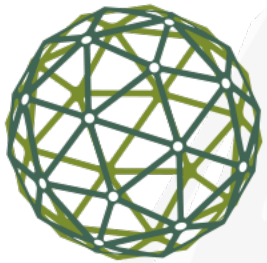

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Ecosystem services in the SEEA Ecosystem Accounting

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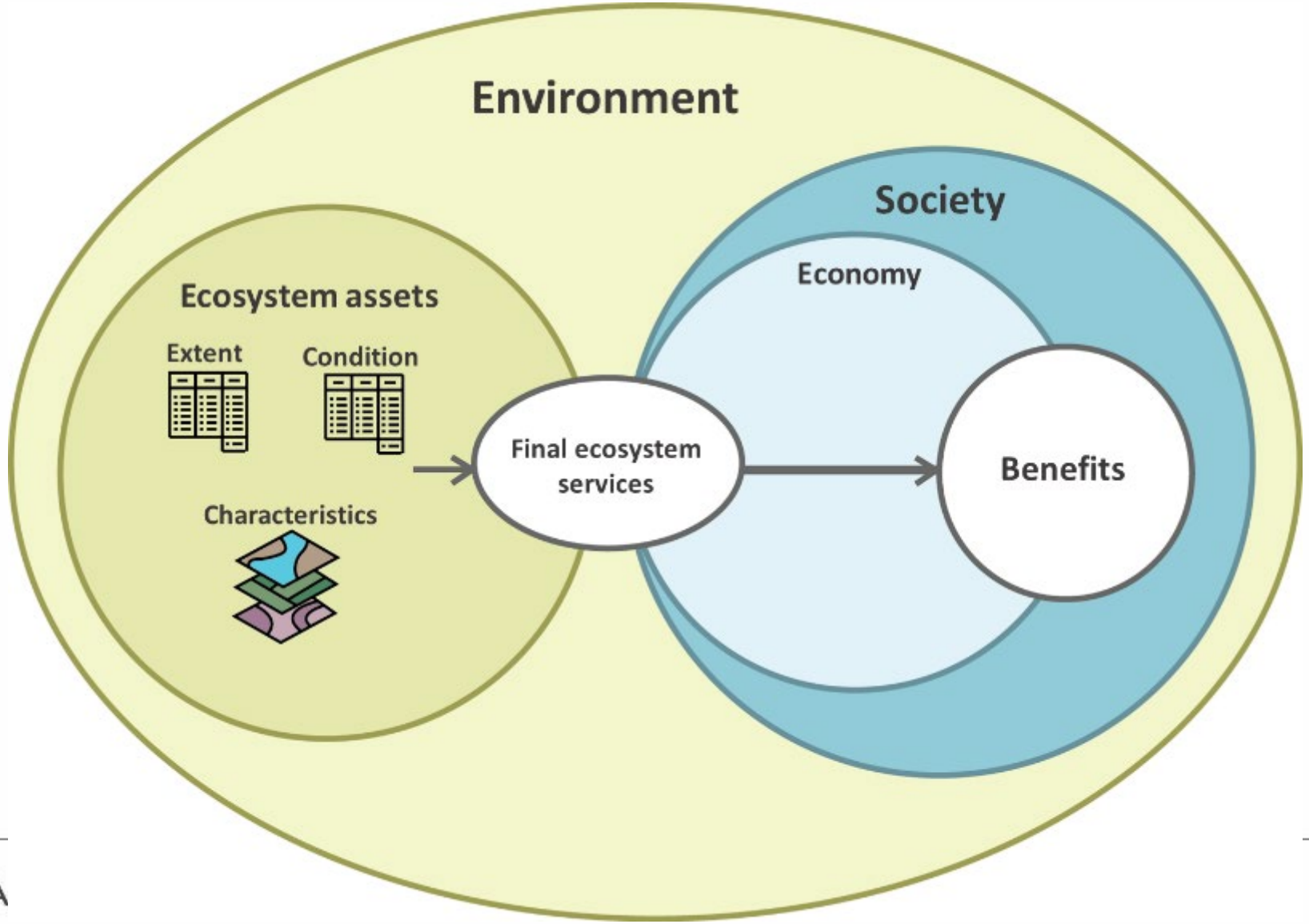
UN Statistics Division

Outline

- The SEEA and the bigger picture
- SEEA Ecosystem Accounting conceptual framework and accounts
- What is the ecosystem services flow accounts
- Ecosystem services reference list
- Biophysical modelling of ecosystem services
- Materials in support of SEEA implementation
- Ecosystem services flow accounts: example from South Africa

SEEA Central Framework and SEEA Ecosystem Accounting – Two sides of the same coin

SEEA Ecosystem Accounting - conceptual framework



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SEEA EA Framework – Illustrative Example

1 Asset – **forest**

2 **Conditions**

Soil depth

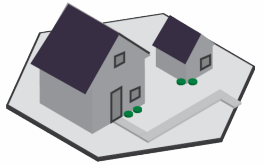
3 **Services**

Water filtration

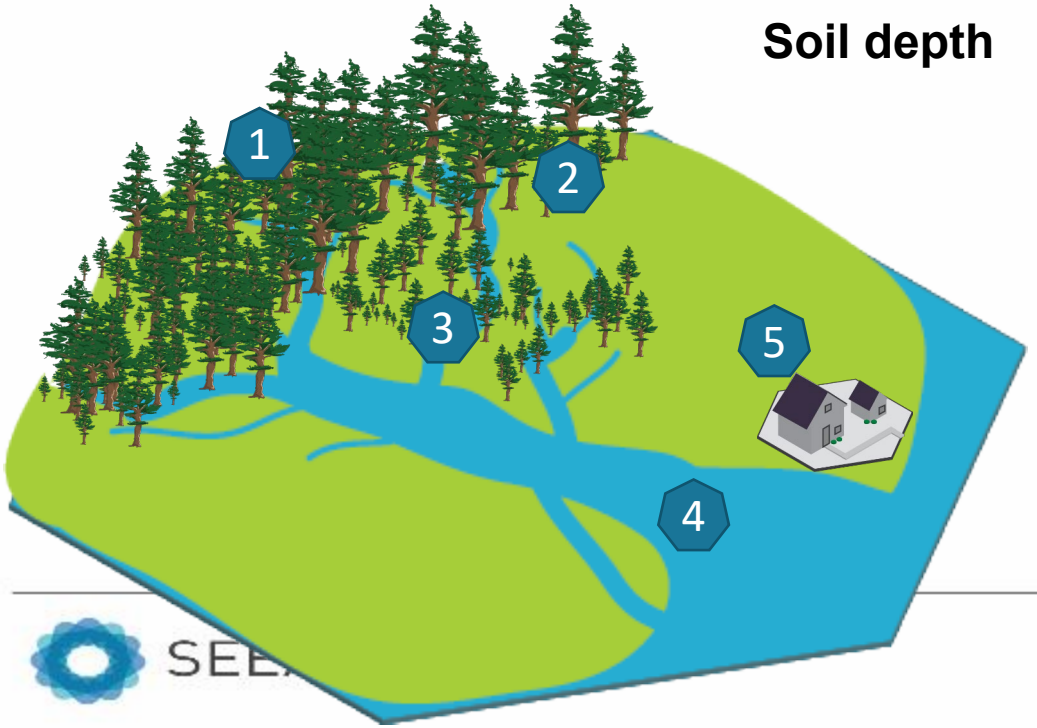
4 **Benefits**

Clean water

5 **Beneficiaries**

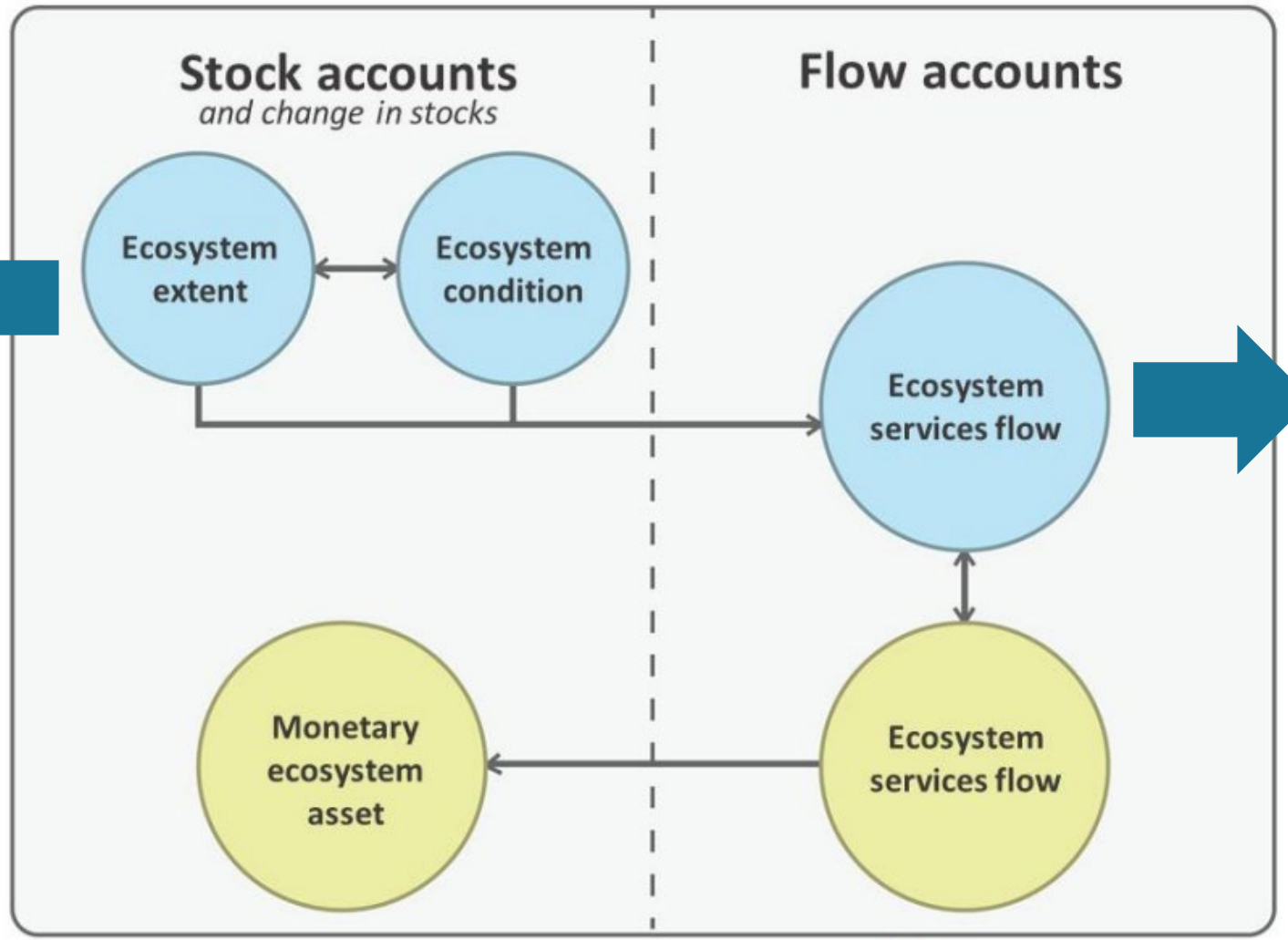


People



SEEA Ecosystem Accounting – core accounts and the GBF

Ecosystem extent account provides the basis for **Indicator A.2 Extent of natural ecosystems**



Ecosystem services account (physical) provides the basis for **Indicator B.1 Services from ecosystems**

Figure 2.2 from SEEA Ecosystem Accounting

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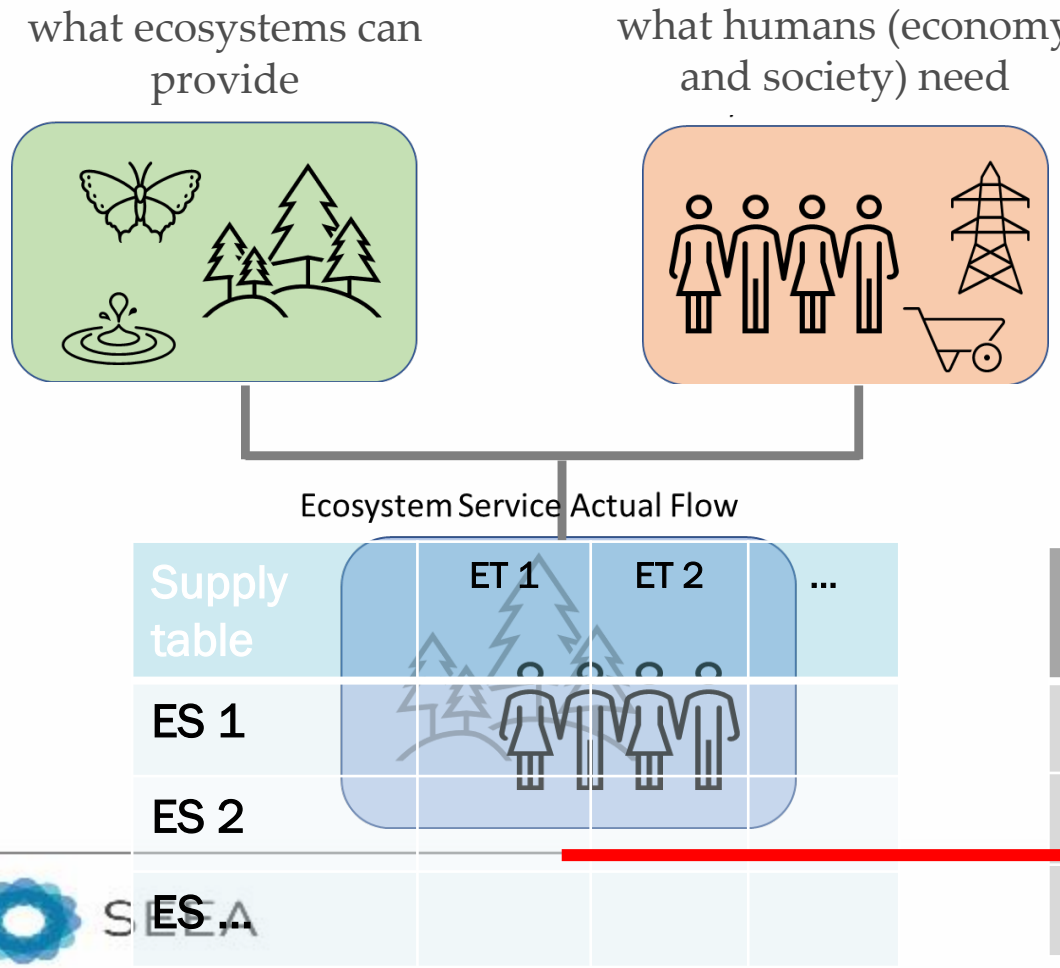
Ecosystem services flow account



- **Flows of ecosystem services** supplied by ecosystem assets and used by economic units (industries, households, government) during an accounting period
- **Alignment between supply and use** (i.e. supply needs to match use of a particular service)
- Both **physical and monetary units**

Ecosystem services

- SEEA EA includes a **reference list** of ecosystem services
- Final and intermediate ES

- Provisioning:
  - > Biomass
    - Grazed biomass
    - Livestock
    - Aquaculture
    - Wood
    - Wild fish + other
    - Wild animals, plants + other
  - > Genetic material
  - > Water supply
- Cultural:
  - > Recreation-related
  - > Visual amenity
  - > Education, scientific and research
  - > Spiritual, artistic and symbolic services
- Other ES
- Non-use

- Regulating and maintenance services
  - > Global climate regulation
  - > Rainfall pattern
  - > Local (micro and meso) climate regulation
  - > Air filtration
  - > Soil quality regulation
  - > Soil and sediment retention
  - > Solid waste remediation
  - > Water purification
  - > Water flow regulation
  - > Flood control
  - > Storm mitigation
  - > Noise attenuation
  - > Pollination
  - > Biological control
  - > Nursery population & habitat maintenance

Biophysical modelling of ecosystem services

- What is biophysical modelling?
  - > Quantitative estimation of biophysical phenomena or processes that are difficult to fully observe directly
  - > Biophysical models are very useful for understanding ecosystem service supply
- Why do we need biophysical modelling?
  - > Data needed for ecosystem accounts not usually captured in regular data sources
  - > Measuring ecosystem services directly is often difficult or costly to measure in situ
  - > Data may only be available for specific locations
- Many modelling techniques are available, including look-up tables, spatial interpolation, geostatistical models, dynamic systems, etc.
- Many platforms are available for modelling ecosystem services, including AIRES, InVEST, INCA/ESTIMAP, etc.

Materials in support of implementation of the SEEA

Guidelines and reports

- Biophysical guidelines
- Monetary valuation
- Policy scenario analysis

E-Learning (in various language options)

- SEEA CF, including SEEA-Energy and SEEA-Water
- SEEA EA
- NCA Policy uptake

Data

- ARIES for SEEA

Policy applications

- Linkages of global indicators with SEEA
- How NCA contributes to sustainability policies

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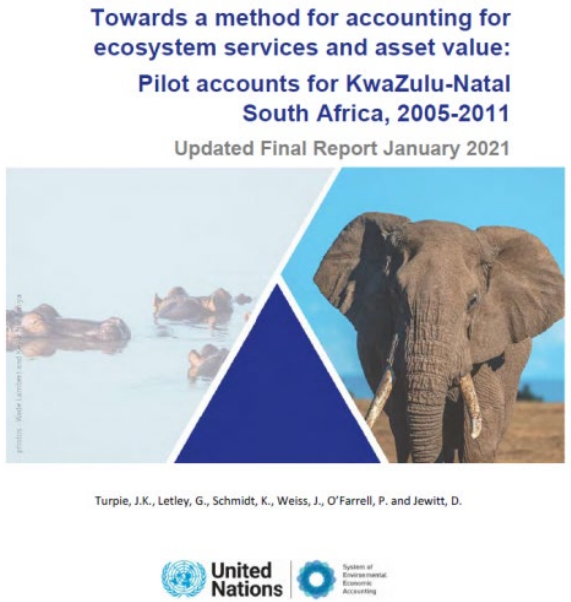
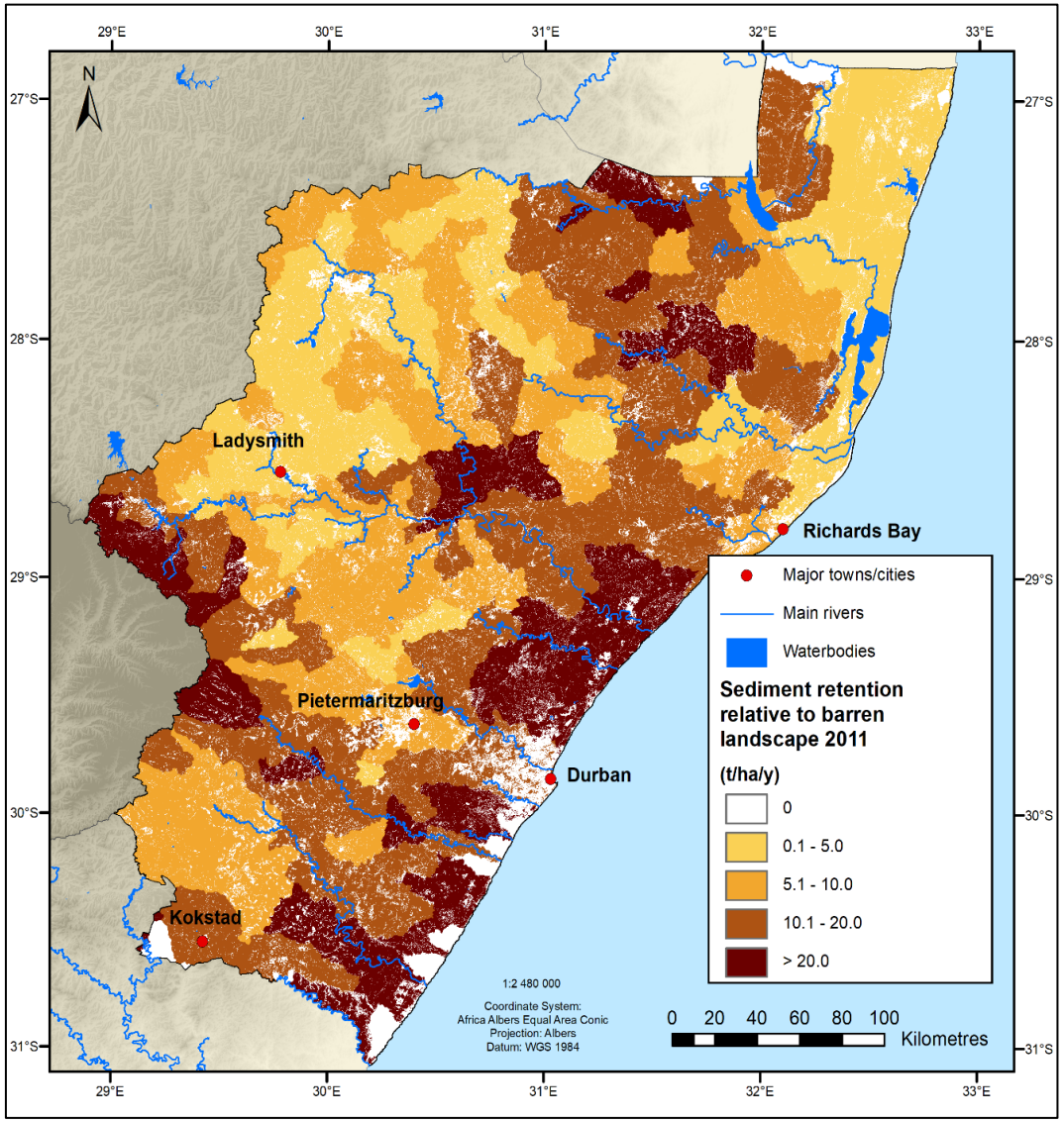
Ecosystem services account: Example from South Africa

- Output of the EU-funded NCAVES project
- Modelled 11 different ES for 2005 and 2011 for Kwazulu-Natal (KZN) province
- Physical & monetary units



Picture representing: Estimated average sediment retention by ecosystems per sub-catchment area in 2011 (tonnes per ha per year) relative to a barren catchment



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Source: Turpie et al., 2021.

Ecosystem services account: Example from South Africa (2)

- After integration, physical supply and use tables (and monetary SUTs + monetary asset account)

Table 5.1. Total biophysical supply per ecosystem type 2005

Resource \ Biome	Freshwater ecosystems	Grassland	Indian Ocean Coastal Belt	Savanna	Forests	Estuaries	Cultivated	Urban green space	Total
Wood products (m^3)	3 523	695 638	235 125	787 294	267 047	169			**1 988 796**
Non-wood products (tonnes)	834	46 494	11 489	34 952	2 911	38			**96 718**
Livestock production (LSU)	1 716	684 698	52 162	289 663	2 010	340			**1 030 589**
Crop production (tonnes)							43 305 781		**43 305 781**
Experiential value (R millions)	14	237	179	218	55	24	85	885	**1 698**
Carbon storage (Tg C)	5	512	61	348	33	0	279		**1 237**
Pollination (R millions)	0	12	6	31	2	0			**51**
Flow regulation (million m^3)	78	3 315	421	2 198	634	36			**6 682**
Flood attenuation (R millions)								31	**31**
Sediment retention (million tonnes)	2	45	6	27	18	2			**99**
Water quality amelioration (tonnes P)	-	3 829	525	5 394	97	6			**9 850**

Source: Turpie et al. 2021

THANK YOU

seea@un.org // https://seea.un.org/