Knowledge co-production as a tool for promoting cooperative action for water security

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Natural Capital Symposium

The Resilience and Development Programme (Swedbio)

Stockholm Resilience Centre
Research for Governance of Social-Ecological Systems

Stockholm University

CSIR
our future through science

ProEcoServ
Project for Ecosystem Services

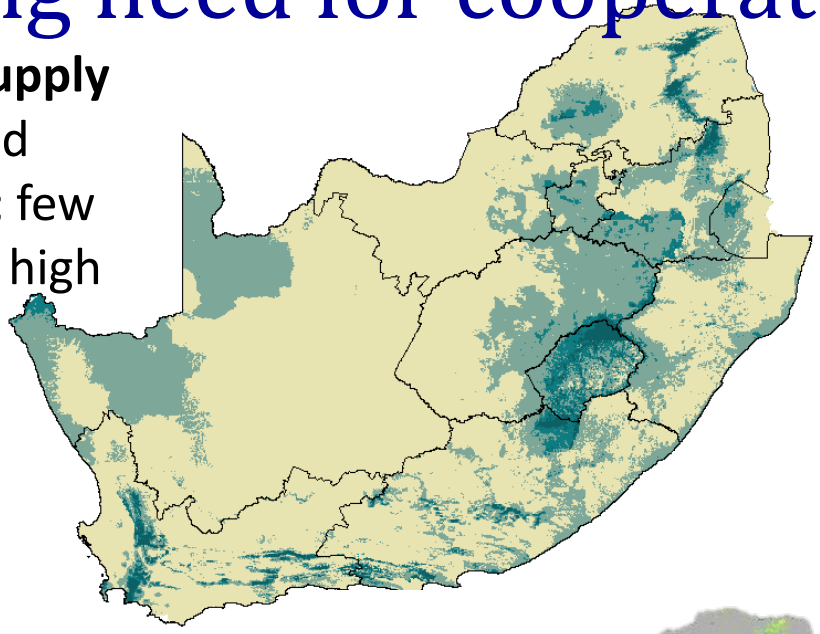
UNEP

gef

Spatial overlap and competing interests → strong need for cooperation

Water supply

Semi-arid country; few areas of high water supply

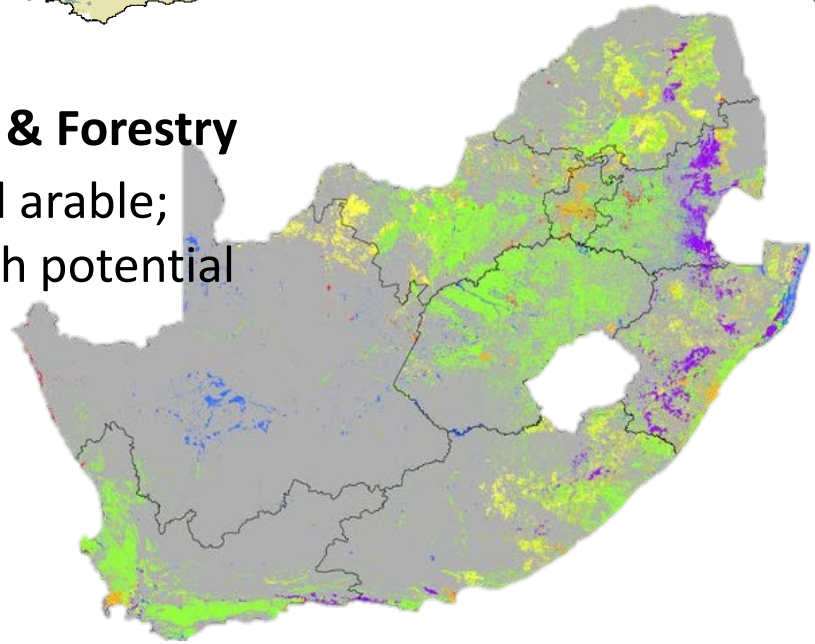


Coal Deposits

Overlap with best agricultural land & all sources of major inland rivers

Agriculture & Forestry

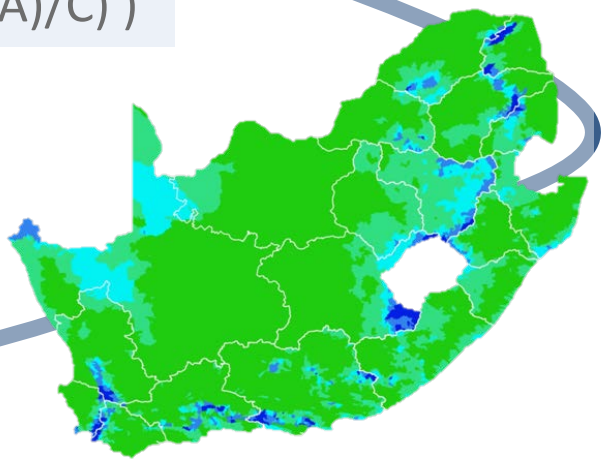
13% of land arable; only 3% high potential



Iterative knowledge co-production

Rainfall-Runoff curves:

MAR = (MAP-B+3) +
(C / exp((MAP-A)/C))



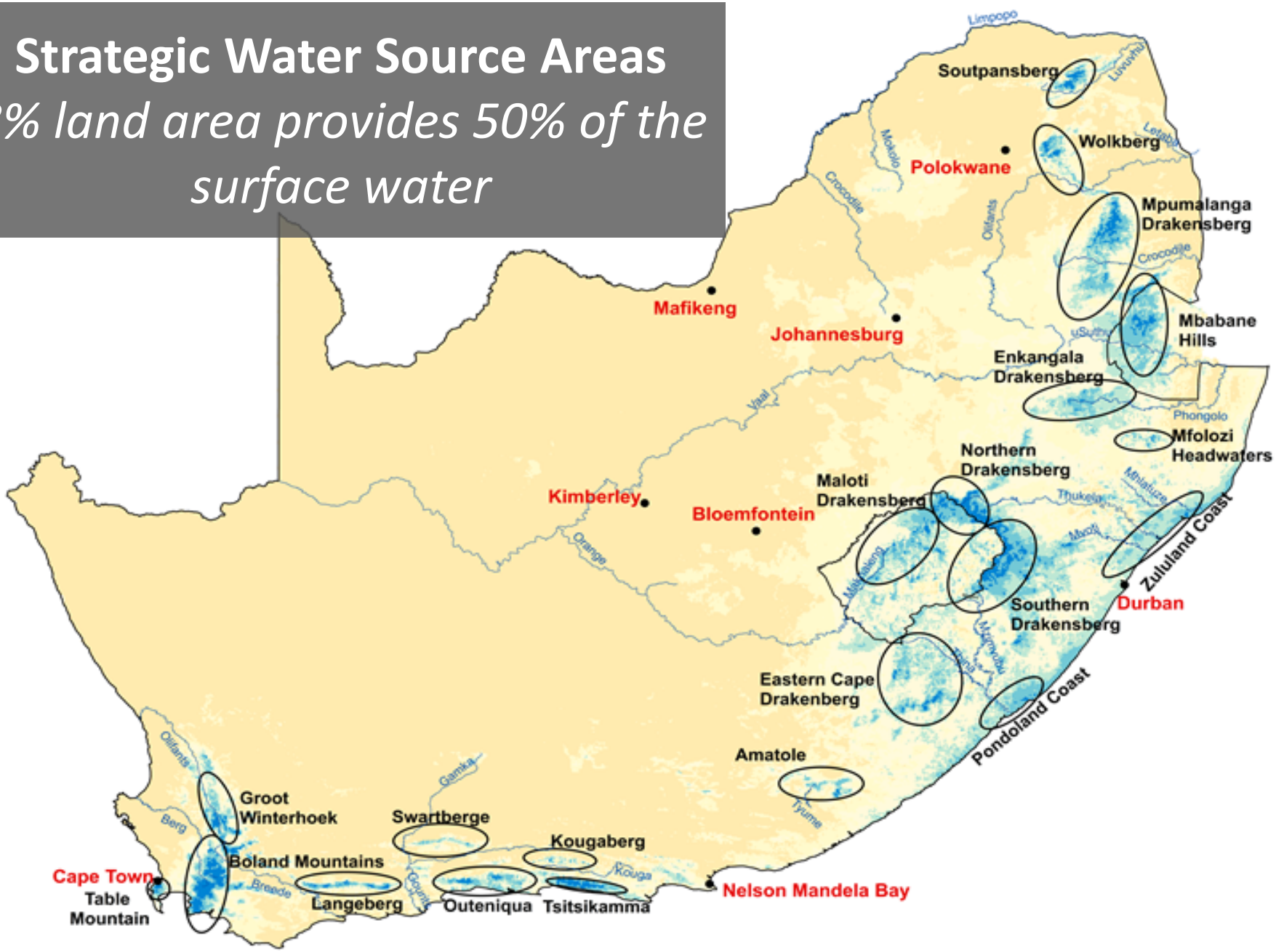
Water engineer data

water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

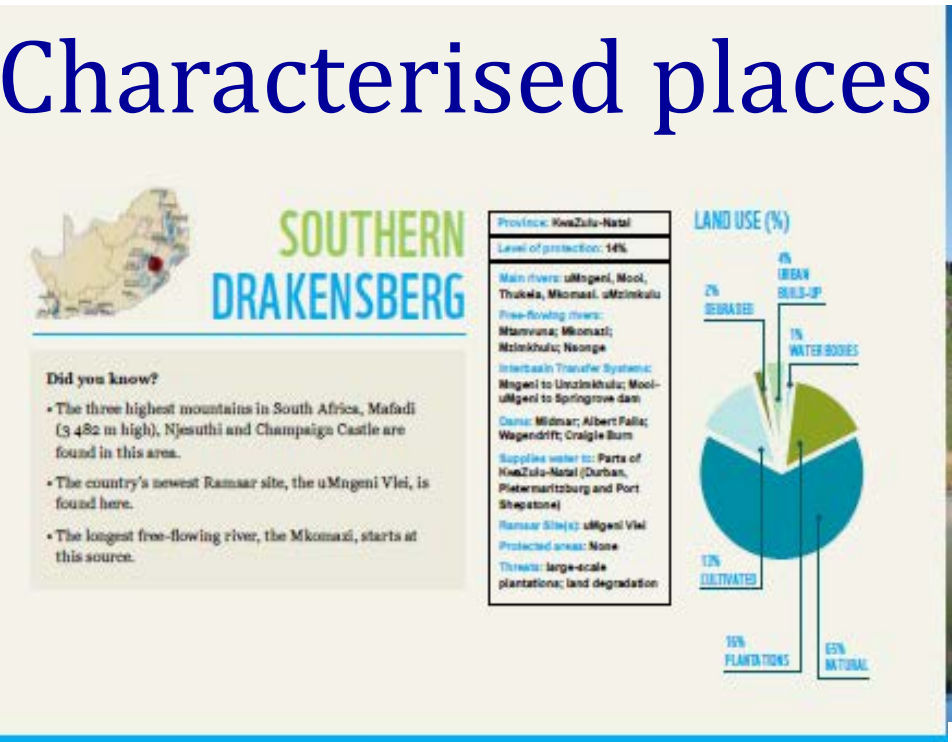
Naming and descriptions

Strategic Water Source Areas

8% land area provides 50% of the surface water



Characterised places



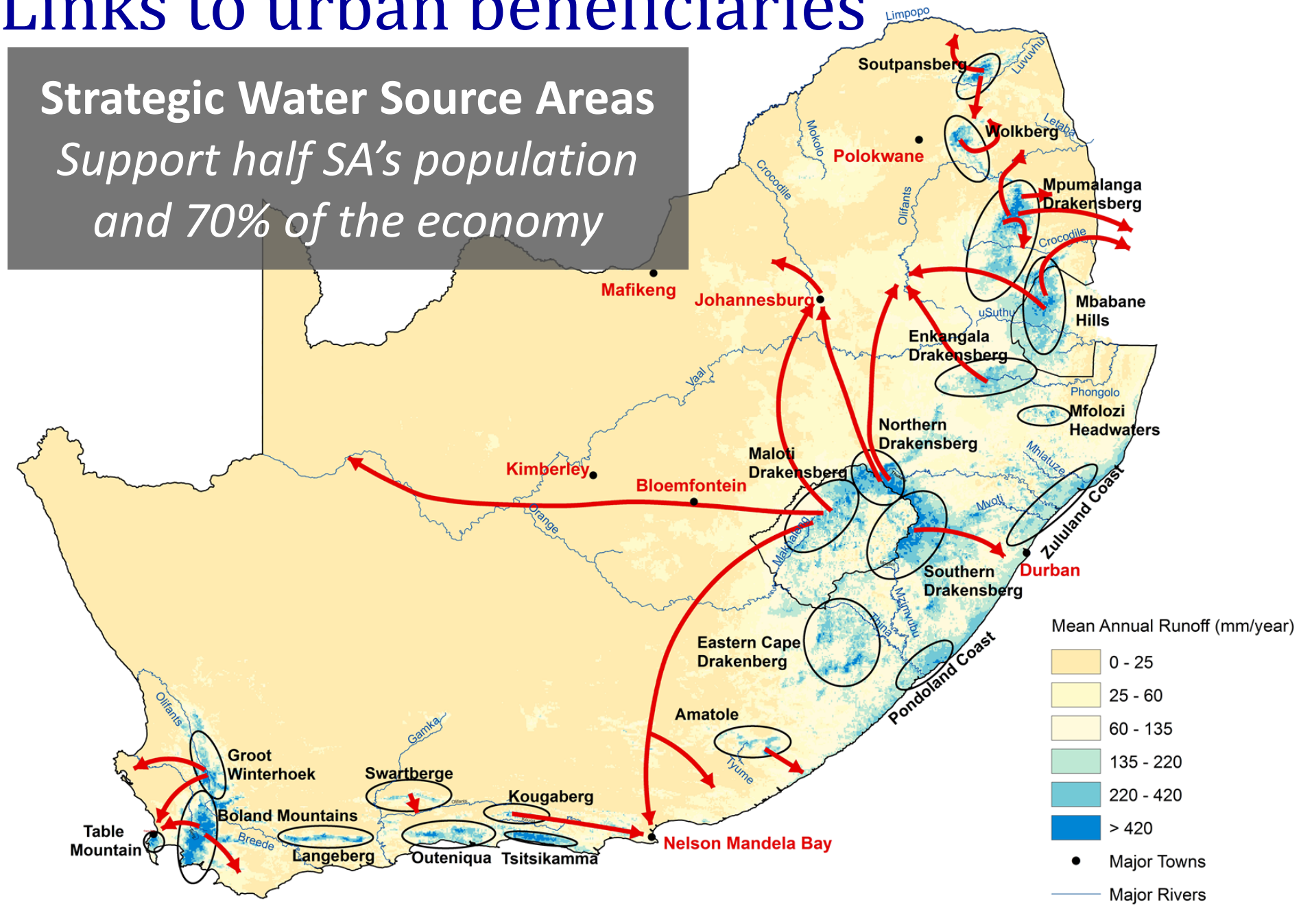
ENABLES:

- Societal identity of place
- Links to beneficiaries
- Identification of key pressures
- Development of targeted interventions

Links to urban beneficiaries

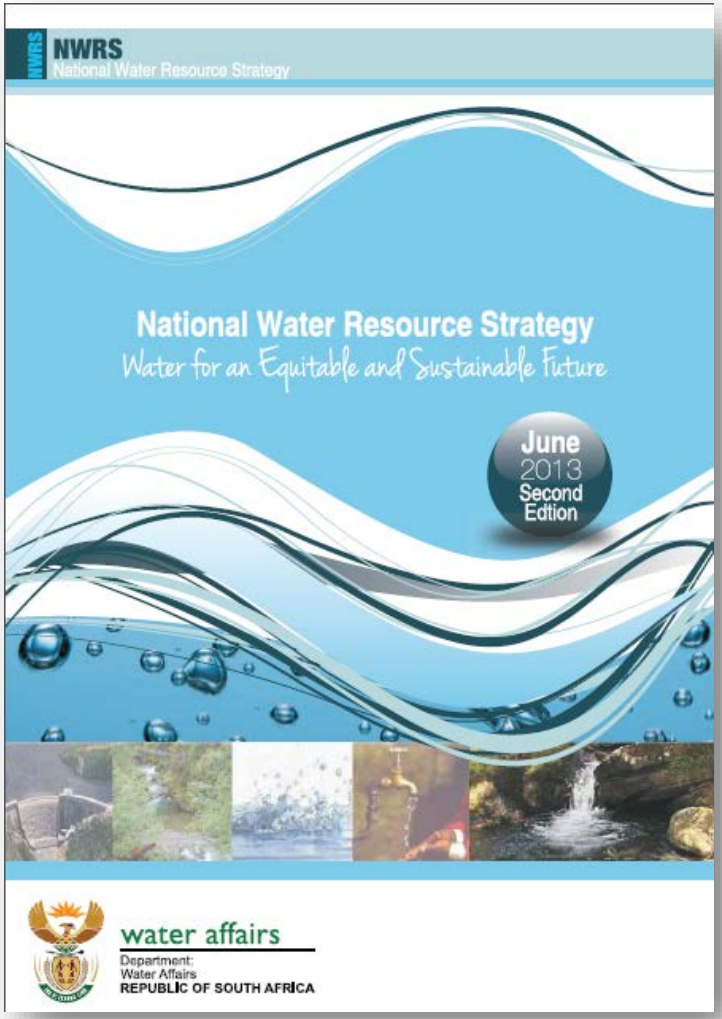
Strategic Water Source Areas

Support half SA's population and 70% of the economy



National policy uptake

Water focused governance:
National Water Act



Chapter 5:

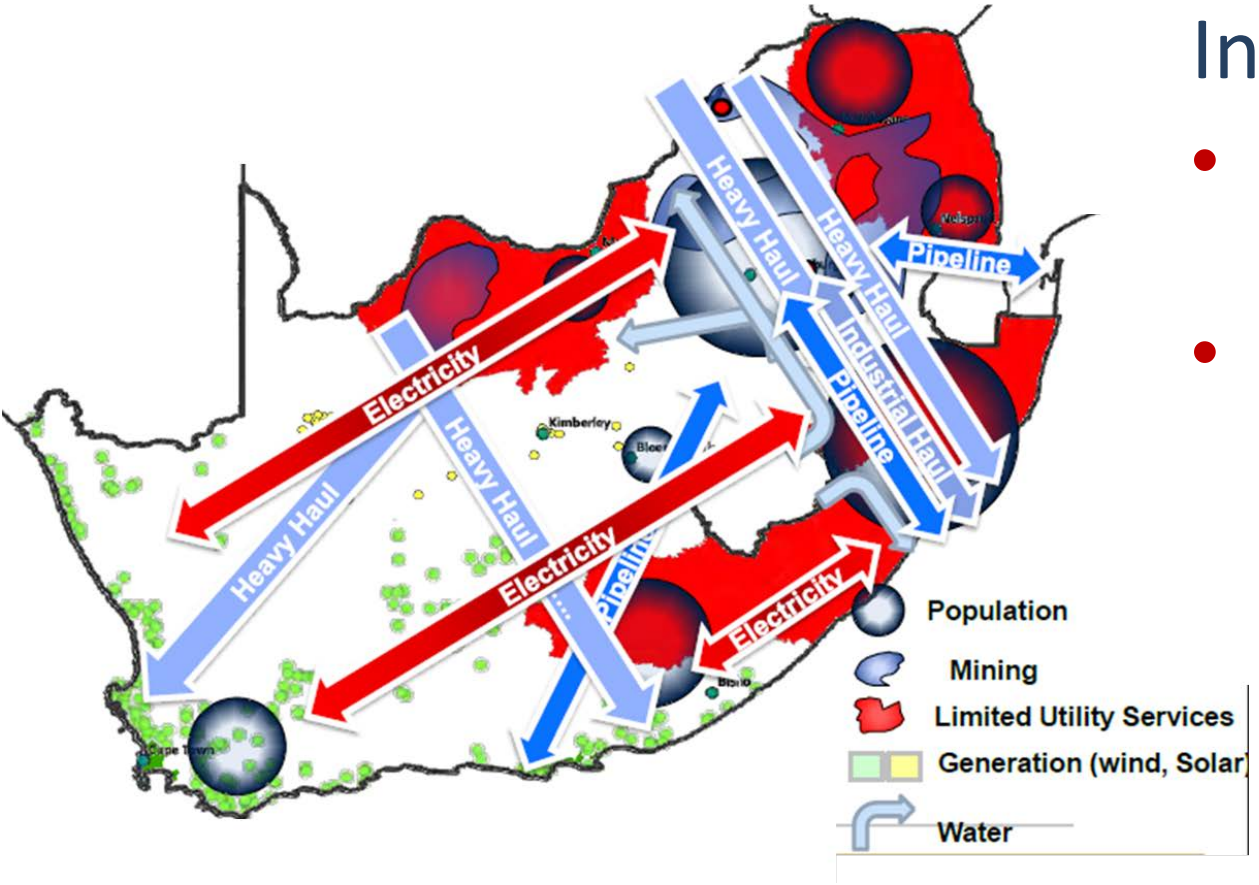
…. "they form the **foundational ecological infrastructure** on which a great deal of built infrastructure for water services depends"

….."**strategic national assets** that are vital for water security"

….."need to be acknowledged as such at the highest level across all sectors"

National policy uptake

National infrastructure & development planning

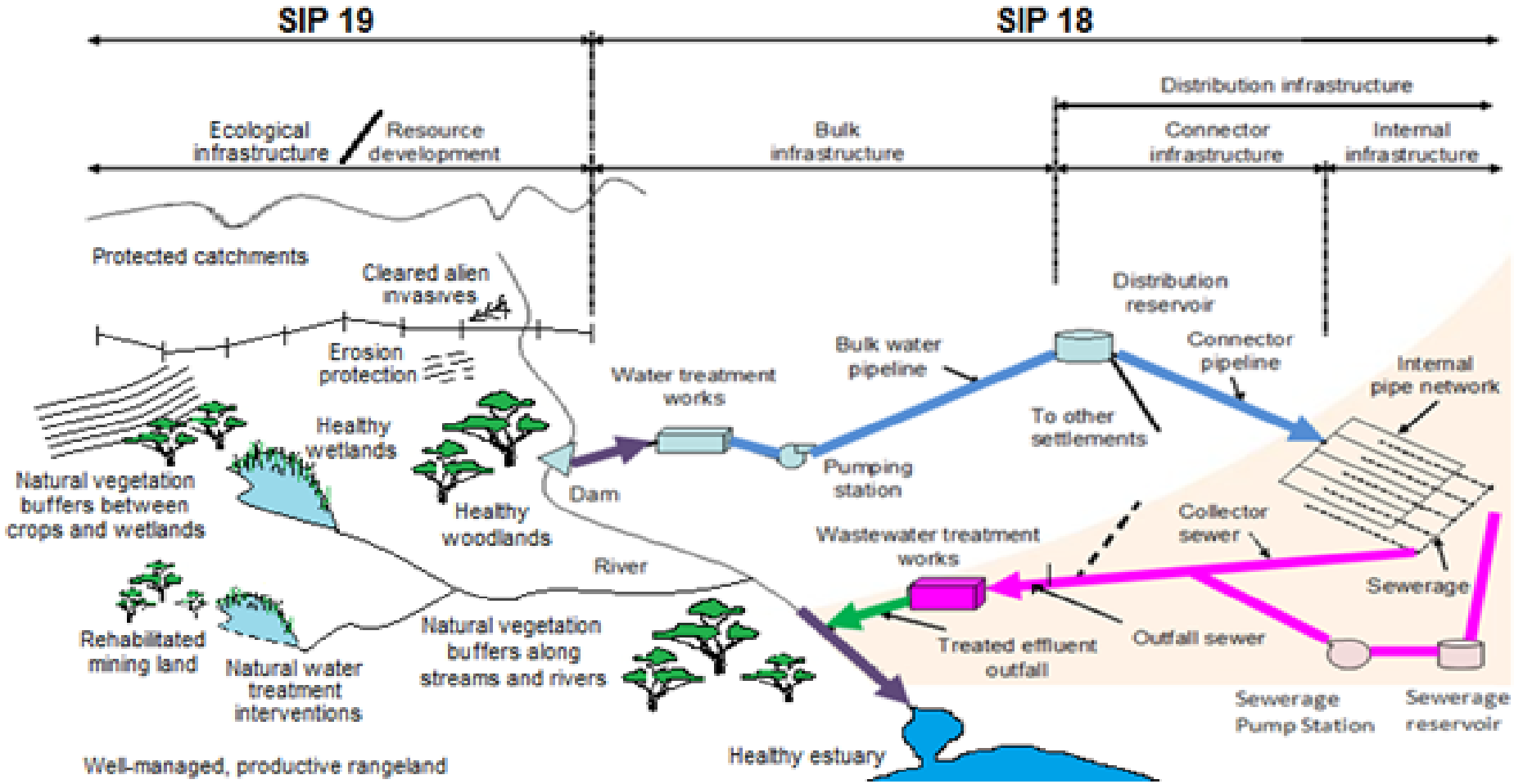


Presidential Strategic Integrated Projects

- $350 billion infrastructure
- $57 million for water infrastructure

Ecological infrastructure for water security

Bulk water supply and water distribution infrastructure



Local uptake: commodity production

- Main uses currently : timber, cultivation, mining

Coal-Water Futures

Strategic planning and strategic choices to protect our future and leave a legacy of worth

?

- > 70% of the Strategic Water Source Areas in Mpumalanga Province are under mining or application for mining

Local uptake: community programmes

Local uptake

Protected areas expansion

SANParks management brief

Ecological Infrastructure, Ecosystem Services, Strategic Water Source Areas and SIP 19

Dirk Roux, Stef Freitag and Jeanne Nel (April 2014)

Background and rationale

Ecological infrastructure comprises the functioning ecosystems that provide a range of valuable and often essential ***ecosystem services*** to society (e.g. intact river banks and riparian vegetation that filter pollutants and recharge aquifers; wetlands that filter and regulate catchment runoff and slow down flood waters; salt marshes and fore dunes that contribute to erosion control or absorb impacts of sea storms; forests that regulate atmospheric carbon and buffer against climate change effects). This concept offers a significant extension of the conventional biodiversity focus of protected areas to a more direct connection with the benefits that people derive from conservation. This is particularly relevant to SANParks' vision of '*Connecting to Society*'.

Public awareness

WWF's Journey of Water campaign

www.journeyofwater.co.za

Main lessons

- Good data paired with an iterative knowledge co-production process
  - Enhanced credibility, salience and legitimacy
  - Leads to multiple impact pathways
- Maps are a good way of integrating diverse knowledge systems
  - Good ‘boundary objects’
- Targeted use contexts