

CLIMATE RISK CHALLENGES AND DISASTER MANAGEMENT FROM A SOUTH AFRICAN PERSPECTIVE

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NDMC: SOUTH AFRICA

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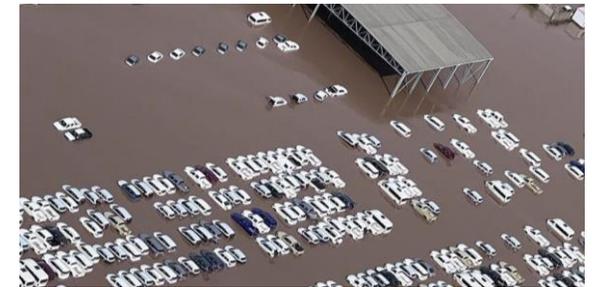
PURPOSE AND OUTLINE OF THE PRESENTATION

The purpose of the presentation is to provide a context for understanding South Africa's most pressing disaster and climate risk challenges, as well as an overview of its best practices, approaches, and programs for addressing those challenges. The presentation will highlight the following:

1. Introduction and overview.
2. Most recent natural hazard-induced disaster in South Africa.
3. Governance structure and emplaced for DRR.
4. Role of STI in addressing the country's disaster and climate risk challenges.
5. South African policies regarding STIs for DRR and climate risks.
6. Policy recommendations in terms of harnessing STI and resilient and secure digital ecosystems to address disaster and climate risks.

INTRODUCTION AND OVERVIEW

- In the past 3 years South Africa has experienced an increase in disaster incidents such drought, tropical storms, wildfires, and heatwaves, and is exposed to a wide range of other hazards.
- Climate change acts as a disaster risk multiplier, amplifying the intensity of extreme weather events, increasing unpredictability of weather patterns, and exacerbating vulnerabilities. The most pressing challenge from climate change in South Africa is that in some areas rain is becoming more frequent and more severe, while other areas receive less rain and are getting hotter, leading to drought conditions. The seasons are changing and moving toward the extremes.
- In addition, our shared borders with six southern African neighbors present both natural and human-induced cross-boundary risks, as well as humanitarian assistance obligations in times of emergency.



MOST RECENT DISASTERS IN SOUTH AFRICA

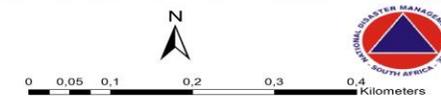
- Following severe flooding in Mozambique and Madagascar in early 2022, a further slow-moving storm Issa brought long periods of heavy rain to KwaZulu-Natal (KZN), Eastern Cape (EC), and North-West (NW) provinces which caused flooding and mudslides in especially Durban (a city in KZN) and surrounding areas of South Africa in April 2022.
- This flooding resulted in over 460 fatalities, 83 missing people and at least 40,000 homes destroyed.
- In December 2023, and January 2024 many parts of South Africa were affected again by thunderstorm activities that led to disruptive rains, drowning, lightning, hailstorms, strong winds, structural collapse, and flooding incidents, with the Province of KwaZulu-Natal being the hardest hit.

Umlazi Mega City Informal Settlement, eThekweni Metropolitan Municipality, South Africa



Interpretation:
The map indicates the damage caused by overflow from Mlazi river affecting informal settlement north of Umlazi Mega City Mall in eThekweni Metro Municipality, South Africa. Satellite imagery showing after floods was acquired on 14 April 2022. The overflow of Mlazi river flooded the informal settlement. There is a high likelihood that the houses (shacks) were flooded, and some house washed away by the floods.

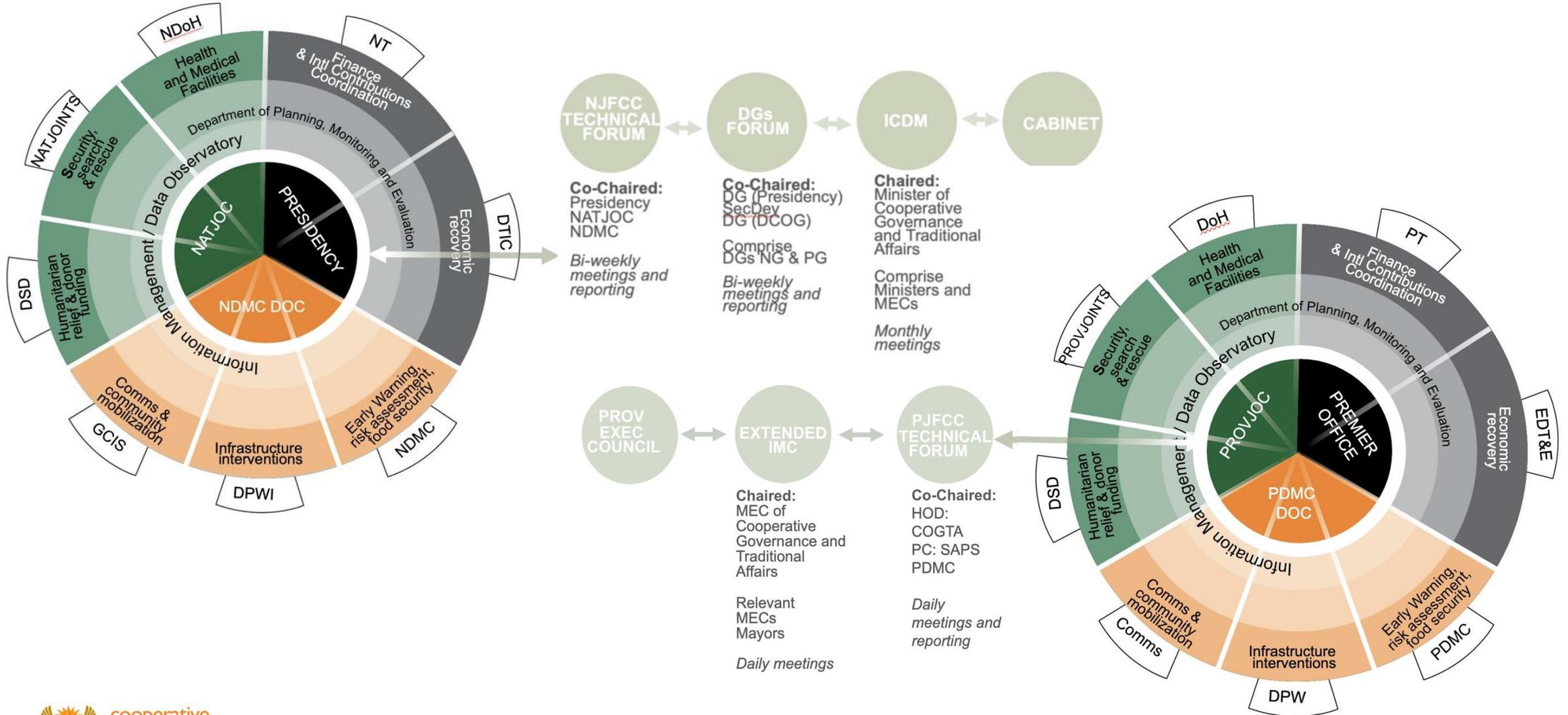
Legend
Affected area
Satellite imagery



IMPACTS OF RECENT FLOODS

- The flooding incidents led to drownings, large numbers of localized landslides, structural collapse of people's homes, and damage to infrastructure, like roads and bridges.
- All this led to major social disruptions to everyday life across the affected provinces: particularly the lives of the vulnerable and the poor. There was catastrophic infrastructure damage and interruptions to water and electricity, education, and health services.
- A decline of 1.8% of the GDP was recorded following the devastating floods. Reports indicated that at least 826 companies were affected by the floods, leaving an estimated 31 220 employees out of work.
- Many unforeseen and unavoidable expenditures led to the depletion of Municipal and Provincial Disaster Relief Grants. Not all the damages caused by the floods could be addressed through the reprioritization and reallocation of funds from existing programs and grants; or from the allocation of funds from the Disaster Relief Grants; or insurances.
- In this regard there was a need to allocate additional funding in the 2022 Adjusted Estimates of National Expenditure (AENE) to address unforeseeable and unavoidable expenditure needed to reconstruct and rehabilitate damaged infrastructure caused by the floods. This was money that was funding planned for other developmental programs.

GOVERNMENT STRUCTURES: INTEGRATED INSTITUTIONAL ARRANGEMENTS- TECHNICAL TASK TEAMS



DISTRICT DEVELOPMENT MODEL

STI play a crucial role in addressing disaster management and climate risk challenges in South Africa.

- 1. Early Warning Systems:** South Africa through the South African Weather Services(SAWS) has an advanced weather-related early warning systems, which include technologies such as satellite imagery, weather forecasting models, and sensor networks. These contribute to more accurate and timely predictions of natural disasters, allowing for better preparedness and response. The warnings are disseminated through partnerships with the NDMC, and the systems allow for efficient communication which facilitates efficient communication and coordination during disaster response and recovery efforts
- 2.** To address issues of climate change the CSIR (Council for Scientific and Industrial Research) has compiled an online planning support tool that provides quantitative scientific evidence on the likely impacts of climate change on communities called the Greenbook. The **Greenbook** supports the government in South Africa with adapting settlements to the impacts of climate change by providing an online repository of downscaled, baseline, and future, municipal climate risk data and insights as well as adaptation information to be integrated into broader settlement planning.
- 3. Communication and Coordination:** Some of the communications systems used in South Africa include digital platforms, mobile applications, and social media, which are used for disseminating information, coordinating relief efforts, and engaging with affected communities.
- 4. Remote Sensing and Monitoring:** Satellite technology and remote sensing tools are employed for continuous monitoring of environmental conditions, enabling real-time assessment of changes in climate, vegetation, and land use. This information is vital for early detection of potential risks.
- 5. Resilient Infrastructure:** Innovation in engineering and technology has contributed significantly to the development of resilient infrastructure. Smart infrastructure designs, incorporating climate-resilient features, which can withstand extreme weather events, reducing the overall impact of disasters.

DISASTER MANAGEMENT POLICY AND LEGISLATION

- The Disaster Management Act, 2002 (Act No. 57 of 2002) was enacted on 15 January 2003. The Act recognizes the wide-ranging opportunities in South Africa to avoid and reduce disaster losses through the concerted energies and efforts of all spheres of government, civil society, and the private sector.
- The Act also requires that we do some research in terms of our National Disaster Management Framework, which addresses the need for consistency across multiple interest groups, by providing a coherent, transparent, and inclusive policy on disaster management appropriate for the Republic as a whole (section 7(1)).
- In this context, the National Disaster Management Framework recognizes a diversity of risks and disasters that occur in Southern Africa and gives priority to developmental measures that reduce the vulnerability of disaster-prone areas, communities, and households. Also, in keeping with international best practices, the National Disaster Management Framework places explicit emphasis on the DRR concepts of disaster prevention and mitigation as the core principles to guide disaster risk management in South Africa.
- The national disaster management framework also informs the subsequent development of provincial and municipal disaster management frameworks and plans, which are required to guide action in all spheres of government.

POLICY RECOMMENDATIONS

- *South Africa's strategic approach towards harnessing STI is embedded within the Disaster Management Framework and the Disaster Management Act No. 57 of 2002.*
- These legislative instruments serve as the bedrock for a comprehensive policy that aims to mitigate, manage, and respond to the multifaceted threats arising from disasters and climate-related issues.
- Within this framework, **Key Performance Area 2** is dedicated to disaster risk assessment, which plays a pivotal role in understanding and evaluating potential hazards. It involves a systematic analysis of vulnerabilities, exposure, and potential impacts, utilizing the latest advancements in STI. The Disaster Management Act integrates two crucial enablers to facilitate this process:
- **Enabler 1: Information Management and Communication** - This enabler underscores the importance of efficient and robust information systems that can collect, process, and disseminate data related to disaster risk. Leveraging cutting-edge technologies and digital platforms enhances the accuracy and timeliness of information, enabling authorities to make informed decisions. The effective communication of risk information to the public is equally emphasized, ensuring that communities are well-informed and can take proactive measures.



POLICY RECOMMENDATIONS CONT..

- **Enabler 2: Education, Training, Public Awareness, and Research Education and training** - initiatives form a cornerstone of the policy, aiming to enhance the capacity of individuals and institutions in dealing with disaster risks. Public awareness campaigns contribute to building a culture of preparedness and resilience. Moreover, the integration of research into the policy framework promotes a continuous understanding of evolving risks, the development of innovative solutions, and the improvement of response strategies. The synergy between research and practical application ensures that the policy remains adaptive and responsive to emerging challenges.
- **Enabler 3: Funding Arrangements for Disaster Risk Management** - Establish mechanisms for funding where researchers have access to funds. In South Africa, we have a bursary program that funds students studying towards their disaster management qualifications. Due to limited funds, the bursaries only fund up to the Master's level and plan to extend funding to Ph.D. levels when funds become available. The outcome of research is to aid in the body of knowledge and come up with innovative solutions to current and future issues
- ***By emphasizing these key performance areas and enablers, South Africa's policy framework recognizes the dynamic nature of disaster and climate risks. The integration of STI and digital ecosystems not only strengthens the nation's resilience but also positions it at the forefront of leveraging innovation for effective disaster management. This comprehensive approach aligns with global best practices, ensuring that South Africa remains proactive in addressing the evolving landscape of risks posed by disasters and climate change.***