

Ecological Infrastructure for Water Security: Insights & lessons from accounts

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Overview

- Introduction and framing
- Snapshot of accounts
- Key lessons and take-home messages

Ecological Infrastructure for Water Security (EI4WS) Project



ECOLOGICAL INFRASTRUCTURE FOR WATER SECURITY

Unlocking development finance to secure ecological infrastructure for water security in critical water catchments



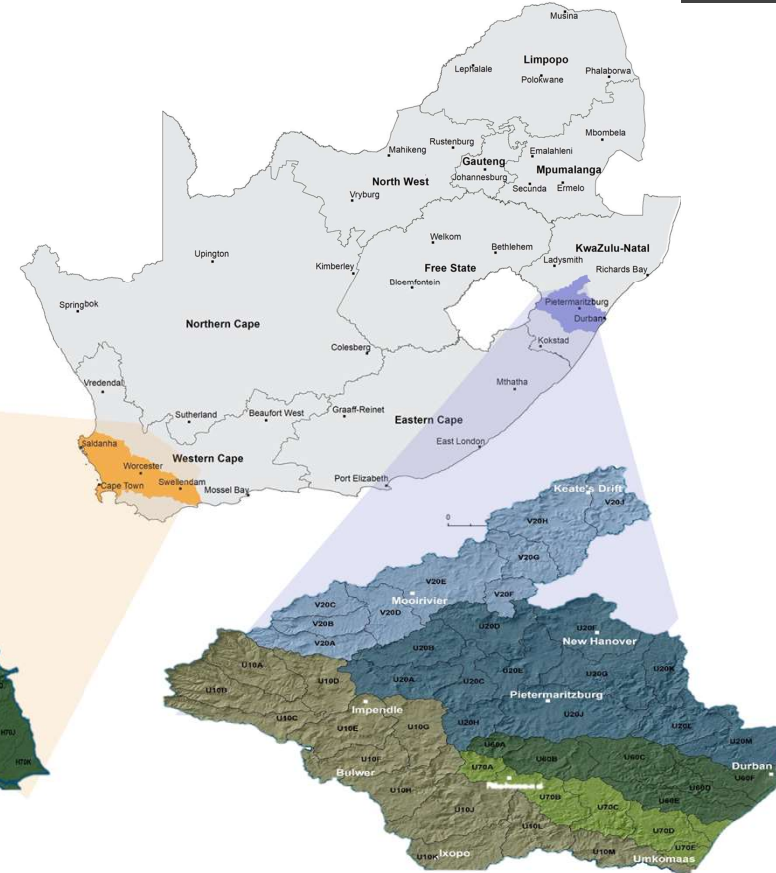
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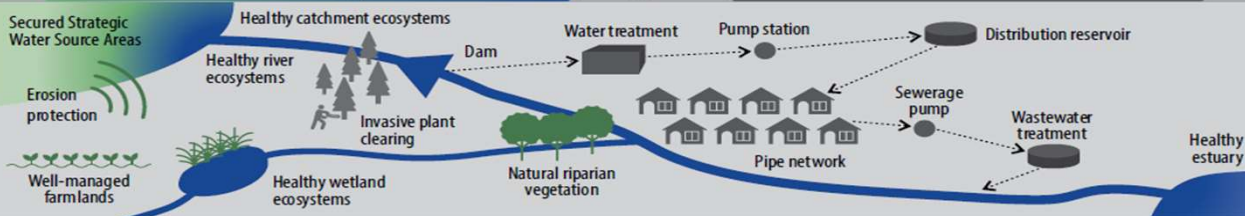
- A seven-year, multi-stakeholder project
- To unlock development finance to secure ecological infrastructure for water security in two critical catchments.

Berg-Breede demonstration catchment



Greater uMngeni demonstration catchment

Ecological infrastructure supports built infrastructure



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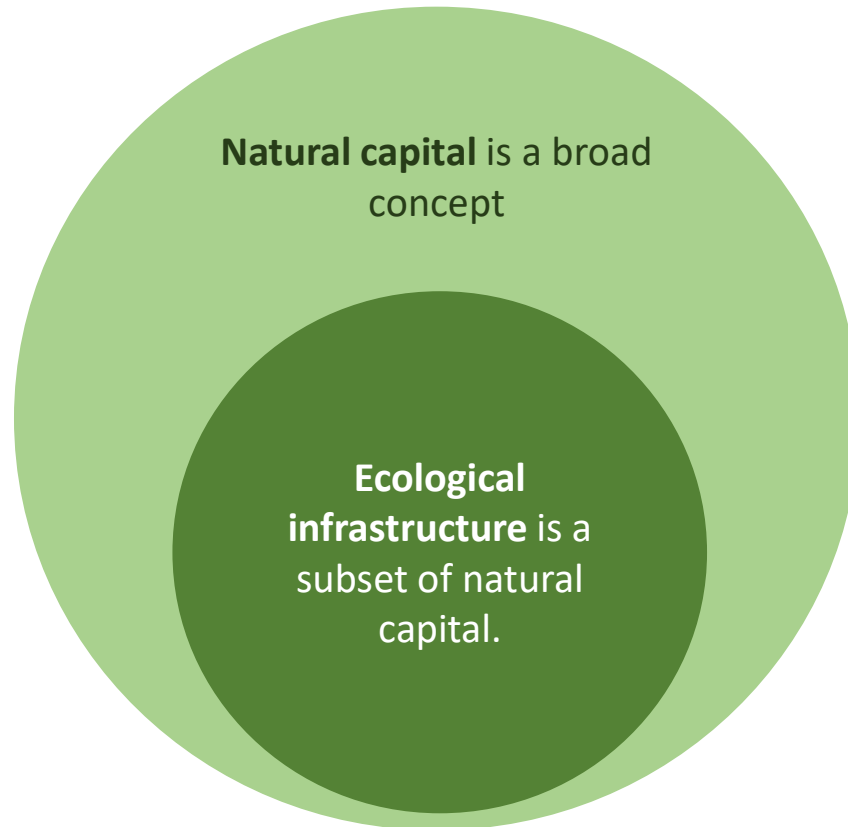
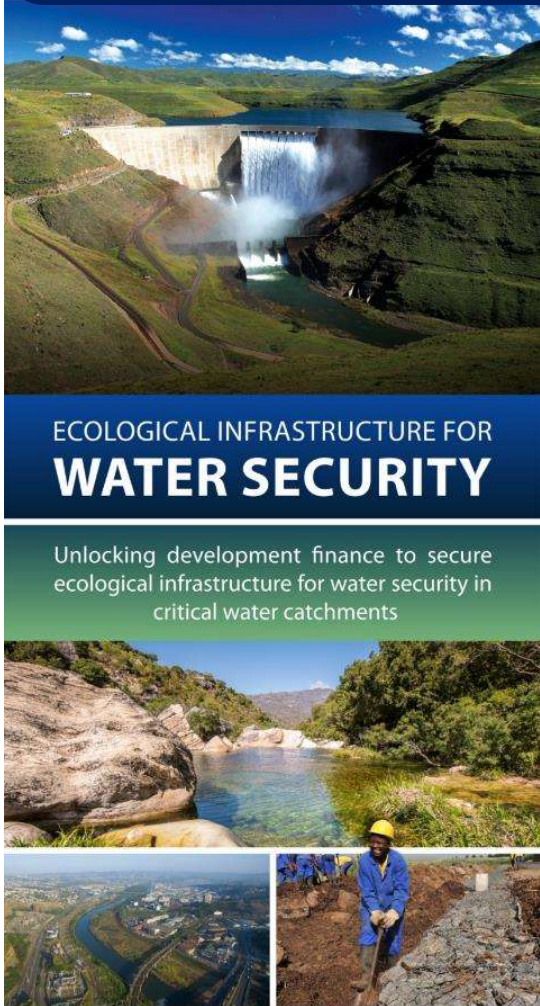
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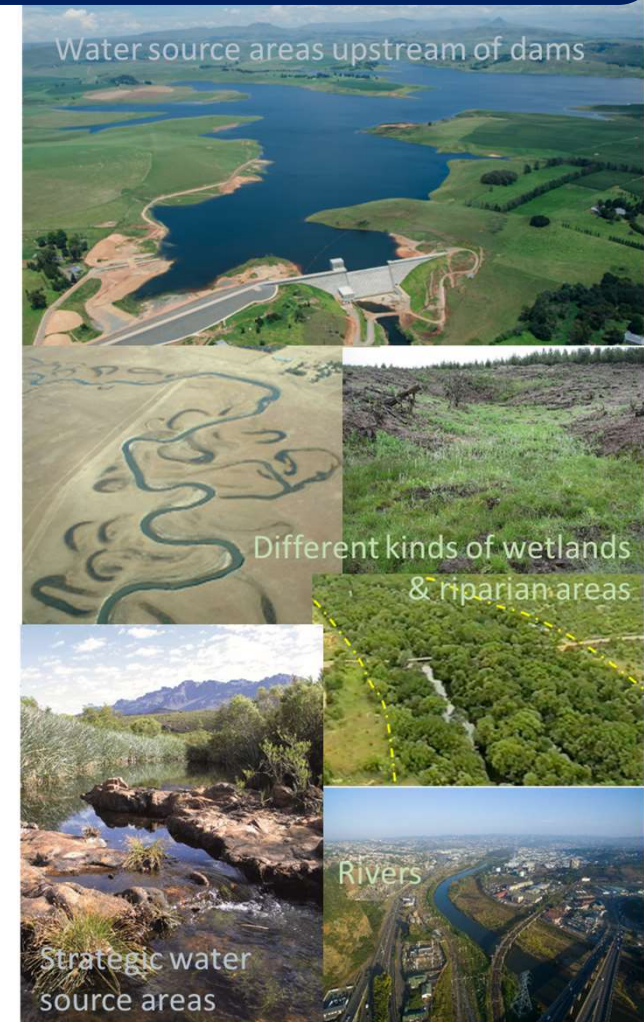


- Some of the core problems the project addresses:
 - Water is managed as a standalone resource
 - Ignoring the critical role of catchments and ecological infrastructure
 - Insufficient and unreliable data on water and ecosystems hampers informed decision-making
- Project aims to *“integrate ecological and socio-economic data into planning, finance and development in the water sector to improve water security and in doing so, support development and human well-being”*
- How can natural capital accounts help?

Ecological infrastructure refers to **naturally functioning ecosystems** that generate or deliver valuable services to people and the economy



EI is the *stock* of assets that provides a *flow* of ecosystem services.



NATURAL CAPITAL 3

Accounts for Strategic Water Source Areas, 1990 to 2020

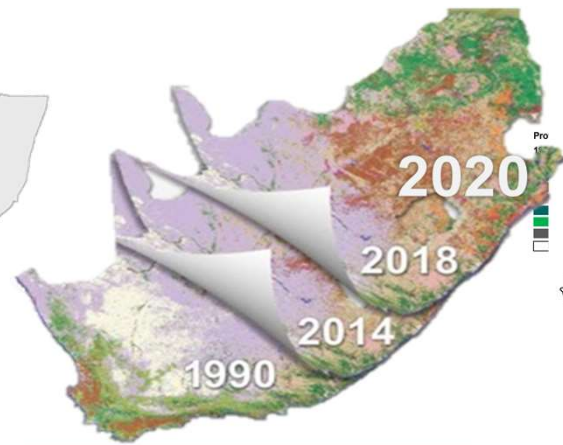
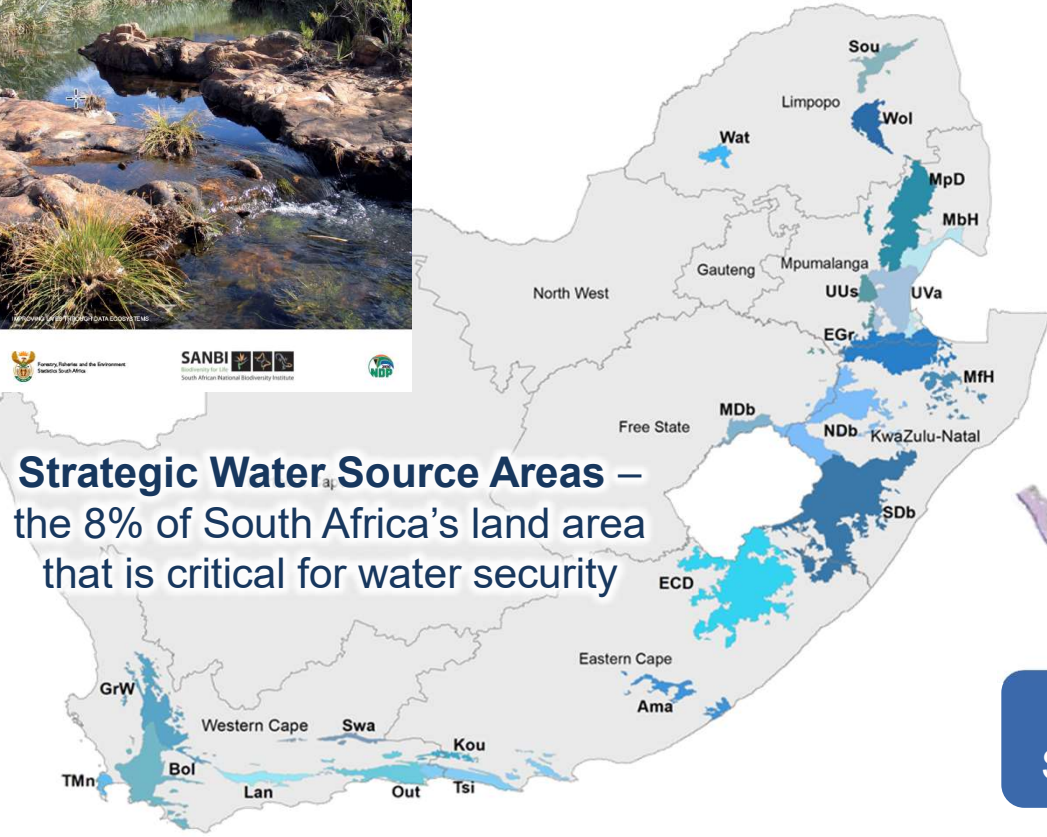


Department of Forestry, Fisheries and the Environment
SANBI South African National Biodiversity Institute
NDP

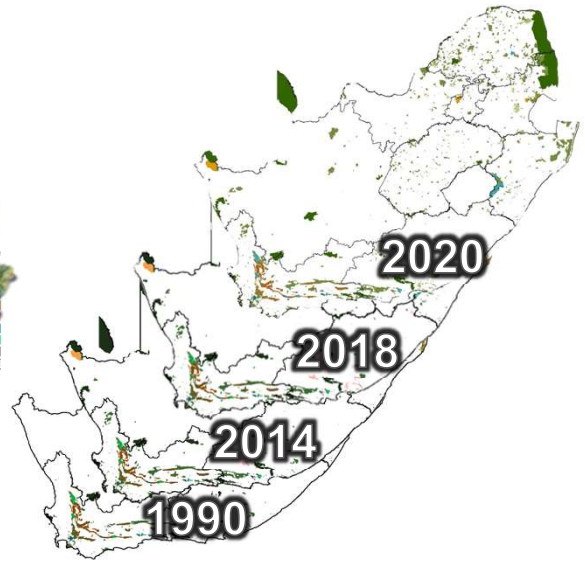
First of their kind: Accounts for SWSAs, 1990 to 2020

Essential data foundations include the **National Land Cover** and the **South African Protected Areas Database**

Strategic Water Source Areas – the 8% of South Africa’s land area that is critical for water security



Land accounts for SWSAs, 1990 to 2020



Accounts for PA's in SWSAs, 1990 to 2020

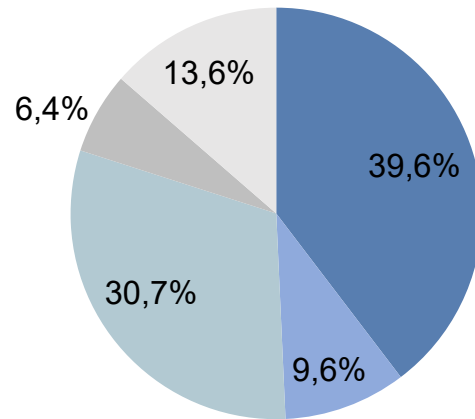
The accounts track changes in land cover and protected areas within SWSAs over three decades from 1990 to 2020, in biophysical terms.

Additional profiled information provided by the Accounts for SWSAs

Main source of water

(Based on Census 2011)

- Spring, river or stream
- Borehole
- Water service provider
- Water tanker or water vendor
- Other



Proportion of provinces covered by SWSAs

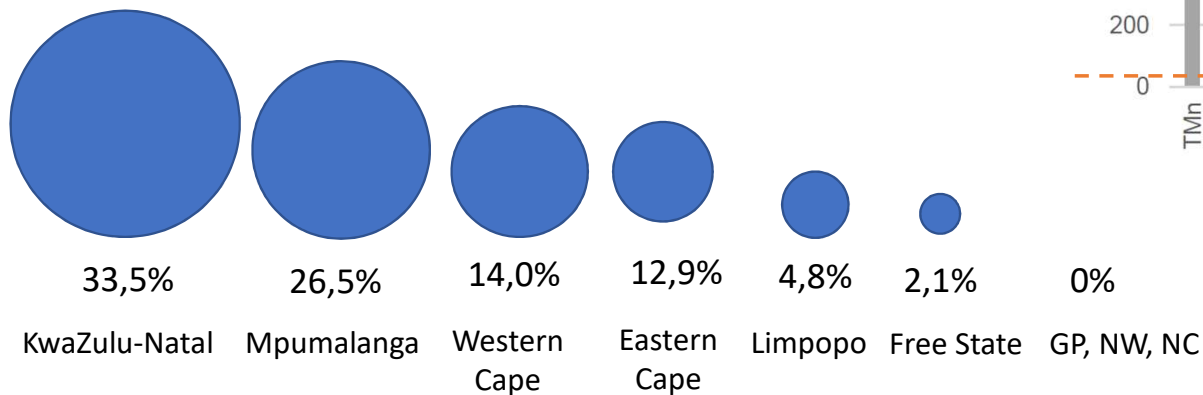
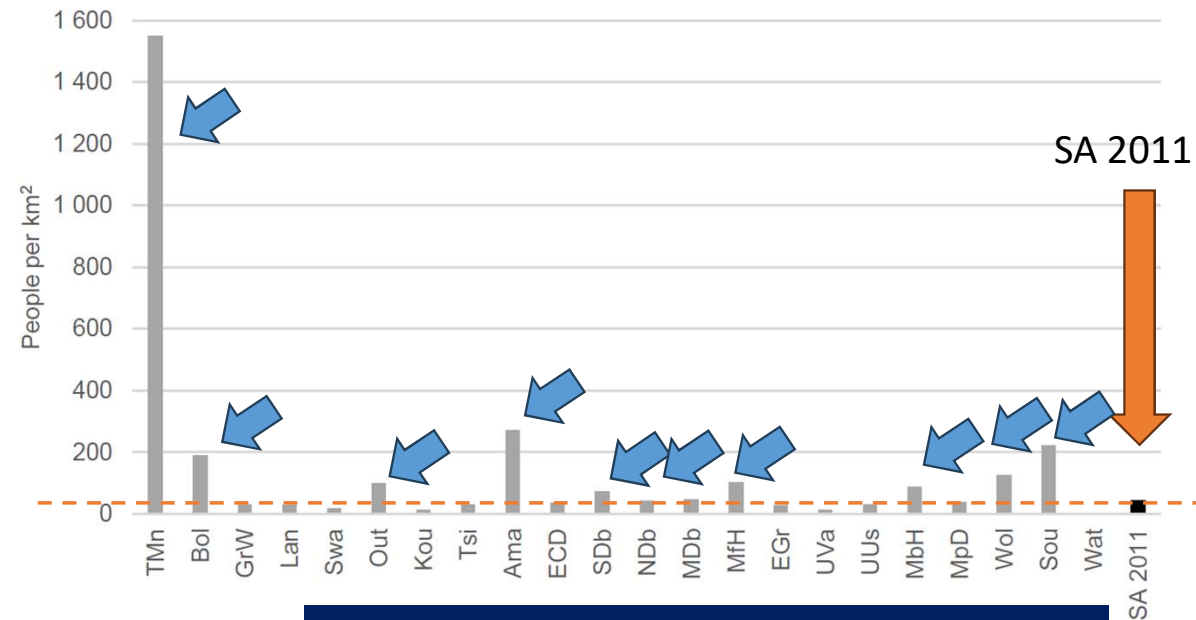


Figure 9: Population density per SWSA in 2011, based on the population census

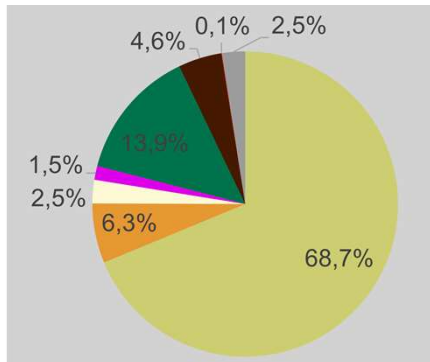


Population density (people per km²) is greater in 10 SWSAs compared to population density in SA as a whole.

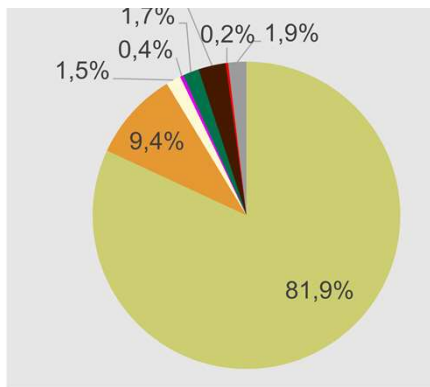
KEY FINDING: There has been an increase in SWSAs' legal protection – 19% protected compared to 9% in the whole country, but in some SWSAs there is almost no protection.

Proportion protected and not protected in all SWSAs and SA as a whole

Land cover in SWSAs, 2020

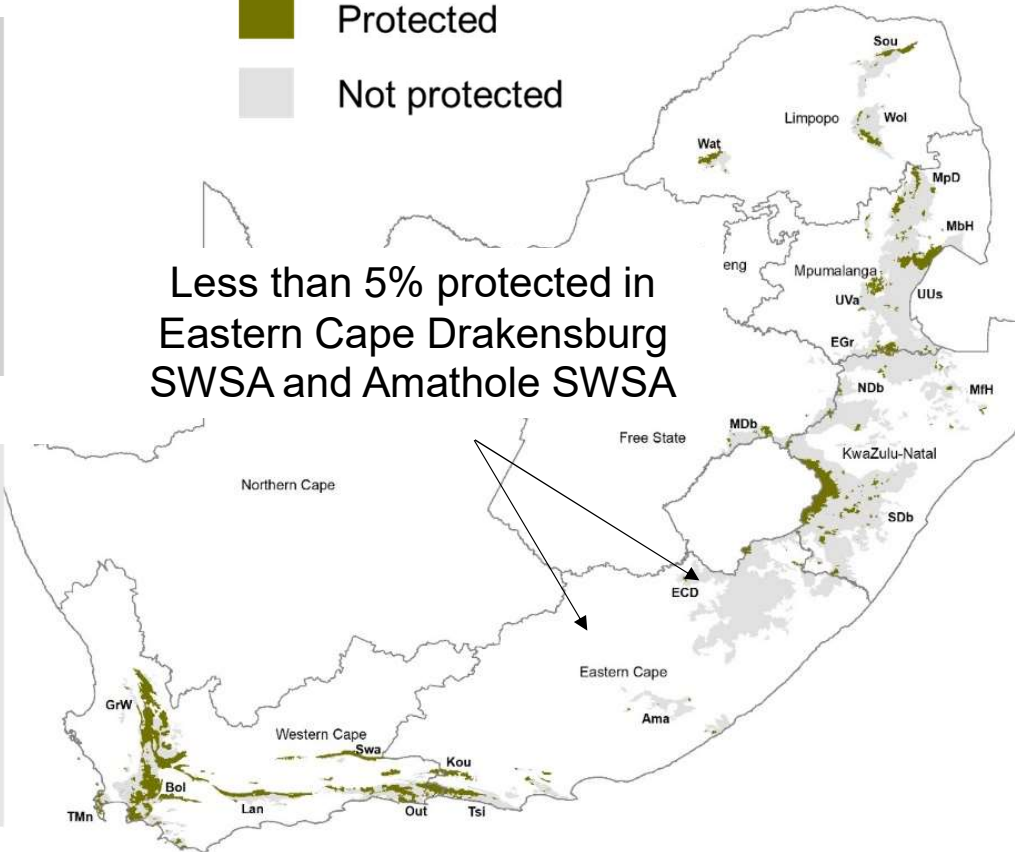


Land cover in SA, 2020



■ Protected
■ Not protected

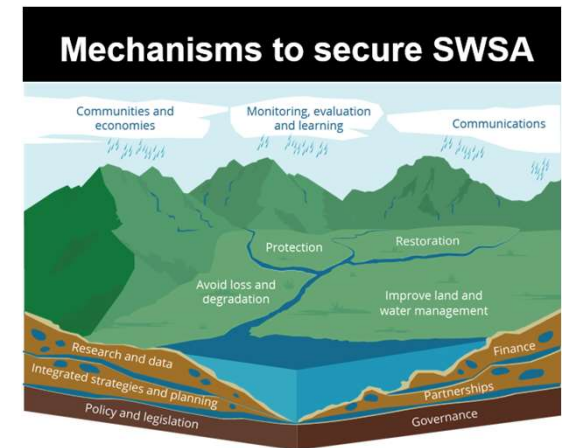
Less than 5% protected in Eastern Cape Drakensburg SWSA and Amathole SWSA



SWSAs with high rates of change in land cover and low levels of protection helped to prioritise SWSAs for gov 5-year target



Measures allocated to secure 6 SWSAs (March 2024)



KEY FINDING: There has been an increase in SWSAs' legal protection – 19% protected compared to 9% in the whole country, but in some SWSAs there is almost no protection.

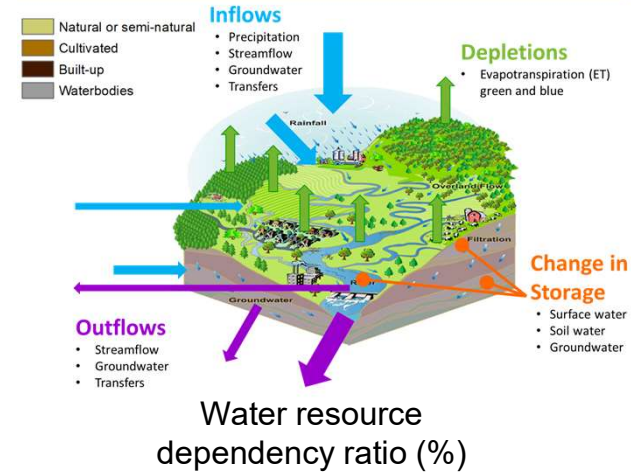
NATURAL CAPITAL 4

Sub-national Water Resource Accounts, 2015 to 2021

Sub-national Water Resource Accounts

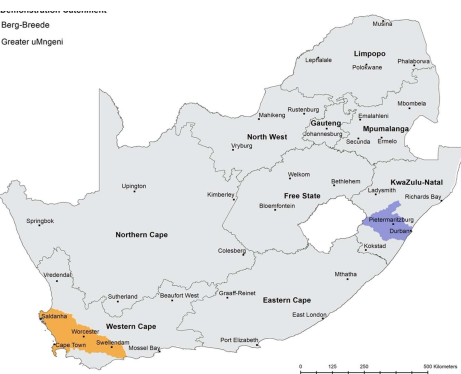
- Sub-national Water Resource Accounts, 2015 to 2021 (Stats SA, 2024)
- Berg-Breede and Greater uMngeni catchments provide water to two major cities.

Model components of stocks, flows and consumption of water



Sub-national Water Resource Accounts, (released March 2024)

Spatially explicit water accounts to support land and water management.



Reserved outflow ratio (%)



Per capita net water resources (m³ pp)



Water resource dependency ratio (%)



The accounts provide annual estimates of catchment water balances, emphasizing the influence of land cover on water availability

Ecosystem accounts for water-related EI

Accounts include

Stock accounts

Ecological infrastructure extent account

Ecological infrastructure condition account

Flow accounts

Ecosystem service supply and use account

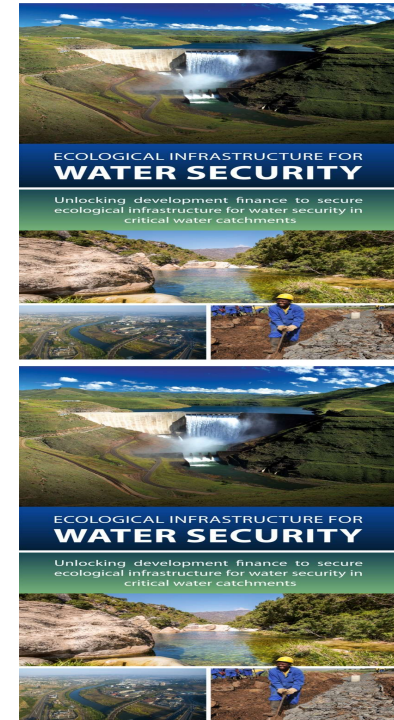
Ecosystem extent account by ecosystem type

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Total
Opening stock Historic Extent (ha)							
Opening stock as % of total river length							
Additions/reductions							
Additions/reductions as a % opening stock							
Closing extent 2020 (ha)							

Accounts are structured tables that track stocks of assets and flows of services. They provide consistent, credible information and indicators

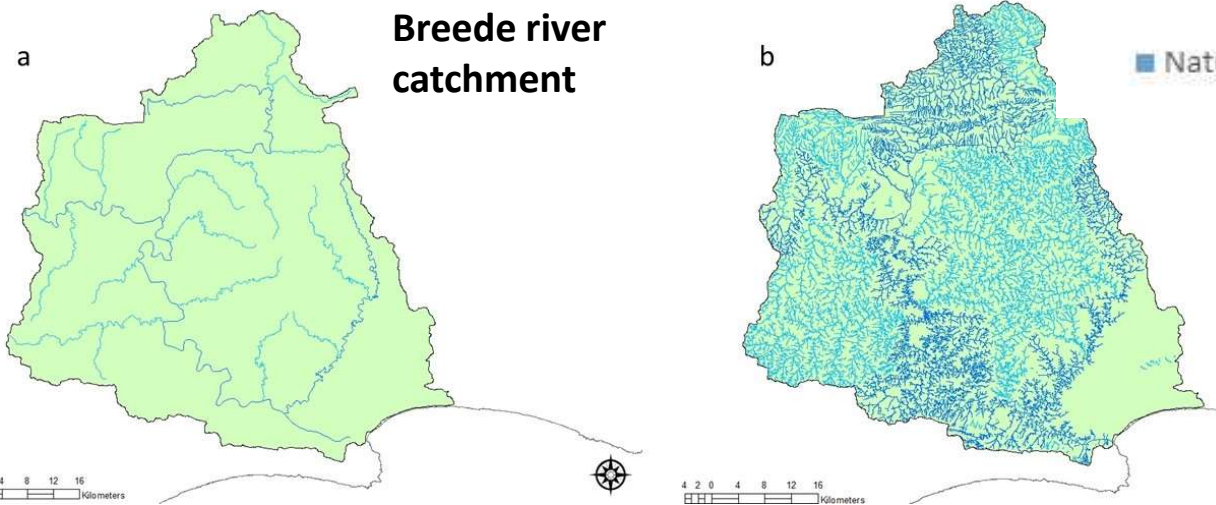
Ecosystem condition account by condition category

	Natural / Near natural	Moderately modified	Highly modified	No data	Total
Opening stock Historic extent (ha)					
Opening stock as % of total river length					
Additions/reductions					
Additions/reductions as a % opening stock					
Closing extent 2020 (ha)					

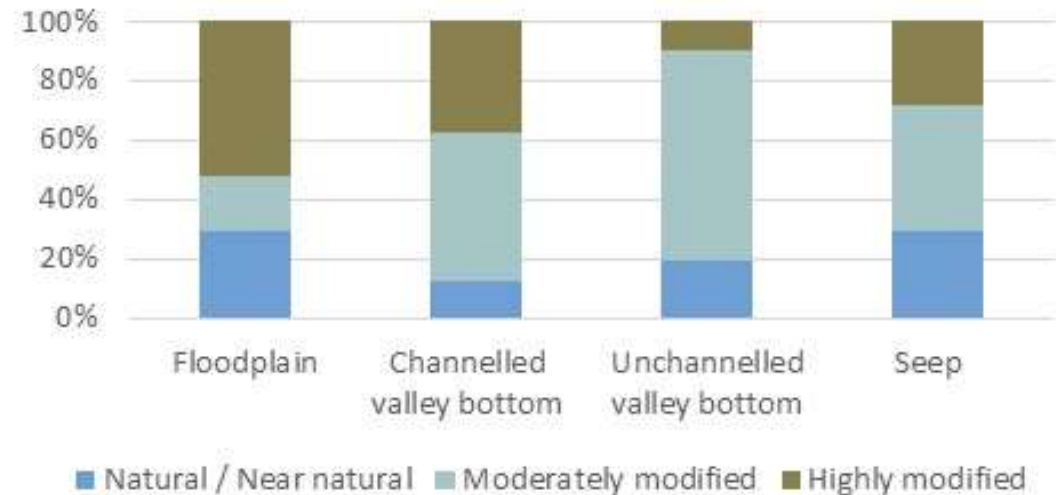


Ecosystem accounts for EI

- The resolution and quality of data on EI make a big difference to how much EI we think we have.
- Rivers are largely modified, and despite some improvements in river condition, the overall trend is towards degradation of our rivers in this region.



Greater uMngeni
Wetland condition



- The ecosystem condition of our water-related EI affects how those ecosystems function and the services that they can deliver to people.

Some key lessons and reflections from NCA

Key lessons

Investment in foundational data pays off

- SA is able to be a global leader in ecosystem accounting because of our datasets
- Investment required in their maintenance, updating and capacity to serve users of the data

Demonstrated feasibility

- Can be produced regularly (dependent on data updates)
- Build up specialist capacity over many years
- Spatially explicit and time series from accounts are useful for water resource management
- And we can integrate ecological and socio-economic information usefully

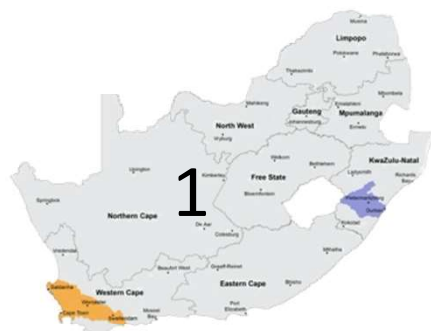
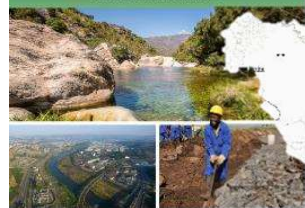
Process makes a difference

- How the technical is undertaken influences how much capacity we build along the way, how much awareness and understanding is grown in users of the information, and the likelihood of it being used to inform policy or decision-making

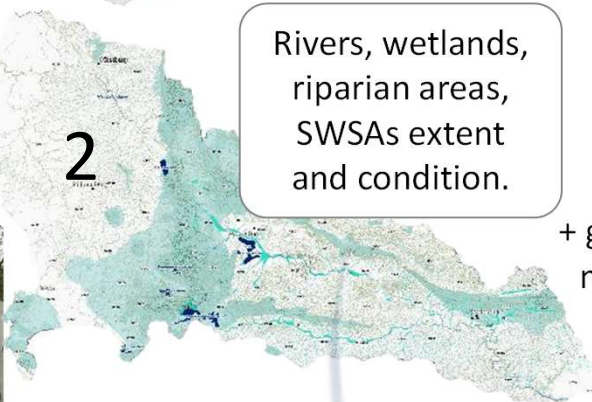


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1



2

Rivers, wetlands, riparian areas, SWSAs extent and condition.

+ ground-truthing modelled work (~accuracy)

3 Experimental EI asset accounts, water resource accounts and accounts for SWSAs

5 EI Management and Investment Plans, Catchment Mgmt Strategies

4 Several collaborative implementation and knowledge sharing platforms in landscapes

ROADMAP FOR MOBILISING INVESTMENT IN ECOLOGICAL INFRASTRUCTURE FOR WATER SECURITY IN TWO SOUTH AFRICAN CATCHMENTS

6 Cost of restoration efforts, flow of funds, how to channel funds for best impact in catchments.



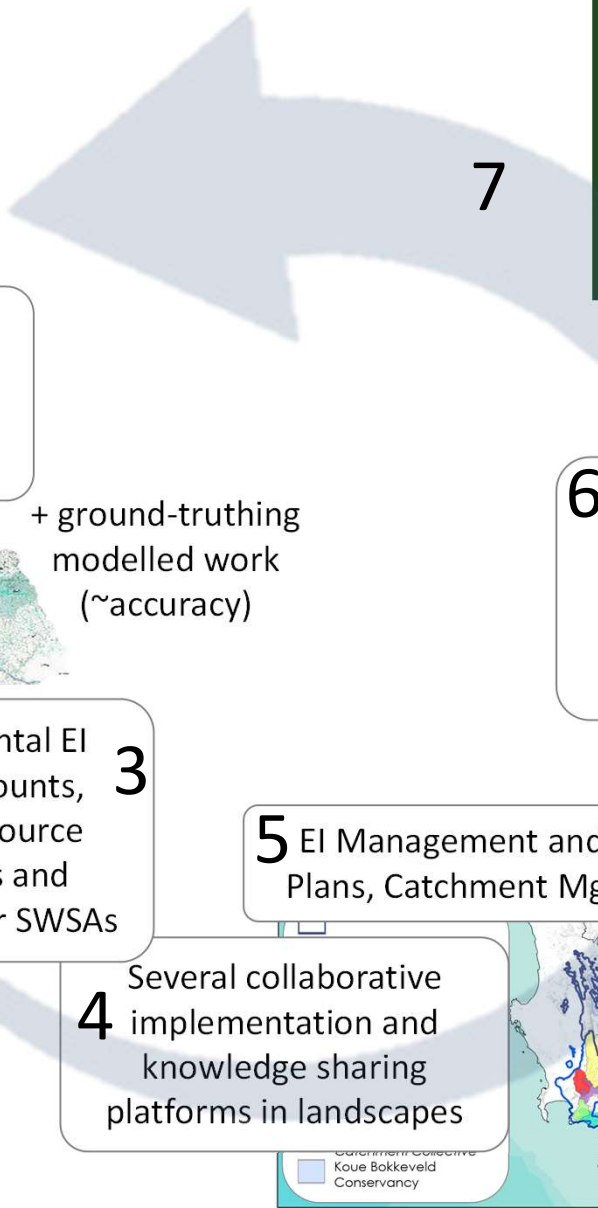
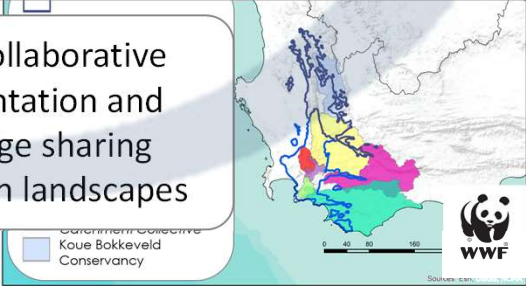
#OurWaterOurPeople



Ecosystem accounts for water-related ecological assets in two demo catchments – extent and condition

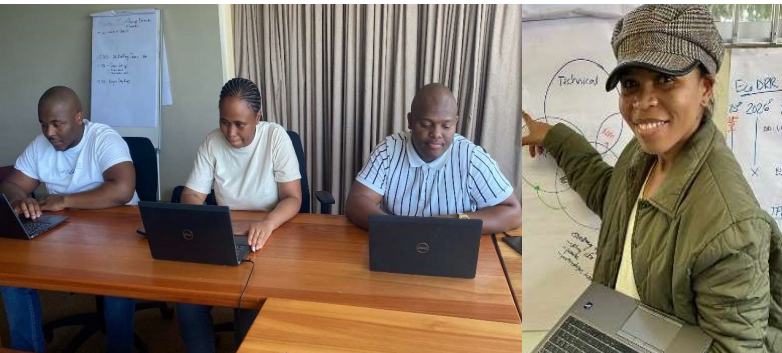
Stock accounts Flow accounts

- Ecological infrastructure extent account
- Ecological infrastructure condition account
- Ecosystem service supply and use account



Food for thought

- How can we support further investment in foundational national datasets to continue to provide evidence-based information to guide policy and planning, decision-makers?



SUSTAINABLE DEVELOPMENT GOALS

Post-2020
Global Biodiversity Framework



Let's Grow South Africa Together,
district by district

The District Development Model: is a new integrated planning model for Cooperative Governance

#Khowuleza



Thank you

