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TOWARDS A JUST TRANSITION

Climate Resilience and Adaptation – 3 Sector Readiness Study

DRAFT Water Value Chain Report

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Overview

- Key messages
- Situation analysis
- Climate change, water and the Just Transition
- Water value chain investments
- Strategic conditions of adaptation readiness
- Resilience pathways

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Key messages

Inequalities in water and sanitation access coupled with unmaintained infrastructure and avoidable water losses undermines readiness for extreme climate change

Water value chain investments are trickling rather than flowing to where they are needed most.

South Africa has excellent research capacity that is not translating into implementation of key policies and strategies

South Africa has a significant regional water footprint and relies heavily on regional water resources that largely come from other countries and/or shared river basins and aquifers (shared ecosystems).

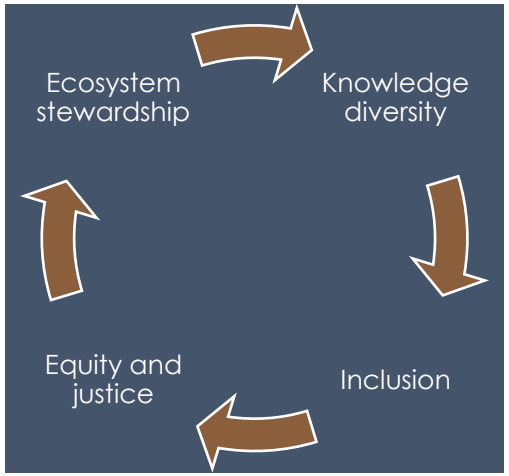
The country lacks a coherent monitoring framework for Nexus approaches

Transformative adaptation key to addressing unequal climate risk & vulnerability distribution

"Actions aimed at adapting to climate change resulting in significant changes in structure of function that go beyond existing practices". (IPCC WG II AR6, 2022)

- Climate change can trigger devastating cascading impacts through a system
- Transformative adaptation to change the underlying causes of risk & vulnerability rooted in the dominant development paradigm and power structures:
  - Norms and values, and world views
  - Governance
  - Flow and distribution of power and resources

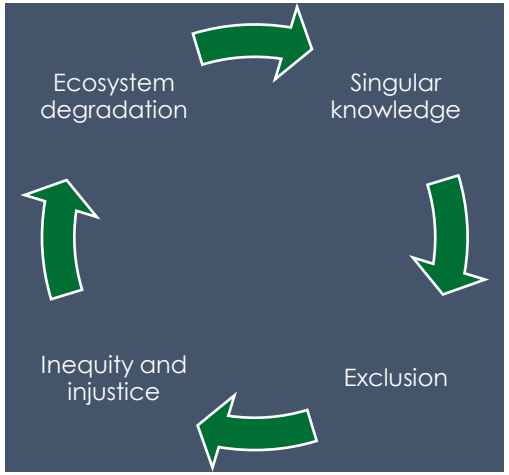
Higher Climate Resilient Development



Global warming limited to below 1,5℃ enables sustainable development and Agenda 2030

positive outcomes for well-being, poverty, ecosystem health, equity and justice, and climate risk

Lower Climate Resilient Development



Increasing warming, path dependence and limited adaptation undermines sustainable development

heightened climate risk and vulnerability and poverty, ecosystem degradation and inequity and injustice

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The water value chain

Situation, inequalities and governance

Water value chain: flow, governance & management

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Upstream supply chain

Operations

Downstream product use

Regional *SADC Water & Member States*	Regional, National and Subnational spheres; private sector (landowners)		Water Boards & municipal authorities, private sector (tankers)	Bulk users of water resources	Local Government , PPPs	Local Government , PPPs
Basin management	Abstraction from river basins and aquifers	Storage – dams, reservoirs, rainwater tanks	Distribution infrastructure (bulkwater) maintenance, quality control	Use and management	Water & wastewater treatment & return to environment	Reuse & recycle for consumption, productive use

Justice disparities – particularly between bulk and downstream consumers – raises questions of restorative and distributive justice related to water resources and services for vulnerable populations

Bulk users:
Municipalities; Agriculture; Industry (manufacturing, mining, power)

Consumers:
Domestic; Commercial; Light Industry

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Current water situation

Water crisis devastating for well-being of the entire population, especially the poorest and most vulnerable

- demand exceeds economically usable freshwater resources by 2025

Diminishing supplies stymie poverty alleviation and economic growth

- Growth rates decline by as much as 6% of GDP - water related losses in agriculture, health, income and prosperity (World Bank, 2023)

Regional inter-dependence

- ~70% GDP supported by shared water resources – 6 neighbouring countries

Main challenges for water availability:

Spatial context issues

- Most informal settlements lack access to services; remote populations lack access to piped water
- Uneven spatial distribution and seasonality of rainfall - 43% of the rain falls on 13% of the land)
- Millions drink water captured in reservoirs > 400km away
- Location of major urban and industrial developments remote from the country's larger watercourses - large-scale water transfers

Relatively low stream flow in rivers

- limits the proportion that can be relied upon

Climate change

- increasing temperatures, heat stress, and intensity and frequency of droughts and floods largely manifesting through water

Water losses and Non-Revenue Water (NRW)

- >35% water loss; >40% NRW

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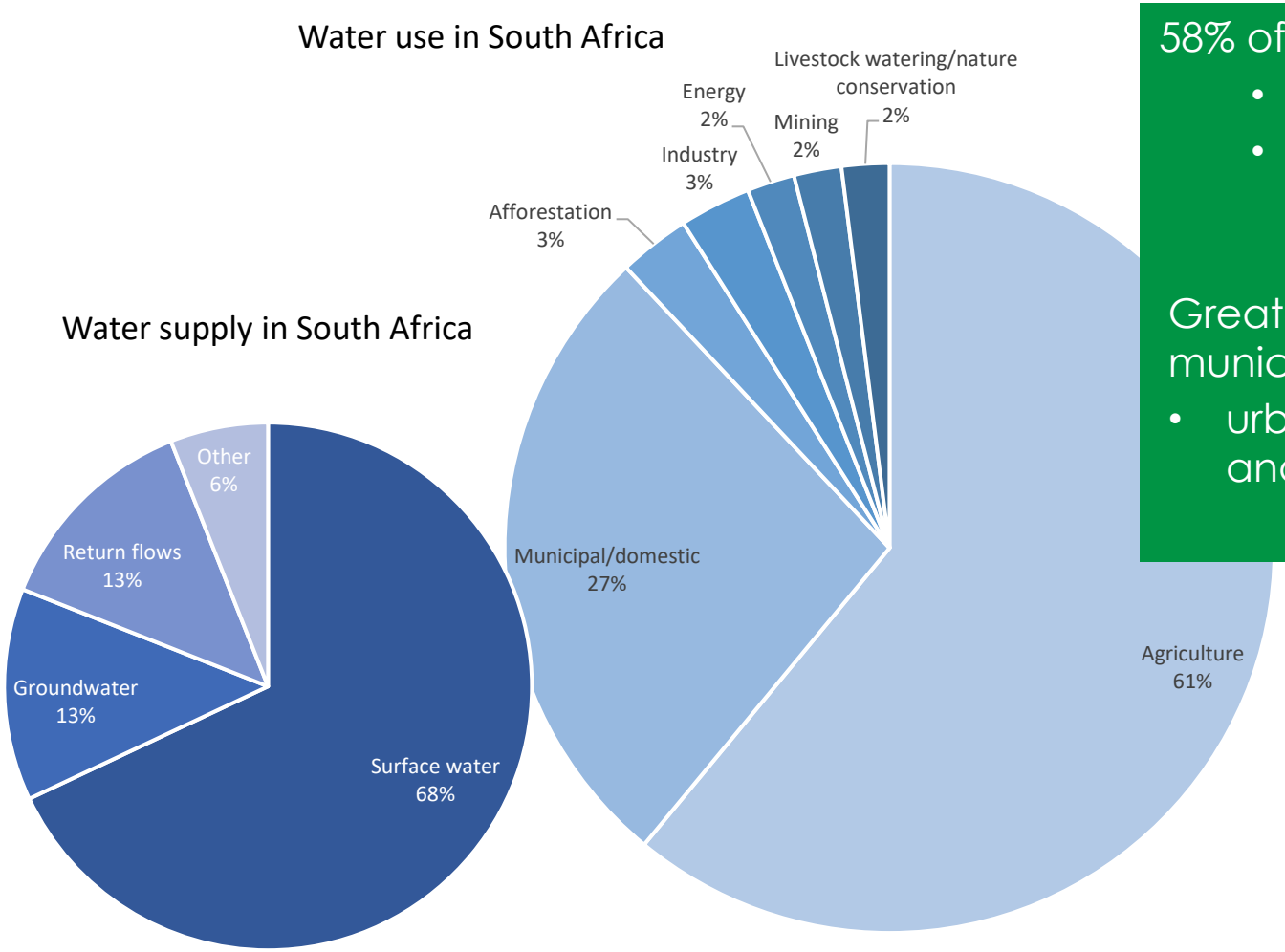
Governance & inequality

- **3 million** have no access to water; **14 million** have no access to sanitation
- **98%** of water is allocated – no water left to allocate, some hoard, others not getting enough
- **60%** of water goes to agriculture; only **5%** used by smallholder and household producers
- Forecasts indicate water demand will exceed supply by **10%** by **2030**
  - low tariffs, leaks and losses, inefficient use, inadequate cost recovery, inappropriate infrastructure choices (e.g. waterborne sanitation), etc.
- The rural poor and those living in informal settlements suffer the most
  - Compared to the **77%** of children living in formal housing, **55%** of children living in informal dwellings, and **19%** of children in traditional housing, have access to safe water, and to sanitation services

Source: StatsSA 2023; GreenCape 2022.

Water supply and use



58% of water sales by municipalities

- 60% from domestic residential use
- 40% from commercial and industrial use

Greatest growth in demand from municipalities

- urbanisation, industrial production and population growth

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Role and conundrum of municipalities

- Key market for the water sector
  - Metros and District Development Model
- Water & sanitation technologies market
  - **117 bn** over 3 years, **>14%** of public infrastructure expenditure (NT, 2021)
- Large proportion of Municipal finance from intergovernmental grant system
  - Debt finance necessary but low financial standing
- Min. **40%** of muni capital budgets to prioritise renewal of existing assets over new infrastructure
  - Large portion of water losses at municipal level
  - Key role in curtailing theft and vandalism

- **23%** of municipalities achieve a 'good' capacity score
- **28 of 144** municipalities (**19%**) PPP fit
- In 2018 Around **59%** don't pay for W&S
  - because they are indigent, or don't want to

Municipalities play a major constitutional role but capacity and resource constraints are enormous and must urgently be addressed - leveraging existing regulatory and institutional frameworks to enable adaptation readiness

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Climate change, water and the Just Transition

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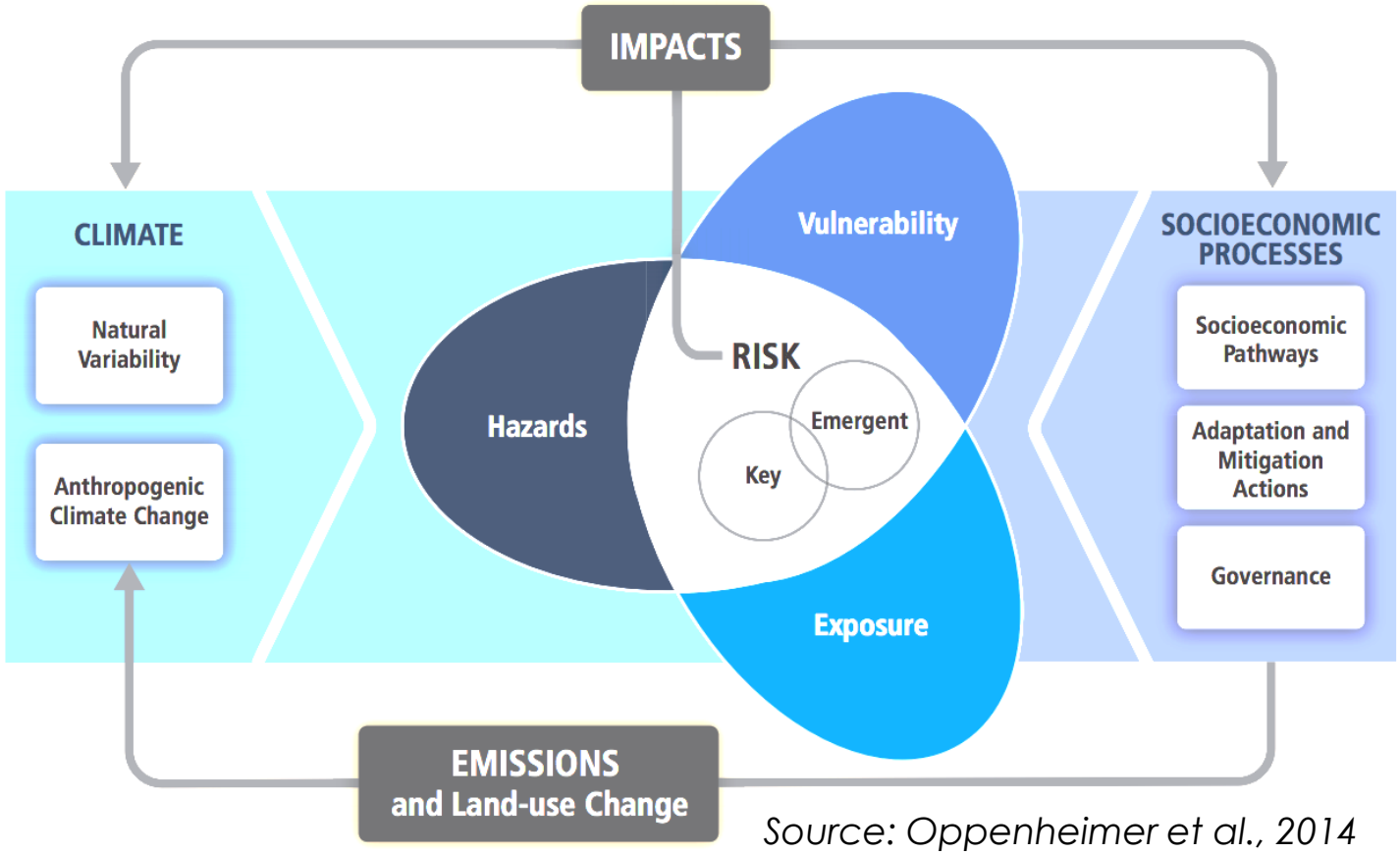
Climate risk and vulnerability



Source: Oppenheimer et al., 2014

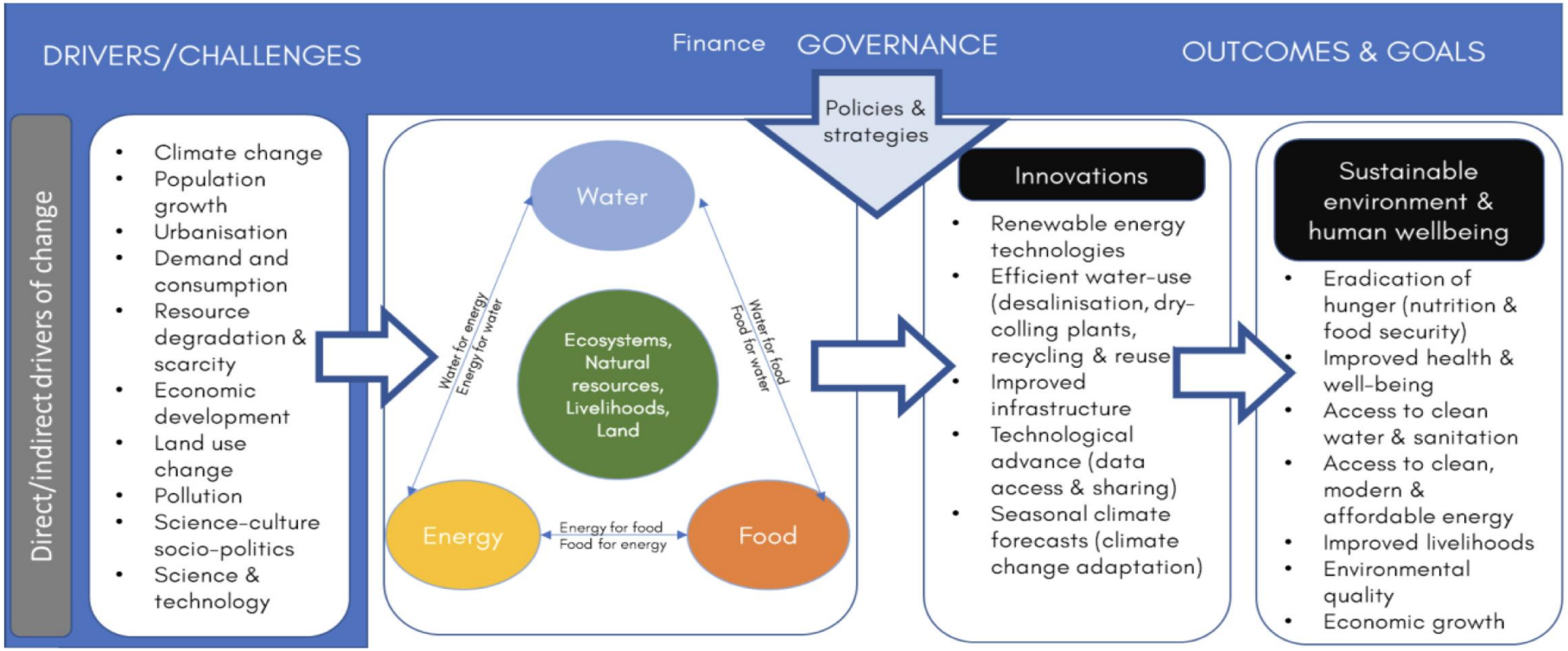
Negative climate risk and governance & socio economic interactions processes impact the poor

Risk pathways:

- Excess water (floods)
- Polluted water, air and land
- Disrupted freshwater ecosystems
- Damage to critical social and economic infrastructure
- Altered water demand and security
- Uncertain water availability

"Everyone has the right to have access to sufficient food and water" (Constitution of SA)

The Water-Energy-Food-Ecosystem (WEFE) Nexus



Source: PCC, 2021, after WRC, 2020

Captures the interrelationships, synergies, and trade-offs between water, energy, and food demand (and supply) in different environmental contexts, as a foundation for a low carbon and climate resilient water value chain, and protecting ecosystems assets

National Water Act: every water services institution must take steps to realise these rights; every municipality must plan for realisation of these rights

Climate-water-development & SA's water factories

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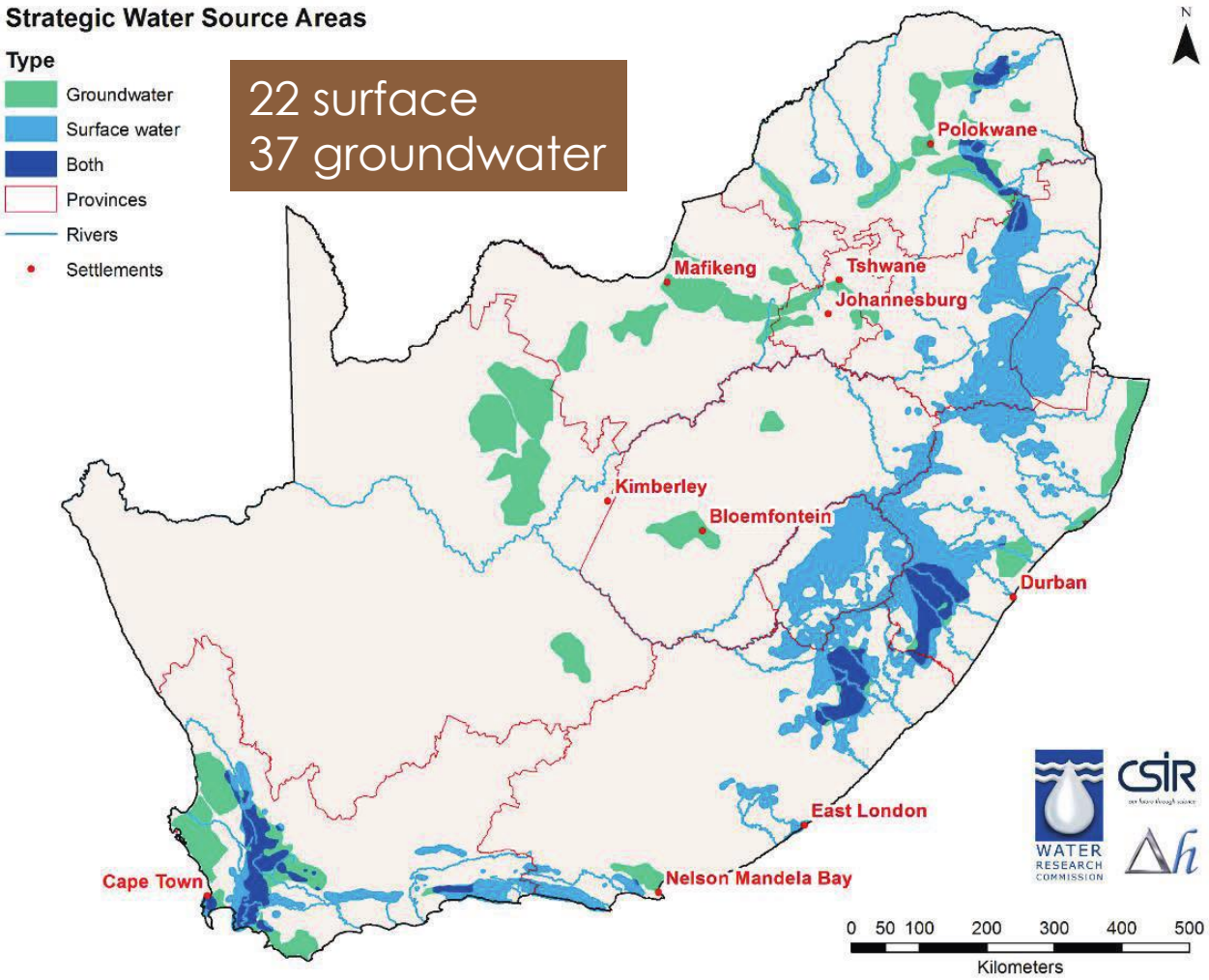
SWSAs and GDEs :

- support ~60% population & ~67% economic activity; 70% irrigation water
- 10% of the land area of South Africa, Eswatini and Lesotho provides 50% surface water
- relies on protection of the natural ecosystem – only 19% under formal protection
- Vital to food, water, economic and energy security.

Three types of pressure for SWSAs:

- **Natural** - climate change & catchment degradation
- **Human and economic** - population and economic growth
- **Intra-sectoral** – deteriorating infrastructure and governance



Source: (Le Maitre *et al.*, 2018)

Just Transition is about Equity, Ecosystems, and Economics

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EQUITY

- Clean Energy systems to reduce water intensity and improve water quality of the energy and power sector, and industries – ***restorative justice***
- Conservation of natural resources to protect and enhance biodiversity and ecosystems
  - secures ecosystem services for vulnerable settlements, populations and livelihoods - ***distributive and restorative justice***
- Equitable access to our water resources to enhance supplies and to distribute to those with no/low access to water and sanitation – ***distributive justice***
- Sustainable, equitable and inclusive land-use for all especially for the most vulnerable, including women – ***restorative and distributive justice***

EQUITY & ECOSYSTEMS

Healthy ecosystems that yield land, water & air services – equitably and inclusively

EQUITY & ECONOMICS

Goals of decent work for all, enhanced livelihoods and incomes, social inclusion, and the eradication of poverty – ***addressing the country's triple challenge***.

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Water value chain investments

The finance gap – drivers

Municipal billed water revenue 12,8bn; expenditure 13.9bn *(NT, 2021)*

- Unattended water leakages and losses
- Non-Revenue Water
- Water tariffs are not cost reflective of abstraction and delivery
- Low municipal access to investments and debt finance
- Under-investment in ecological infrastructure and ecosystem-based adaptation
  - Low access to climate finance
- ESG finance and commercial bank investments

Nelson Mandela Bay water crisis

- Insufficient budget
- Consumption inefficiencies
- Water leaks – 36% water losses & 2000 water leaks/month
- NRW >40%

The finance gap – solutions

- Invest in infrastructure maintenance – including ecological
  - reduce leaks and NRW
- Invest in key municipalities – NT recommendations
- Climate finance and impact investments for ecological infrastructure and ecosystem-based adaptation
- Strategic leverage of the IGGS
- Leverage blended finance mechanisms for Nexus investments

To reduce the 2030 water deficit, DBSA aims to establish water reuse infrastructure as a new financial asset class
- through catalytic GCF investments, in partnership with DWS and SALGA

Differentiated tariff adjustments to ensure the most vulnerable don't pay the price

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Strategic recommendations and resilience pathways

Inter-related conditions for transformative climate response

Adaptation-ready Governance and Finance	• Capacitated and accountable municipalities • Climate change fully integrated into planning, budgets and grants • Leverage of private sector investment for equitable ecosystems and economies • Application of the 'polluter pays' principle, and the principles of restorative, and distributive justice between water intensive users and water scarce consumers
Adaptation-ready Multistakeholder Partnerships	• Institutional arrangements and partnerships to enable the WEFE Nexus and investments in EI and EbA • Application of the principles of procedural, restorative, and distributive justice • Enhanced relationships between government, NGOs, private sector and commercial financiers
Monitoring Evaluation & Learning	• Monitor progress of transformational change • Leverage wealth of research for implementation • Implement Citizen Science
Collaborative Management of Regional Water Resources	Forefront key initiatives such as equitable benefit sharing and strengthened regional integration through the WEFE Nexus approach Enhance SA's regional integration to both ensure that water flows from the region are 'guaranteed' and that its own footprint on the region's ecosystems is positive

Key is inter-governmental coordination and upscaling and integrating broader Multi Stakeholder Partnerships.

Unlock resilience pathways

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Just Policy Reform

- Regulate for Mining & industry reparations to impacted communities
- Enforce the Government Notice R1147 Regulations & Section 24P of NEMA for social investments and rehabilitation of mining lands
- Introduce differentiated water pricing – polluter pays and/or beneficiary pays
- Enable community and citizen agency through IWRM, including in disaster risk reduction and preparedness, and water resource management
- Incentivise aggressive Water Conservation & Demand Management in the metros

Sustainable Finance

- Scale the pipeline of investment ready climate resilient low carbon projects across the water value chain
- Streamline regulations for PPPs
- Enable benefits-based finance
- Enhance municipal finance, capacities and accountability to address municipal funding access constraints and wasteful expenditure
- Design/implement measures to ensure growing indigent population has access to clean and dignified water & sanitation, and for collecting revenues from those unwilling to pay – credit ratings
- Implement climate finance tracking
- Incentivise commercial bank invest e.g. leveraging public insurance funds, etc.
- Implement financing principles for social equity
- Establish a Sanitation Fund to accelerate climate resilient WASH
- Incentivise ecological infrastructure and ecosystem-based adaptation approaches, prioritising SWSAs
- Leverage carbon ESG finance, etc.

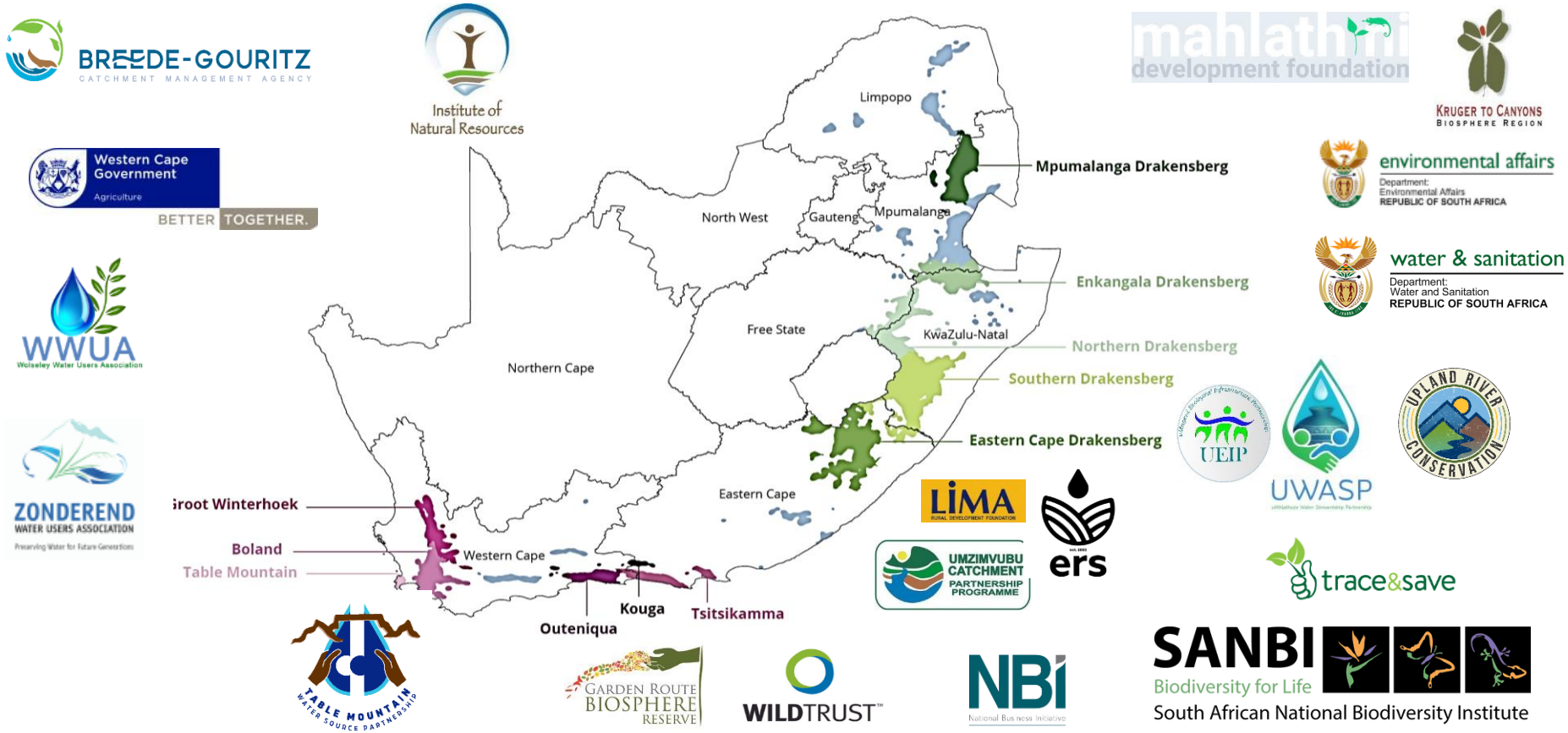
Technology & Innovation

- Standardise climate resilient WASH technologies, based on CRDP
- Implement AI and Smart Water Management to digitalise water utilities, providing real time monitoring, predictive maintenance, process control, energy consumption and NRW, and forecasting support
- Reduce the water value chain's carbon footprint
- Accelerate infrastructure action in Blue Drop low scoring municipalities
- Promote aggressive Water Conservation & Demand Management technologies to significantly reduce water services costs and to achieve NDP and SDGs
- Increase clearing of Invasive Alien Plants, prioritising SWSAs and degraded ecosystems
- Target improvements in operational efficiencies in the bulk water system
- Promote commercialisation technologies, e.g. incubating technologies for uptake and commercialisation

Integration

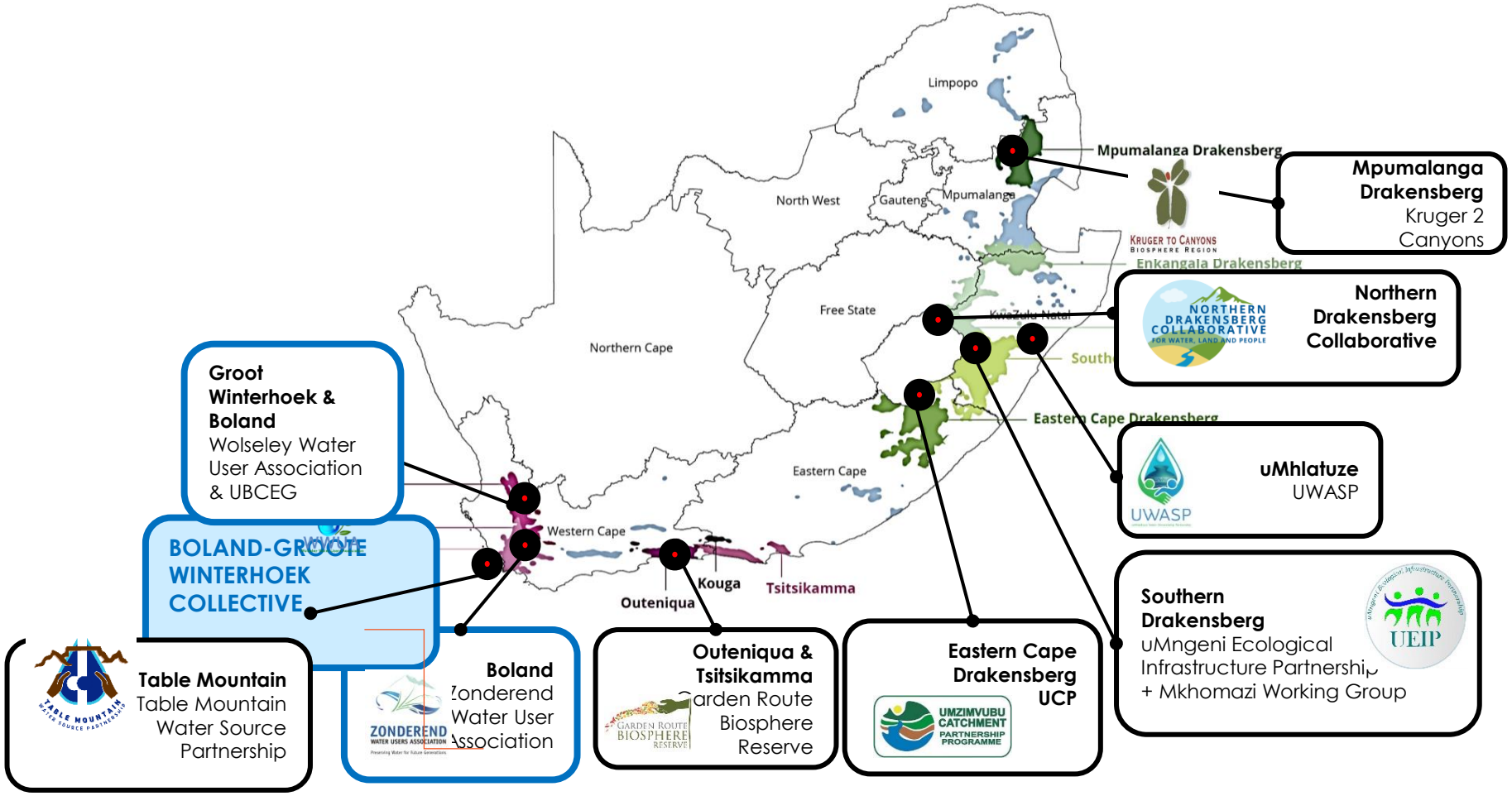
- Implement the WEFE, anchored in IWRM, and reduce the water value chain's carbon footprint
- Accelerate the energy transition, so as to significantly reduce water use by the energy sector
- Incentivise joined up planning and budgeting
- Enable leverage of available sources of finance for water, including national and subnational budgets and funds (e.g. ICM fund, mine rehab fund), the IGGS
- Analyse, monitor and manage WEFE trade-offs and synergies
- Drive coherence between policies that affect water resources and strengthen the regulatory environment to protect the water services function
- Analyse/respond to the impacts of the Just Energy Transition for water
- Incentivise integrated asset management to improve maintenance and new infrastructure design

Its all about partnerships – e.g. SWSAs



Source: WWF, 2024

Platforms & implementing partners



Source: WWF, 2024

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