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South African National Biodiversity Institute



# Policy applications of ecosystem accounts: Emerging examples from South Africa



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# Ecosystem accounting work in South Africa

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



United Nations  
Statistics Division



Convention on  
Biological Diversity



NORWEGIAN MINISTRY  
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our future through science



Conservation, Partnerships & Ecotourism



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# Now building on this with NCA&VES project 2018-2020

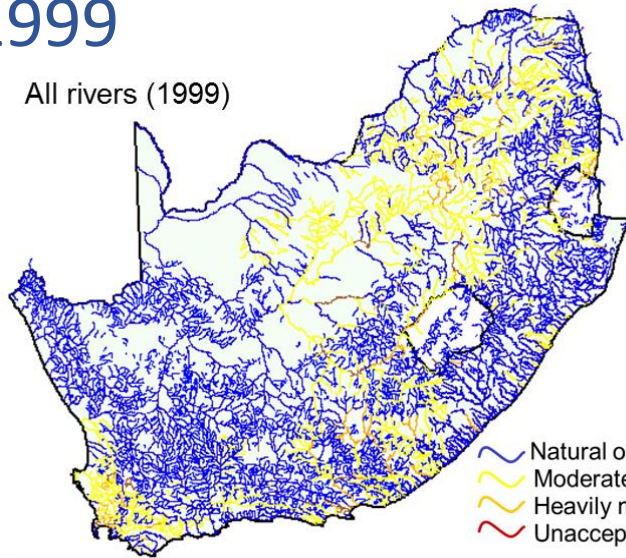
## Natural Capital Accounting & Valuation of Ecosystem Services



# National River Ecosystem Accounts

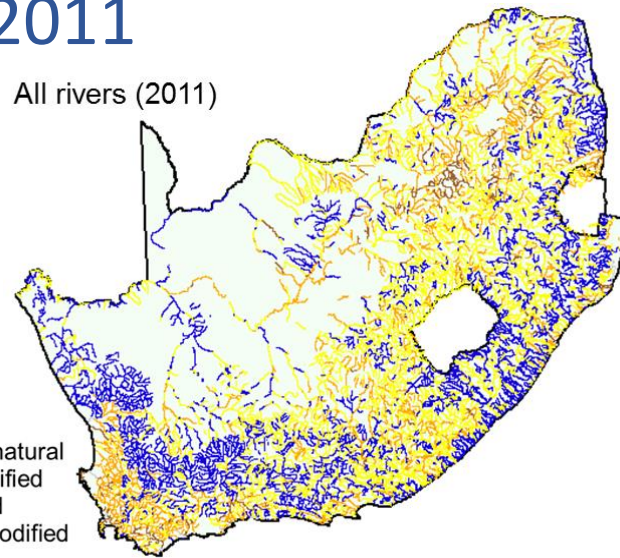
1999

All rivers (1999)



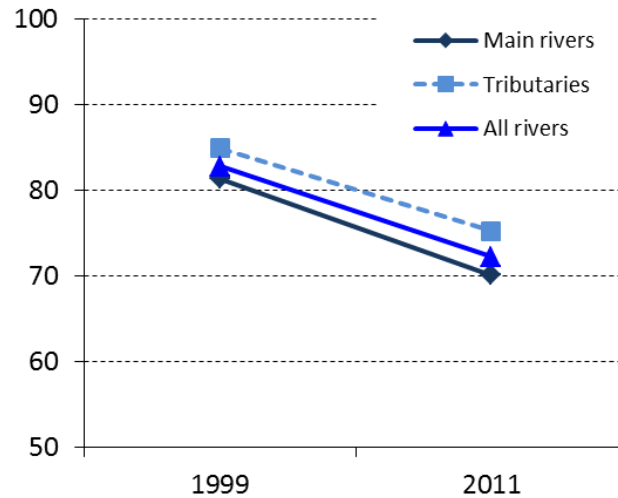
2011

All rivers (2011)



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

Ecological Condition Index



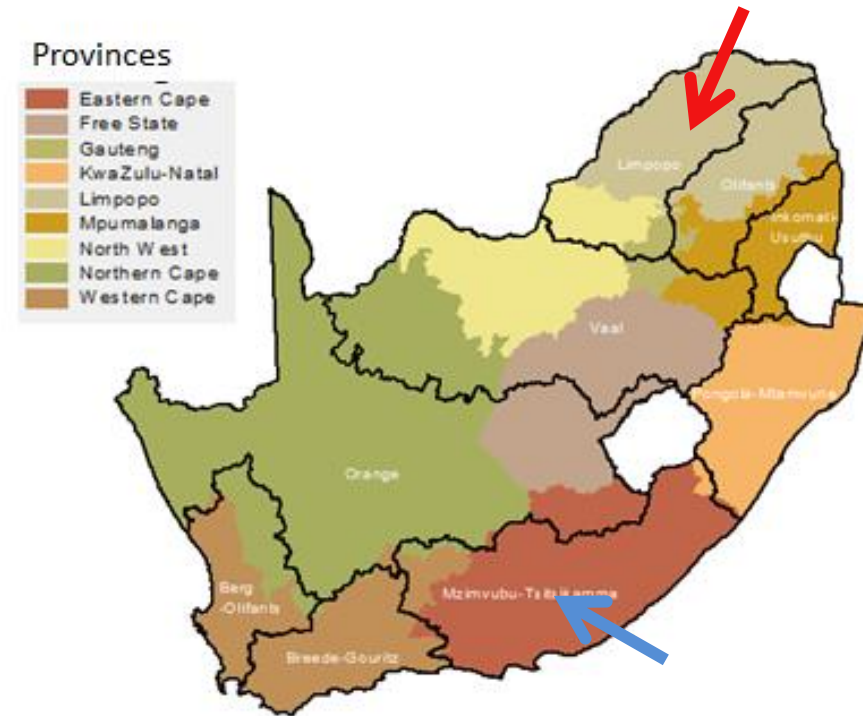
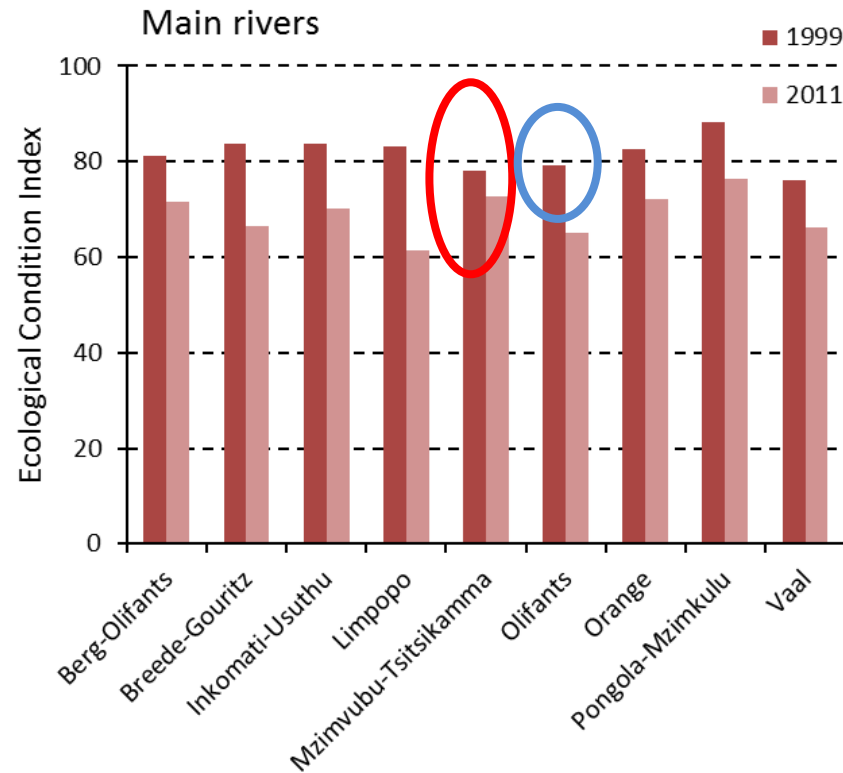
Overall  
**10% decline**  
ecological condition of  
rivers  
1999 - 2011



Information for national policies, such as  
**National Water & Sanitation Master Plan**

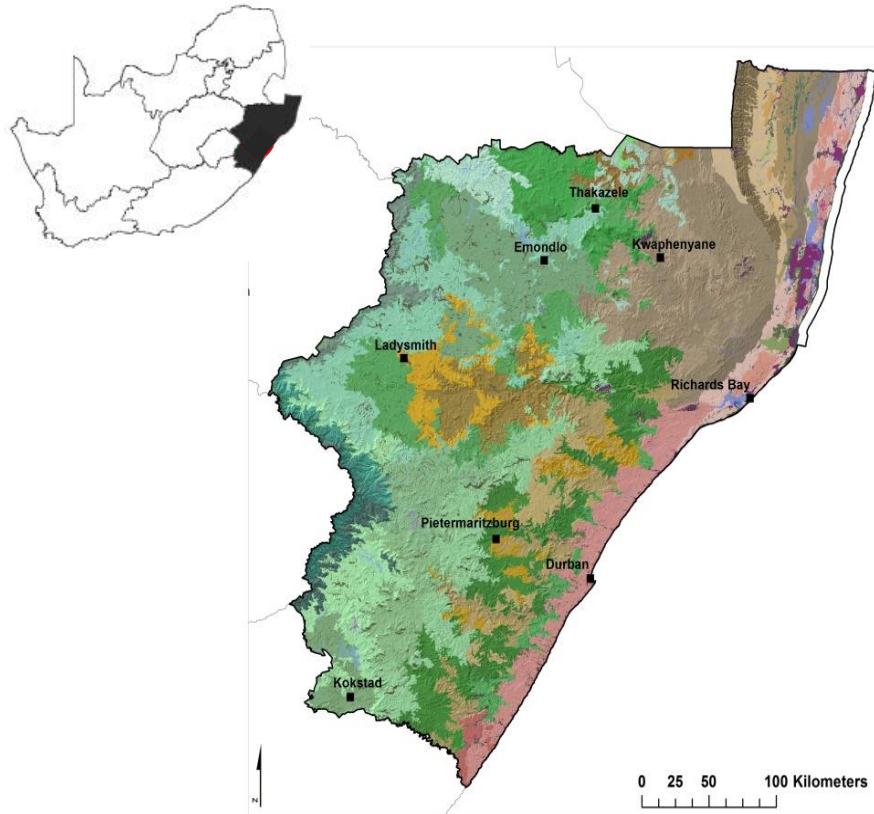
# Change in Ecological Condition Index by Water Management Area

→ informs the work of Catchment Management Agencies



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

# Pilot: Land and ecosystem accounts for KwaZulu-Natal province

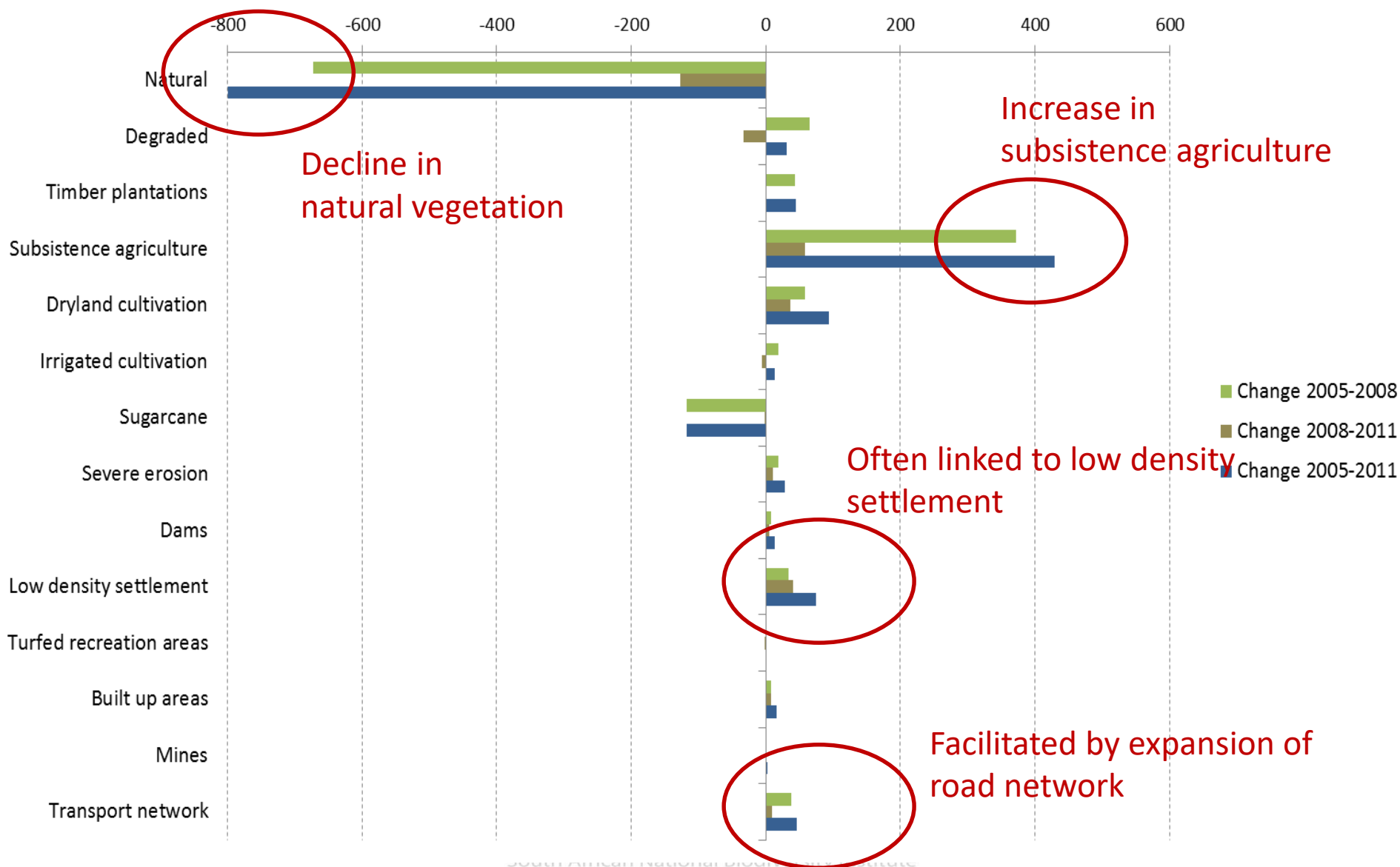


Ecosystem types  
(~100 – mapped at a fine scale)

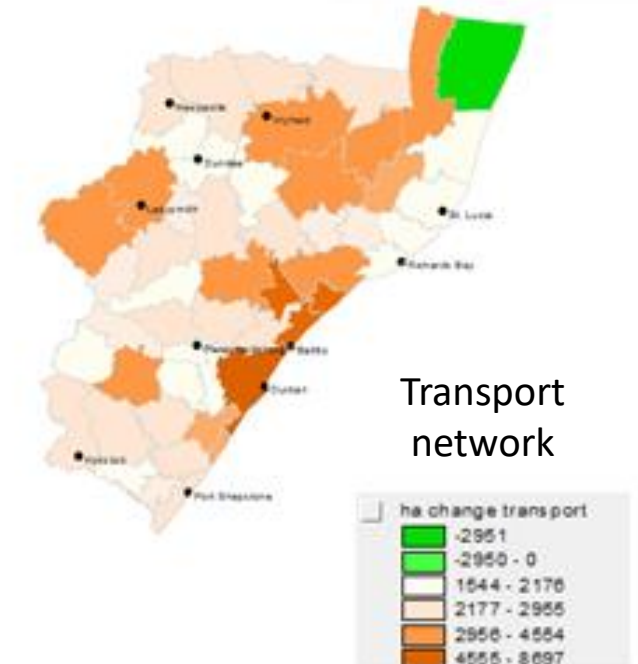
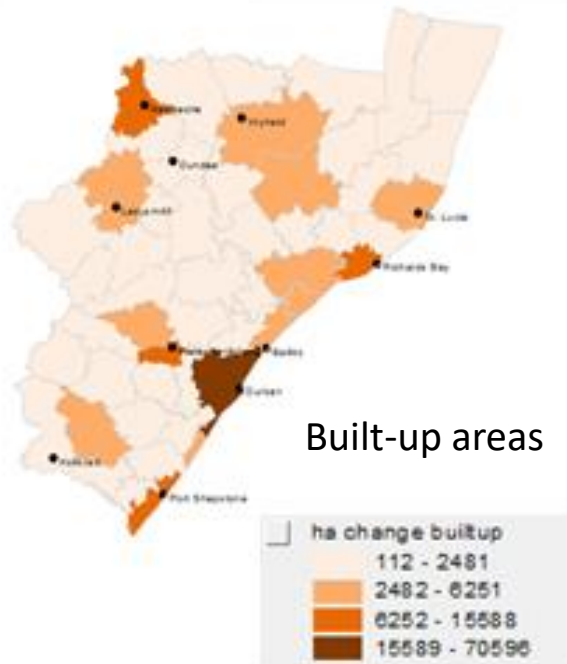
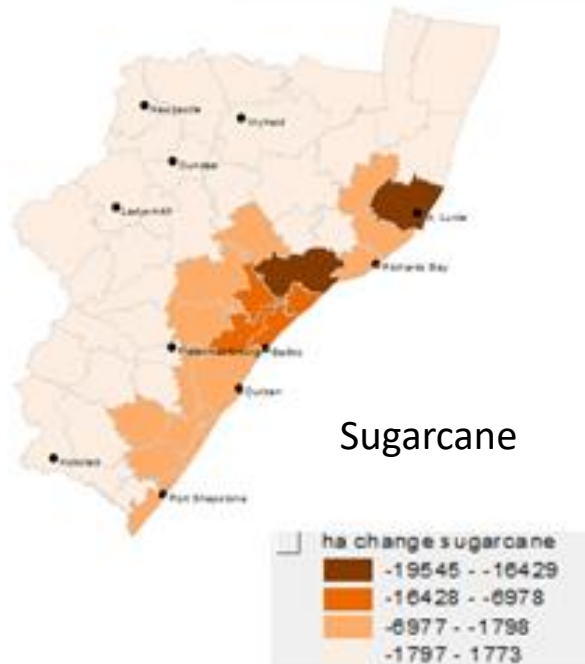
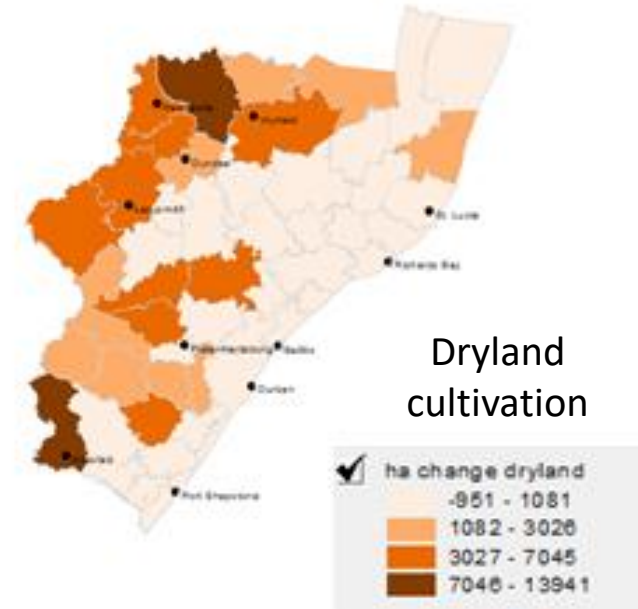
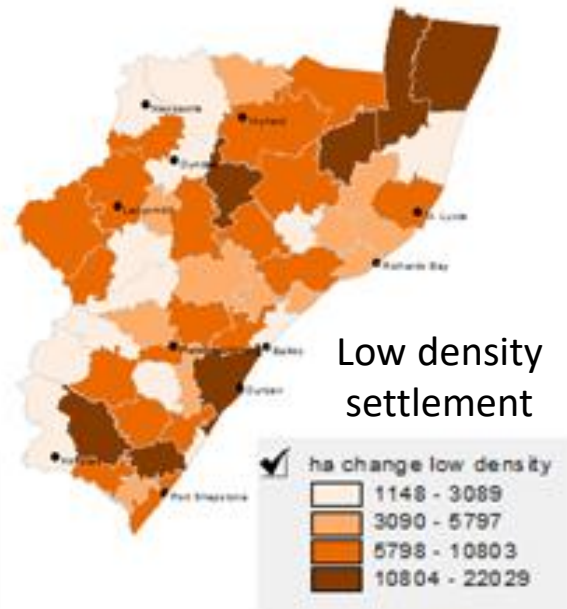
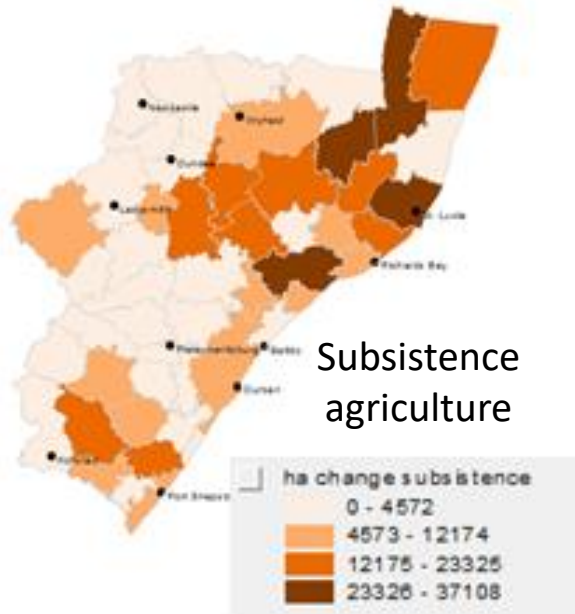


Land cover  
(2005, 2008, 2011)

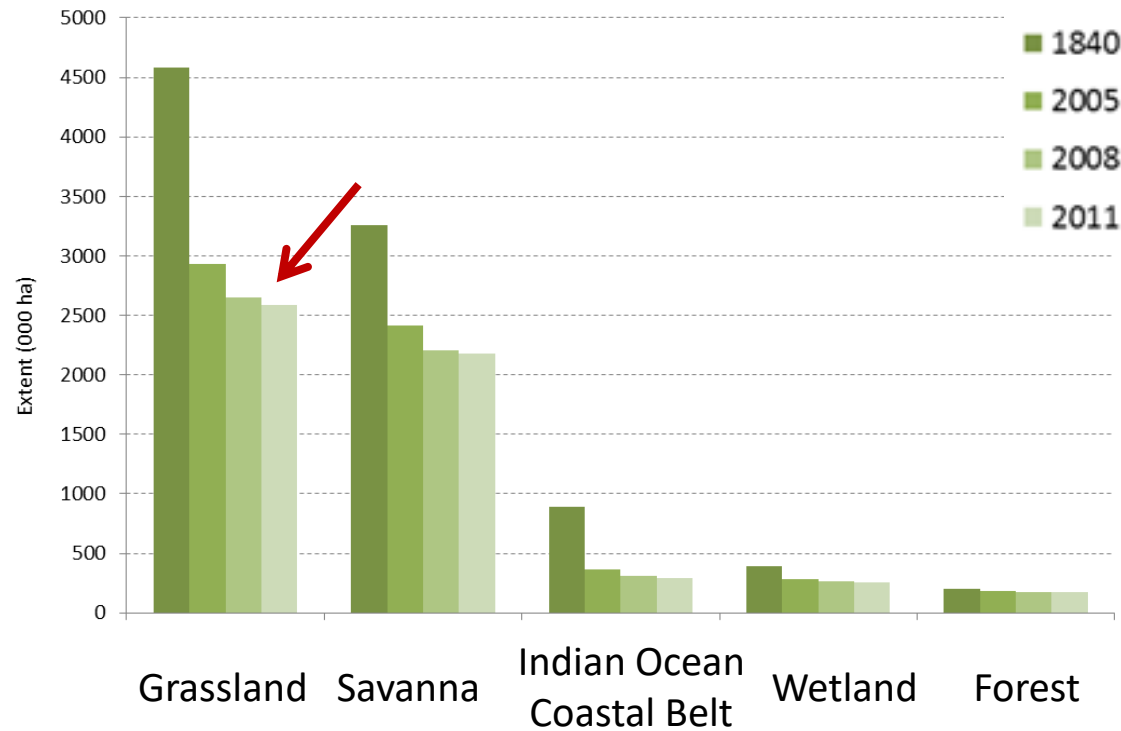
# What key changes are taking place in the landscape?



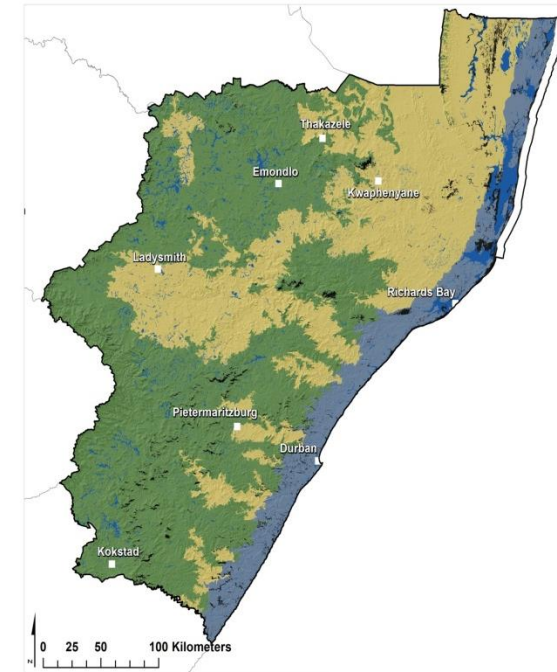
# Which municipalities are most affected?



# Which biomes are most at risk?



- Largest decline in extent – Grassland biome
- Important role in water provision, also rangelands



## Biomes



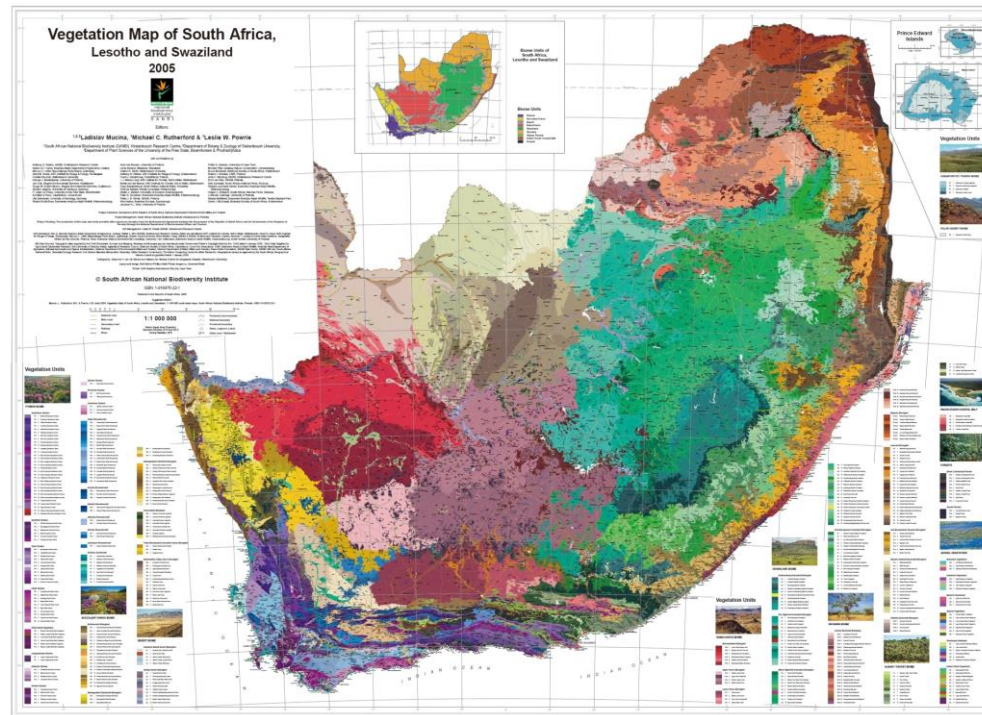
# Which ecosystem types are most at risk?

## A few examples – clear links to ecosystem services

		Increases (positive numbers) and decreases (negative numbers) from other land cover classes within each vegetation type or wetland type															
Hectares		Natural	Degraded	Fallow lands	Plantation	Subsistence agriculture	Dryland agriculture	Irrigated agriculture	Sugarcane	Rehabilitated mines	Severe erosion	Dams	Low density settlement	Turfed recreation areas	Built-up areas	Mines	Transport
<b>Vegetation type</b>	<b>Biome</b>																
Freshwater Wetlands	Wetland	-8336	1039	563	365	3104	2331	548	-1102	-193	-1873	2500	521	-596	594	-206	73
Alluvial Wetlands	Wetland	-18363	-344	775	209	10066	5045	680	-2710	-1961	-7854	11512	1967	-683	864	-828	158
Southern Drakensberg Highland Grassland	Grassland	-1053	895	0	50	1	30	0	0	0	-32	35	37	1	4	-63	9
Northern Drakensberg Highland Grassland	Grassland	-1744	1685	0	-13	-27	1	0	0	-68	64	-274	350	-28	41	-15	2
Subtropical Dune Thicket	IOCB	-285	293	0	1	1	0	0	-11	0	0	-2	3	-7	8	0	

- Conversion of **alluvial wetlands** (floodplains) and **freshwater wetlands** to subsistence agriculture, dryland cultivation and dams → Water quality impacts? Flood risk?
- Degradation of **Subtropical Dune Thicket** → Coastal storm risk?

# To be completed in 2019: National land and ecosystem accounts



← National ecosystem types



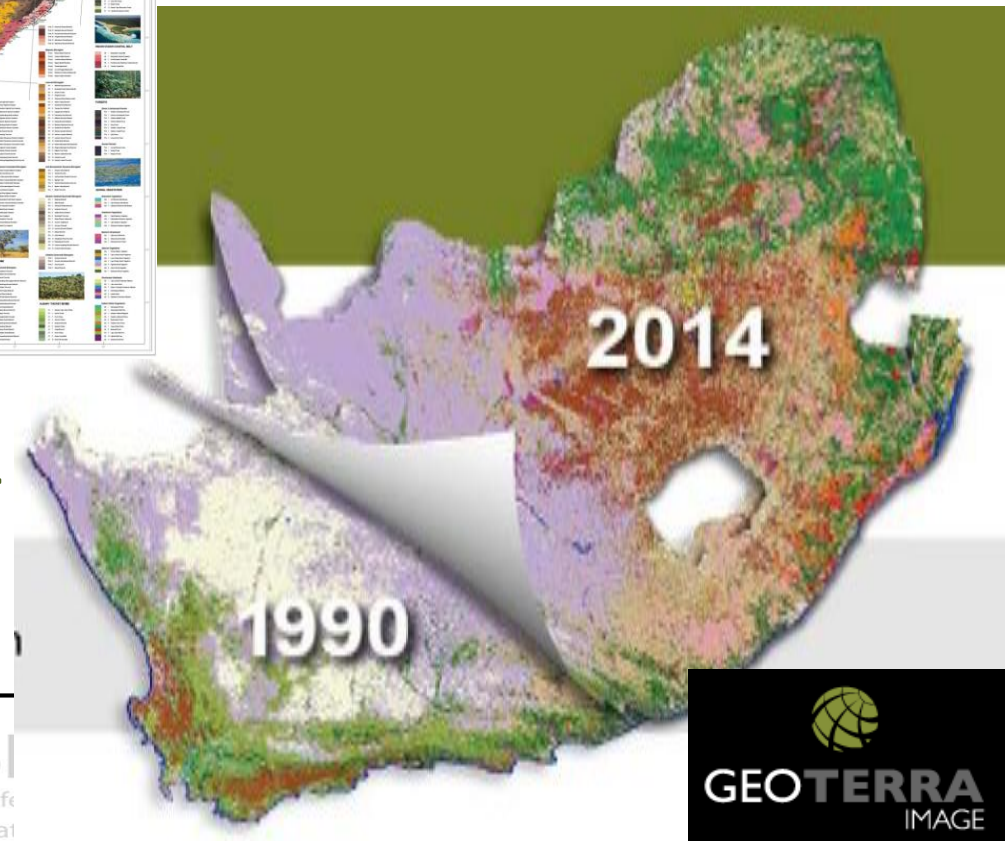
Time series national land cover  
now available →

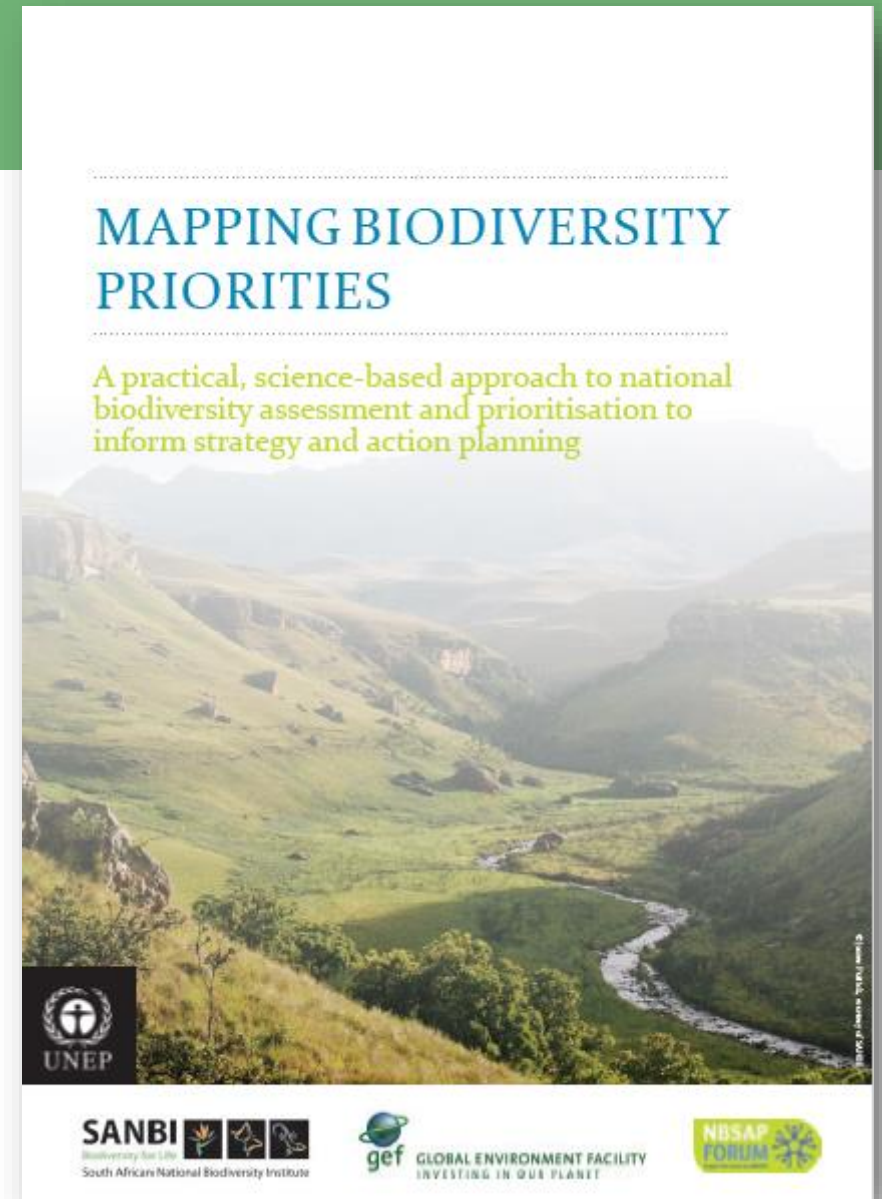
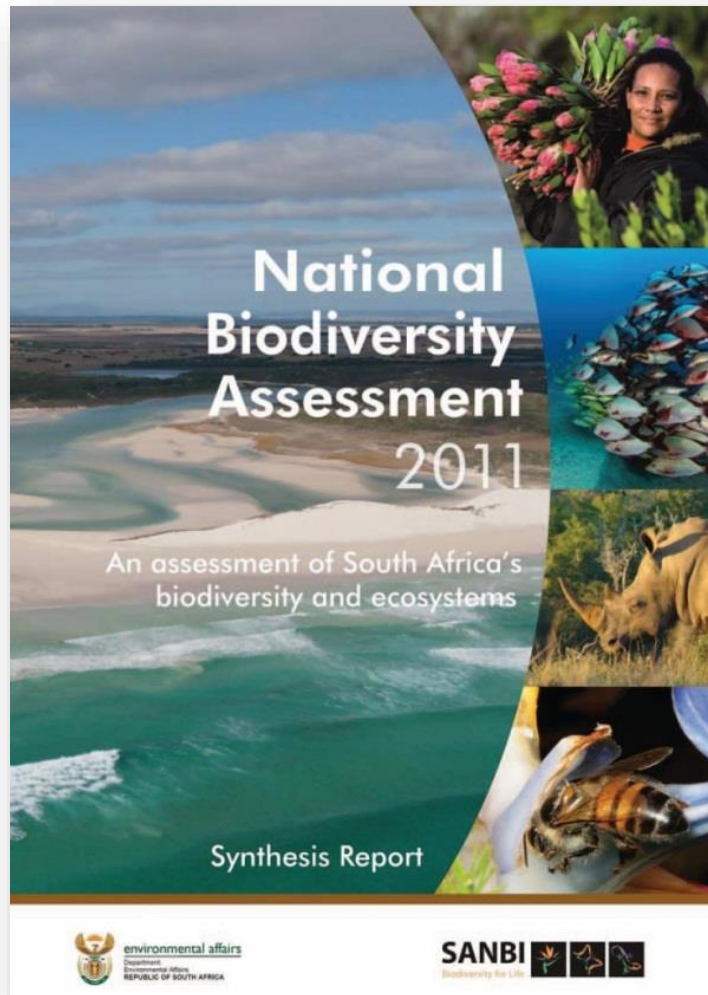


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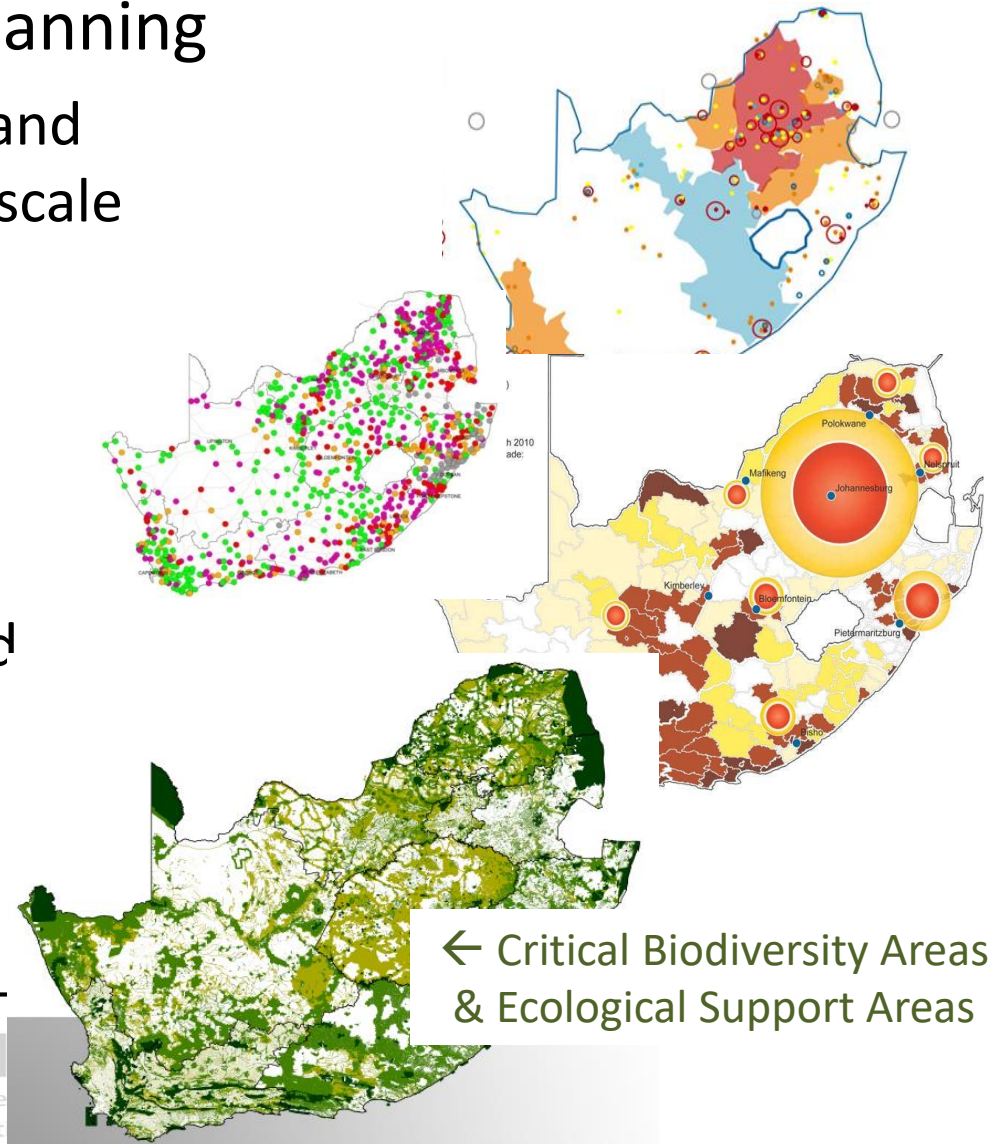


# Four promising policy applications for ecosystem accounts

- Spatial planning
  - Strategic national level
  - Municipal land use planning
- Water security
- Investment in ecosystem restoration
- Protected area expansion

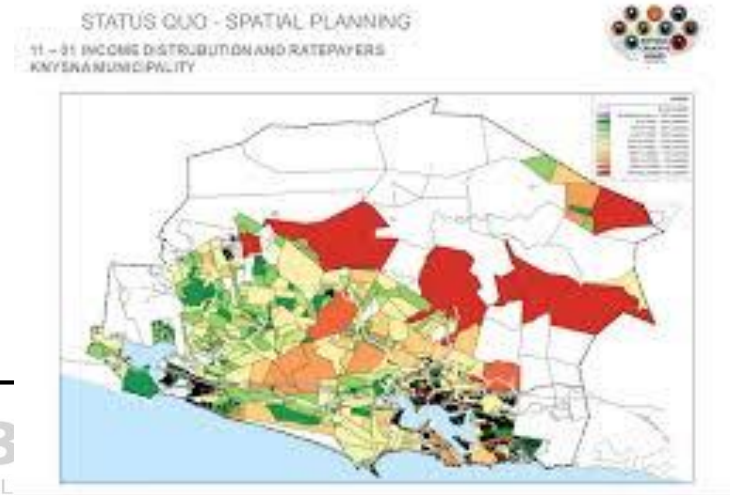
# Policy application 1: Spatial planning

- Strategic development planning
  - Understanding synergies and trade-offs at the national scale
- Policy opportunity:
  - National Spatial Development Framework
  - Currently being developed led by the Presidency
  - In support of the National Development Plan

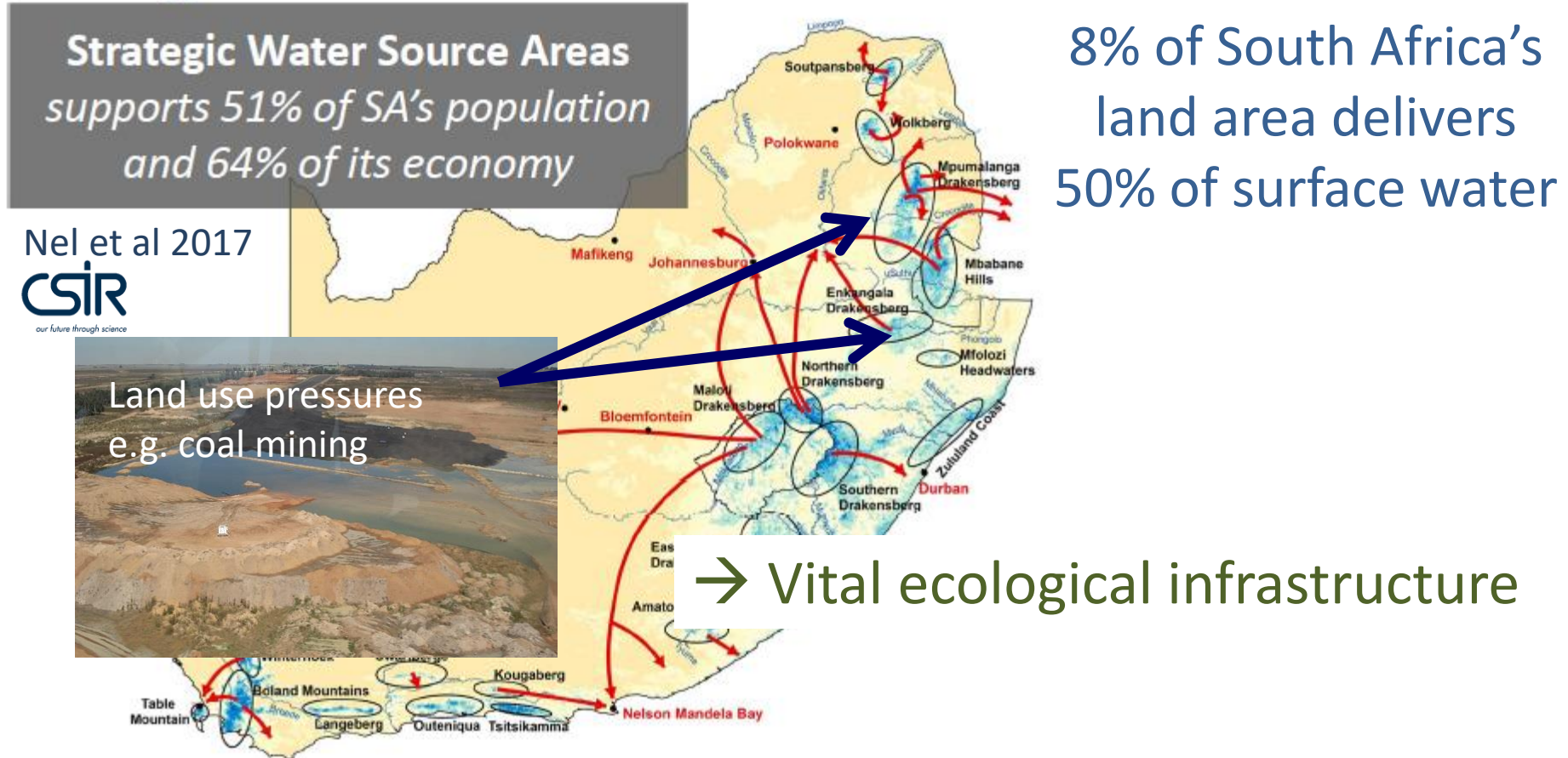


# Policy application 1: Spatial planning

- Municipal land-use planning
- Policy opportunity:
  - Spatial Planning and Land Use Management Act (SPLUMA)
    - new system, implementation currently underway
  - Spatial Development Frameworks
  - Land Use Schemes



# Policy application 2: Water security



Could extract accounts for ecological infrastructure assets  
from national land and ecosystem accounts,  
to inform better management of these assets

# Policy application 3:

## Investment in ecosystem restoration

Environmental public works programmes in South Africa create thousands of work opportunities every year

Which ecosystems are priorities for intervention?

What is the return on investment?

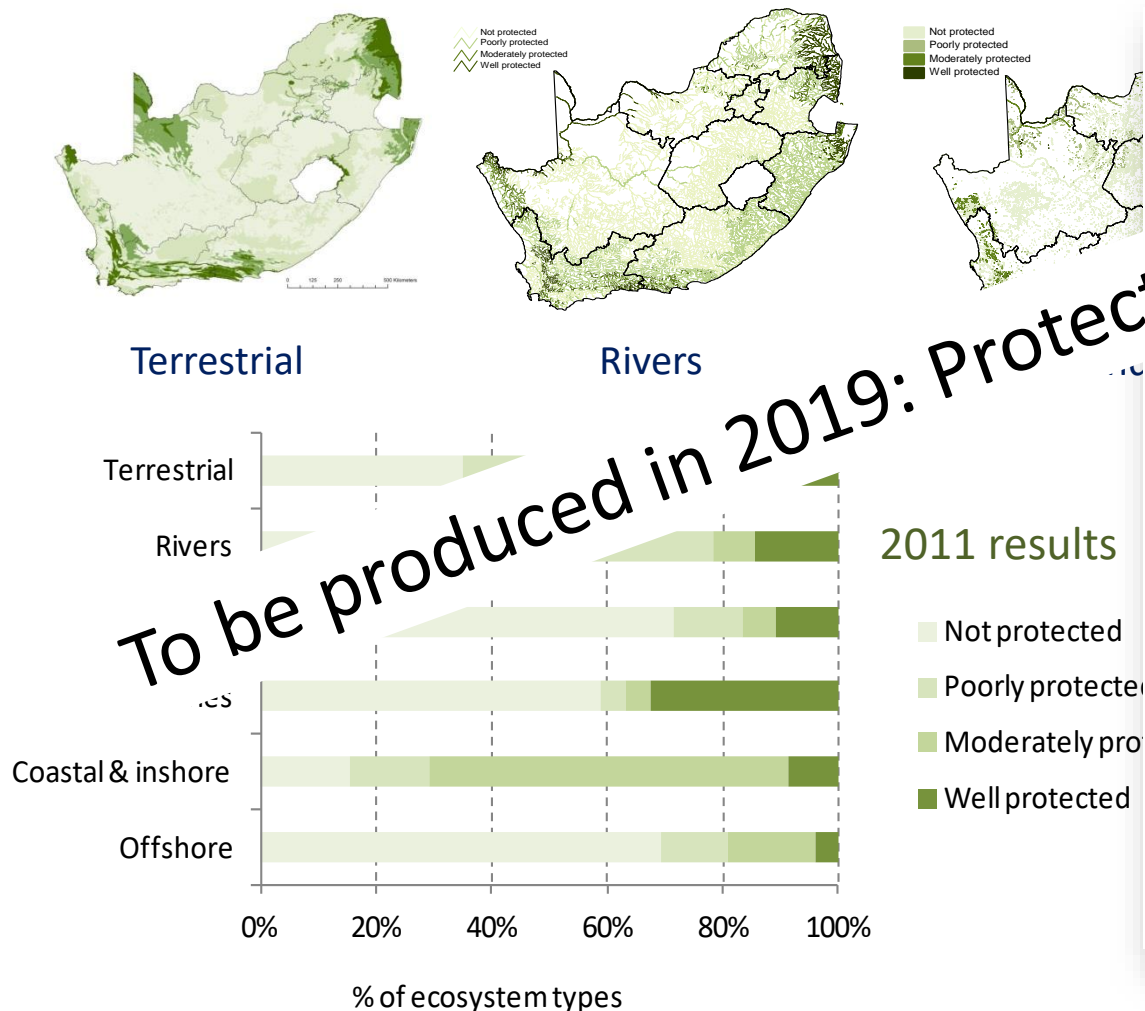


**Wetland restoration  
through Working for Wetlands Programme**

Photo: Ellen Elmendorp

# Policy application 4: Protected area expansion

National Biodiversity Assessment Includes assessment of **ecosystem protection level**:  
Are our ecosystems well represented in protected areas?



To be produced in 2019: Protected area accounts

2011 results

Not protected  
Poorly protected  
Moderately protected  
Well protected



