CESA Infrastructure Indaba

WATER SECURITY

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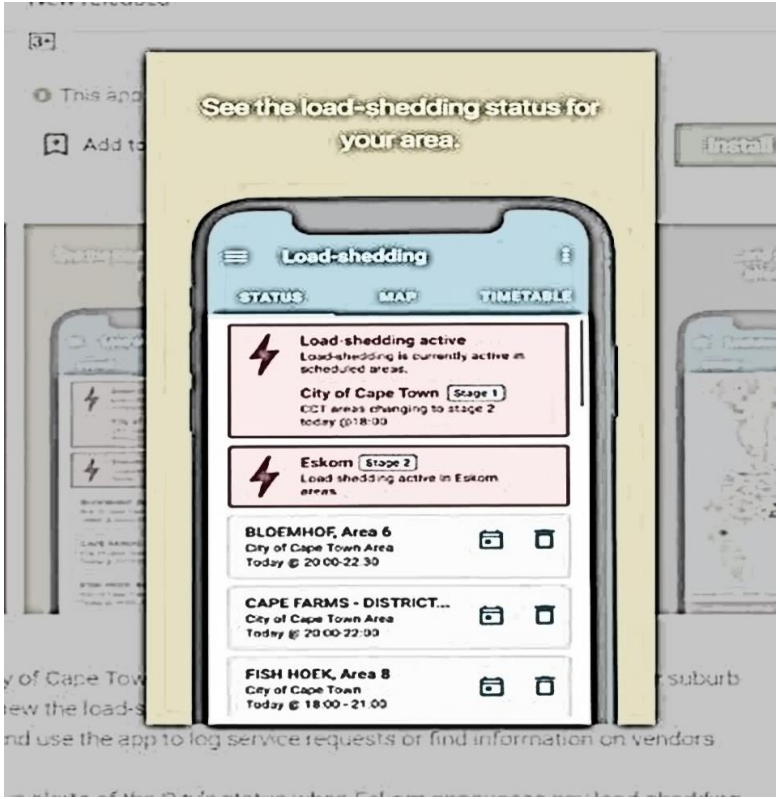
State of Chaos – Eskom Loadshedding App



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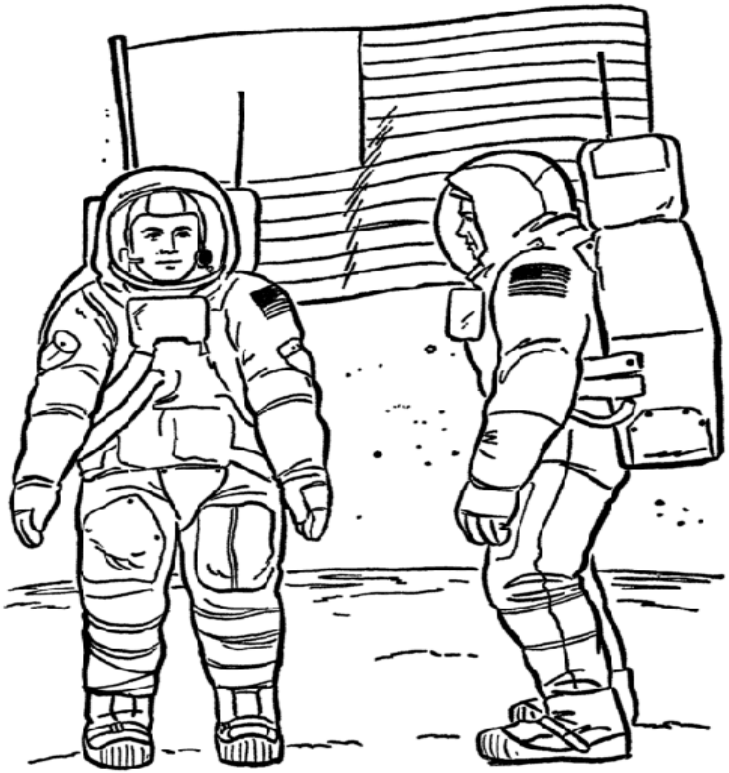
Voting

Uber App

Adapting or accepting?



State of Chaos

Irony:

- 70% of water on earth is not consumable
- We have discovered how to go to the moon and back

What is the Value of Water?

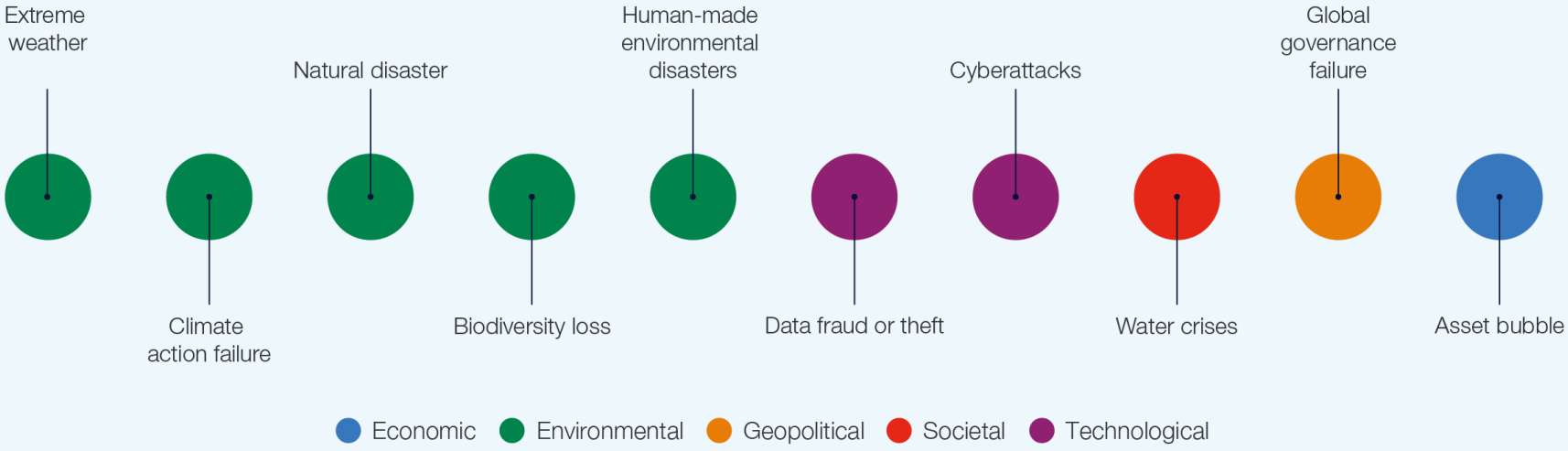
- Water is a source of life and influences agriculture, industry, transport, energy, and health
- Symbiotic relationship between water and society as without water, our economy would not function
- **Political?**
- **Environmental?**
- **Social?**
- **Business?**

TOP 10 RISKS OVER THE NEXT 10 YEARS

Long-Term Risk Outlook: Likelihood

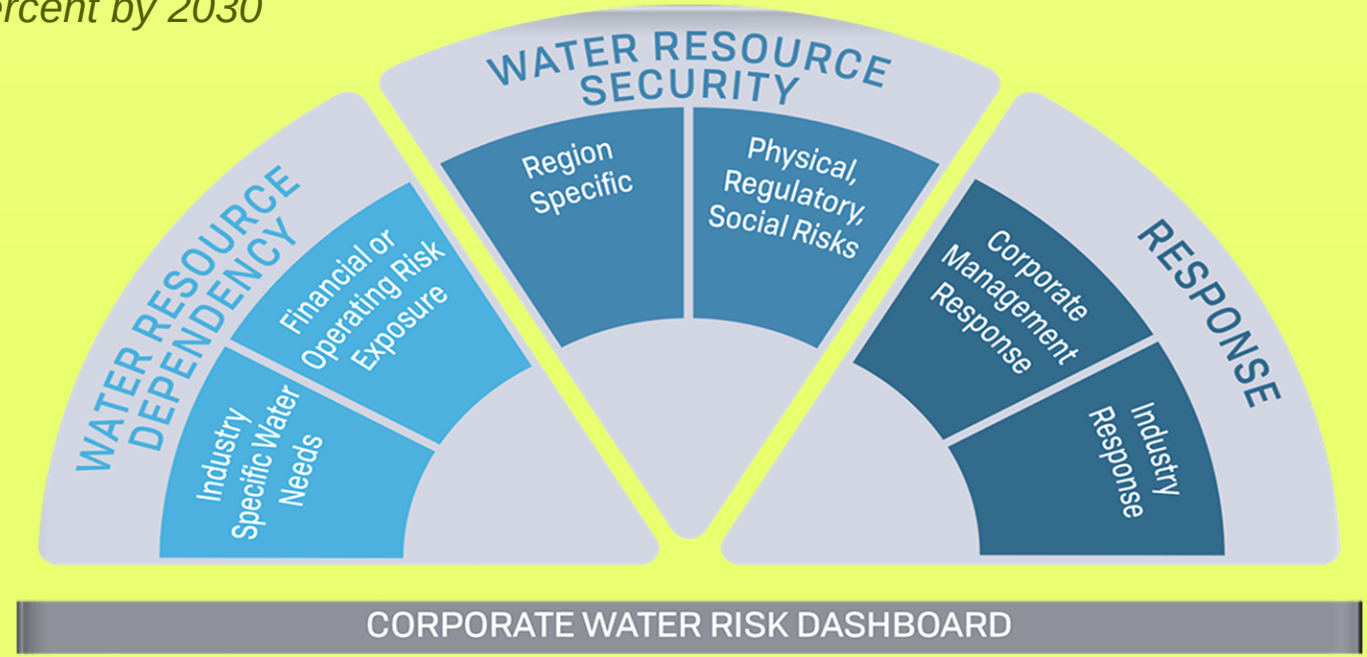
WORLD ECONOMIC FORUM

Multistakeholders



The Broad Spectrum of Water Risks

If we don't change our habits now, global demand for water could increase by 50 percent by 2030



Source: www.ceres.org/investorwatertoolkit

Ceres

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WATER SECURITY

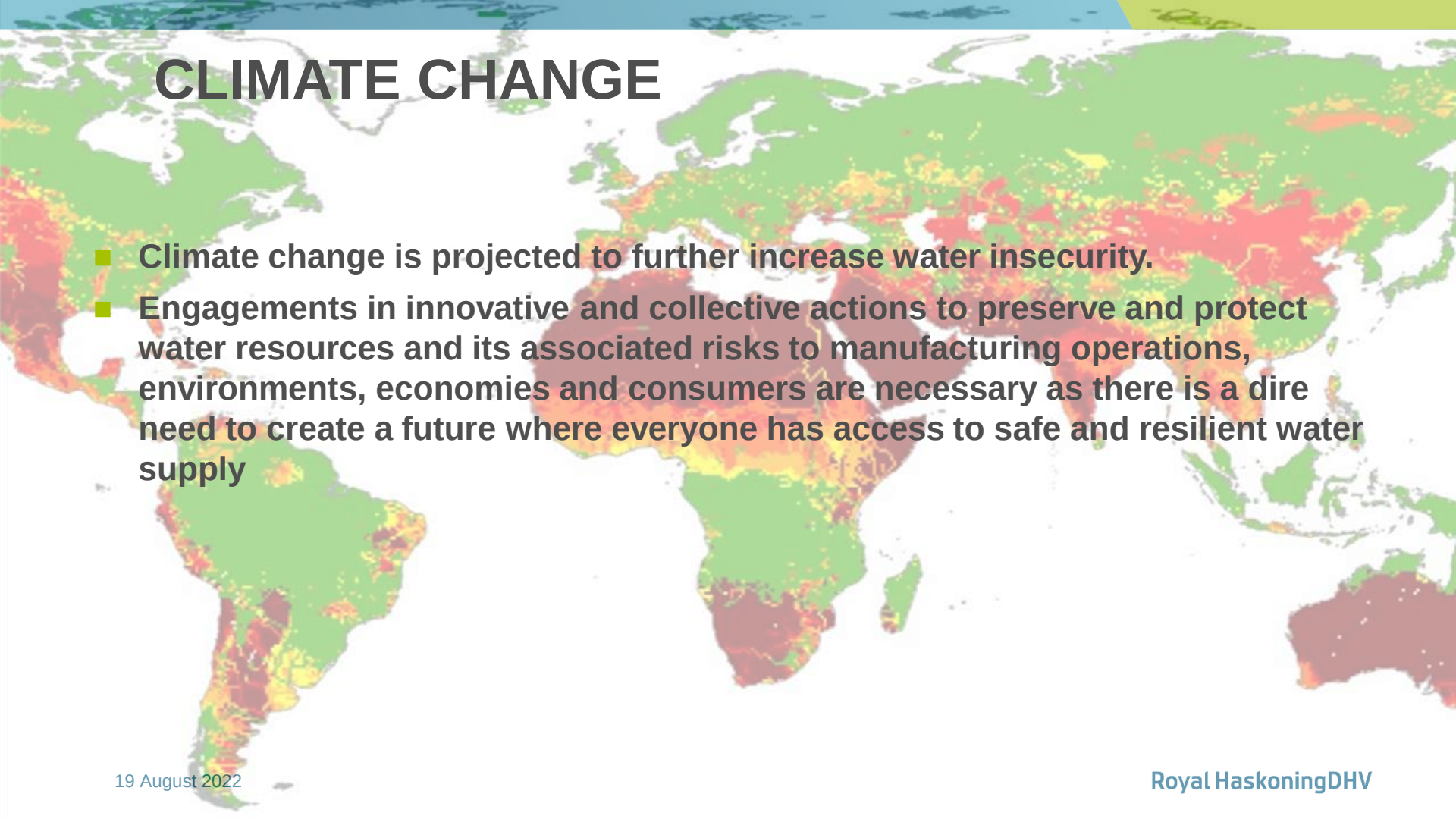
Definition

- The basic goal of water policy and management and speaks to a society with an acceptable quality and quantity of water for health, livelihood and ecosystems
- = a global phenomenon.
- According to UN projections, the world's population will be 9.7 billion in 2050, and the increasing population will only intensify pressure on the world's resources
- SA = water stressed and is among the 30 driest countries globally
- Water shortages do not only affect people who live in water-scarce areas but has a negative ripple effect on all. How do we remove this chaos?

Classifications

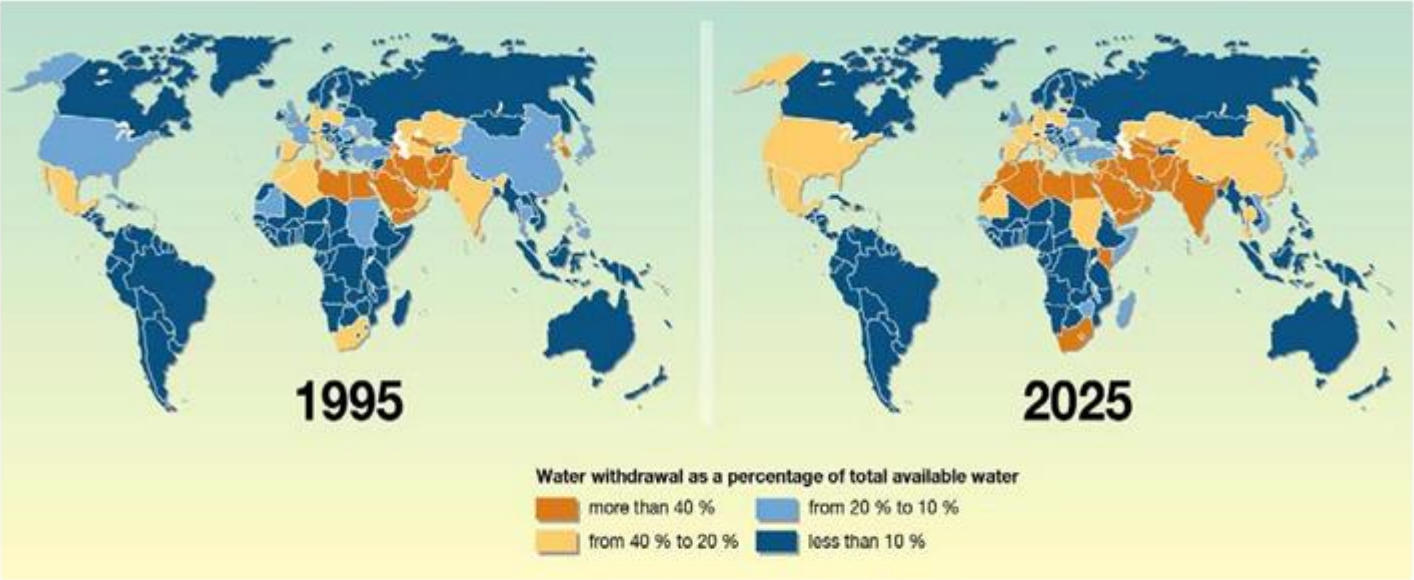
- Diminished water supply or quality
- Increased water demand
- Extreme flood events

CLIMATE CHANGE



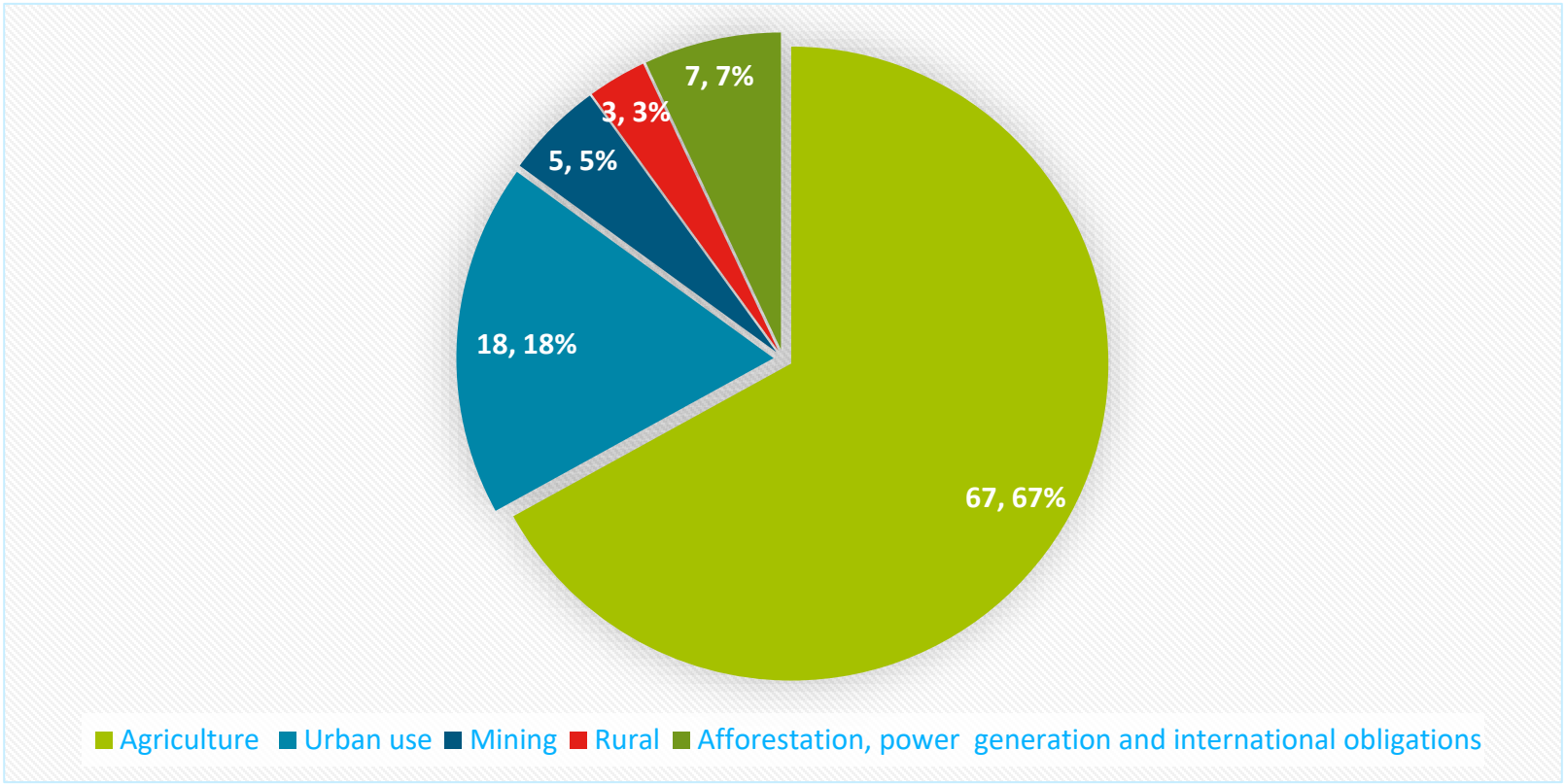
- Climate change is projected to further increase water insecurity.
- Engagements in innovative and collective actions to preserve and protect water resources and its associated risks to manufacturing operations, environments, economies and consumers are necessary as there is a dire need to create a future where everyone has access to safe and resilient water supply

PREDICTED WATER SCARCITY:2025



Water withdrawal is defined as the loss of water for some use by humans. (UNEP 2008)

SA WATER USAGE



Water Scarcity

Growing water scarcity is now one of the leading challenges for sustainable development

A wide range of alarming water-related risks undermine human well-being, threaten human civilization and contribute to political instability, violent conflicts, and acute food insecurity, which in turn can undermine national, regional, and even global security

HISTORY

Water demand has increased as a result of population growth and economic expansion

Controlling population growth is found to be imperative for mitigating drought risk in Africa

Previously services were exclusive

SA INEQUALITY

- Stakeholders to consider a more inclusive approach to making geographical water decision that involve equity of water provisions (environmental, social and environmental needs) especially in urgent times of droughts, floods and COVID-19 pandemic
- Exposed negative impact of lack of service delivery and its associated socio-economic impacts –quality vs availability of basic needs and isolated people living in shacks (5M/ 1.3M households)from the privileges those who are enabled to avoid the spread of the virus
- Poverty levels have the following constraints:
  - No effective drainage, waste collection, access to healthcare and inadequate food supply
  - YET communicated messages (regulation): expected all to be frequently washing hands, sanitising and in self isolation when sick

DAY ZERO

The estimated day on which reservoir levels supply falls below 13.5% of capacity

- **Cape Town:** Major water shortage 2017-18

  (organised/structured, developed and performing metros – skills & infrastructure)
- never actually reach “Day Zero,” because authorities implemented water restrictions throughout the period, banning outdoor and non-essential water use, encouraging toilet flushing with grey water and eventually limiting consumption to about 50l per person
- That level of conservation was foreign to many residents of the coastal tourist destination

  REACTIVE:
  - ***How do we change and prepare ourselves differently for the inevitable?***
  - *Dams - brimming we go back to our old habits!*

DAY ZERO

- **Gqeberha**: municipal taps don't supply water anymore
- Besides drought, the dire situation has been caused by the municipality failing to replace and repair old infrastructure, or sufficiently reduce leakage.
- The constant need to repair decaying infrastructure, slow response to fix leaks and residents drawing water recklessly from tankers is worsening the situation

- **WHO is NEXT??**
- Transnet HQ moving to Port of Ngqurha: an expected influx of expertise and families ~ higher demand of resources and services

LESSONS LEARNT FROM THE PAST

- Water supply is expected to decline because of the dramatic shift in the climate change
- Water-related conflict, migration, and food insecurity are much more likely if governance is weak, infrastructure is inadequate, and institutions are fragile
- *The 'water we eat' daily through the food we consume is much more than what we drink. This also translates to wasted food equals wasted water*

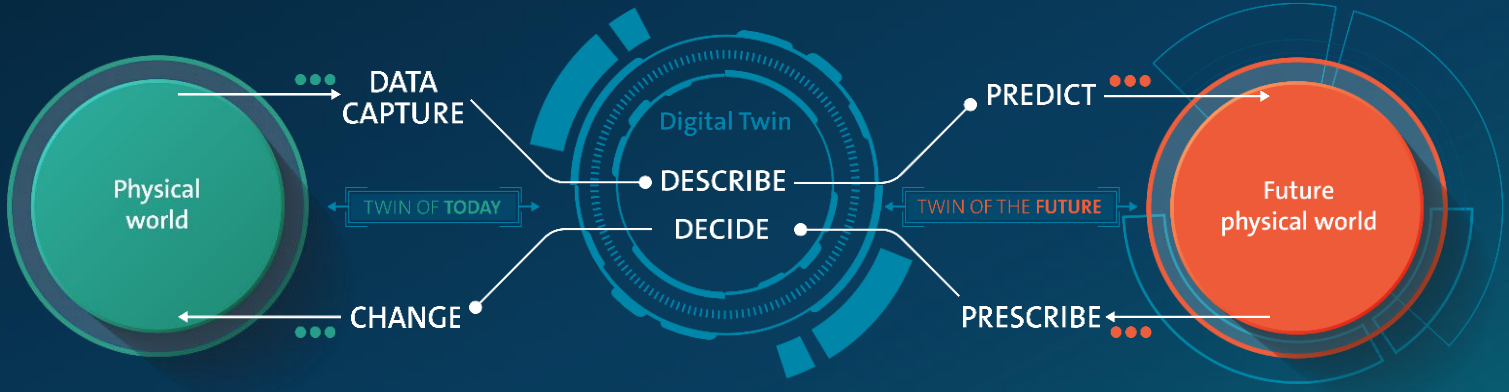
EMERGING TECHNOLOGIES FOR ADVANCEMENT

- **SMART Water** involvement of analytics to process, automate and optimise as we evolve
- Research
- simulation tools to help us prepare for the future
- Modelling scenarios for area's scenarios
- Monitoring, detection and data collection

- Few treatment plant operators = threat and an opportunity (digital solutions e.g. digital twins)

DIGITAL TWINS – Concept of Improving Certainty

Understanding the physical world



Shaping the physical world

CONSULTANT PERSPECTIVE

- Clients need to start asking the right questions & being open minded to innovative solutions (e.g. leak detection, maintenance and minimising operational costs)

There is no use building best infrastructure that will deteriorate due to lack of maintenance

- Need for policies, framework & guidelines to cater for water conservation and sustainable solutions and industries to be made accountable
- Govt willingness to invest and incentivise those who are obliging to make circular water concepts more attractive

CONCLUSION: How to reshape the narrative and create a positive water impact

- No single strategy is sufficient to reduce water risk, but LT strategies = pertinent
- A nation's capacity to handle "water shocks" also influences outcomes.
- EWS
- Wetlands to be maintained and restored as they are an integral part of water management as they provide natural infrastructure that can help meet a range of policy objectives.
- Understanding the role of biodiversity and our role in water conservation and reuse (adapting to direct domestic initiatives e.g. rainwater harvesting and water-friendly garden design or simply reducing water usage by changing water consumption behaviours – urbanisation and rising income levels)
- Reducing quality of potable water being used to flush
- Feasible predictions of water certainties
- Revised tariffs to penalise excess water users
- Planning and funding availability for desalination solutions
- WHO BENEFITS from all these efforts? ALL OF US!! Clean and affordable water for vulnerable communities, operational efficiencies and systems for Clients and Consultants can better solve all intrinsic societal problems faster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