Exploring knowledge co-production for sustainable development planning in South Africa

ProEcoServ
Project for Ecosystem Services

UNEP

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WATER RESEARCH COMMISSION

CSIR
our future through science

SANBI
Biodiversity for Life

Jeanne Nel & Nadia Sitas

PECS Conference 2015

Stellenbosch

5 November 2015

Mainstreaming ecosystem services into

ProEcoServ

Mainstreaming:

"The integration of relevant environmental concerns into the decisions of institutions that drive national, local and sectoral development policy, rules, plans, investment and action"

(Dalal-Clayton and Bass 2009).

Use Cases in South Africa

National policy & planning

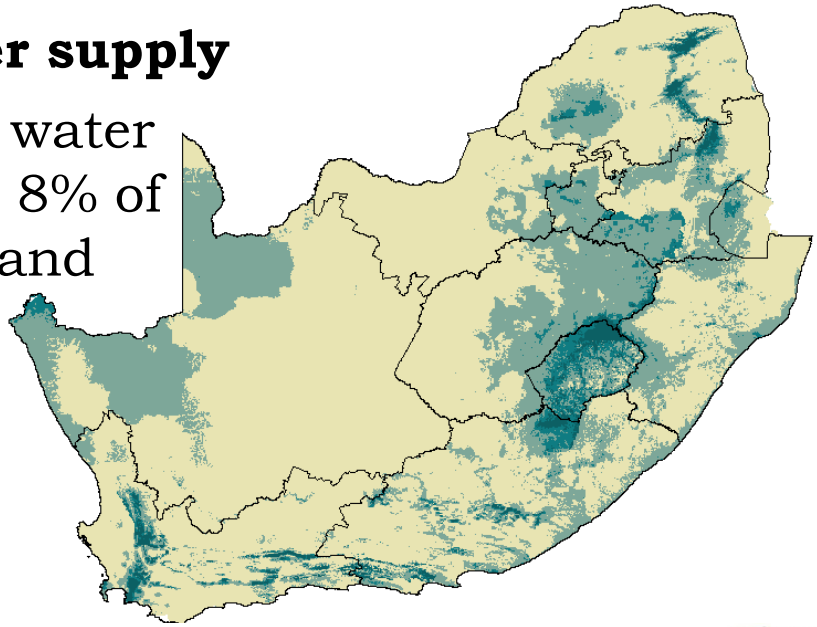
Local level planning & management: Eden District

Mainstreaming into national development planning

Spatial overlap and competing interests

Water supply

50% water from 8% of the land

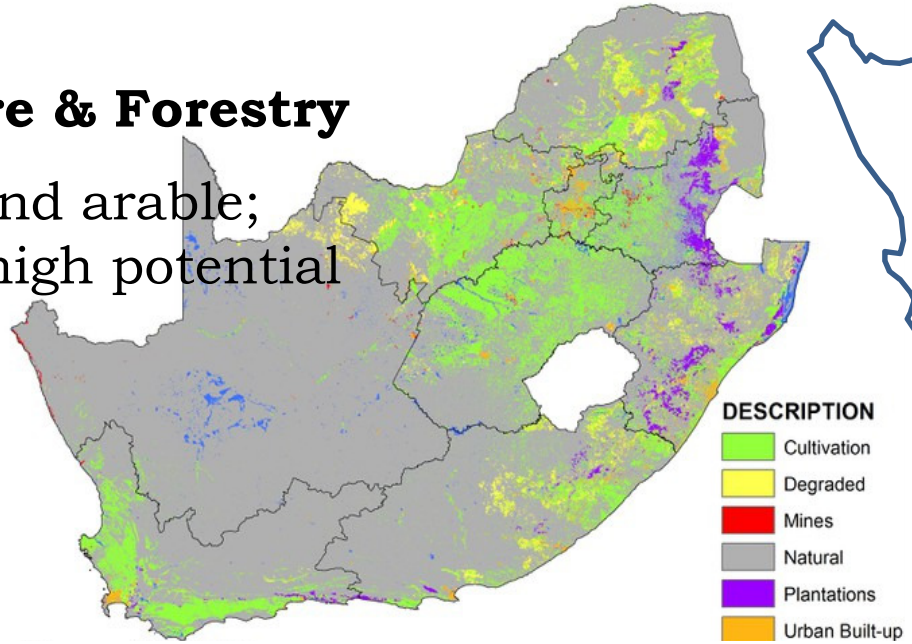


Coal Deposits

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

Agriculture & Forestry

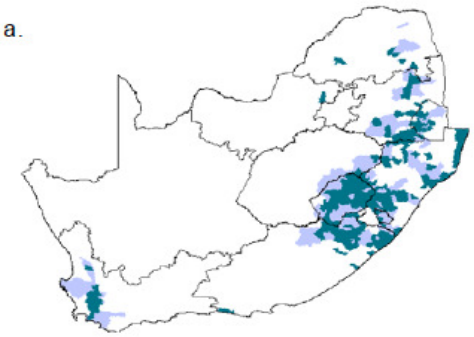
13% of land arable; only 3% high potential



- Water infrastructure can't keep up with demand
- 6 million households have no access to piped water
- Highly vulnerable to health hazards associated with agricultural and mining effluent

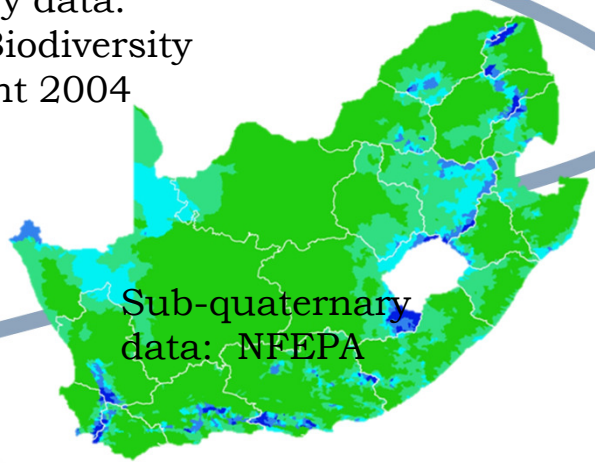
Paired scientific and social process

a.



Rainfall-Runoff curves:
MAR = (MAP-B+3) + (C / exp((MAP-A)/C))

Quaternary data: National Biodiversity Assessment 2004



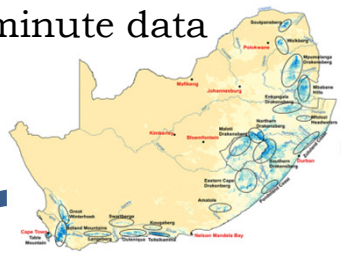
Water engineer data

Sub-quaternary data: NFEPA

Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

Naming and descriptions

1x1 minute data

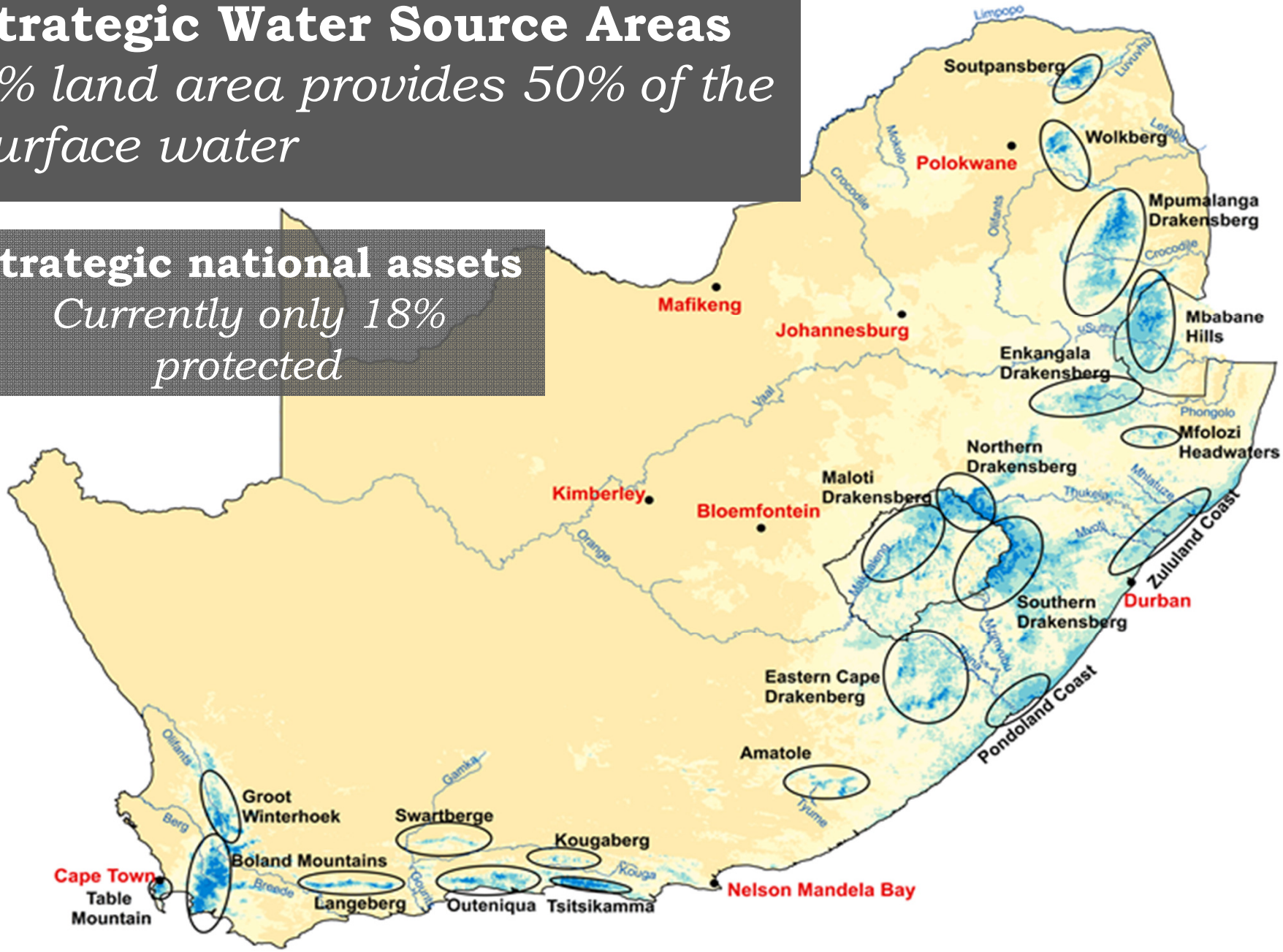


Strategic Water Source Areas

8% land area provides 50% of the surface water

Strategic national assets

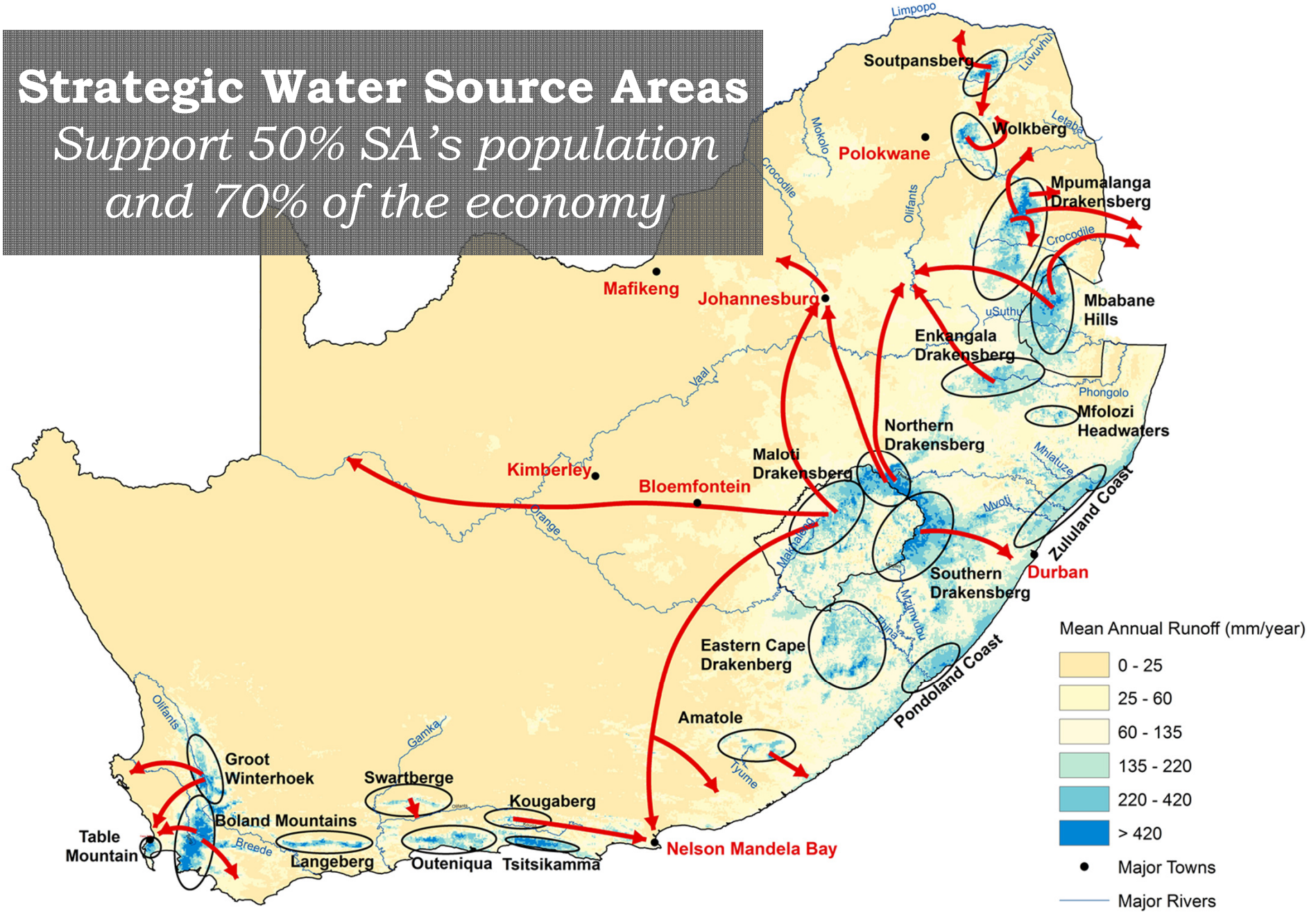
Currently only 18% protected



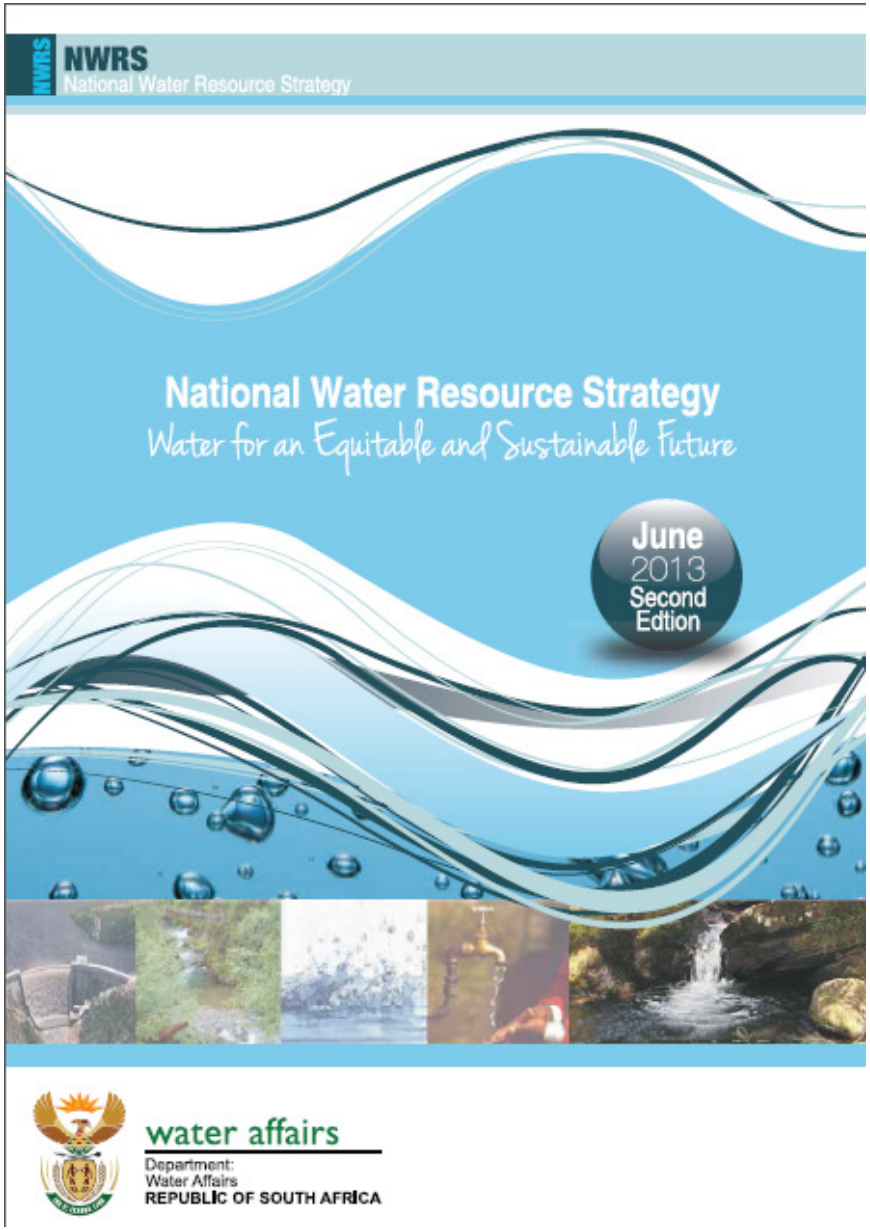
Links to urban beneficiaries

Strategic Water Source Areas

Support 50% SA's population and 70% of the economy

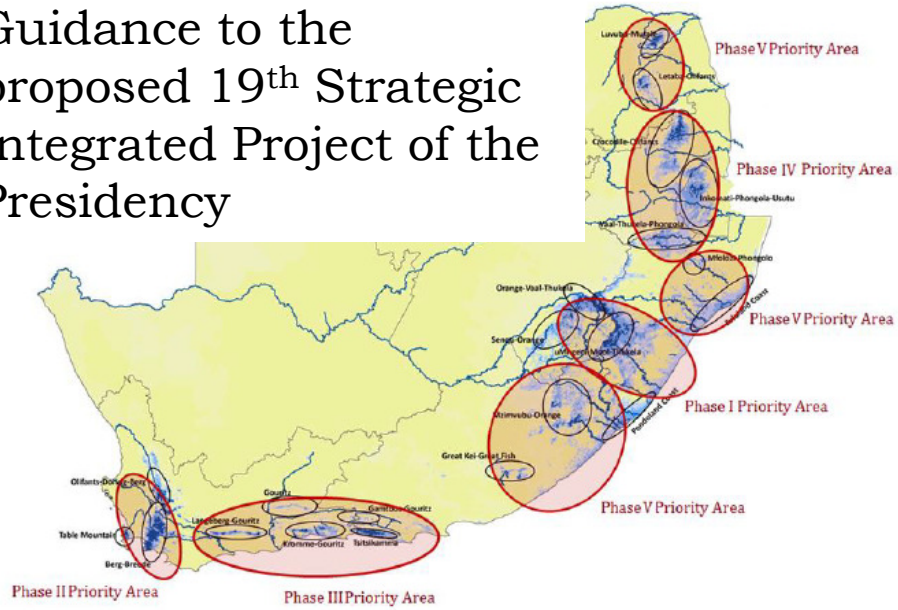


Policy hook



- National mandate
- Consultant Terms of Reference

Guidance to the proposed 19th Strategic Integrated Project of the Presidency



Ch 5: National Water Resource Strategy

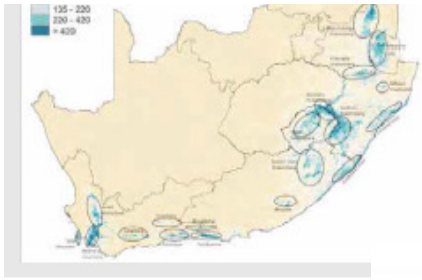


Figure 8: Strategic water source areas for South Africa

The areas >135 mm/year represent strategic water source South Africa, Lesotho and Swaziland. These areas approximately 8% of the land surface and contribute 50% of supply.*

5.1.8 Lack of monitoring to inform management actions

To inform the management of water ecosystems, information about the ecological state of these systems as well as the trajectories and rates of change taking place in that state is needed. Such information is obtained through monitoring selected indicators, which can be defined as "measures, variables, or indices that represent or mimic either the structure or function of ecological processes and systems across a disturbance gradient" (Brooks et al.

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

WWF's journey of water seeks to concentrate minds on our precious resource

www.journeyofwater.co.za

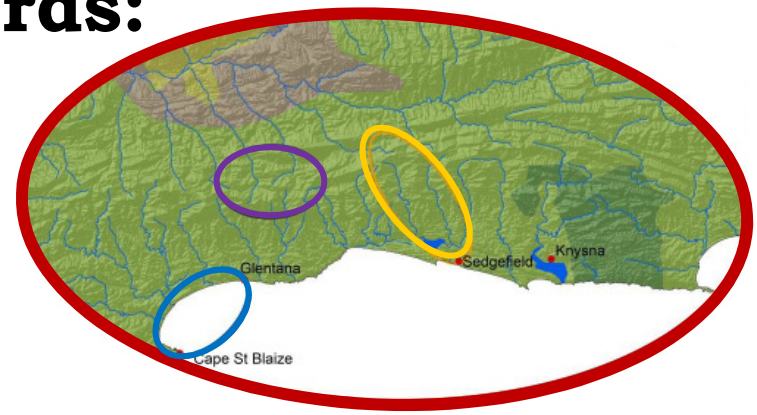
http://www.youtube.com/watch?v=5Be6b70yrTM

Mainstreaming into local planning processes

The Eden journey begins

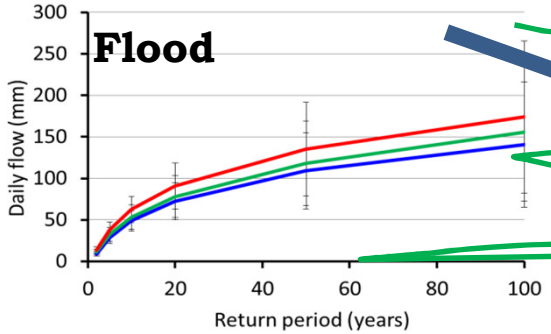
Natural hazards:

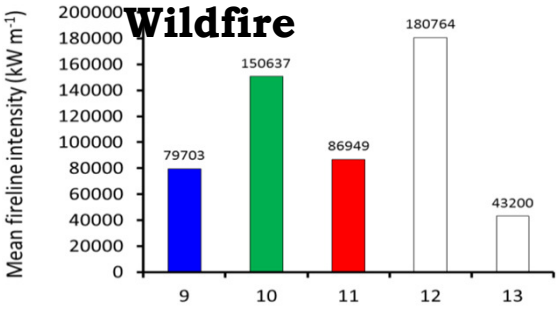
- **Flood**
- **Drought**
- **Wildfire**
- **Storm-wave**

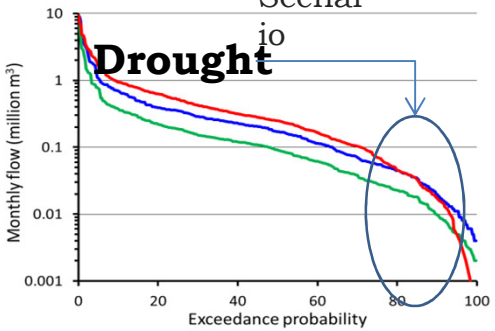


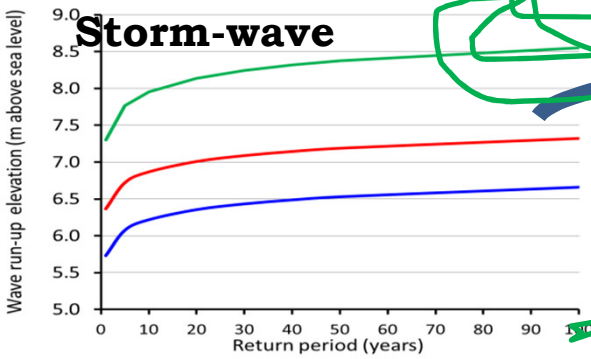
Stakeholders:

- Insurance industry
- Beverage and timber industry (executives, managers and farmers)
- Local and provincial authorities
- Poverty alleviation programmes
- Conservation agencies
- Research organisations
- Civil society









Baseline
Landscape change
Climate change

Nel et al. 2014 PLOS One

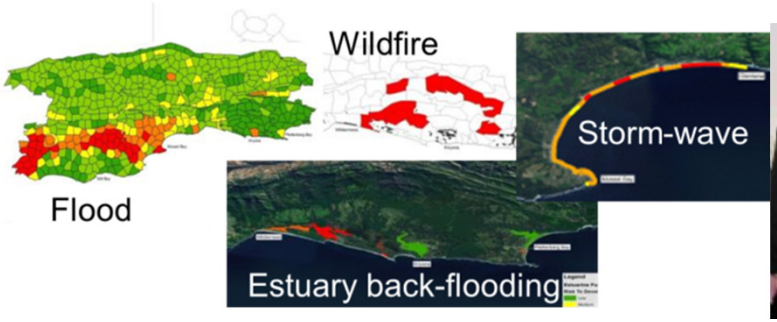
Investment in ecosystem services

Institutional change

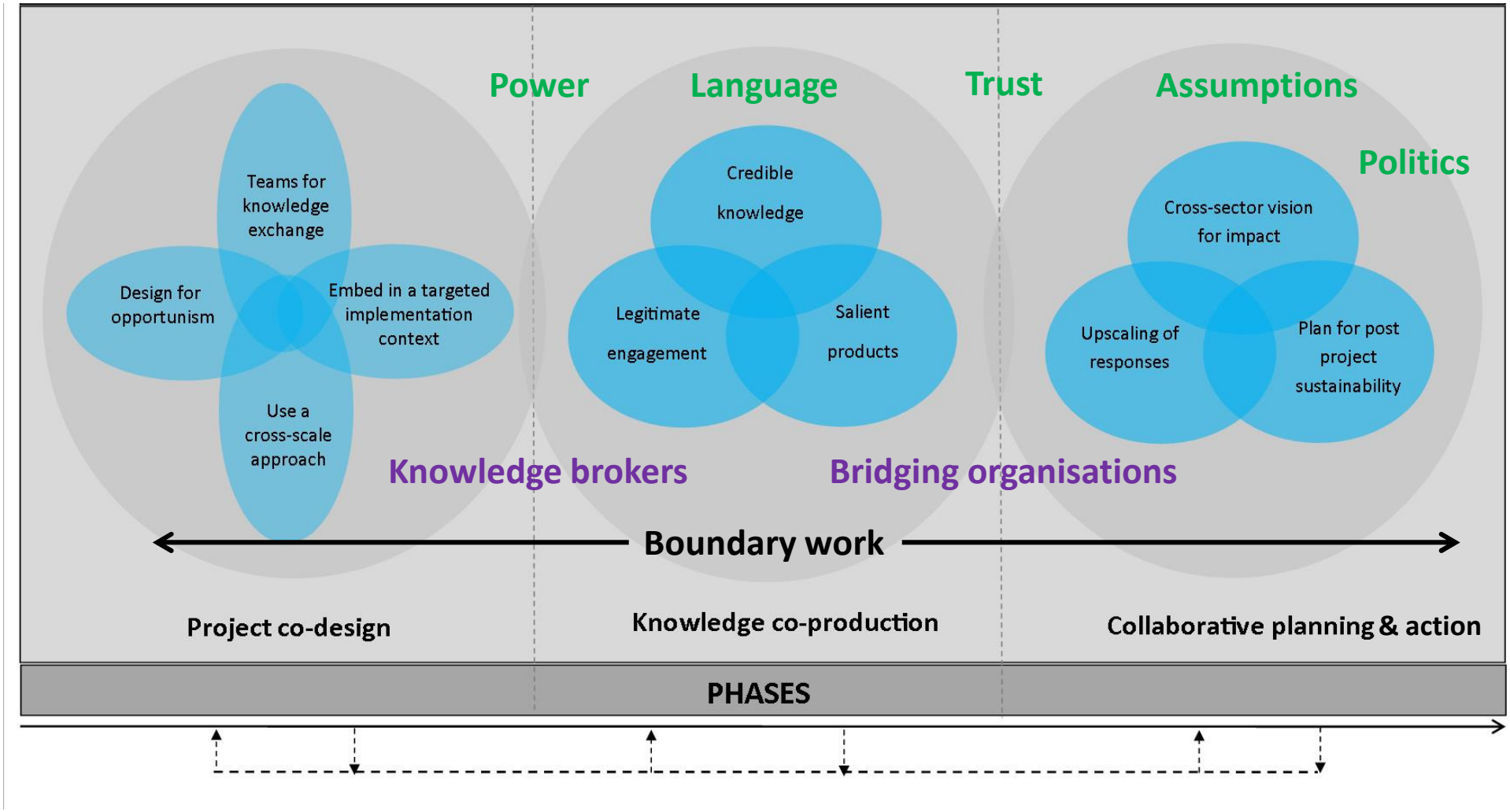
- Inputs into Disaster Management Bill
- Appointment of catchment coordinator by beverage industry
- Decentralising underwriters
- Inclusion of new private sector partners in fire protection agencies

Development of learning networks

- Eden Disaster Resilience Learning Network
- Business Adopt a Municipality
- Climate Adaptation Working Group



Principles of knowledge co-production



Adapted from Reyers et al. 2015

Thank you

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