

South Africa's National River Ecosystem Account



Background...



Work on **National River Ecosystem Accounts** was groundbreaking

- 2013-2015
- Undertaken jointly by:
 - South African National Biodiversity Institute (SANBI)
 - Statistics South Africa
 - Department of Water & Sanitation (DWS)
 - Council for Scientific & Industrial Research (CSIR)

Helped to put SA on the map as a global leader in ecosystem accounting

Now building on this with further projects

Institutions involved



Initial ecosystem accounts in SA formed part of Advancing Natural Capital Accounting (ANCA), 2014-2015



United Nations
Statistics Division



Convention on
Biological Diversity



NORWEGIAN MINISTRY
OF FOREIGN AFFAIRS

SANBI

Biodiversity for Life

South African National Biodiversity Institute



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our future through science



Conservation, Partnerships & Ecotourism



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THE SOUTH AFRICA I KNOW, THE HOME I UNDERSTAND

Classification



Classifying river ecosystem types

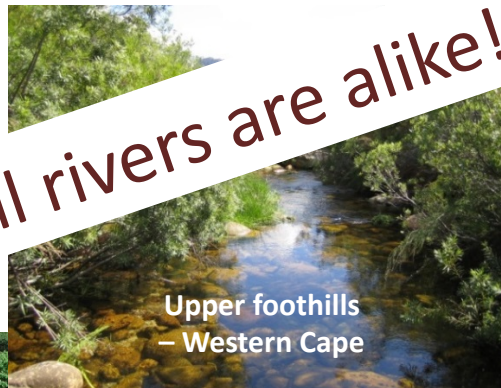
South Africa is a diverse country – geologically, geomorphologically and climatically
Large diversity of river ecosystems across the country

Upper foothills – Highveld



Not all rivers are alike!

Upper foothills
– Western Cape



Lower foothills – Highveld



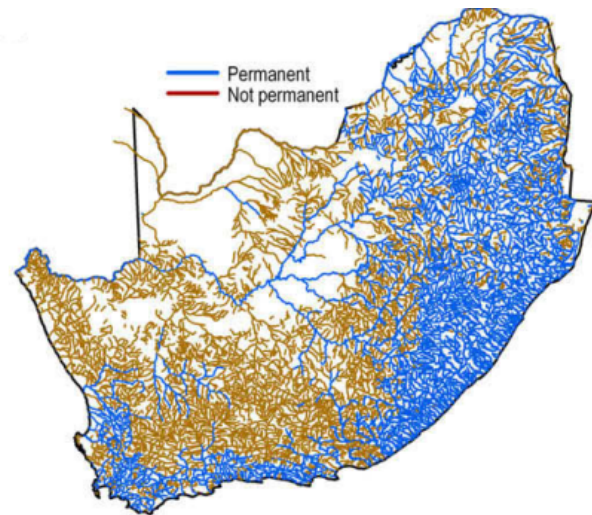
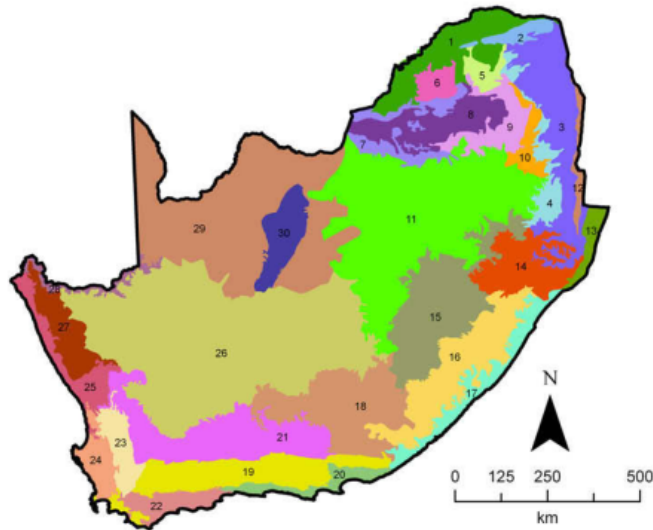
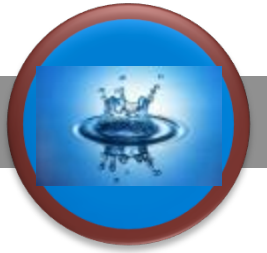
Mountain Stream



Lowland Stream



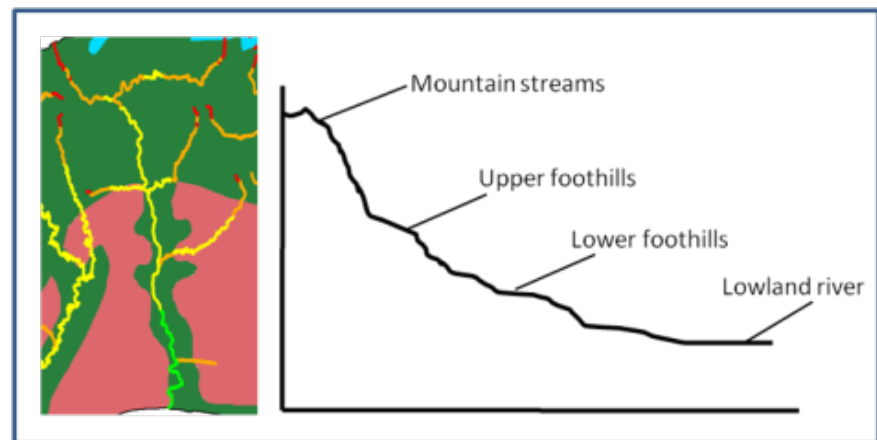
River ecosystem types



223 national river ecosystem types

Based on:

- Landscape classification – 31 freshwater ecoregions
- Flow variability – 2 flow regime categories
- Slope – 4 longitudinal zones







Categories



Categories of river ecological condition – used by Department of Water & Sanitation

6 categories; grouped to 4 for accounts

Ecological category	Description	
A	Unmodified, natural	Unmodified
B	Largely natural, few modifications	Largely natural with few modifications. A small change in natural habitats and biota may have taken place but the ecosystem functions are essentially unchanged
C	Moderately-modified	Moderately modified. Loss and change of natural habitat and biota have occurred, but the basic ecosystem functions are still predominantly unchanged
D	Largely-modified	Largely modified. A large loss of natural habitat, biota and basic ecosystem functions has occurred
E	Seriously-modified	Loss of natural habitat, biota and basic ecosystem functions is extensive
F	Critically/Extremely-modified	System has been modified completely with an almost complete loss of natural habitat and biota.

-  Natural or near-natural
-  Moderately modified
-  Heavily modified
-  Unacceptably modified

Based on degree of modification from a reference condition of “natural”

Not all rivers need to be natural
– hard-working rivers are often in a D condition (heavily modified), and can be sustainably used in that condition

River Ecosystem Accounts



National River Ecosystem Accounts: Extent and condition of river ecosystems

Based on 1999 and 2011
Present Ecological State (PES)
national datasets

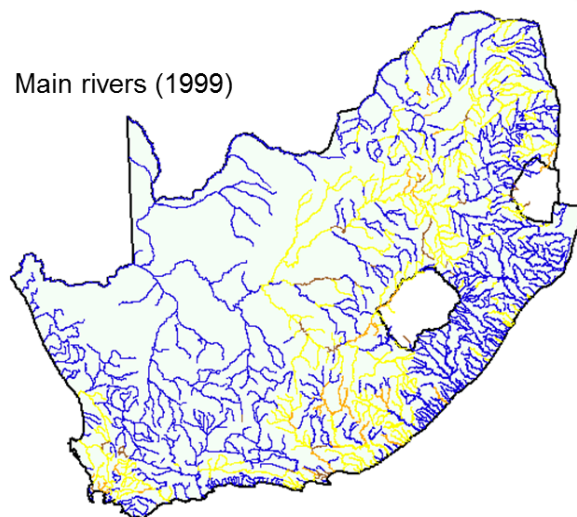


water & sanitation

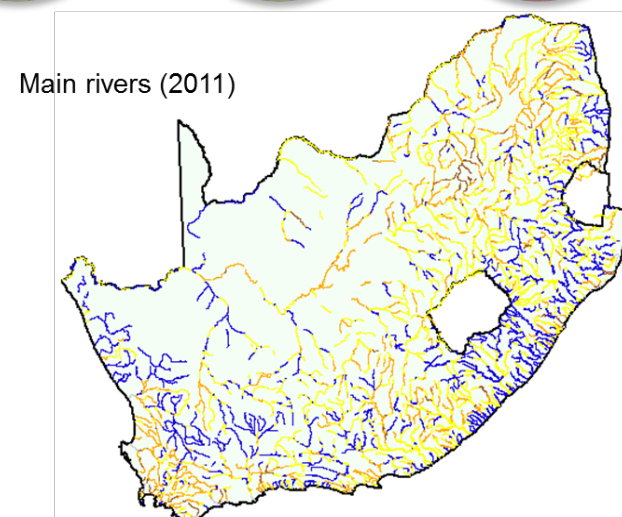
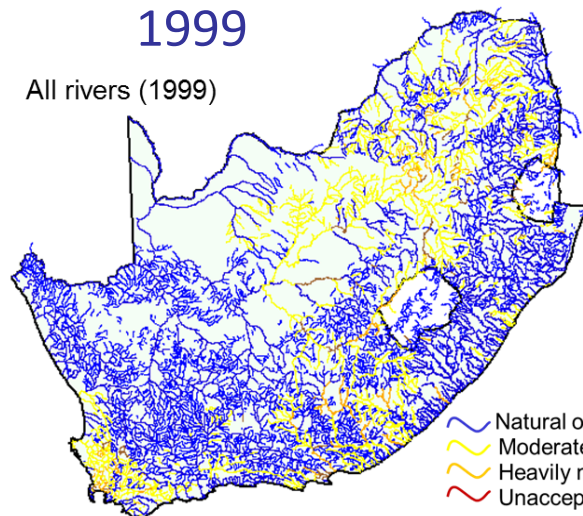
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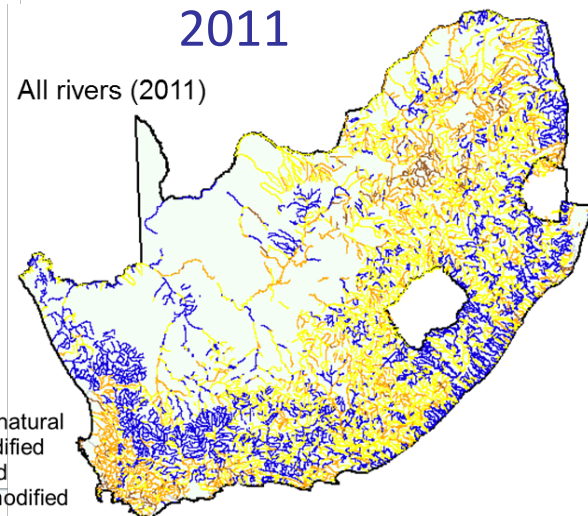
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1999

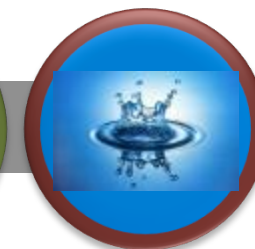


2011



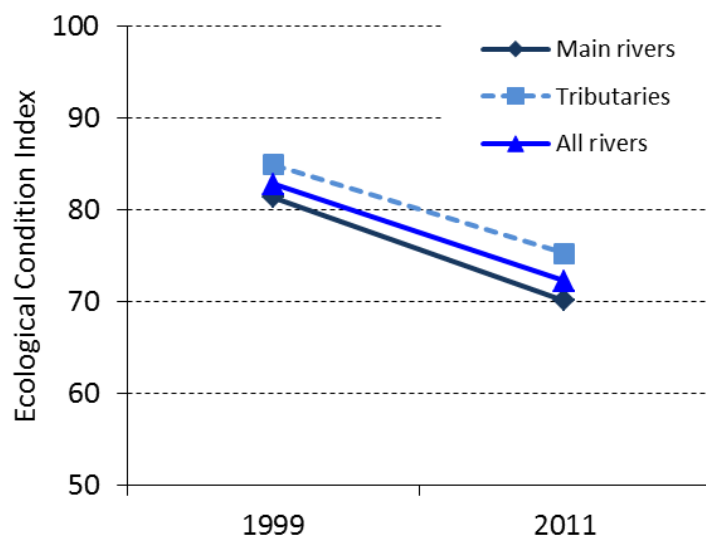
— Natural or near-natural
— Moderately modified
— Heavily modified
— Unacceptably modified

Ecological Condition Index



Ecological Condition Index

	Main rivers	Tributaries	All rivers
1999	81.3	84.9	82.8
2011	70.1	75.2	72.2
Change between 1999 and 2011	-11.2	-9.7	-10.6



Overall
10% decline in
ecological condition
of rivers
1999 - 2011

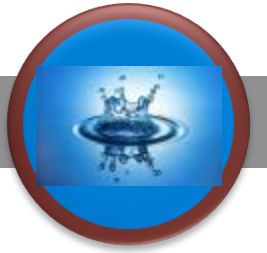
Impact



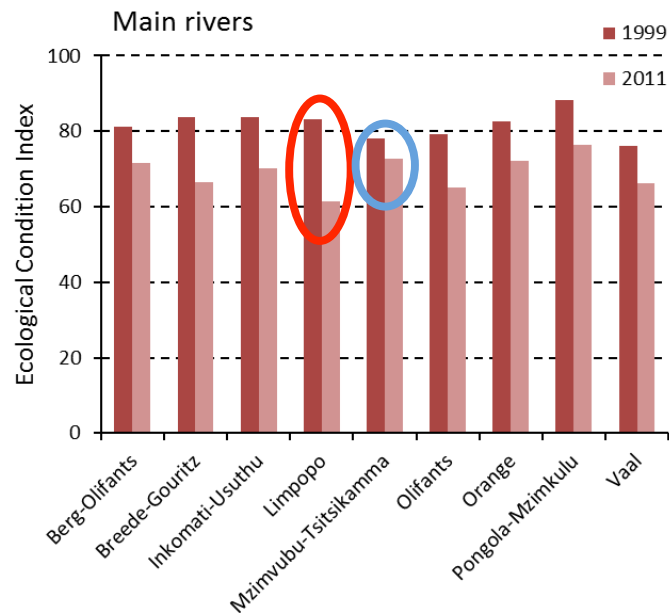
Lowland rivers often heavily impacted – fertile flood plains



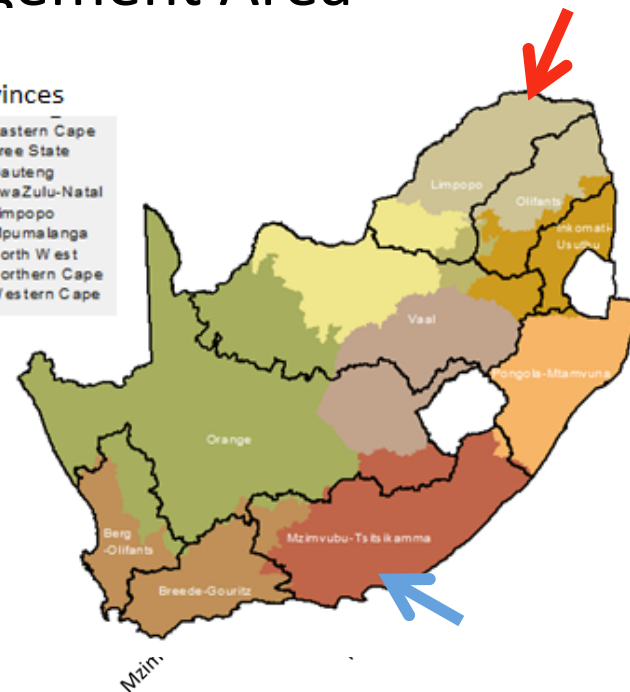
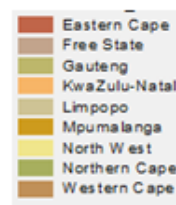
Ecological Condition Index



Change in Ecological Condition Index by Water Management Area



Provinces



- Biggest decline – Limpopo, esp. for main rivers (>20%)
- Smallest decline – Mzimvubu-Tsitsikamma

Related projects funded by the Water Research Commission



- **National Water Accounts**
 - Partnership with Stats SA
 - Water supply and use at national & Water Management Area level
 - Recently completed
- **Catchment-level Water Resource Accounts**
 - Led by UKZN Center for Water Resources Research
 - Spatial info on water depletion and withdrawal processes, linked to land and water management
 - Piloted in several catchments
 - To be completed in March 2019

New projects



Natural Capital Accounting & Valuation of Ecosystem Services



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United Nations



System of
Environmental
Economic
Accounting

Ecological Infrastructure for Water Security Project (GEF6)

→ Includes an NCA component

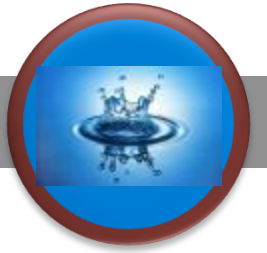


Natural Capital Accounting & Valuation of Ecosystem Services (NCA&VES)

- EU-funded
- 2018-2020
- Includes developing a 10-year National Strategy for NCA

Priority accounts identified for 2018-20 include:

- National land and ecosystem accounts
- Protected area accounts
- Marine ecosystem accounts
- Species accounts (e.g. rhino, Aloe ferox)
- Full suite of ecosystem asset and ecosystem service accounts for KZN



Ecological Infrastructure for Water Security Project

- GEF-funded
- 2018-2022
- Component 1 includes Natural Capital Accounting

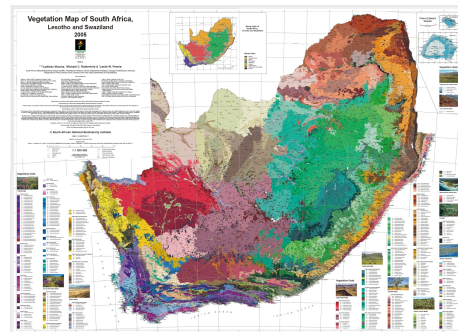
Priority accounts include:

- Accounts for ecological infrastructure assets e.g. Strategic Water Source Areas
- Catchment-level water resource accounts (building on WRC project)

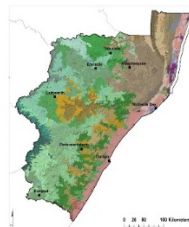
Natural Capital Accounting & Valuation of Ecosystem Services (NCA&VES) Project

National

National land and ecosystem asset accounts



Sub-national

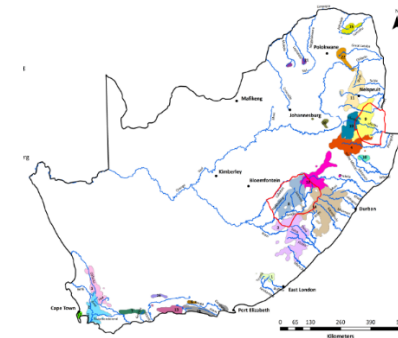


KZN: Full suite of ecosystem asset and ecosystem service accounts



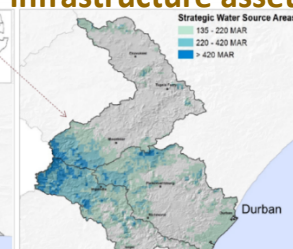
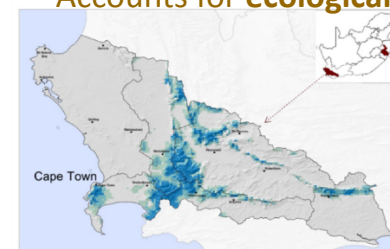
Ecological Infrastructure for Water Security Project: Outcome 1.1

Accounts for Strategic Water Source Areas



Demo catchments:

- Catchment-level **water resource** accounts
- Accounts for **ecological infrastructure assets**



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