefit is payable in accordance with the income replacement rate

for Unemployment Insurance Fund (UIF) benefits.

b. **Reduced Work Time Benefit.** A benefit may be payable to qualifying employees where working hours are reduced as a direct result of the COVID-19 pandemic; the monthly benefit is payable in accordance with the income replacement rate for UIF benefits and is reduced by any employer-paid benefits.

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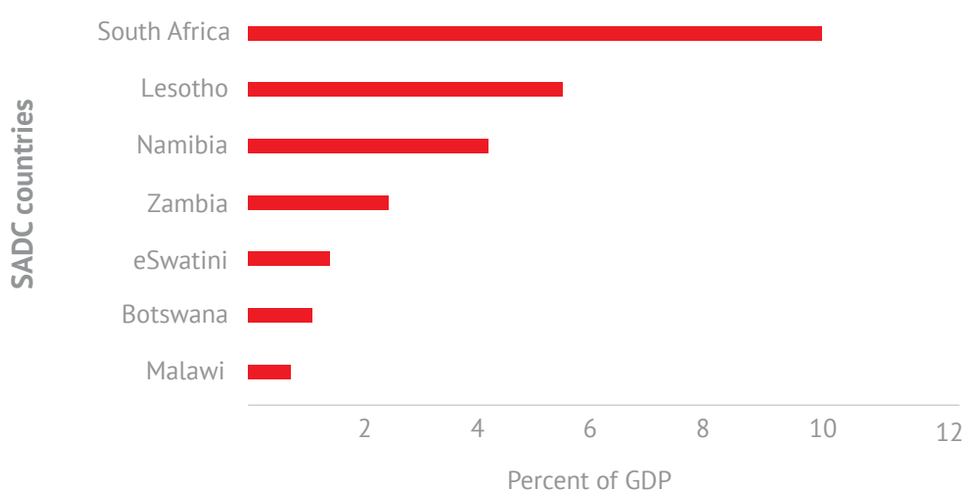
COVID-19 Response

In addition to containment measures to curb infection, the GoSA launched on April 21, 2020, an ambitious stimulus package to support the economy, costing up to R500 billion (US$35.7 billion), or the equivalent of 10 percent of GDP. This was the highest percentage in the Southern African Development Community (SADC) region (see Figure 51).

Figure 51: Total spending on COVID-19 response in SADC countries as percentage of GDP



Source: International Monetary Fund, "Policy Responses to COVID-19: Policy Tracker," https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19.

Note: The expenditures are for all support measures to be implemented by the government.

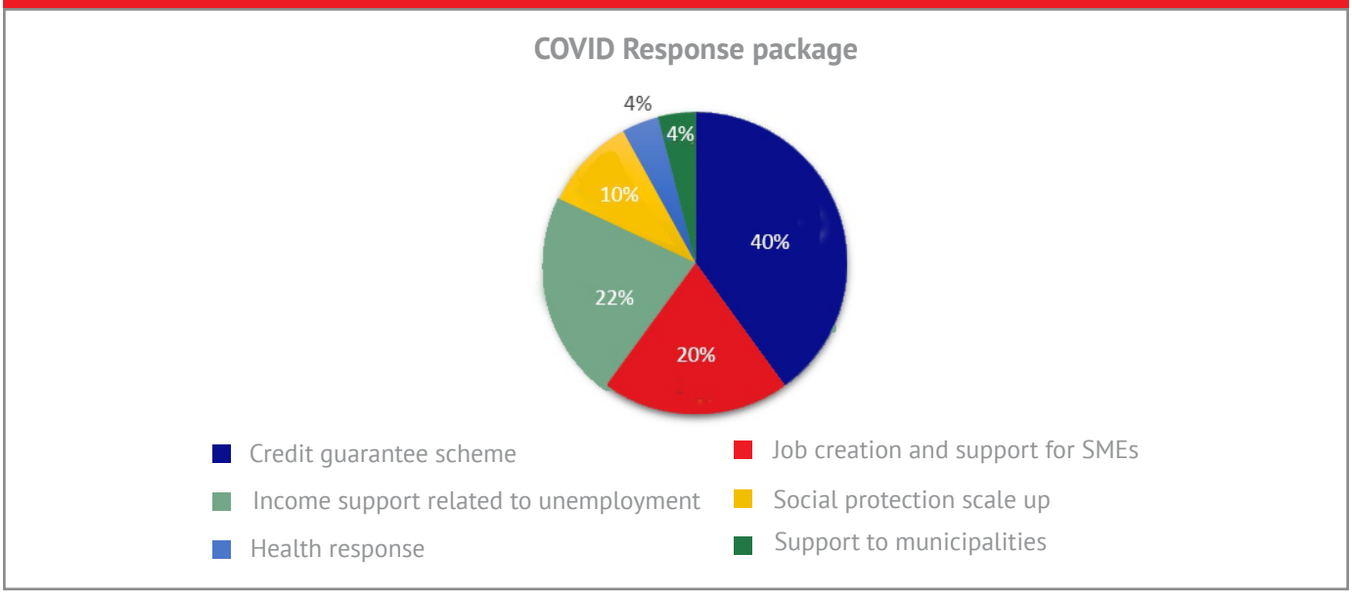
Health received priority, but the social protection (SP) support for the poor and the unemployed accounted for more than 30 percent of the planned spending for a range of measures that included an increase in the social grant and billions of rands in subsidies for business and wages. Table 13 presents the breakdown of the COVID-19 response budget by type of measure and figure 52 presents (as a percent) the share of the value of the main measures implemented in the total financing package.

Table 13: COVID-19 response budget by type of measure	
Measure	**Financing need (R, million)**
Credit guarantee scheme	200,000
Job creation and support for MSME's	100,000
Measures of income support (TERS)	70,000
Support to vulnerable households for 6 months (scaled-up SP grants)	50,000
Wage protection (UIF)	40,000
Health response	20,000
Support to municipalities	20,000
Total	**500,000**

Source: Authors table based on interviews with Treasury and the COVID response documentation

Note: TERS = Temporary Employer-Employee Relief Scheme; UIF = Unemployment Insurance Fund.

Figure 52: Distribution of COVID-19 response package across types of measures (percent)



Source: World Bank, based on public information on the total cost of COVID-19 response in South Africa.

The second COVID-19 wave imposed lockdowns that prolonged economic impact on households. In response, several measures (see Box 3 below) that were intended to end in Q4 2020 were maintained throughout Q1 2021 (for three to six months), thus incurring supplementary costs, to be captured in subsequent official Mid-Term Budget Policy Statements. These supplementary measured include (i) UIF benefits, (ii) additional funds for the health response, (iii) extension of the Temporary Employer-Employee Relief Scheme (TERS) and of the loan guarantee scheme, and (iv) increased food parcel delivery and additional funding for public works programs.

Box 3: South Africa's social protection response to COVID-19

Vertical expansion: Given the mature and comprehensive package of SP programs that exist in South Africa, vertical scaling to existing beneficiaries was relatively easy and limited only by resources available. The top-up payments provided are detailed in Table 14 below. As outlined, most SP grants are well targeted toward the poorest wealth groups, so expanding payments to these groups in the face of such a major economic shock made sense.

Table 14: Adaptation of South Africa's social assistance grants and programs to COVID-19

Program	Beneficiary age/eligibility	No. enrolled	COVID-19 adjustments
Older Persons Grant (OPG)	Persons age 60 and above	3.6 million	Grant increased by R250 (US$17) per beneficiary (May-Oct. 2020)
Child Support Grant (CSG)	Children age 18 or younger	12.7 million	Payment increased by R300 (US$20) per child (May-Oct 2020)
Disability Grant (DG)	Disabled persons ages 18-59	1 million	Grant increased by R250 (US$17) per beneficiary (May-Oct. 2020)
Care dependency grant	Children under 18 years	154,735	Grant increased by R250 (US$17) per beneficiary (May-Oct. 2020)
Foster care grant	Children under 18 years	355,609	Grant increased by R250 (US$17) per beneficiary (May-Oct. 2020)
War veterans	Ages 60 or over (or disabled)	62	Grant increased by R250 (US$17) per beneficiary (May-Oct. 2020)
Grant-in-aid	18 years +	273,922	Grant increased by R250 (US$17) per beneficiary (May-Oct. 2020)
Social Relief of Distress (SRD)	Individuals and families experiencing undue hardships	344,482	Applications stalled and new COVID-19 SRD grant established
COVID-19 SRD grant	Adults age 18-59, unemployed and with no other SP assistance	6 million	Monthly payment of R350 (US$24) for 6 months
Temporary Employer-Employee Relief Scheme (TERS)	Working-age adults in formal employment	3.87 million	Between R3,500 (US$235) and R6,370 (US$428) per employee per month

Source: Horizontal scaling: Early on in the crisis it became clear that large numbers of individuals not normally targeted by the regular suite of SP programs were affected by the lockdown and not eligible for existing SP grants. In particular, the crisis affected informal sector workers, who suffered an almost complete loss of income during the lockdown; many in this group were not co-resident with other grant recipients.a It also became apparent that the government had no real way of identifying these individuals through any of its existing databases, which do not capture data on informal workers.
Consequently, the government took the bold step of reinventing the Social Relief of Distress (SRD) grant in response to the COVID-19 crisis and establishing a bespoke adaptive social protection program that would address the gaps left by the existing SP system. The South Africa Social Services Agency (SASSA) led the development of the COVID-19 SRD grant, which was established and operational in just over one month. The grant provided R350 (US$24) for six months and had the following eligibility criteria: working-age adults (18-59 years); not in formal employment; not paying Unemployment Insurance Fund (UIF) deductions; not receiving old age grant, disability grant, or grant-in-aid. By November 2020 over 6 million people had been registered and paid through the COVID-19 SRD grant.

a. Haroon Bhorat, Tim Köhler, Morné Oosthuizen, Ben Stanwix, François Steenkamp, and Amy Thornton, "The Economics of Covid-19 in South Africa: Early Impressions," DPRU Working Paper 202004, May 2020, http://www.dpru.uct.ac.za/sites/default/files/image_tool/images/36/Publications/Working_Papers/DPRU%20WP202004.pdf.

Financing COVID-19 Response

To finance its Strategic Response Plan for COVID-19, South Africa used reprioritization, IFI loans, and adjustment budgets. However, a funding gap persisted in 2020 (see Table 15).

Table 15: Funding for COVID-19 Strategic Response Plan

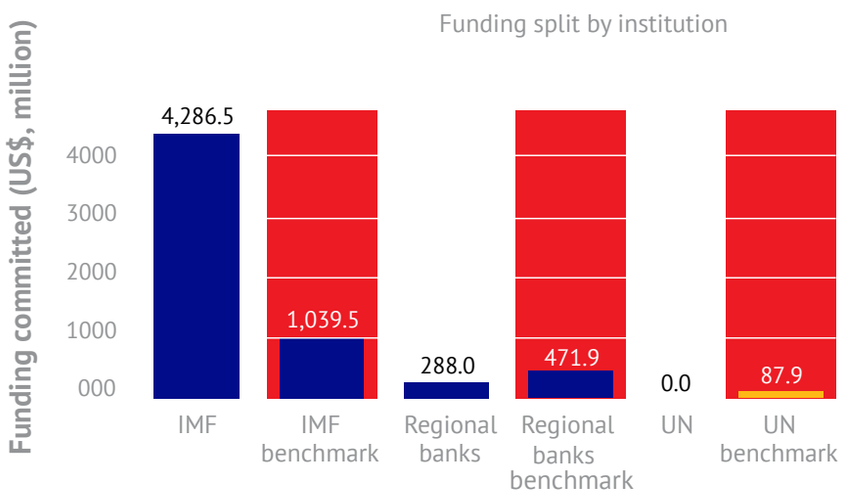
Instrument	Financing mobilized (R, millions)
Disaster Fund	466
Reprioritization	130,000
Special adjustment budget (including Dept. of Health budget bids)	70,000
Solidarity Fund	3,000
International development funds	70,000
Total	**273,466**
Funding gap of the COVID-19 response package	(-226,534)

Source: World Bank, based on public information on the total cost of COVID-19 response in South Africa.

Given the unprecedented nature and cost of the event, National Treasury borrowed from IFIs (IMF and AfDB) the equivalent of R70 billion, of which 90 percent had been disbursed by Q1 2021. All the funding was received in the form of loans. Figure 53 presents information on international donors' funding of COVID-19, as collated by the Centre for Disaster Protection.[140]

140 The Centre for Disaster Protection's work on funding COVID-19 response brings together information on development and humanitarian funding for COVID-19

Figure 53: COVID-19 funding by international donors



Source: Centre for Disaster Protection, "Global Covid-19 Humanitarian and Development Funding," https://public.tableau.com/views/Covid-19FinancialFlows_16014756245770/Covid19Dashboard?:embed=y&:showVizHome=no&:host_url=https%3A%2F%2Fpublic.tableau.com%2F&:embed_code_version=3&:tabs=no&:toolbar=yes&:animate_transition=yes&:display_static_image=no&:display_spinner=no&:display_overlay=yes&:display_count=yes&:language=en-GB&:loadOrderID=0.

The main funder was the IMF, which provided 93 percent of the total amount received by South Africa. Until September 2020, the only amount entirely disbursed was the one received from the IMF. The IMF instrument used to finance the loan to South Africa was the Rapid Financing Instrument.[141] Funds were provided in the form of budget support.[142]

The AfDB, under its US$10 billion COVID-19 Response Facility,[143] committed US$288 million[144] in the form of budget support. This represents the AfDB's first ever budget support to the country. The support was designed as a Crisis Response Budget Support Operation and was prepared following a request from the Government of South Africa. The remaining amounts received from the AfDB had not been disbursed as of mid-2021.

The majority of the IFI funding came in during June-July 2020 (see Figure 54), three months after the response package was launched, and it coincided with the first observed decrease in the number of cases following government containment measures.

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response. The center has collected data on grants and loans received by countries from international donors to implement the COVID-19 response plan. The donors in scope for this analysis are IMF, World Bank, regional development banks (Inter-American Development Bank, AfDB, Asian Development Bank, Islamic Development Bank) and the UN.

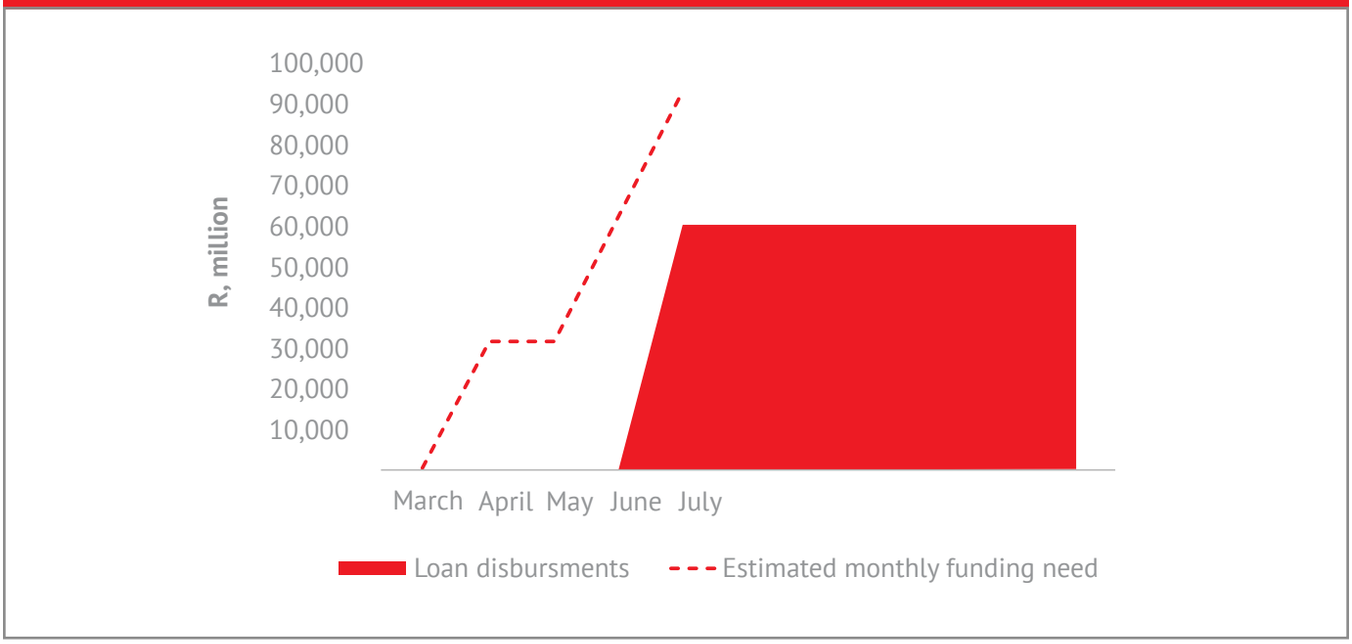
141 International Monetary Fund, "The IMF's Rapid Financing Instrument (RFI)," March 1, 2022, *https://www.imf.org/en/About/Factsheets/Sheets/2016/08/02/19/55/Rapid-Financing-Instrument.*

142 International Monetary Fund, "IMF Executive Board Approves US$4.3 Billion in Emergency Support to South Africa to Address the COVID-19 Pandemic," press release no. 20/271, July 27, 2020, *https://www.imf.org/en/News/Articles/2020/07/27/pr20271-south-africa-imf-executive-board-approves-us-billion-emergency-support-covid-19-pandemic.*

143 African Development Bank Group, "COVID-19 Response Facility (CRF)," *https://www.afdb.org/en/news-keywords/covid-19-response-facility-crf.*

144 African Development Bank Group, "South Africa: African Development Bank Approves First Ever Crisis Response Budget Support of R5 Billion to Fight COVID-19," July 22, 2020, *https://www.afdb.org/en/news-and-events/press-releases/south-africa-african-development-bank-approves-first-ever-crisis-response-budget-support-r5-billion-fight-covid-19-36964.*

Figure 54: Timing of disbursed IFI loan funds for COVID-19, 2020



Source: Centre for Disaster Protection, "Global Covid-19 Humanitarian and Development Funding," https://public.tableau.com/views/Covid-19FinancialFlows_16014756245770/Covid19Dashboard?:embed=y&:showVizHome=no&:host_url=https%3A%2F%2Fpublic.tableau.com%2F&:embed_code_version=3&:tabs=no&:toolbar=yes&:animate_transition=yes&:display_static_image=no&:display_spinner=no&:display_overlay=yes&:display_count=yes&:language=en-GB&:loadOrderID=0; World Bank staff calculations of monthly allocation of COVID funding needs.

GoSA had to cover at a minimum-without considering any support to the SMEs or the municipalities-the equivalent of R91.6 billion through budget reprioritization or dedicated (but limited) disaster funds (see table 16 below). Depending on the speed of reprioritizations and the disbursement from dedicated disaster funds, this could have created temporary liquidity constraints for the government.

Table 16: Timing of needed COVID-19 funding (monthly allocation of response for April-July 2020)

Source	Amount needed (R, millions)	Comments
Measures of income support (TERS)	34,830	Support for 3 months
Wage protection (UIF)	20,000	Support for 3 months
Health response	15,000	75 percent of the response package
Support to vulnerable households	21,768	Support for 3 months
Total	**91,598**	

Source: World Bank, based on public information on the total cost of COVID-19 response in South Africa.

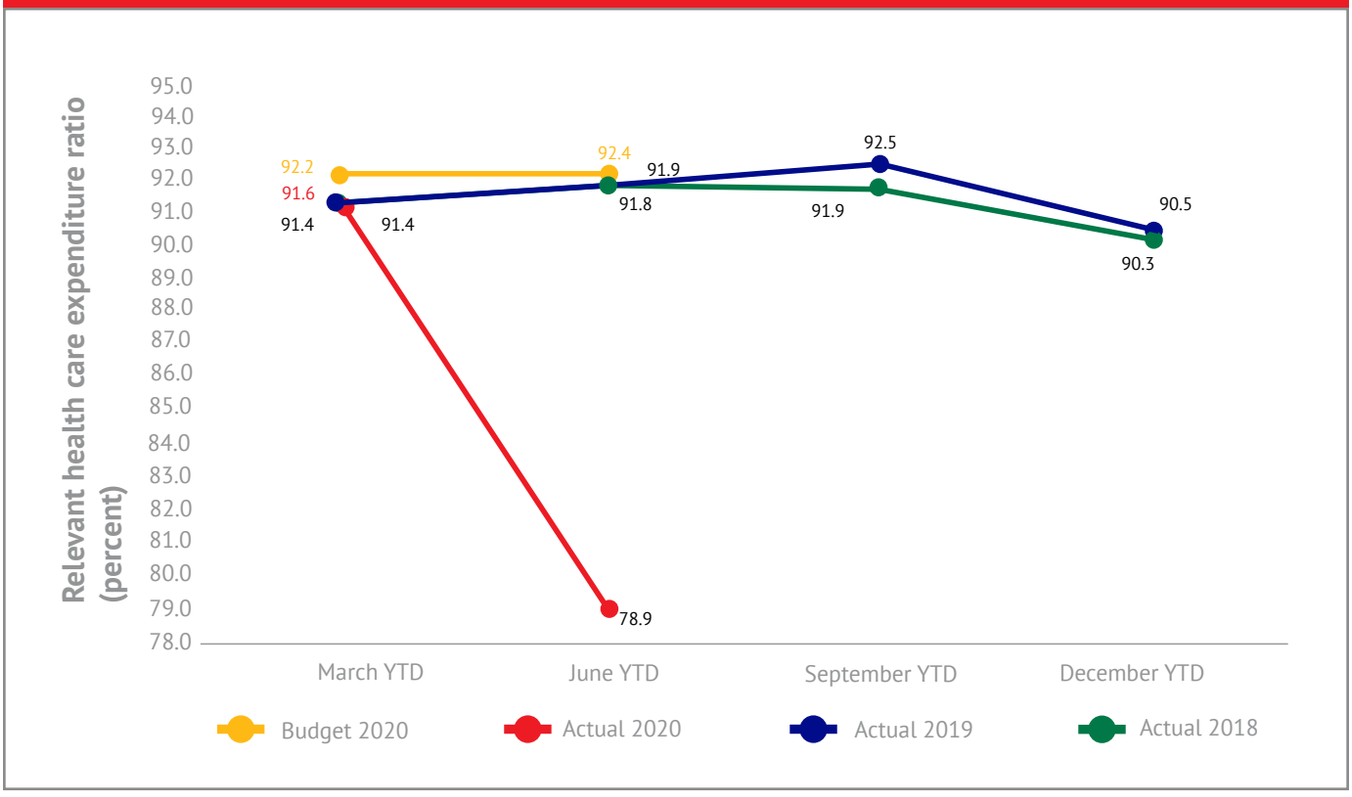
COVID Impact on Insurance Industry

Private Health Care Insurance

Based on reported results as of June 30, 2020, COVID-19 had no significant impact on either solvency levels or net assets ("free capital") of medical insurance schemes in South Africa.[145] The overall industry average solvency level increased by 10.9 percent from the audited solvency level of 35.6 percent as of December 31, 2019, reaching 39.5 percent as of June 30, 2020. Total net assets per Regulation 29 for all medical schemes amounted to R87.1 billion as of June 30, 2020, which was 18.8 percent higher than the reserves of R73.3 billion as of December 31, 2019. The solvency level as of June 30, 2020, was 39.5 percent, which was 16.5 percent higher than the budgeted solvency level of 33.9 percent for the same period.

According to CMS quarterly reports, relevant health care expenditures per beneficiary per month in Q2 2020 were lower than in Q2 2019 or Q1 2020, and lower than the budgeted values. The relevant health care expenditure ratio of 78.9 percent as of June 30, 2020, was substantially lower than the budgeted relevant health care expenditure ratio of 92.4 percent, and also much lower than the ratio as of June 30, 2019, of 91.8 percent (Figure 55).

Figure 55: Evolution of relevant health care expenditure ratio, 2018-2020



Source: Council for Medical Schemes, "Quarterly Reports for the period ending June 30, 2020", https://www.medicalschemes.co.za/publications/#2009-3487-wpfd-2020-quarterly-reports-archive

The CMS quarterly report as of June 30, 2020, shows substantially better operating results than budgeted. Registered medical schemes returned a net health care surplus (before taking investment and other income into account) of R12.6 billion, compared to a budgeted net health care deficit of R1.4 billion as of June 30, 2020. The total net health care results are substantially better than budgeted (Table 17).

145 Council for Medical Schemes, "Quarterly Reports for the period ending June 30, 2020", *https://www.medicalschemes.co.za/publications/#2009-3487-wpfd-2020-quarterly-reports-archive*

Table 17: Net health care results for medical aid schemes in South Africa, 2019-2020 (R, million)			
Results comparison			
	June 2020, actual	**June 2020, budgeted**	**June 2019, actual**
Average members	4,050	4,093	4,042
Average beneficiaries	8,927	8,924	8,906
Risk contribution income (RCI)	100,102	100,859	93,365
Relevant health care incurred (including managed care claims)	78,946	93,160	85,709
Net health care results	12,627	(1,370)	(491)
Surplus/(deficit)	13,129	1,340	2,915
Quarter end reserve position (per Regulation 29)	87,100	75,345	68,775

Source: Council for Medical Schemes, "Quarterly Reports for the period ending June 30, 2020", https://www.medicalschemes.co.za/publications/#2009-3487-wpfd-2020-quarterly-reports-archive

Discussions with CMS revealed that the main reason for the savings in claims cost is that elective surgeries were postponed for 2021, so the full impact of the COVID-19 outbreak was still not fully captured in the quarterly reports available. By law, the insured have four months to declare a claim before it gets prescribed; and given the national lockdown, there could be a significant number of claims still undeclared as of the date of the Q2 report (June 30, 2020) related to medical care that occurred since the onset of the outbreak (March 15, 2020). CMS advises that a full year of reporting is needed to assess correctly the impact of COVID-19 claims on the medical aid industry.

In terms of premium contribution from insured members for 2021, CMS issued guidelines for medical aid schemes designed to ensure affordability. This is the reason why premiums are not expected to increase significantly for members.

Life Insurance

Concerning the life insurers, the COVID-19 outbreak is not expected to have any substantial impact on the annual claims experience, except for claims related to insured clients presenting preexisting health conditions at underwriting (comorbidities).

Business Interruption Insurance

The main impact of COVID-19 for the non-life insurance industry in South Africa is not as clearly quantifiable as it is for the life and health insurance industries. In keeping with the international experience from other jurisdictions, the non-life insurance sector is dealing with numerous non-damage business interruption litigations initiated by SMEs, especially from the hospitality sector. According to Tshifhiwa Tshivhengwa, CEO of the Tourism Business Council of South Africa, the country's tourism sector lost about R72 billion due to the national COVID-19-related lockdown; Tshivhengwa believes the result could be the largest insurance event ever faced by the insurance industry.[146] This is similar to the international experience, where COVID-related business interruption claims account for the main increase in insurance payouts.

In South Africa, at industry level, most COVID-19-related business interruption claims have been initially denied by

146 Daily Maverick, "Business Interruption Insurance Is Becoming a Huge Issue–But There May Be a Compromise," July 5, 2020, *https://www.dailymaverick.co.za/article/2020-07-05-business-interruption-insurance-is-becoming-a-huge-issue-but-there-may-be-a-compromise/.*

insurers (Santam, Hollard, Old Mutual, and Guardrisk). Most of these are still to be settled in court, but the precedent created by Santam, one of the largest insurance companies in South Africa, is relevant: it chose to expedite court processes in a bid to get legal certainty on the vexed subject of business interruption insurance and lost, so the expectation is that most business interruption claims from the hospitality industry will be covered. The results of the Santam test case, which was heard in July 2020 and lost even in the Supreme Court, will be legally binding on the insurers who are parties to the case, and the test case will provide persuasive guidance for the interpretation of similar policy wordings and claims.

In parallel, South Africa's Financial Sector Conduct Authority was contacted by the claimant businesses to get a formal opinion, which was issued in June 2020 after the FSCA investigated the business interruption policy wording of all insurers offering such cover in South Africa. It is the opinion of the FSCA that there is "no evidence in support of the view that the National lockdown could be a trigger for a valid BI [business interruption] insurance cover claim."[147] However, FSCA mentions that a policyholder will have a valid claim under certain conditions: if the policy stipulates coverage for business interruption as a result of a contagious disease at the premises or within a certain radius, and if the local authority has formally declared that a disease exists within the area and has imposed quarantine regulations or restricted access to the area. To prove the existence of COVID-19 within the radius specified in a policy, it's good enough to show that a major facility like a hospital or large retail store (within the specified radius) was closed for a certain period due to a positive case of COVID-19 at its premises, or that the insured's business premises are situated within one of the metros or districts that have been declared COVID-19 hotspots by government.[148]

While the regulator's decisions are binding, the industry could still appeal to the Financial Services Tribunal, and these decisions could be taken on review to the Supreme Court. For further discussion of non-damage business interruption insurance in the context of the pandemic, and in particular some proposed ways to avoid conflicts between insurers and insured, see Annex 6.

Other Non-life Insurance Covers

Discussions with representatives of Cape Town's General Insurance Fund, as well as representatives of the state-owned short-term insurance company Sasria, confirmed that there is no claim attributable to COVID-19 on their books, since they require physical damage in connection to fire, burglary, natural catastrophes, or special risks (politically motivated malicious acts, riots, strikes, terrorism, and public disorders) for claims to be covered.

Annex 6: Non-damage Business Interruption Insurance Concept

Business interruption claims litigations coming from the private sector, where SMEs affected by the national lockdown see

147 Financial Sector Conduct Authority, "FSCA Communication 34 OF 2020 (INS)," June 18, 2020, *https://www.fsca.co.za/Regulatory%20Frameworks/Temp/FSCA%20Communication%2034%20of%202020%20(INS).pdf.*

148 Daily Maverick, "Insurers Claim Covid-19 Does Not Trigger 'Infectious Disease' Insurance Claims," June 22, 2020, *https://www.dailymaverick.co.za/article/2020-06-22-insurers-claim-covid-19-does-not-trigger-infectious-disease-insurance-claims/.*

their revenues plummet but don't receive the insurance payouts, they consider themselves entitled to, are increasingly present in South Africa following the COVID-19 outbreak. The direct loss incurred by the tourism and hospitality industry in 2020 alone was as high as R72 billion (US$4.8 billion),[149] and the refusal of insurers to pay business interruption claims to the hospitality industry has created considerable turmoil. After the FSCA statement that the government lockdowns are not a reason for valid claims except if spread of COVID can be proved in areas around the premise of the insured,[150] the South African Insurance Association (SAIA) convened representatives of the insurance industry to brainstorm around a pandemic cover that could protect businesses in the future against lost revenue due to business interruption triggered by a health emergency.

The starting point is a short list of principles governing any shared resilience solution for pandemic risks, on which the members of the working group agreed:

- **Costs and responsibilities are to be shared across the relevant parts of the private and public sector in a meaningful manner, to minimize moral hazard.**
- **There is to be central coordination across public and private entities and standardization of insurance terms.**
- **Any solution involving public and private sector would be conditional upon implementing efficient and effective prevention and adaptation measures by insured.**
- **A shared resilience solution can insure against only a portion of the economic costs.**

Inspired by similar work done in the UK market (see Box 4) and aware of the limitation of industry-wide capacity to insure this risk at just the private sector level, the working group came up with a few recommendations for product design that are to be submitted to the government for comments (Table 18).

Table 18: Proposed design of a pandemic insurance product for SMEs

Component	Design choice
Type of product	Public-private pool, with the government acting as a reinsurer of last resort
Distribution channel	Distribution made by insurance companies with a valid operating license in South Africa
Insured risk	Loss of revenue following the declaration of a health emergency or national disaster
Trigger	Mixed: Declaration of national emergency, parametric, economic
Insured	Small businesses, with turnover between R50,000 and R13 million; maximum of 50 employees

149 Daily Maverick, "Business Interruption Insurance Is Becoming a Huge Issue–But There May Be a Compromise," July 5, 2020, *https://www.dailymaverick.co.za/article/2020-07-05-business-interruption-insurance-is-becoming-a-huge-issue-but-there-may-be-a-compromise/.*

150 Financial Sector Conduct Authority, "FSCA Communication 34 OF 2020 (INS)," June 18, 2020, *https://www.fsca.co.za/Regulatory%20Frameworks/Temp/FSCA%20Communication%2034%20of%202020%20(INS).pdf.*

Component	Design choice
Product design	3-layer approach: -Layer 1: 100 percent parametric trigger, 100 percent retained by insurers -Layer 2: Mix of parametric trigger and loss adjustment, risk partially reinsured -Layer 3: After reaching insurance industry capacity, government covers losses as a reinsurer of last resort
Insurer	All non-life insurers
Payout	Fixed amount or percentage of lost revenue, with a deductible

Source: SAIA working group

A number of open points remain to be discussed both at the working group level and with the government:

- **If implemented, should such cover be mandatory for SMEs?**
- **If implemented, should the facility operate based on a risk-sharing model, i.e., each licensed insurer in South Africa should automatically take a portion of the risk?**
- **Should cover and payouts be designed at a sectoral level to better follow different industries' risk patterns and exposure to emergencies and to limit basis risk?**
- **Should such a facility be used to cover other risks with similar business interruption potential?**
- **What is the right balance between speed of payouts (to support businesses during the critical periods with low revenue) and the claims settlement process needed for such a solution to be viable?**
- **What should the underwriting process look like? Should it consider any existing business continuity plans or risk reduction measures taken at business level?**

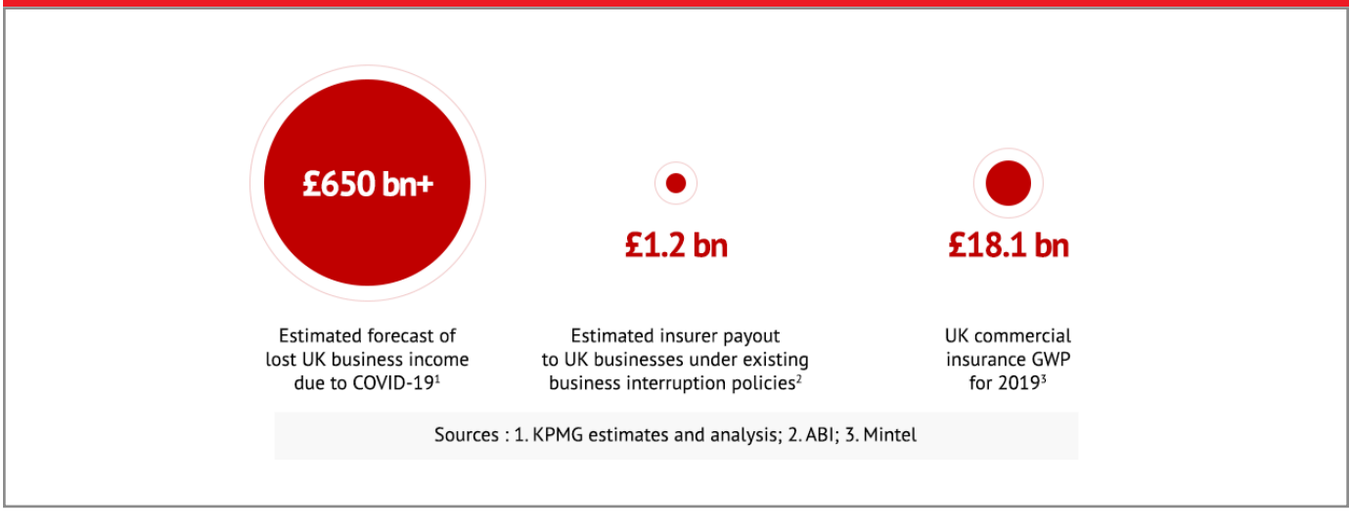
Box 4: Pandemic reinsurance pools in the UK[151]

On top of the widespread disruption that the COVID-19 outbreak caused in the UK, it also highlighted the shortcomings of existing business interruption insurance policies, which proved to be inadequate to cover the pandemic's impact on SME revenues during lockdown. The contractual ambiguity of many properties policies' business interruption coverage led to reputation damage for insurers and uncertainty over the ultimate cost of claims. Businesses that were denied cover for COVID-19-related losses have banded together to form action groups for litigation against insurance providers.

It became obvious that in the UK, a market-wide solution was needed to rethink the non-damage business interruption cover but given the size of any probable loss scenario (see figure 55 below), any practical pandemic cover must rely on government guarantees.

151 Julian Enoizi, "Resilience Re: Designing A Public-Private Response To Pandemic & Other Systemic Risks," webinar presentation, Financial Services Club Webinar, July 29, 2020, *https://www.longfinance.net/media/documents/Resilience_Re_2020.07.30_v1.0.pdf.*

Figure 56: Loss estimates due to business interruption for UK businesses



Source: KPMG, ABI, Mintel. Note: GWP = gross written premium.

A number of insurance groups have been established with the purpose of designing a pandemic insurance solution as a public-private partnership (Table 19). The product would be based on some core principles:

- **The product should respond to needs from all businesses in the UK, including small and medium enterprises.**
- **It should encourage businesses both to purchase cover (be affordable, demonstrate value, including through a transparent and reliable claims process) and to actively manage and reduce their risk.**
- **The private insurance sector should be incentivized to participate, and to collaborate to speed up the market launch of the cover.**

Table 19: Insurance groups involved in the pandemic insurance solution consultations in the UK

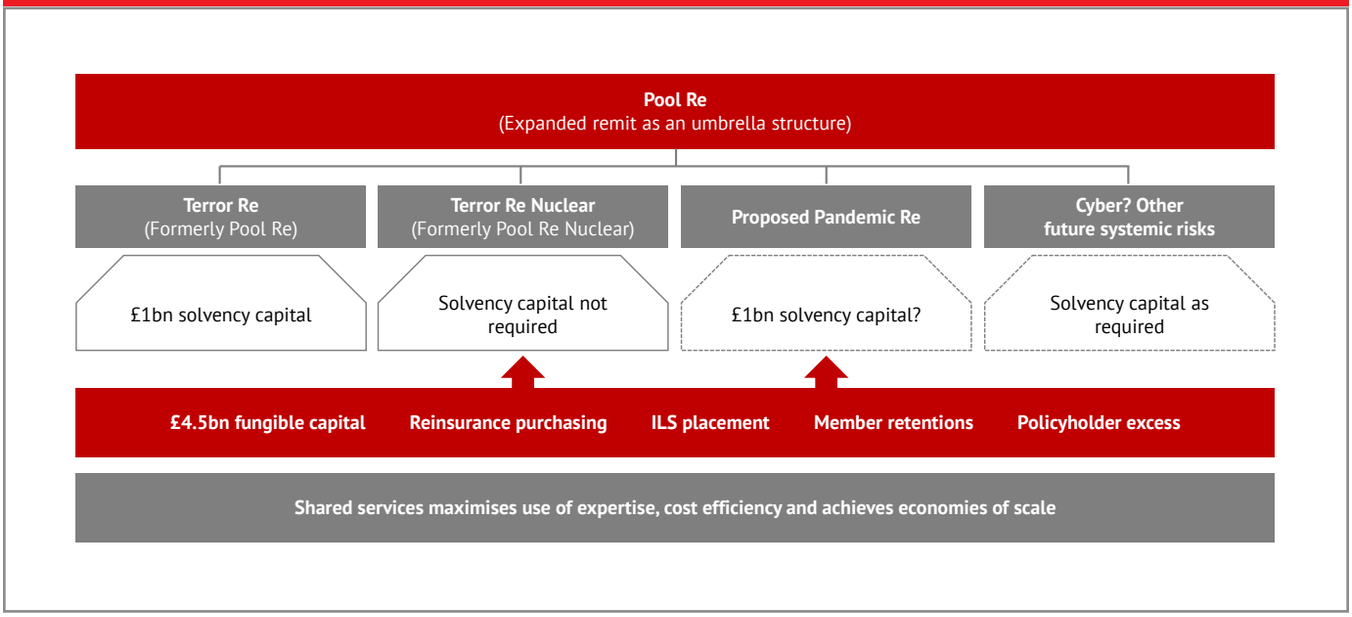
Group	Member	Notes
Pandemic Re	Strong senior representation from across the insurance industry	Six working groups have been formed to solve for customer and distribution, technical insurance, modeling, scheme structure and operating model, preparedness and mitigation, and regulatory and government affairs.
Recover Re	Members of this Lloyd's initiative include representation from the Lloyd's market across its managing agents, supported by the Lloyd's innovation team	• The Recover Re insurance vehicle offers "after the event" cover for pandemic-related business recovery, including the current COVID-19 pandemic. • It will use Lloyd's Innovation Lab and Product Innovation Facility to help fast-track the product development.

Group	Member	Notes
Totus Re	An "open collective" independently developed by James York and Liz Foster	Totus Re aims to preempt macro perils for any catastrophic pan-economic event.
Black Swan Re	Lloyd's	A Black Swan Re could be a funded structure (like the UK's Pool Re) that sets up a private-public partnership to provide coverage for non-damage business interruption from systemic risks such as pandemics, internet outages, space weather, etc.

Source: Market research by author; Pool Re documentation.

An "umbrella cover," which includes pandemic, existing terrorism schemes, and the ability to add other systemic risks in the future, has the advantage of providing both government and industry with a single body and point of contact to manage and coordinate the relevant risks. An example is shown in Figure 57.

Figure 57: Proposed sovereign level pandemic solution



Source: Pool Re. Note: ILS = insurance-linked security.

Annex 7: Fiscal Gap Analysis: Estimation of Historical Fiscal Relief Costs

This annex describes the estimation of historical fiscal relief costs in response to climatic disasters in South Africa. A statistical distribution was fitted to these historical relief costs and Monte Carlo simulation conducted to determine the annual cost of relief at various return periods.

The analysis uses historical annual economic loss information for disaster occurrences recorded between 1959 and 2019 to determine the historical annual relief costs borne by GoSA. Two distinct methods of estimating the relief costs are used depending on whether the impact of the peril is through physical damage to property and assets or through effect on human livelihoods and productivity.

Flood, Storm, and All Other Non-Drought Perils

Flood, storm, wildfire, and earthquake create losses through physical damage to property and assets. Therefore, for these perils we use a cost estimation methodology, which entails applying an emergency relief factor derived from historical occurrences to the uninsured loss amount.

$$Relief\ cost_{peril} = uninsured\ loss \times emergency\ relief\ factor_{peril}$$

The emergency relief factor is unique for each peril. The factor is calculated for each disaster occurrence by dividing the amount of funding allocated for relief by the total economic loss for that occurrence. Thereafter the average factor of all occurrences of the same peril (storm, flood, wildfire, earthquake) is calculated. The amount of funding allocated for each occurrence is obtained from the National Disaster Management Centre (NDMC) annual reports.

To check for reasonability, the emergency relief factors are compared to relief factors determined by AIR in other countries (Table 20).

Table 20: South Africa emergency relief factors compared to AIR model factors

Peril	South Africa factor (Percent)	AIR model factor (Percent)
Flood	19	23
Social violence	21	NA
Drought	4	NA
Storm	20	23
Earthquake	15	16
Wildfire	2	NA

Note: NA = data not available.

The following assumptions underlie this estimation method:

- **The total economic loss reflects both the costs needed to repair or replace damaged assets and the emergency relief cost, which include removing debris, clearing roads, establishing temporary shelter, and supplying medication and food to those affected.**
- **Where the NDMC report does not state that the funding is from the relief grant, we assume that the amount allocated by National Treasury and/or the affected organ of state (municipality or province) is the emergency relief cost.**
- **There is no delay in providing emergency funding at any sphere of government, particularly from national government (National Treasury) to the local government (municipality); hence the emergency factor does not need to allow for the time value of money.**

Drought

The impact of drought is largely through livelihoods and reduced productivity; therefore the relief cost estimation method uses the number of lives affected and an average cost of relief per person. This approach is preferred over the relief factor estimation method because for most drought occurrences (7 of 11), no total economic loss amounts are provided in the anchor data (EM-DAT). Furthermore, for three of the five drought occurrences since 2008, no relief amounts are provided in the data (GoSA/NDMC expenditure reports).

$$Relief\ cost_{drought} = number\ of\ lives\ affected \times cost\ of\ relief\ per\ person$$

The average cost of relief per person is assumed to be R1,000 under the base scenario and R1,376 under the prudent scenario. These are derived from the Social Relief of Distress (SRD) grant that is administered by the South Africa Social Services Agency (SASSA).[152] Data on the amounts of the grant were obtained from SASSA annual reports between 2017 and 2019.[153]

- **Under the base scenario, the cost of relief is assumed to be R1,000 per person, which is the average amount of the SRD grant over the last three years.** The three-year average of R1,000 compares favorably to the COVID-19 grant that was introduced in response to the pandemic in March 2020 and was considered reasonable.
- **Under the prudent scenario, the cost of relief is assumed to be R1,376.** This is the projected 2020 SRD grant amount based on the average growth rate of the SRD grant over the last two years. This scenario assumes that the SRD grant will continue to increase in line with the previous rate of increase of the grant.

The number of lives affected is the maximum of the number of lives affected by each drought occurrence (as recorded by EM-DAT and other public data sources) and the number of beneficiaries of the SDR grant (obtained through SASSA). The number of lives affected in each year was scaled up to the 2019 population using population data from the World Development Indicators.[154]

The total relief cost for each year is the sum of the non-drought relief costs and the drought relief costs across all disaster events that occurred in that year. These total values are adjusted for inflation to ensure all costs are 2020 US dollar values.

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152 The SRD grant is provided to individuals and households who are in disaster situations, have insufficient means, and have been affected by a disaster as defined in the Disaster Management Act or the Fund Raising Act 1978.

153 South Africa Social Services Agency, "Annual Reports," *https://www.sassa.gov.za/Pages/Annual-Reports.aspx.*

154 World Bank, "Population Total–South Africa," *https://data.worldbank.org/indicator/SP.POP.TOTL?locations=ZA.*

Annex 8: Full Case Studies

Case Study 1: Heavy Rains and Flooding in eThekwini-April 2019

In April 2019, eThekwini was affected by heavy rainfall and flooding. Beginning on April 22, eThekwini Metro was pelted with heavy rainfall and high winds, due to a cutoff lower pressure system. Over 165 mm of rain fell-the heaviest rainfall in a 24-hour period since 1985. Water flooded low-lying areas, and informal settlements were frantically evacuated as the banks of the Umgeni River began swelling. Nearly 100 people were killed and over 1,000 displaced as a result of rapid-onset flooding and landslides, collapsed buildings, and sinkholes in KwaZulu-Natal. The areas that were hardest hit include Umlazi, eManzimtoti, Chatsworth, Malvern, Queensburgh, Port Edward, Margate, Pennington, and Paddock. The floods came just days after a separate storm caused a church in KwaZulu-Natal to collapse, killing 13 people.

Cost of responding to the disasters

Different damage assessments yielded different estimates. According to the interim assessment (conducted by the municipality), the damage costs were R1,093,537,152.40; this includes costs for eight units, as outlined in Table 21. However, the provincial disaster management center from the KwaZulu-Natal Department of Cooperative Governance and Traditional Affairs (COGTA) had a much higher estimate of R1,866,886,740, as highlighted in Table 22. Only R34,307,171 was allocated for response, however, creating a budget shortfall of R1,832,579,569, equal to a funding gap of 98.16 percent. The funds that were received came from the education infrastructure grant, provincial roads maintenance grant, and human settlements development grant.

Credit: Photo by Marlin Clark from Unsplash

Table 21: eThekwini interim assessment costs for April 2019 floods (municipal)		
Department	**Description of activities**	**Estimated costs (R)**
Health Unit	Repairs to clinic roofs and consultation rooms	3,000,000
Parks and Recreation	Repairs to District 1 (front door, window frames, aluminum doors, wooden umbrellas, lifeguard platform, PA system/ speaker; replacement of refuse bins that washed away); repairs to Districts 2 and 3 (driveway damaged) and District 9 (bridge and picnic spot washed away)	1,800,000
Engineering	Activities related to roads and stormwater maintenance, roads provision, and coastal stormwater and catchment management	337,418,340
Human Settlements	Activities related to BNG houses (HSDG funding); transit camp (emergency funding for those living in totally damaged houses); informal settlements (emergency funding); retaining walls (USDG funds); hostels/flags (HSDG funding); professional fees (20 percent of total costs) (emergency grant/ USDG/HSDG)	663,308,400
Electricity	Repair of damage to fences and HV network; mopping up and replacing pumps in flooded basements	19,530,000
Water and Sanitation	NA	60,000,000
Metro Police	Repairs to roof, tiles, walls, equipment, and furniture	3,158,000
Disaster Management	Request for helicopter to conduct aerial observation of rain damage; volunteer activation to assist with household assessments; temporary shelters; hot breakfast and dinner for 860 flood victims at different shelters; catering post-storm for a prayer day for 500 people	5,322,422
Total		**1,093,537,162**

Source: City of eThekwini.

Note: BNG = Breaking New Ground; HSDG = human settlement development grant; HV = high-voltage; NA = data not available; USDG = urban settlement development grant.

Table 22: KwaZulu-Natal COGTA cost assessment of April 2019 floods (provincial)							
Sector	**Entities/ facilities damaged**	**Estimated costs for emergency repairs (R)**	**Estimated costs for medium- and long-term projects (R)**	**Estimated costs for emergency, medium, and long term (R)**	**Own funds allocation in FY2019/20 (R)**	**Own funds allocation in FY2020/21 (R)**	**Shortfall (R)**
Dept. of Health [a, b]	Health care facilities	68,328,000	0	68,328,000	0	0	68,328,000
Dept. of Human Settlements	Housing infrastructure-eThekwini	461,731,000	341,870,200	803,601,200	0	0	803,601,200
Dept. of Transport	eThekwini Metro	230,800,000	194,400,000	425,200,000	0	34,307,170.59	390,892,829
eThekwini Metro	Health Unit	3,000,000	0	3,000,000	0	0	3,000,000
	Parks & Recreation	1,800,000	0	1,800,000	0	0	1,800,000
	Engineering	195,400,000	210,068,340	405,468,340	0	0	405,468,340
	Electricity	19,530,000	0	19,530,000	0	0	19,530,000
	Water & Sanitation	60,000,000	0	60,000,000	0	0	60,000,000
	Reservoir and other property	50,000,000	0	50,000,000	0	0	50,000,000
Dept. of Education[a]	School damages	29,959,200	0	29,959,200	0	0	29,959,200
Total		**1,120,548,200**	**746,338,540**	**1,866,886,740**	**0**	**34,307,171**	**1,832,579,569**
Funding gap		98.16%					

Source: COGTA.

a. The table indicates 65.7 percent of provincial cost, calculated on the basis that eThekwini accounted for 65.7 percent of provincial transport and human settlement costs for the April 2019 disaster.

b. Total costs for repairing health care facilities at the provincial level was R104,000,000. eThekwini estimated its costs at R3,000,000. This table includes the municipal cost of R3,000,000 and 65.7 percent of the provincial cost (R68,328,000). This is calculated on the basis that eThekwini accounted for 65.7 percent of provincial transport & human settlement costs (other provinces affected include Ugu, Umkhanyakude, Harry Gwala, Ilembe, King Cetshwayo, and Zululand.

Even for the most urgent of needs, a substantial funding shortfall exists. The FY 2019/20 operating budget for the Disaster Management and Emergency Control Unit was R7,071,730. In the event of major incidents or disasters, such as the 2017 and 2019 storms, the budget allocation cannot meet the relief needs of affected individuals across the affected wards. Table 23 provides the actual expenditure that was used to provide the required services for major incidents and disasters during FY2016/17, FY2018/19, and FY2019/20.

Table 23: Summary of spending during disasters, FY2016/17, FY2018/19, and FY2019/20		
Item	**Financial year**	**Actual spending**
Food hampers, blankets, mattresses	2016/17, 2018/19	R7,484,648.16
Tents, ablution facilities	2019/20	R38,957,722.50
Soup kitchen	2019/20	R107,900.00
Total		**R47,517, 270.66**

Source: eThekwini Municipality.

Going Forward

The eThekwini Disaster Management Level 2 Plan notes three priorities to improve budgeting for disaster response and recovery. First, the city is to review the budget allocation to disaster management based on response and recovery operations. Second, emergency funding for emergency rehabilitation is to be allocated. And third, Treasury is to look into 2017 and 2019 storm damages to be able to forecast budget allocations. Without further discussions with the finance department, however, it is not possible to tell whether these priority steps have been taken.

There have been substantial delays in conducting assessments, which are a prerequisite to disbursing funds. According to an update from the national COGTA in mid-2020, the assessments for the April 2019 floods had yet to be completed. The update noted that NDMC, a branch of the Department of Cooperative Governance (DCoG), is reinstating the process regarding previous disaster occurrences that were reported by KZN [KwaZulu-Natal] province. These are regarding the damages due to inclement weather in April 2019. . . The process was halted due to the COVID-19 pandemic and the lockdown in the country. Engagements are underway with the province and relevant national organs of state to determine the funding already disbursed to the province by various organs of state and the shortfall identified in addressing the damages. Upon receipt of the information from sectors, the NDMC will be engaging the independent assessors to conduct the damage assessment on damaged infrastructure by mid-August 2020.[155]

However, based on the guidance we received from the eThekwini government, the assessments restarted only in November 2020, and had not been finalized as of November 2021. This indicates a significant delay in assessing damages (over 18 months) and mobilizing the funds to rebuild.

As discussed earlier, the Municipal Disaster Relief Grant is designed to enable a timely response to immediate needs after a disaster-but the eThekwini government stated it does not apply for the grants due to the challenges associated with utilizing funds and meeting reporting requirements. For example, the grant requires detailed assessments of damages by all three spheres of the government: National Disaster Management Centre conducts a preliminary cost verification; the provincial disaster management center monitors the implementation of disaster funds; and the municipality conducts disaster assessment reports, expenditure reports, and performance reports. The complexity of the process and a relatively low level of experience with the grant leads to some municipalities either not initiating or failing to complete the application process.

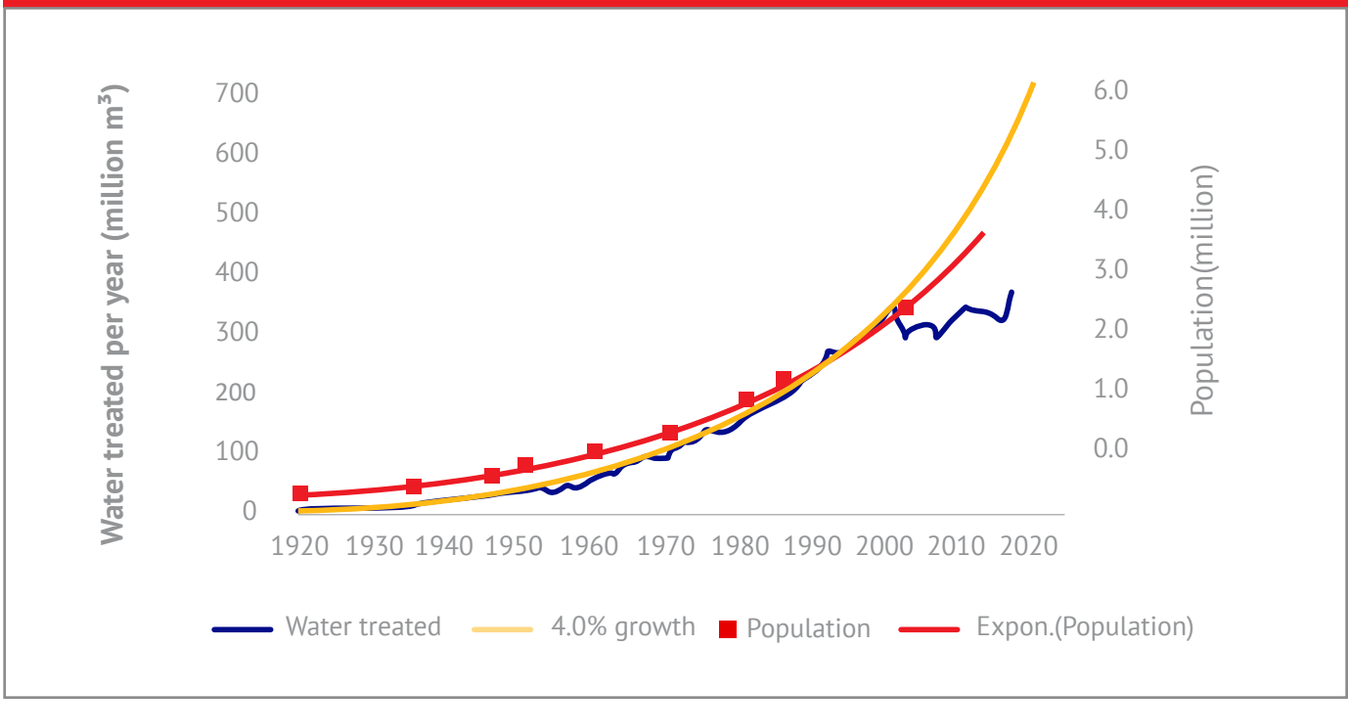
155 Presentation by the National Disaster Management Centre (a branch of the Department of Cooperative Governance).

Case Study 2: Cape Town-Day Zero

Overview

Cape Town's demand for water has been growing faster than its water treatment capacity. Cape Town, a metropolitan coastal city of more than 4 million people, has been close to water scarcity for years, as the effects of a slow-onset disaster ramped up. A dry climate coupled with high population growth (and thus demand) and high per capita water consumption led to a mounting water shortage (Figure 59). Although dam levels had been declining since 2015, they dropped to 15-30 percent capacity by late 2017. In early 2018, after three consecutive winters with little rainfall, the concept of "Day Zero" emerged-the triggering of Level 7 water restrictions when water levels in the city's supplier dams dropped below 13.5 percent.

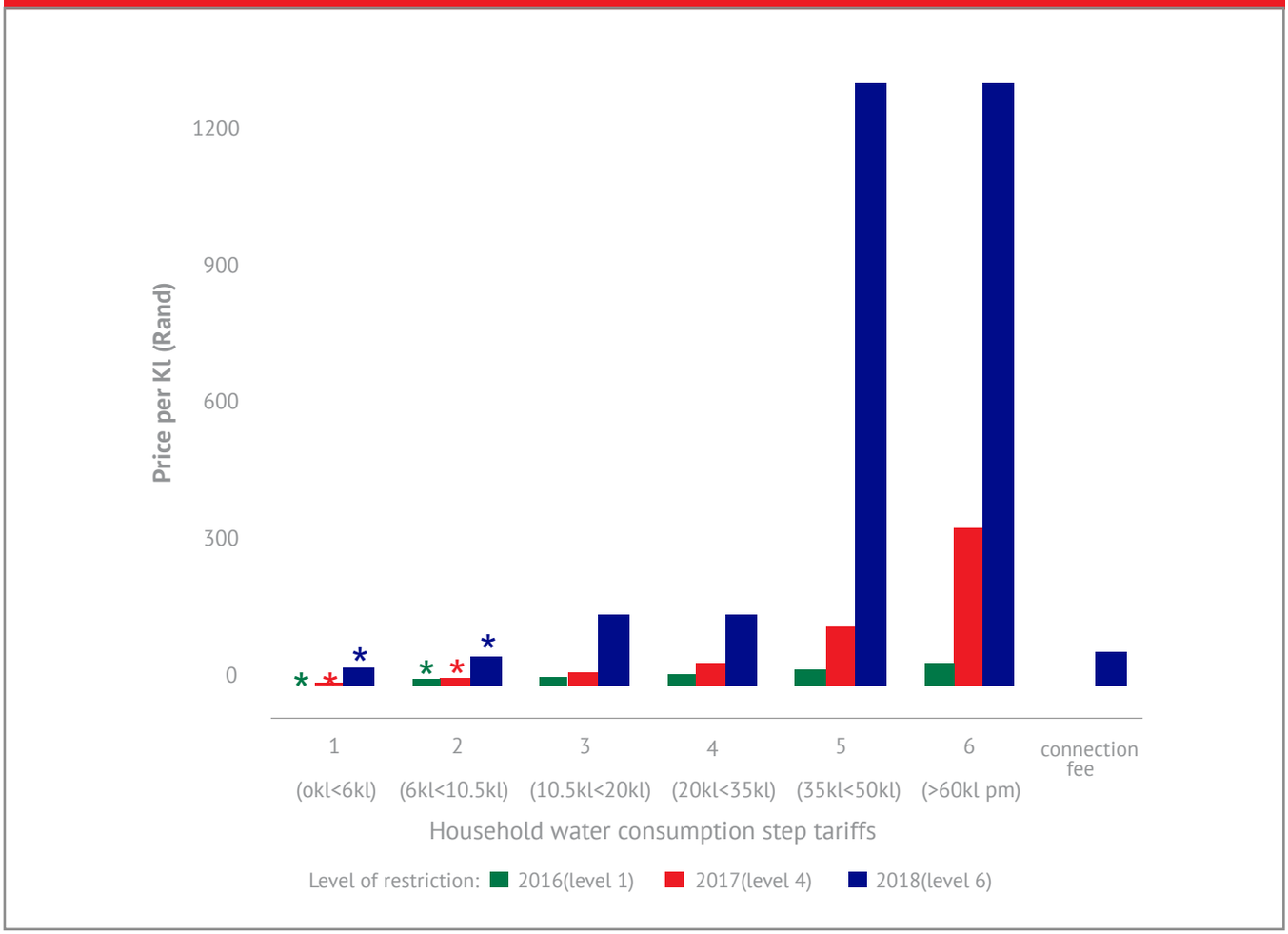
Figure 58: Water treated versus population growth, 1920-2020



Source: Robbie Parks, Megan McLaren, Ralf Toumib, and Ulrike Rivett, "Experiences and Lessons in Managing Water from Cape Town," Grantham Institute Briefing Paper 29, Imperial College London, https://www.imperial.ac.uk/media/imperial-college/grantham-institute/public/publications/briefing-papers/Experiences-and-lessons-in-managing-water.pdf.

This level of restriction would mean the shutting off of municipal water supplies, in turn forcing residents to wait in lines for their daily water ration (25 liters, in line with the World Health Organization's minimum short-term emergency survival recommendation for washing, cooking, and hygiene). The City escalated restriction levels from Level 3 (105 liters per person per day) in November 2016 to level 6B (50 liters per person, per day) in January 2018. Preparing for Day Zero, the City of Cape Town set up water collection points across the city, where each collection point could accommodate 20,000 people per day. To prevent reaching Day Zero, the City of Cape Town government created a new set of rules and regulations to curb water use, including usage restrictions, new tariffs to penalize high water usage (Figure 60), the installation of smart devices on domestic properties to monitor usage, and new communication strategies to strengthen outreach. Water usage tariffs skyrocketed during 2017 and 2018. By early 2018, residents who used more than 13 gallons of water per day were charged a levy that was three times higher than before the drought started.

Figure 59: Household water consumption step tariffs



Source: Robbie Parks, Megan McLaren, Ralf Toumib, and Ulrike Rivett, "Experiences and Lessons in Managing Water from Cape Town," Grantham Institute Briefing Paper 29, Imperial College London, https://www.imperial.ac.uk/media/imperial-college/grantham-institute/public/publications/briefing-papers/Experiences-and-lessons-in-managing-water.pdf.

Ultimately, the net impact of various water saving interventions was substantial. Average daily water consumption for the city reduced from 317 million gallons in February 2015 to 132 million gallons in February 2018. Between December 2017 and March 2018, the percentage of single-family homes using less than 2,773.8 gallons of water per month increased from 64 percent to 81 percent, with those using less than 1,585 gallons increasing from 31 percent to 49 percent.[156] Day Zero never arrived. Although Cape Town's dams returned to being 80 percent full one year after the Day Zero threat, and though water restrictions have been relaxed, the likelihood of future shortages remains high. South Africa continues to be one of the world's driest countries, and demand for water is continuing to increase: according to the World Economic Forum, demand is forecasted to reach 17.7 billion m³ by 2030, up from 13.4 billion m³ in 2016-which is more than the country has capacity to allocate.[157]

Economic Impact of Day Zero

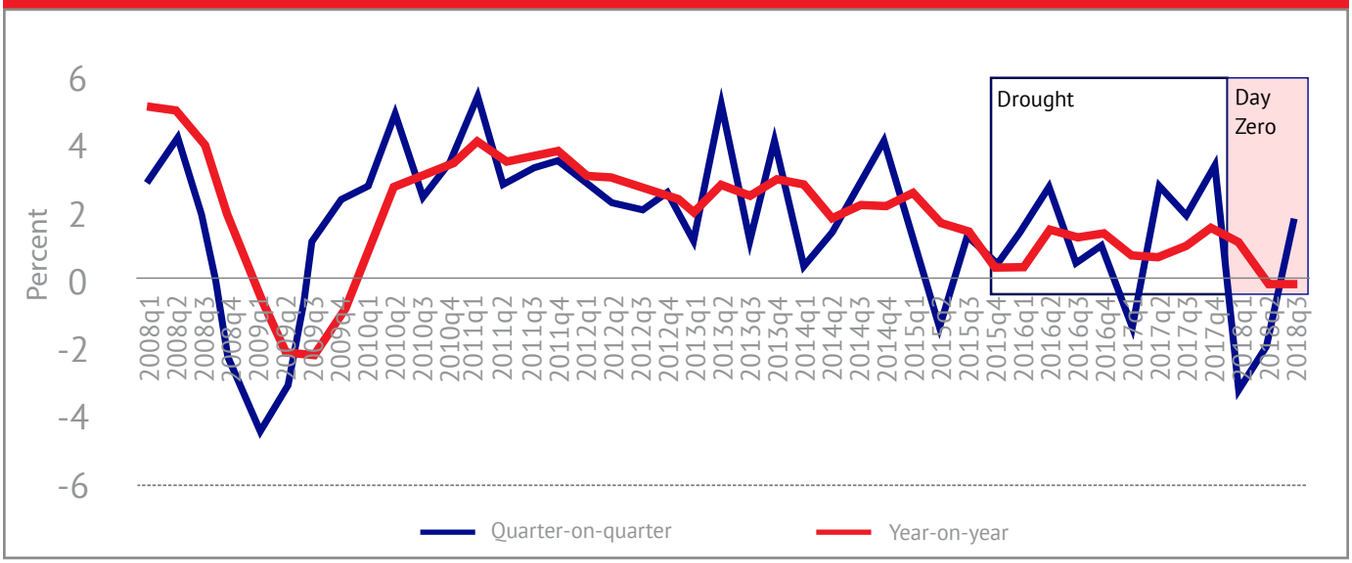
As Figure 61 shows, the Day Zero crisis had a significant economic impact. Although GDP statistics for the City of Cape Town are not available on a quarterly basis, the performance of the municipality's economy typically mirrors that of the provincial economy. This is largely owing to the fact that the city contributes to 70 percent of the provincial economic

156 Tools of Change, "Day Zero: Cape Town Includes Fear Appeal to Avoid Running Out of Water," 2020, *https://toolsofchange.com/en/case-studies/detail/735.*

157 World Economic Forum, "Cape Town Almost Ran Out of Water. Here's How It Averted the Crisis," August 23, 2019, *https://www.weforum.org/agenda/2019/08/cape-town-was-90-days-away-from-running-out-of-water-heres-how-it-averted-the-crisis/.*

output.[158] It is important to note that agriculture contributes more to the Western Cape economy than to the City of Cape Town economy; thus agricultural declines are less burdensome to the city's economic performance, and the City of Cape Town likely performed slightly better than the province. Still, there was a notable decline in year-on-year (y/y) economic growth between 2015 and 2018, bottoming out at a near 0 percent real gross geographic product (GGP) in 2018-down from GGP growth rates of 2-4 percent between Q2 2010 and Q2 2015.

Figure 60: Real GGP growth for the Western Cape, Q1 2008 to Q3 2018



Source: City of Cape Town, "EPIC: Economic Performance Indicators for Cape Town 2018: Quarter 3 (July-September)," https://www.investcapetown.com/wp-content/uploads/2019/04/EPIC-2018Q3-FINAL.pdf (using Quantec data).

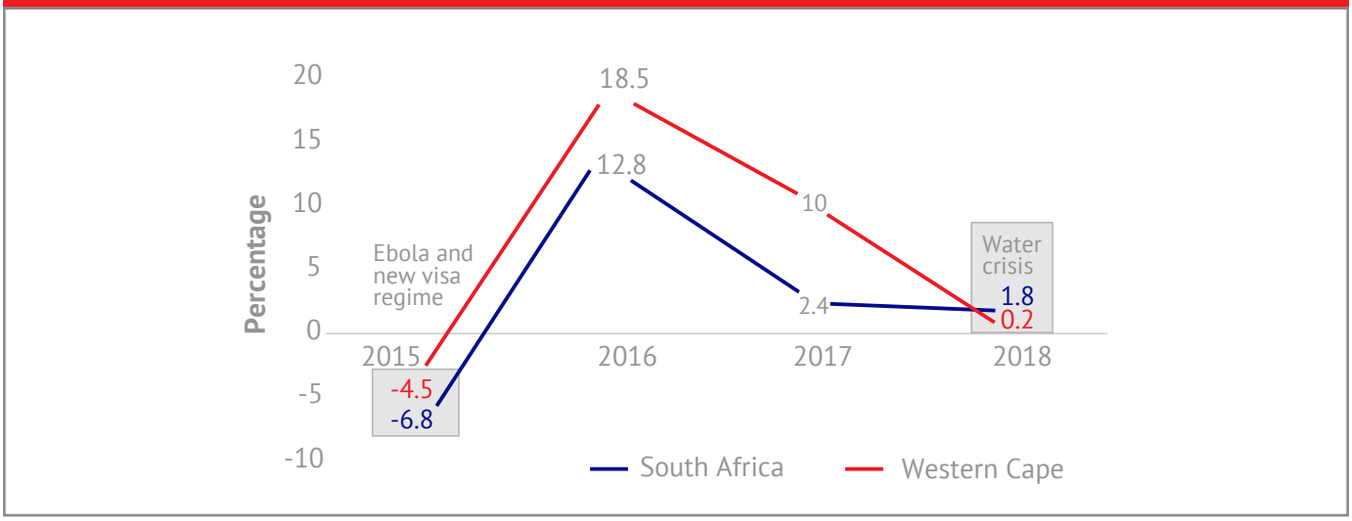
Impact of Day Zero on Tourism

As Figure 62 shows, the growth of the tourism sector in the Western Cape declined from 18.5 percent in 2016 to 0.2 percent in 2018 during the water crisis. To gauge the impact of the drought on tourism business, the Tourism Business Council of South Africa collected data on a biannual basis from tourism stakeholders, which included car rental companies, travel agencies, event planners, tour operators, and those working at various destinations. In 2018, two-thirds of tourism businesses reported that the drought had an adverse effect on their business. Wesgro noted that the drought cost tourism businesses in the Western Cape between R723 million and R1.7 billion a year; low hotel occupancy, a decline in consumer spending, and a general decline in tourism arrivals to the province all played a role.[159]

158 HHIS Markit data; cited in City of Cape Town, "EPIC Economic Performance Indicators for Cape Town 2019: Quarter 1 (January–March)," *https://resource.capetown.gov.za/documentcentre/Documents/City%20research%20reports%20and%20review/EPIC%202019%20Q1%20FINAL.pdf.*

159 Westgro 2019.

Figure 61: Adverse effect of drought on growth in the tourism sector



Source: Kaitano Dube, Godwell Nhamo, David Chikodzi, "Climate Change-Induced Droughts and Tourism: Impacts and Responses of Western Cape Province, South Africa," Journal of Outdoor Recreation and Tourism, 2020, https://doi.org/10.1016/j.jort.2020.100319.

Once the Day Zero threat ended, tourism began picking up again. By the third quarter of 2018, international passenger arrivals at Cape Town International Airport recorded a 17.5 percent y/y increase and domestic arrivals a 2.4 percent y/y increase.[160] But the effects lingered for some time. Occupancy rates at city accommodation establishments decreased by an average of 5.1 percentage points in the third quarter of 2018 compared to the same period in 2017. According to the City of Cape Town's Economic Performance Indicators report, "Lower occupancy rates [in Q3 2018] could be explained by possible lingering negative perceptions associated with the water crisis."[161]

Impact of Day Zero on Agriculture and Logistics

The 2017/18 drought in the Western Cape had a heavy impact on the agriculture sector. The sector lost roughly R5.9 billion, and the drought triggered a loss of 30,000 jobs. The drought also affected the macroeconomic health of the country, given that the Western Cape contributes 22 percent to the nation's agricultural GDP and that the province's fruit and wine industries are key national exporters. The Western Cape drought had a significant effect on total production, with 2013/14-2017/18 export volumes down 25 percent, on average, compared to the five-year period from 2008/09 to 2012/13.[162]

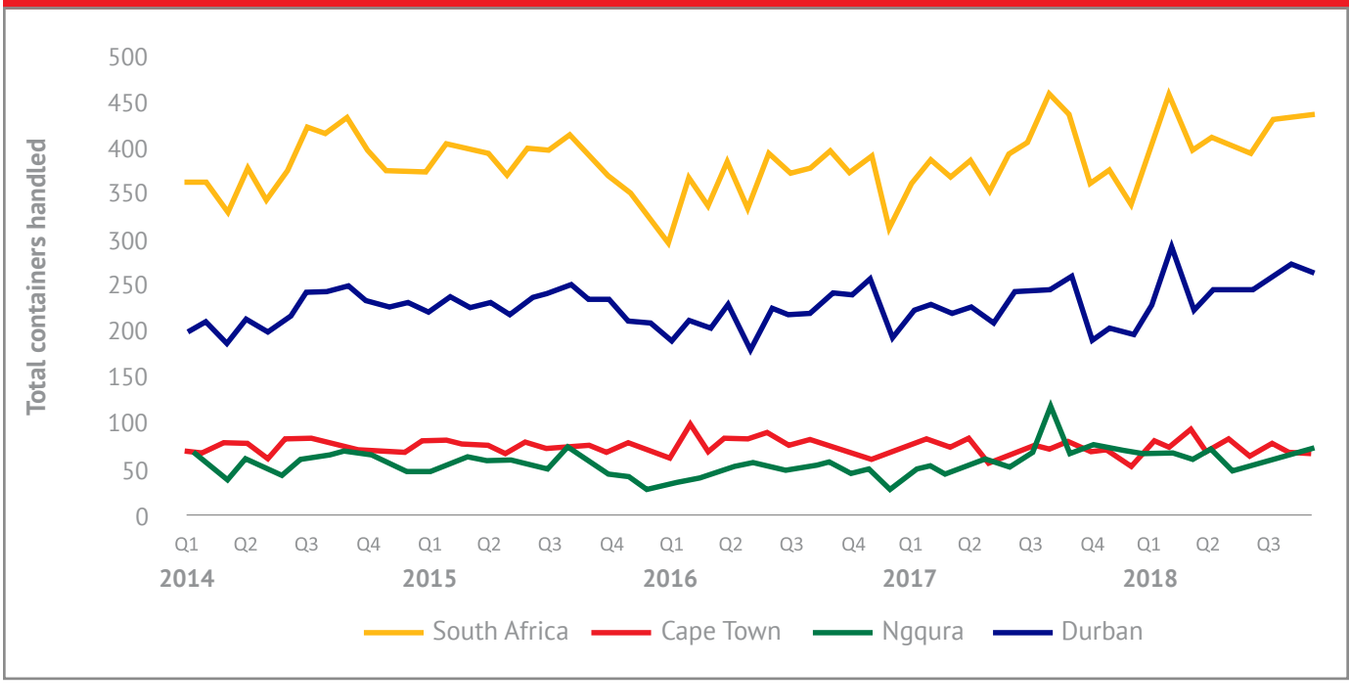
Though the vast majority of agricultural production in the Western Cape happens outside the City of Cape Town, the city was adversely affected through drought's adverse impacts on the Port of Cape Town. As Figure 63 shows, between Q1 2015 and Q2 2017, Port of Cape Town generally had a relatively wide lead over Port of Ngqura as the second largest port in South Africa, as measured in total number of twenty-foot equivalent units (TEUs) handled. However, beginning in Q3 2017, the Port of Ngqura overtook Port of Cape Town as the second biggest port in South Africa-a lead it maintained for two quarters. Though Port of Cape Town then increased its TEUs, it remained in very close competition with Port of Ngqura and was overtaken by it at various points in 2018-a sharp contrast with 2016, when Port of Cape Town had over 100 percent more TEUs.

160 City of Cape Town, "EPIC: Economic Performance Indicators for Cape Town 2018: Quarter 3 (July-September)," *https://www.investcapetown.com/wp-content/uploads/2019/04/EPIC-2018Q3-FINAL.pdf.*

161 Ibid.

162 Parliamentary Monitoring Group, "Drought Update: Provinces' State of Readiness for 2019/20 Planting Season," November 5, 2019, *https://pmg.org.za/committee-meeting/29261/.*

Figure 62: Total containers handled (TEUs), January 2014-September 2018



Source: City of Cape Town, "EPIC: Economic Performance Indicators for Cape Town 2018: Quarter 3 (July-September)," https://www.investcapetown.com/wp-content/uploads/2019/04/EPIC-2018Q3-FINAL.pdf (using Transnet National Ports Authority data).

Cost of Responding to the Disaster

During the Day Zero drought, Cape Town's financial resilience was tested through two key avenues: a substantial decline in revenue and the additional costs required to respond to the drought. The decreased revenues resulted from a decline in water and sanitation service charges and larger macroeconomic impacts from the loss of 25,000 Western Cape jobs in agriculture and tens of thousands more in the service, hospitality, and food sectors. The increased costs required to respond to the drought related to implementing various initiatives to ensure sustainability and resilience in water provision for the city, including investment in desalination, underground extraction from aquifers, and water reclamation/reuse initiatives. The reduction in revenue and increase in costs are explored in turn below.

The decline in revenue was underpinned by a reliance on water service charges. For the 2018/19 financial year, the total municipal budget was R47.7 billion, including R8.4 billion for capital expenditure and R39.3 billion for operating expenditure. Electricity charges are the most substantial contributor to municipal revenue, bringing in R12.6 billion, or 32 percent of the city's total revenue. This is followed by property rates, which bring in R9.3 billion, or 23.8 percent of revenue. Water service charges generate revenue of R3.5 billion; when added to the revenue generated from sanitation charges (R1.8 billion), water service-related revenue contributes 13.7 percent of total revenue. This makes water services the third largest source of own revenue for the City of Cape Town.

The City of Cape Town's financial approach is encapsulated in the Medium-Term Revenue and Expenditure Framework (MTREF), which seeks to utilize "the appropriate mix of financial parameters and assumptions within which the City should operate to facilitate budgets that are affordable and sustainable at least 10 years into the future.[163]" A review of the MTREFs shows that there are shifts in the consumption of both electricity and water-and by extension, shifts in the revenue the City of Cape Town is able to raise from the sale of these services. The decline in consumption is led by an increase in load-shedding in the electricity sector and water restrictions linked to the drought. For electricity, many households and firms have invested in alternate sources of energy, particularly solar photovoltaic (PV) panels. This change, coupled with increasing efficiencies, leads to residents purchasing less electricity from the state and to a consistent decline in revenue for the city.[164] The MTREFs show a consistent decline in consumption of 1-1.5 percent over the four-year period leading up to the 2017/18 MTREF.[165] The 2017/18 MTREF indicated that the rate of electricity consumption decline will double to 2.68 percent for the 2018/19 financial year, with a predicted shrinkage of 2 percent for the following two financial years.[166] The City of Cape Town has incorporated the expected decline in electricity consumption in its long-term budget planning, and the city's Integrated Development Plan (IDP) notes the importance of developing a revenue model that is not reliant on electricity sales as a key revenue source.[167]

According to a 2019 study by Simpson et al., the persistent decline in electricity consumption provided the "backdrop for the revenue predicament brought on by the recent Cape Town drought."[168] As rainfall and resulting surface water levels declined, water consumption also had to decline-and at a much more aggressive level than electricity. The City of Cape Town implemented stringent water restrictions and initiated water-saving campaigns, which led to a 50 percent decline in water consumption compared to pre-drought consumption levels.[169] This decline in consumption led to a reduction in water revenues.

Day Zero was a "a shock within a shock."[170] The drought led to an increase in the usage of off-grid approaches and technologies (first shock), which led to a precipitous decline in the city's revenue from water consumption (second shock). Consumption declined by 90 percent, from 117,000 households using 20,000 liters of municipal water per month in December 2016, to only 12,300 households using water in February 2018.[171] Many firms and households supplemented their municipal water with alternative water sources and invested in rainwater harvesting, boreholes, and grey water systems. In particular, rainwater harvesting tanks were an affordable and accessible way to achieve water security and became the most often used alternate source of water.[172]

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163 City of Cape Town 2018a:1.

164 City of Cape Town 2018g.

165 City of Cape Town 2018a.

166 Ibid.

167 City of Cape Town 2017.

168 Nicholas Philip Simpson, Kayleen Jeanne Simpson, Clifford D. Shearing, and Liza Rose Cirolia, "Municipal Finance and Resilience Lessons for Urban Infrastructure Management: A Case Study from the Cape Town Drought," International Journal of Urban Sustainable Development 11, no. 3 (2019), *https://www.tandfonline.com/doi/full/10.1080/19463138.2019.1642203?scroll=top&needAccess=true.*

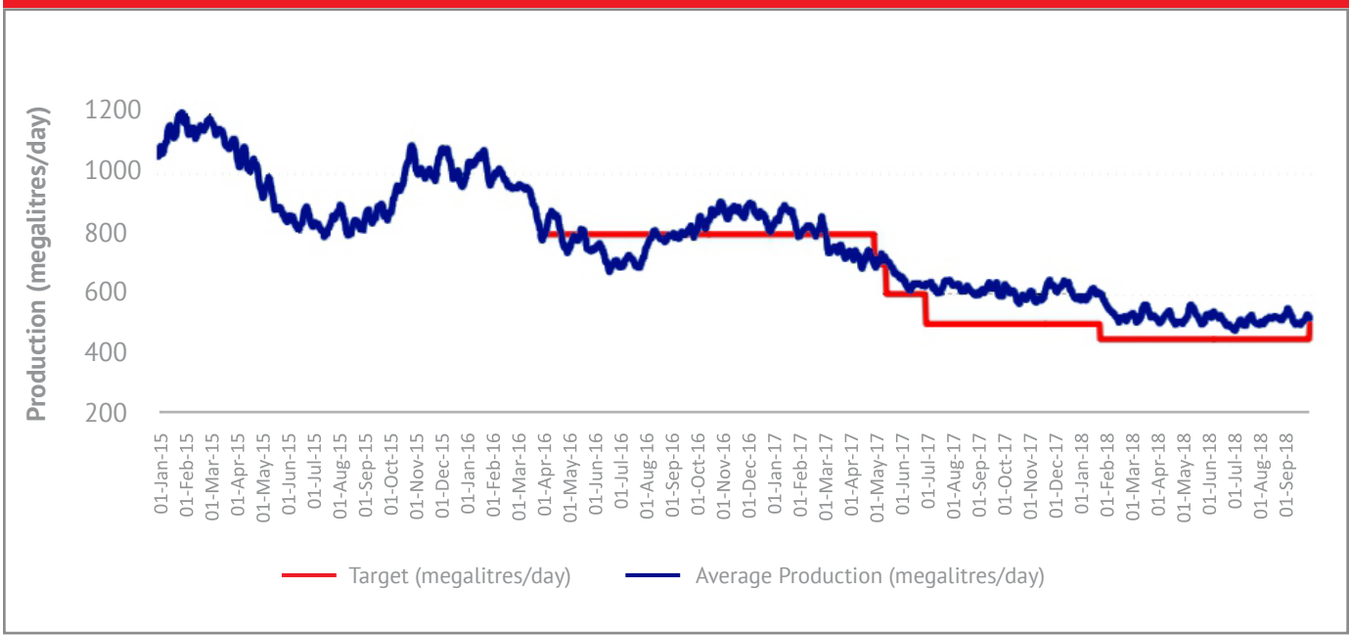
169 City of Cape Town 2018g; Booysen et al. 2019.

170 Nicholas Philip Simpson, Kayleen Jeanne Simpson, Clifford D. Shearing, and Liza Rose Cirolia, "Municipal Finance and Resilience Lessons for Urban Infrastructure Management: A Case Study from the Cape Town Drought," International Journal of Urban Sustainable Development 11, no. 3 (2019), *https://www.tandfonline.com/doi/full/10.1080/19463138.2019.1642203?scroll=top&needAccess=true.*

171 Ibid.

172 Ibid.

Figure 63: Daily average water production (seven-day average) in Cape Town, January 2015-September 2018



Source: City of Cape Town, "EPIC: Economic Performance Indicators for Cape Town 2018: Quarter 3 (July-September)," https://www.investcapetown.com/wp-content/uploads/2019/04/EPIC-2018Q3-FINAL.pdf (using City of Cape Town Department of Water & Sanitation data).

This downturn had fiscal implications given that revenue from the sale of water accounted for 15.8 percent of total revenue for Cape Town during the 2017/18 financial year.[173] Cape Town initially forecasted revenue from water and sanitation tariffs for the 2017/18 financial year to be approximately R6.02 billion.[174] This estimate came in early 2017 when dam levels sat above 40 percent and demand for water was 900 million liters per day. But the 2017 rainy season brought in less than half of the expected rainfall, and there was not enough water to bring in the forecasted R6.02 billion. By December 2017, the city had received 24.8 percent less revenue from water service charges y/y, which amounted to a shortfall of R483 million, and 30.8 percent less revenue from sanitation service charges y/y, adding a shortfall of R316 million.[175] The substantial revenue shortfall led to an adjustment to the predicted revenue from these service charges.

The adjusted budget in January 2018 revised the revenue expected from water and sanitation services down from R6.02 billion to R4.17 billion to account for the under-recovery and forecasted impact of Level 6 restrictions.[176] This revision meant that expected revenue from sale of water and sanitation services declined by 31 percent, accounting for just 9.6

173 City of Cape Town 2018c:17.

174 City of Cape Town 2018b.

175 City of Cape Town 2018h.

176 City of Cape Town 2018b, 2018c

percent of total municipal revenue-far below the expected 15.8 percent.[177] This decreased revenue "necessitated budget reprioritization and immediate internal cost-cutting directives on various expenditure items.[178]" However, the decline in actual revenue at the end of the 2017/18 financial year in June 2019 was more subdued than expected. The final audited revenue received for water and sanitation services for the 2017/18 financial year was R5.316 billion-a 12 percent shortfall.[179] The increase in revenue despite the 50 percent decline in volumetric consumption was largely due to the steep tariffs implemented for firms and households with higher than permitted water consumption.[180]

The City of Cape Town's budgeting model did not take into account severe water shortages. Cameron and Katzschner note an important assumption that underpinned the "shock within a shock": Cape Town municipality's budgeting is built on the structure and pricing of its water system, which in turn "is based on the assumption that there will be a constant supply of available and easily accessible freshwater."[181] Thus, although the city accounted for long-term decline in electricity consumption, it did not apply conventional approaches such as contingency reserve to buffer water scarcity shocks.[182] It is perhaps unsurprising, then, that Cape Town ultimately ended up with a negative cash flow for operations (Figure 65).

Support from Provincial and National Governments

During the first years of the drought (2015-2017), the City of Cape Town largely self-financed the response. This was likely partially due to a deficit within South Africa's Department of Water and Sanitation, which revealed last June that it had overspent on its budget by R110 million at the end of the 2016/17 financial year. The Department of Water and Sanitation also stated that it had no funds allocated for drought relief in the 2017/18 financial year. A report released by South Africa's auditor-general toward the end of 2017 concluded that the Department of Water and Sanitation was guilty of "fruitless and wasteful" spending. Ian Neilson, deputy mayor of Cape Town, noted that severe water mismanagement at the national level was a key factor in the city's water crisis.

By 2018, the state of disaster was declared, and National Treasury allocated R6 billion (approximately US$512 million) in the 2018/19 financial year for drought relief. This included R473 million in relief for provinces and municipalities. Additionally, the government allocated R91.6 billion for extending, upgrading, and maintaining water infrastructure, and R34 billion for water services, largely through municipal grants. Discussions with the Budget Office indicate that an allocation was made from the contingency reserve in 2018. The city did not receive funds from the contingency reserve for drought response in prior years because the contingency reserve had been used for other purposes (such as public sector wages after the 2016 wage negotiations) and was depleted.

To mitigate the impact of the water crisis on government services, the Western Cape government established a Joint Operations Committee to coordinate the provincial response. In the 2017 Adjusted Estimates, funding of R165.331 million for 2017/18 and R157.031 million for 2018/19 was made available for drought relief and mitigation initiatives.

The city has adopted a steep progressive financing structure. During the peak of the crisis, the heaviest consumers (those using more than 35 kiloliters) in Cape Town had their tariffs increased from R52.04 per kiloliter to R341.72 per kiloliter. Though the water tariffs have declined because Cape Town is no longer in an emergency, tariffs in Cape Town have remained steeper than in other parts of South Africa. For consumption between 6 and 10 kiloliters per month, Cape Town charges R20.75 per kiloliter, while Johannesburg charges R18.99, a difference of 8.5 percent. That charge increases

177 City of Cape Town 2018h.

178 City of Cape Town 2018c.

179 City of Cape Town 2018a.

180 City of Cape Town 2018h.

181 R. Cameron and T. Katzschner, "Every Last Drop: The Role of Spatial Planning in Enhancing Integrated Urban Water Management in the City of Cape Town," South African Geographical Journal 99, no. 2 (2017): 196-216. doi:10.1080/03736245.2016.1231622.

182 N. S. Grigg and E. C. Vlachos, "Drought and Water-Supply Management: Roles and Responsibilities," Journal of Water Resources Planning and Management 119, no. 5 (1993): 531-41; H. J. Bruins, "Proactive Contingency Planning vis-à-vis Declining Water Security in the 21st Century," Journal of Contingencies Crisis Management 8, no. 2 (2000): 63-72, doi:10.1111/1468-5973.00125.

as consumption goes up. Cape Town's highest bracket, assuming no water restrictions, charges R52.05 per kiloliter (for consumption higher than 35 kiloliters per month). In Johannesburg, usage of more than 30 kiloliters per month incurs a cost of R4 2 per kiloliter, nearly 20 percent less.

The new fixed service charge model has been designed to support financial sustainability. The 2018/19 budget includes a restructured water tariff, with a revision from the six-step tariff to a four-step tariff structure; this allows for a higher rate of recovery at the lower usage levels given that the higher usage levels are no longer a viable source of revenue.[183] In addition, Cape Town City Council agreed upon the introduction of a fixed service charge for both electricity and water and sanitation services, which is independent of consumption levels.[184]The intention behind this fixed service charge is to recover the cost of maintaining the service connection and the grid infrastructure necessary to deliver the service. Previously this cost was built into the unit price for electricity and water, with the assumption that those using fewer units of these services were more vulnerable and those consuming more were higher-income households who could afford to contribute more to the upkeep of the infrastructure.[185] However, it is now evident that the consumption of electricity and water is no longer closely aligned to income, as more affluent households and businesses are able to leave "the grid" by making the capital investments necessary to generate their own electricity and secure their own water supply.[186] Therefore, this assumption cannot underpin the tariffing structure, and a more equitable means of recouping the costs of service delivery is required. The introduction of a fixed service charge is an attempt at creating a more equitable means of distributing the costs of infrastructure maintenance.

City of Cape Town's 2018/19 Tariff Policy[187] is built on the following assumptions for setting water and electricity tariffs:

1. **Consumptive tariffs will be set at levels that facilitate the financial sustainability of the service.**
2. **Reasonable and appropriate cross-subsidization may be applied between consumer categories.**
3. **The calculation of all tariffs is based on the general principles of full cost recovery, to protect the basic level of service and to ensure long-term sustainability of the service.[188]**

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183 City of Cape Town 2018c.

184 City of Cape Town 2018f.

185 Ibid.

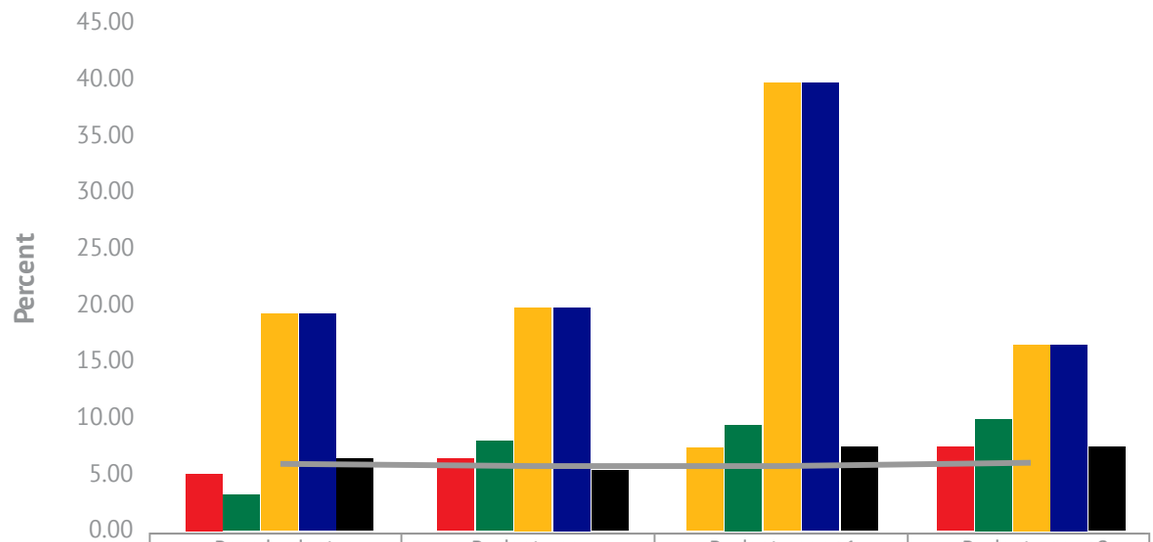
186 Nicholas Philip Simpson, Kayleen Jeanne Simpson, Clifford D. Shearing, and Liza Rose Cirolia, "Municipal Finance and Resilience Lessons for Urban Infrastructure Management: A Case Study from the Cape Town Drought," International Journal of Urban Sustainable Development 11, no. 3 (2019), *https://www.tandfonline.com/doi/full/10.1080/19463138.2019.1642203?scroll=top&needAccess=true.*

187 City of Cape Town 2018d.

188 City of Cape Town 2018e.

It is this requirement for cost recovery that has informed the substantial increases in tariffs for water and sanitation services for City of Cape Town residents. Figure 65 depicts the proposed revenue increases of 19.9 percent for the 2018/19 financial year, with 39.7 percent and 16.8 percent proposed respectively for 2019/20 and 2020/21.[189] Justification for these increases is the current and anticipated negative volumetric growth in water consumption; in other words, if the city is to safeguard current levels of water revenue, the water consumed must be more expensive per unit. Additional factors cited in the MTREF include the spending required to ensure the sustainability and resilience of Cape Town's water supply, the continued rollout of water demand management initiatives, and the lower collection rate.[190]

Figure 64: Average revenue increases per revenue type, 2017-2021



	Base budget 2017/18 (Percent)	Budget year 2018/19 (Percent)	Budget year +1 2019/20 (Percent)	Budget year +2 2020/21 (Percent)
Property rates	5.00	6.50	7.70	8.16
Electricity	3.34	8.14	9.56	9.96
Water	19.25	19.90	39.70	16.80
Sanitation	19.25	19.90	39.70	16.80
Refuse	6.51	5.70	7.90	8.00
City's CPI Projection	5.70	5.50	5.50	5.55

Source: City of Cape Town; Nicholas Philip Simpson, Kayleen Jeanne Simpson, Clifford D. Shearing, and Liza Rose Cirolia, "Municipal Finance and Resilience Lessons for Urban Infrastructure Management: A Case Study from the Cape Town Drought," International Journal of Urban Sustainable Development 11, no. 3 (2019), https://www.tandfonline.com/doi/full/10.1080/19463138.2019.1642203?scroll=top&needAccess=true.

189 City of Cape Town 2018f.

190 Ibid.

Credit: Photo by Stephan Gladieu from World Bank Flickr.

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