

# What is ecosystem accounting?

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National NCA Forum

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Statistics South Africa Auditorium, Pretoria





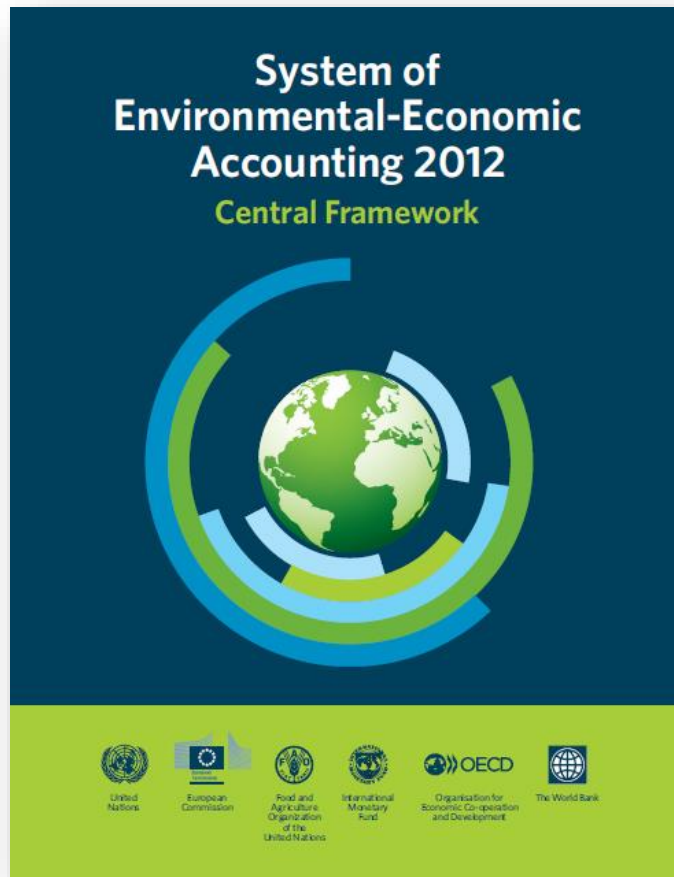
Reminder...

**Natural Capital Accounting** is the systematic measurement of stocks and flows of natural resources

**Ecosystem accounting** is one component of NCA



# The measurement framework for NCA is the **SEEA**



**Central Framework:** Deals with accounts for stocks and flows of **individual natural resources**, e.g. minerals, water, timber, fish



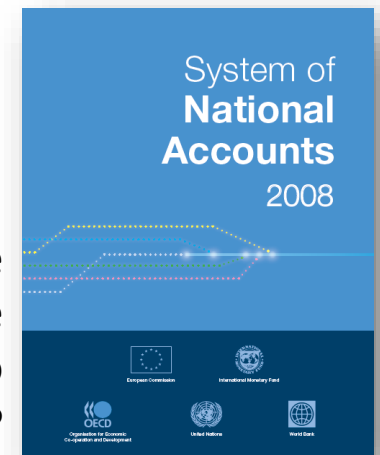
**Ecosystem Accounting:** Deals with accounts for **ecosystem assets** and **ecosystem services**



System of  
Environmental  
Economic  
Accounting

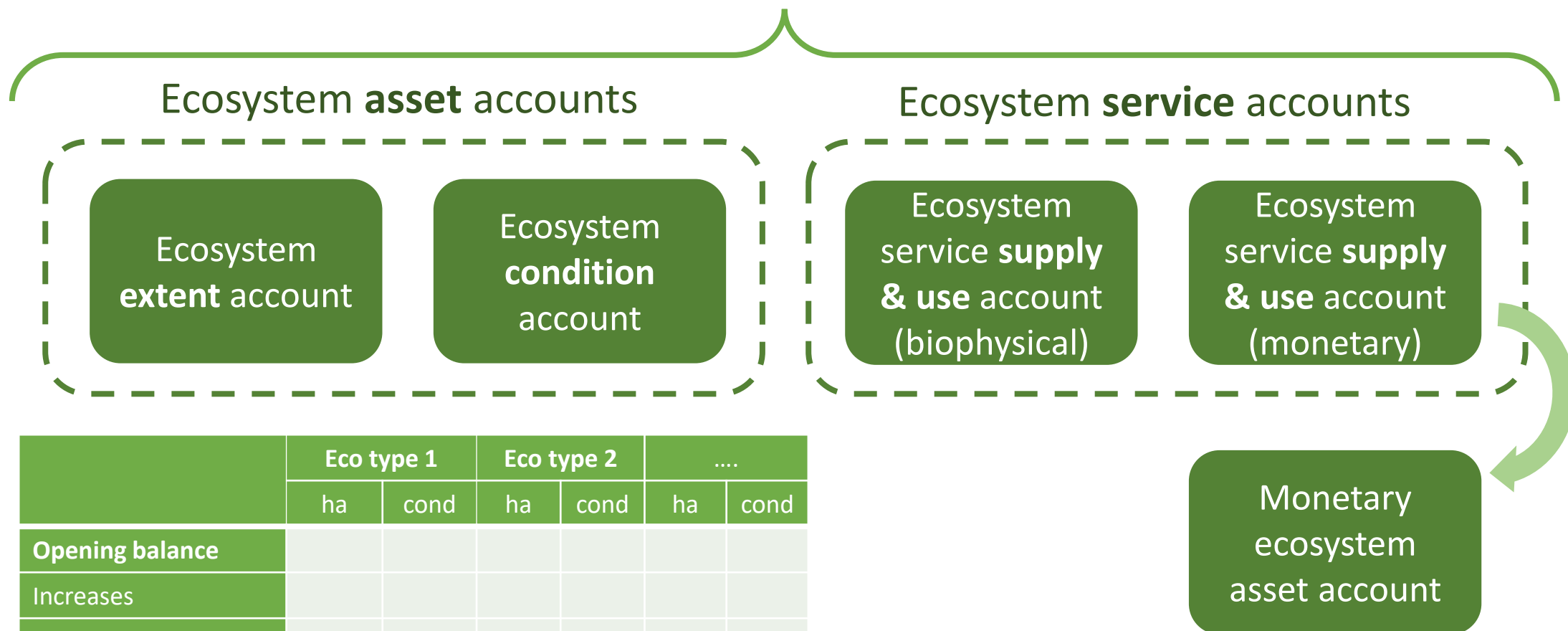
SEEA Ecosystem Accounting  
adopted by the UN Statistical  
Commission in March 2021

Has the same  
status as the  
SNA, used to  
calculate GDP



# Overview of SEEA ecosystem accounts

## Core set of ecosystem accounts



|                 | Eco type 1 |      | Eco type 2 |      | .... |      |
|-----------------|------------|------|------------|------|------|------|
|                 | ha         | cond | ha         | cond | ha   | cond |
| Opening balance |            |      |            |      |      |      |
| Increases       |            |      |            |      |      |      |
| Decreases       |            |      |            |      |      |      |
| Net change      |            |      |            |      |      |      |
| Closing balance |            |      |            |      |      |      |

# What does it mean to take an **accounting approach** to measurement?

- Focus on stocks and flows
- Structured tables – always exactly the same structure
- Table entries must balance
- Backward-looking perspective – account for what has already happened
- Consistent concepts and definitions
- Use of hierarchical classification systems

# Accounts are underpinned by classification systems, refined over time

- National accounts
  - **Standard Industrial Classification** – classifies economic sectors (e.g. mining, manufacturing, agriculture)
  - **Central Product Classification** – classifies products and services (e.g. food and beverages, machinery, financial services)
  - Others....
- Ecosystem accounts
  - **Global Ecosystem Typology** – classifies ecosystem types
  - Reference list of ecosystem services (not yet a fully developed classification)



## IUCN Global Ecosystem Typology 2.0

Descriptive profiles for biomes and ecosystem functional groups

David A. Keith, Jose R. Ferrer-Paris, Emily Nicholson and Richard T. Kingsford (editors)



INTERNATIONAL UNION FOR CONSERVATION OF NATURE



Global  
Ecosystem  
Typology

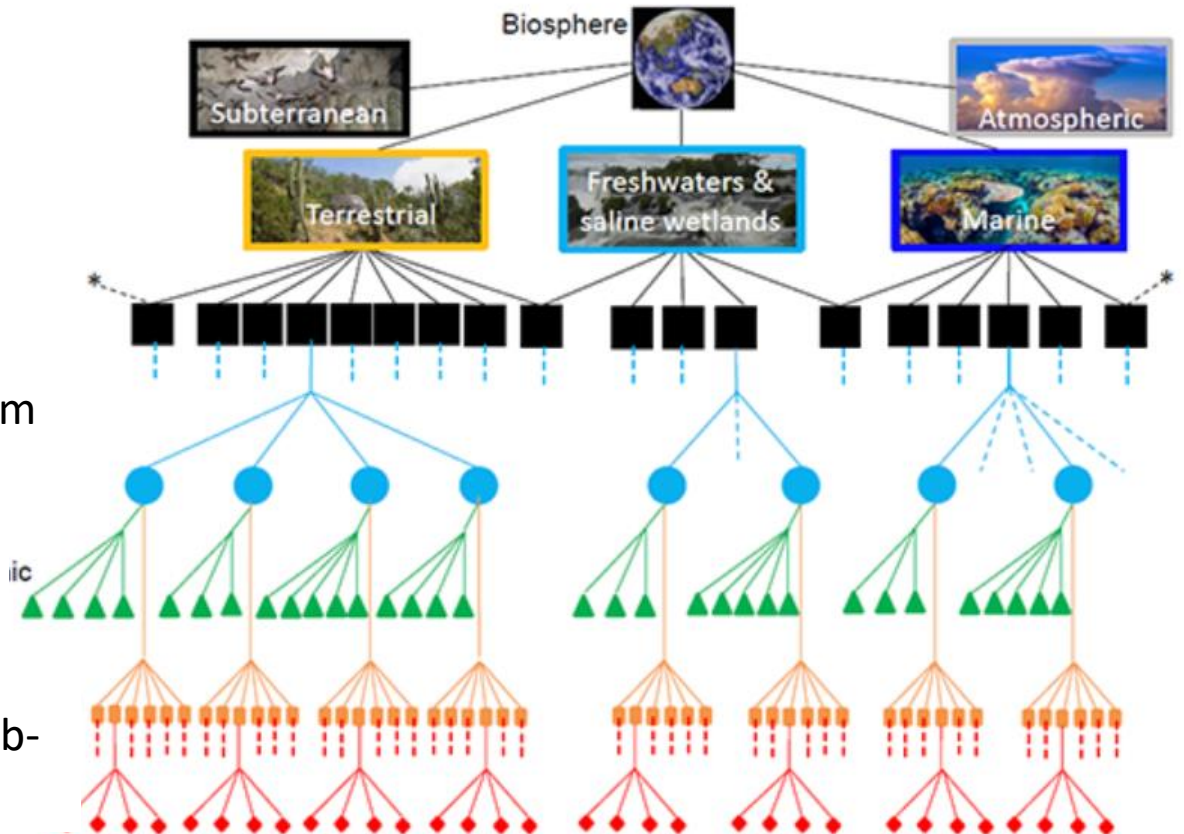
## Nested hierarchical classification of different **ecosystem types**

1. Realms

2. Biomes

3. Ecosystem functional groups

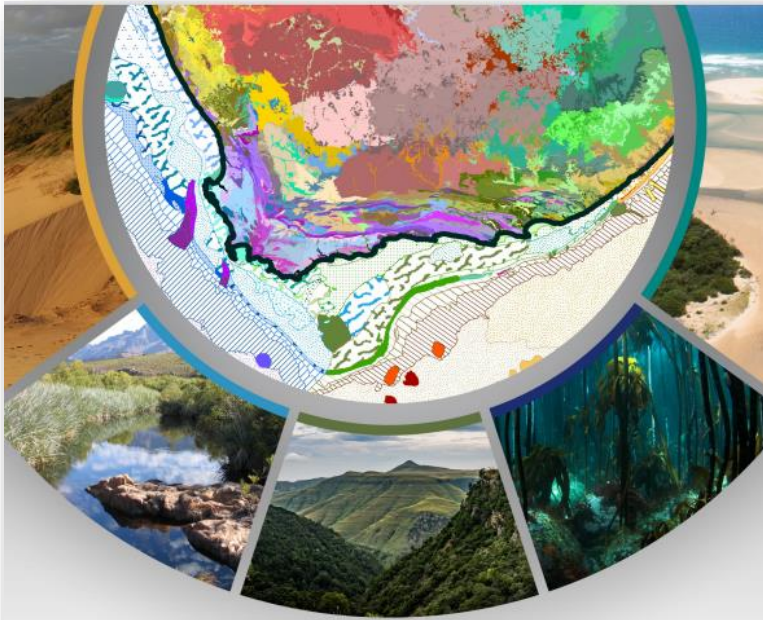
4-6 – more detailed sub-divisions



Can be adapted by countries to suit their national ecological context

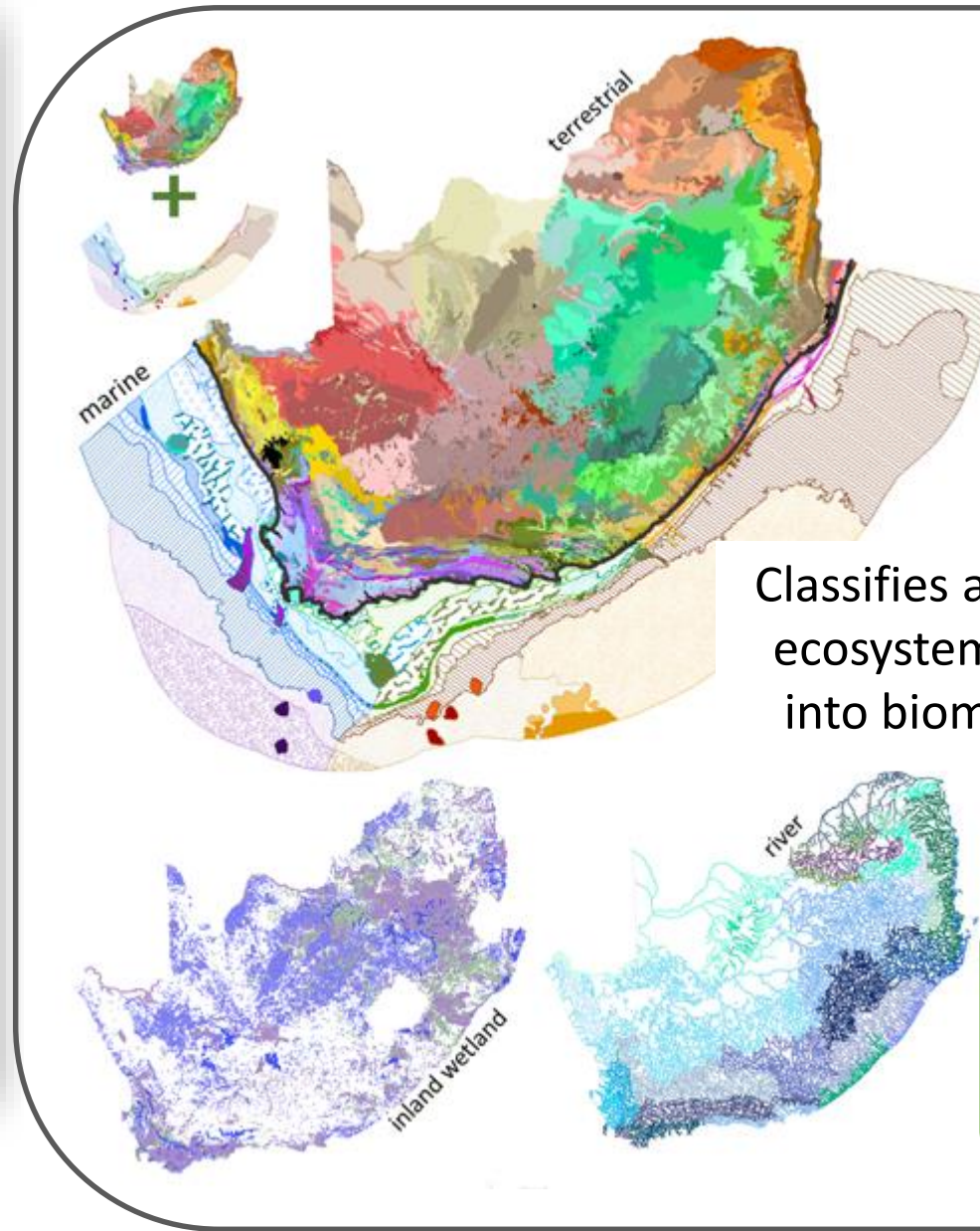


# South African National Ecosystem Classification System



## South African National Ecosystem Classification System Handbook

**SANBI**  
Biodiversity for Life  
South African National Biodiversity Institute



Developed by SANBI  
in collaboration with  
partners, adopted by  
Stats SA as a  
standard in 2021

Classifies and maps ~1000  
ecosystem types, nested  
into biomes and realms

Provides the  
**foundation** for our  
ecosystem accounts

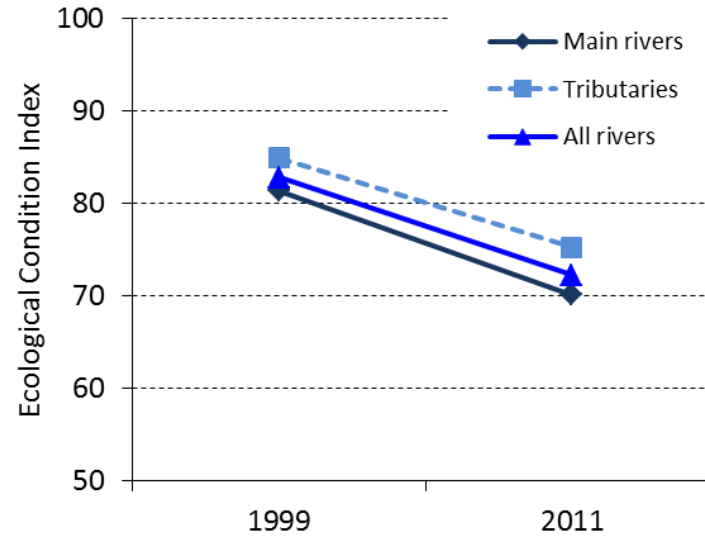


Ecosystem accounts in SA to date,  
in chronological order

# National River Ecosystem Accounts – extent and condition

2015

Tested an  
Ecosystem Condition Index



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

## Advancing Natural Capital Accounting, 2014-2015



# Accounts for SA's estuaries – extent, condition, ecosystem services

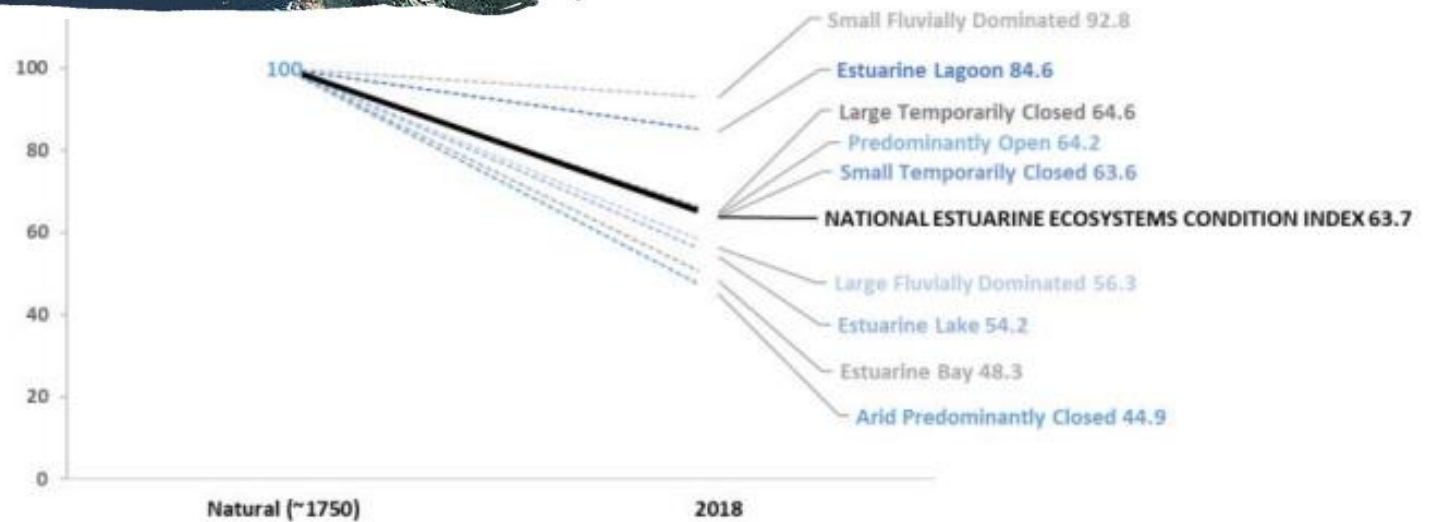
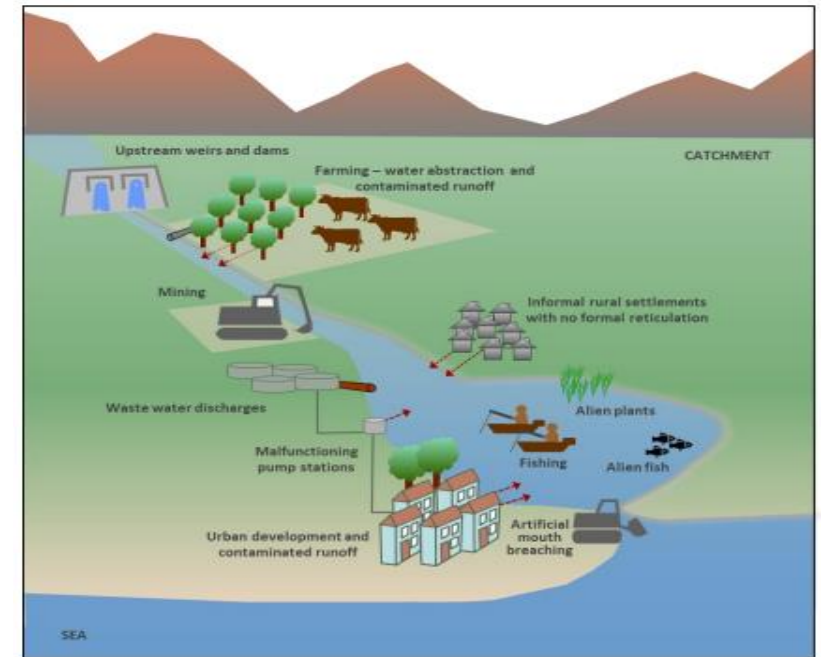
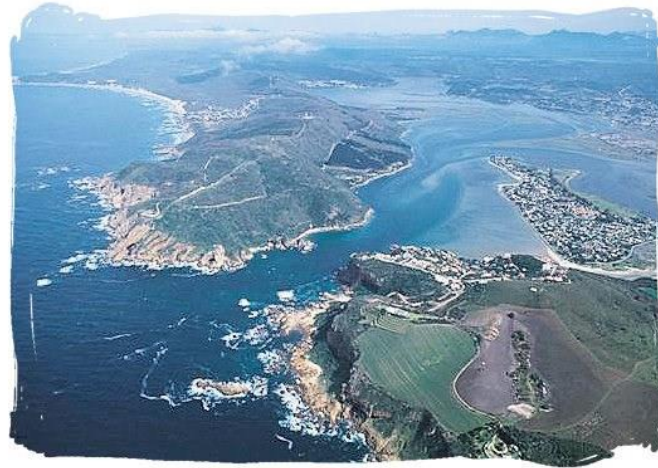
2020



## EXPERIMENTAL ECOSYSTEM ACCOUNTS FOR SOUTH AFRICA'S ESTUARIES

Extent, Condition and Ecosystem  
Services Accounts

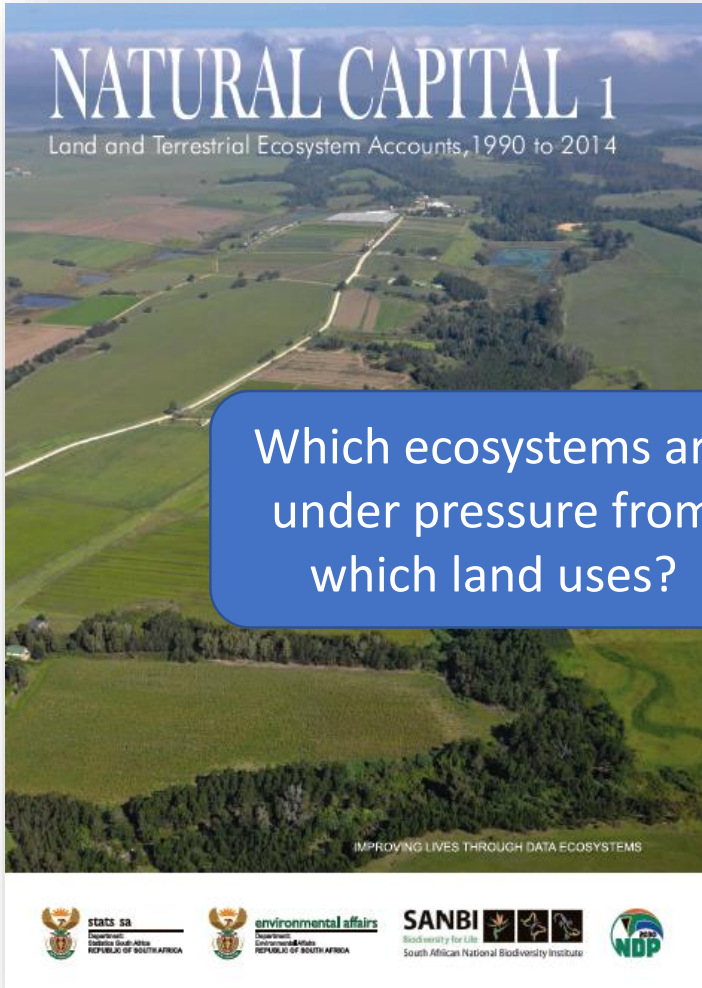
October 2020



**Figure 5.1: National Estuarine Ecosystem Condition Index aggregated from the nine estuary functional types overall condition**

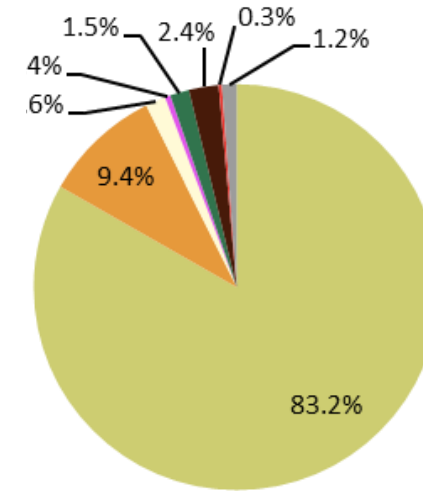
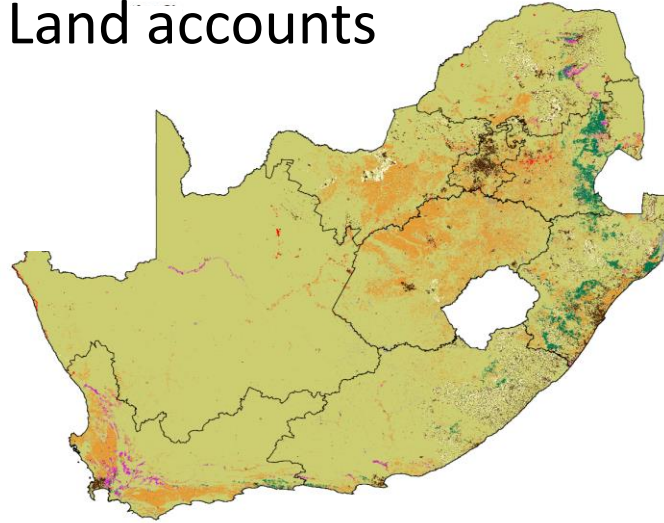


# Stats SA's new *Natural Capital* series, launched Dec 2020 with Land and Terrestrial Ecosystem Accounts, 1990 to 2014



Which ecosystems are under pressure from which land uses?

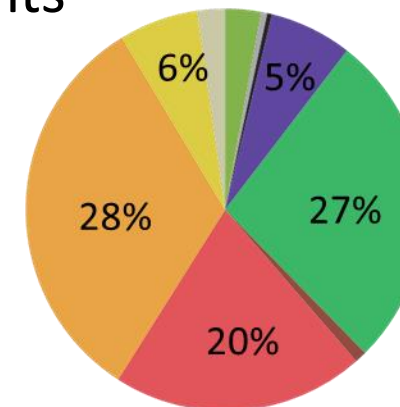
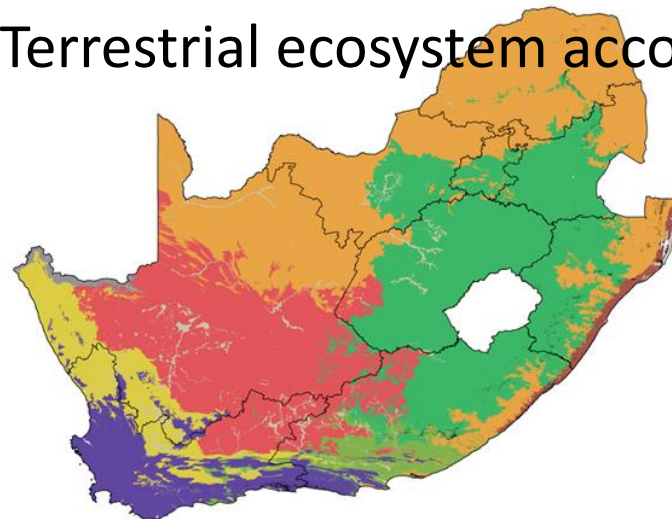
## Land accounts



## National land cover (tier 2) 2014

- Natural or semi-natural
- Commercial crops
- Subsistence crops
- Orchards and vines
- Timber plantations
- Urban
- Mines
- Waterbodies

## Terrestrial ecosystem accounts



## Biomes

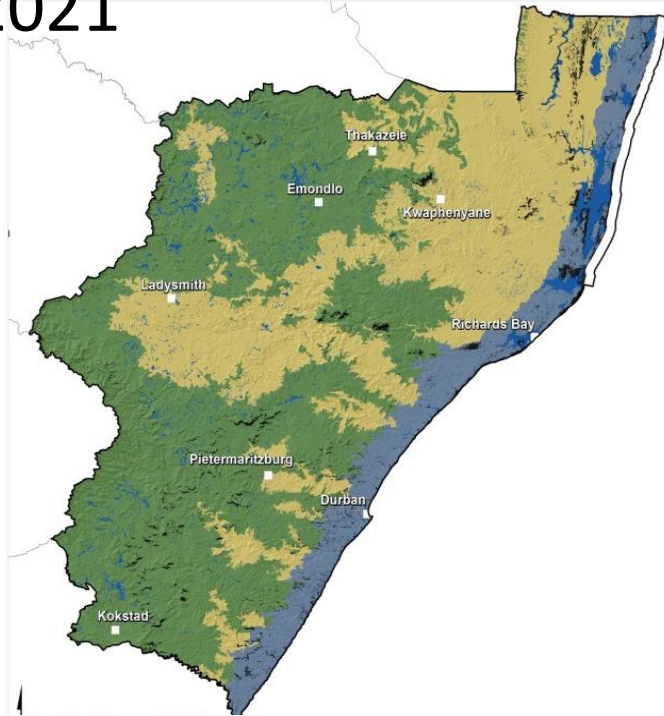
- Albany Thicket
- Desert
- Forests
- Fynbos
- Grassland
- Indian Ocean Coastal Belt
- Nama-Karoo
- Savanna
- Succulent Karoo
- Azonal Vegetation



System of  
Environmental  
Economic  
Accounting

# Ecosystem services accounts for KwaZulu-Natal

2021



## Biomes

- Forests
- Grassland
- Indian Ocean Coastal Belt
- Savanna
- Wetlands

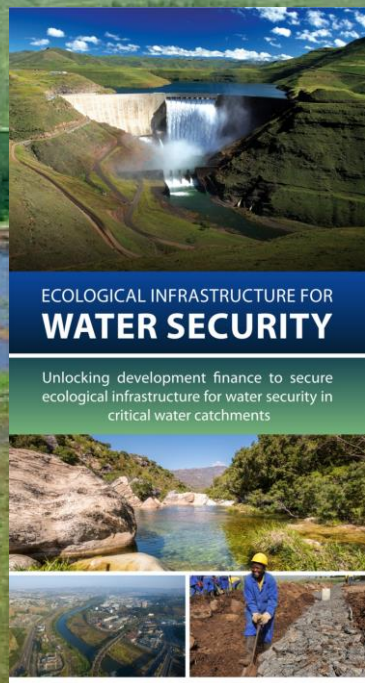


## Natural Capital Accounting & Valuation of Ecosystem Services (NCA&VES) project, 2018-2021





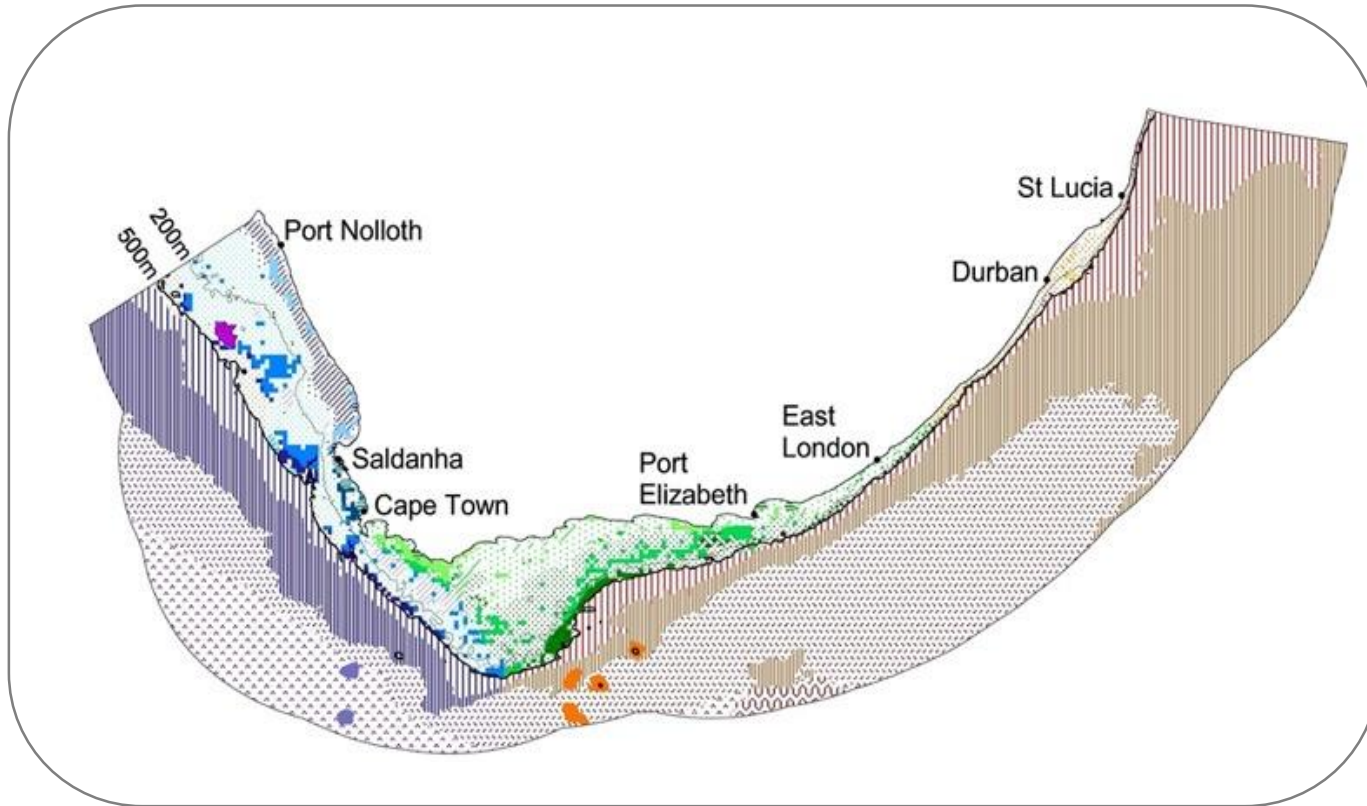
# Underway: Accounts for water-related ecological infrastructure assets in two demo catchments – extent and condition



Greater uMngeni catchment feeds the city of Durban



# Underway: Marine ecosystem asset accounts – extent



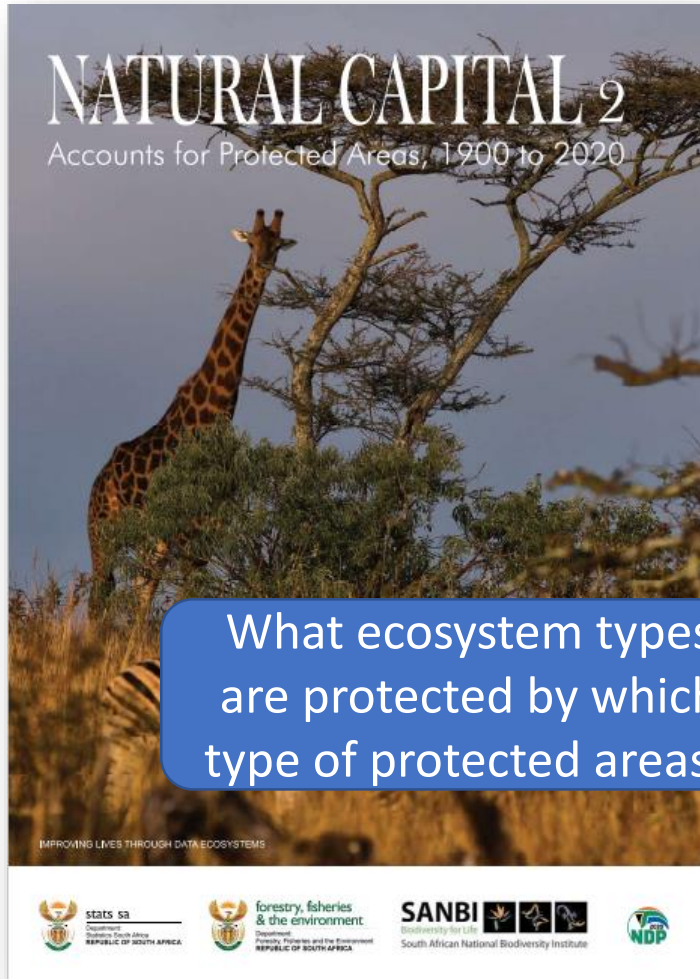
# Thematic accounts in SA to date

**Chapter 13 of SEEA Ecosystem Accounting deals with thematic accounts.**  
A thematic account pulls together several accounts that relate to a single theme.

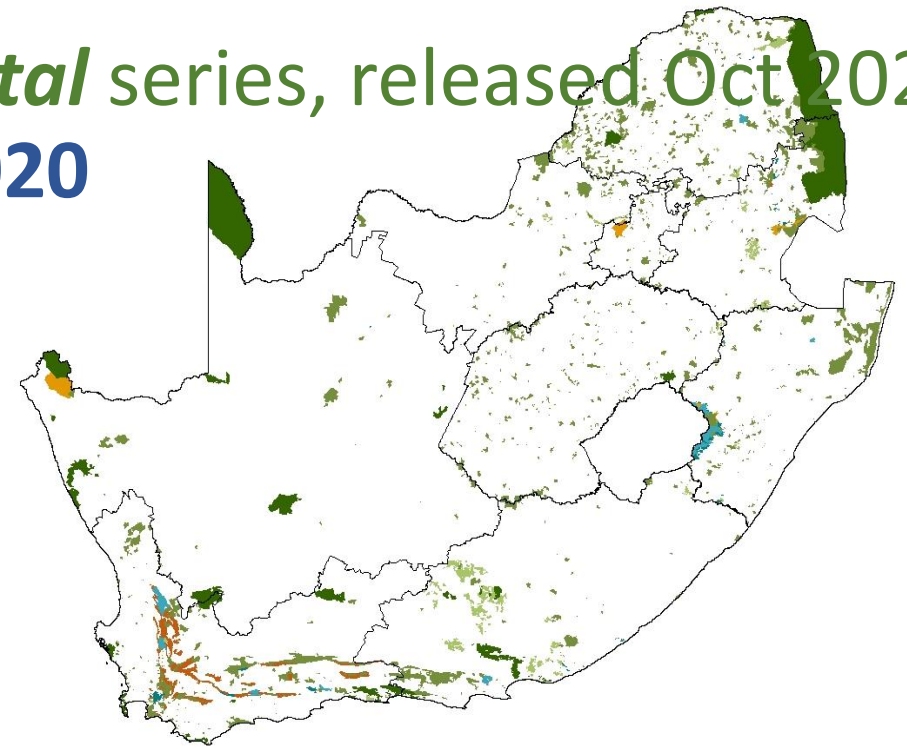


# 2nd publication in Stats SA's *Natural Capital* series, released Oct 2021

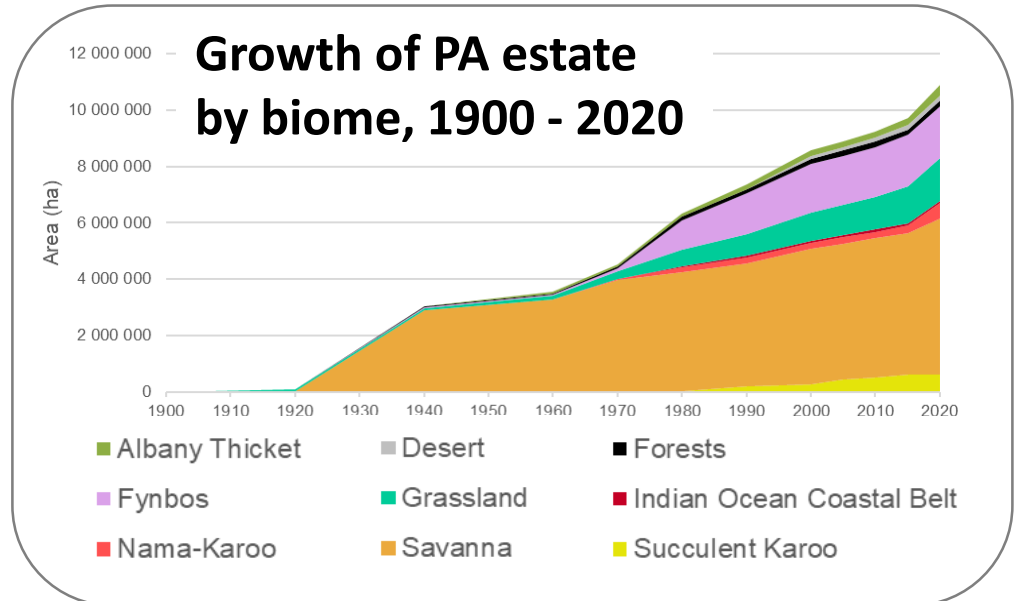
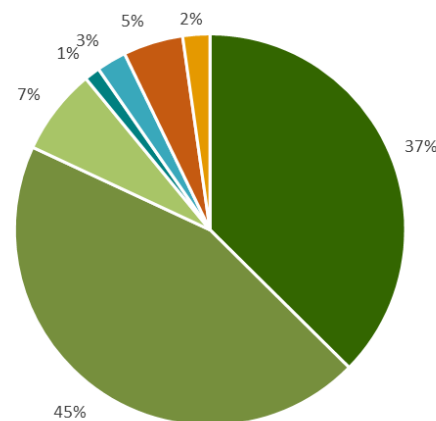
## Accounts for Protected Areas, 1900 to 2020



What ecosystem types are protected by which type of protected areas?

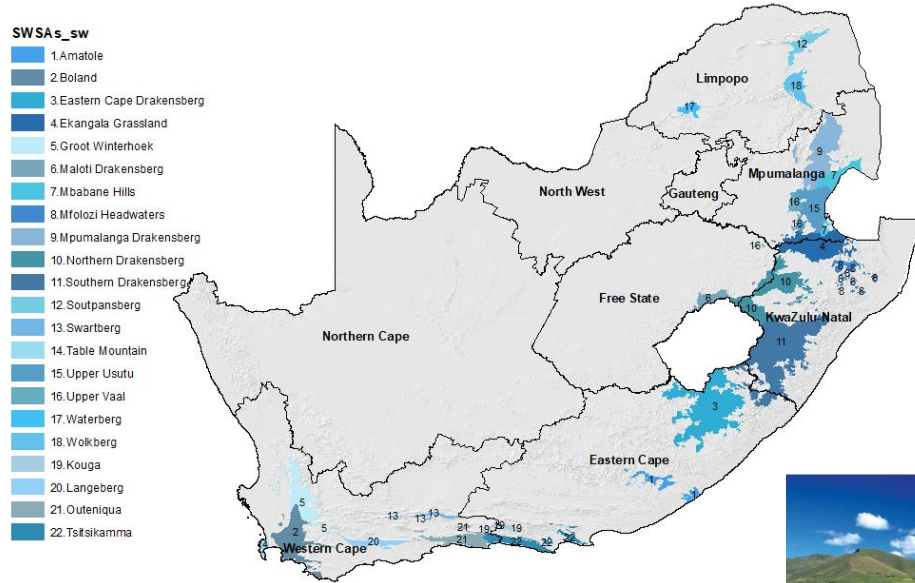


Composition of PA estate, 2020





# Forthcoming: Accounts for Strategic Water Source Areas



National assets for  
water security



SWSAs feed South Africa's  
major dams

