

Deriving indicators from SEEA EEA

Initial results from evaluation of four SDG indicators in South Africa

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stats sa

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environmental affairs

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Environmental Affairs
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SANBI 
Biodiversity for Life
South African National Biodiversity Institute



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System of
Environmental
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South Africa's reporting so far on the 4 selected indicators

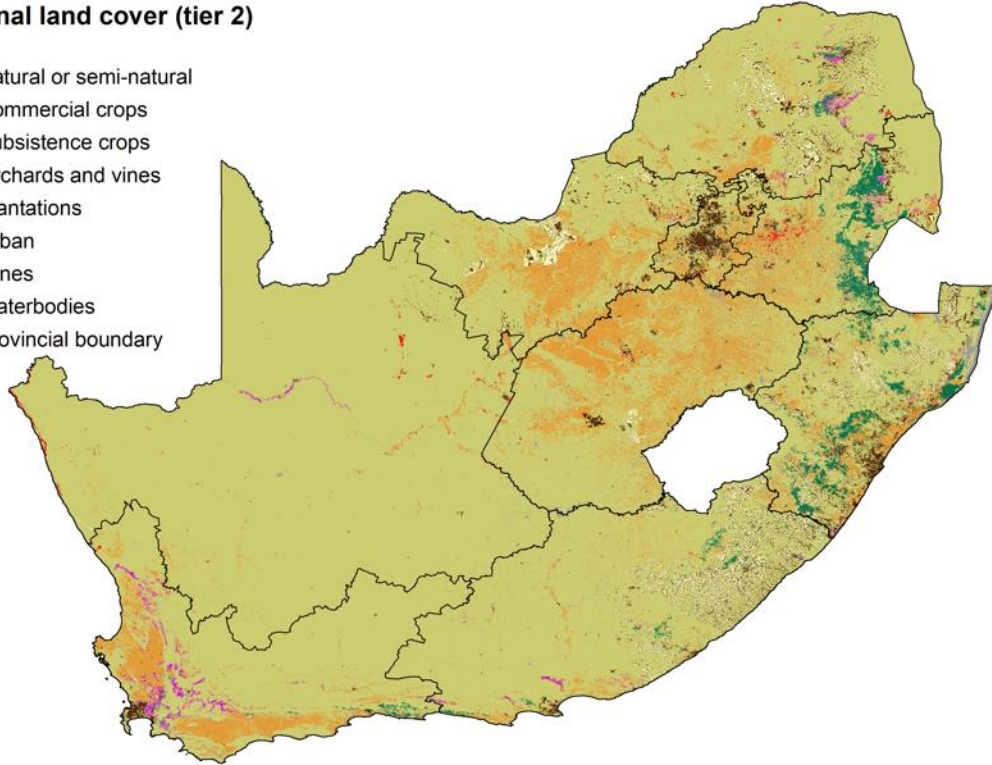


SDG Indicators	SDG Baseline Report Report (Stats SA 2017)	SDG Country Report Report (Stats SA 2019)
6.6.1: Water-related ecosystems	--	✓
11.7.1: Urban open space	--	--
15.1.1: Forest area	✓	✓
15.3.1: Degraded land area	--	✓

Recently produced SEEA accounts in SA

National land cover (tier 2)

2014



- **Land and terrestrial ecosystem account (LTEA), 1990 to 2014**
 - Land accounts reported at national, provincial and district level
 - Ecosystem extent account by biome and ecosystem type
- **Land accounts for metropolitan municipalities, 1990 to 2014**
 - Subset of the national land accounts, for 8 metros
 - With supplementary analysis on urban green open space
- **Accounts for protected areas, 1900 to 2018**
 - Land-based protected areas
 - With supplementary analysis on surrounding land use and population (national parks)
 - *Accounts for marine protected areas under development*

6.6.1 (1) Spatial extent of water-related ecosystems

Estimates for ~2014 using different datasets	ha	% SA land area	Comments
EC JRC Global dataset 30 m	571 551	0.5	Land cover data result in under-reporting <ul style="list-style-type: none"> • Misses small wetlands (the majority of wetland area) • Under-estimates during drier seasons/years (SA is semi-arid)
Global Lakes and Wetlands database	1 536 066	1.3	
Land & Terrestrial Ecosystem Accounts (SA NLC 30m) *	1 420 676	1.2	
SDG Country report (HYDSTRA Database by SANBI/CSIR)	3 902 926	3.2	Combined land cover data with SANBI's GIS data on wetlands
South African Inventory of Inland Aquatic Ecosystems (SAIIAE)	4 123 798	3.4	Official national wetland inventory curated by SANBI, robust estimate of full extent.

- Table shows global & national land cover data are inadequate for measuring extent of water-related ecosystems in SA
- In highly seasonal/arid zones, very important to use more than just land cover to track extent of water-related ecosystems
- The SAIIE will provide the best estimate of baseline extent, with current land cover useful for tracking conversion/loss of wetlands to other land uses

Indicator 11.7.1 Urban open space

Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities

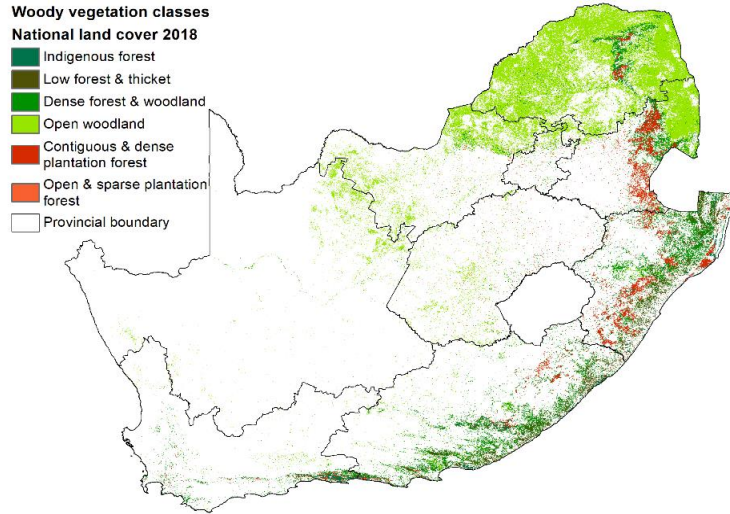
- $\% \text{ Open Space} = \frac{\text{Open public space area} + \text{Street area}}{\text{Built-up area}}$
- This indicator not reported in SA to date, in any form
- Land accounts have been produced for each Metropolitan Municipality
 - As opposed to urban areas (boundaries change)
- The supplementary analyses describe open space in urban areas, and could be better aligned to the indicator (at least for metros)
 - Using UN guidelines on defining urban agglomerations;
 - Using the Metros' detailed data on open space
- Will need to update metro datasets following international open space typology
 - The SA National Land Cover could be adapted to this end

Some suggestions

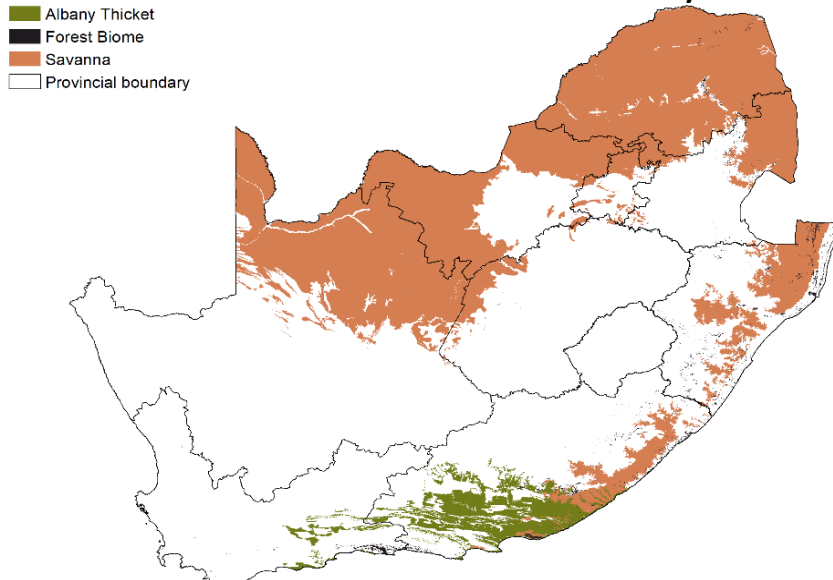
- Need guidance on **scale** – all urban area in the country?
 - Cut-off based on town size (↑ size, ↑ importance)
- **Street area** not universally appropriate, suggest modification
 - Consider extent to which streets add amenity value, e.g. with street trees
- **Safety**: Info ideally combined with crime statistics - probably biggest determinant of open space utility/disutility in SA

Indicator 15.1.1 Forest area % land area under forest, as defined by FAO

Land cover classes with > 10% tree cover



Historical extent of SA's three woody biomes



Analysis

- **Not all trees are equal:** FAO definition is forestry-focused, and problematic for SA
 - Would include exotic forestry plantations, areas with bush encroachment and woody invasive alien plants
 - Gains in these would mask losses of indigenous forest ecosystems
 - Doesn't align with sense of healthy ecosystems
- **SA has domesticated the indicator**
 - Reports on remaining extent of 3 woody biomes relative to their historical extent
 - True indigenous forest (<1% of land area), thicket and savanna

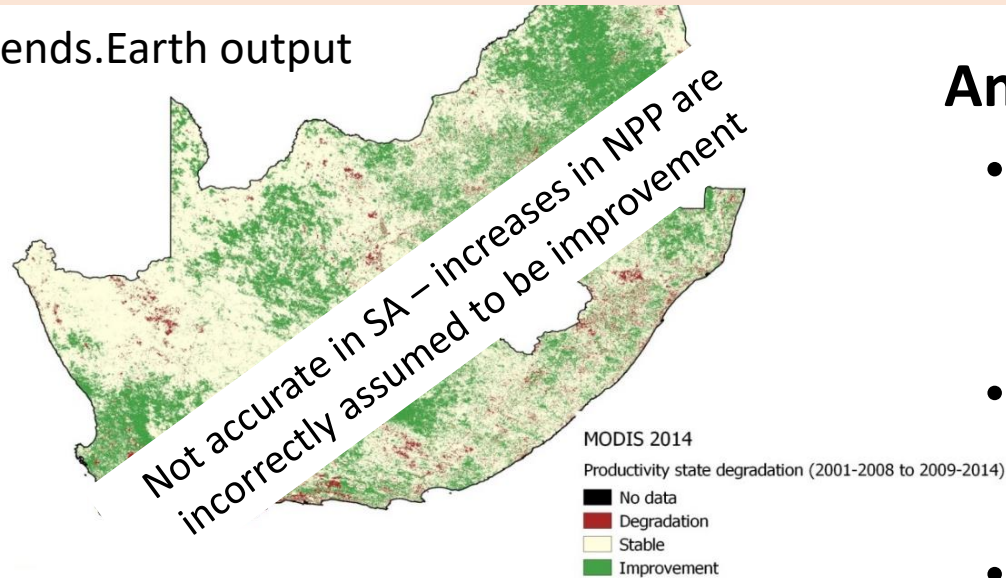
Suggestions

- **Exclude exotic plantations**
- Change the global method to report on remaining extent of **all major biomes** (using IUCN GET) – rationale for focusing only on forests is unclear.
- Add condition modifier to measure **remaining functional extent**
 - SEEA is well-suited to deliver this

Indicator 15.3.1 Proportion of land degraded

10AO: Land Cover/NPP/Carbon
Degraded/Stable/Improved
Baseline 2015 based on 2000-15

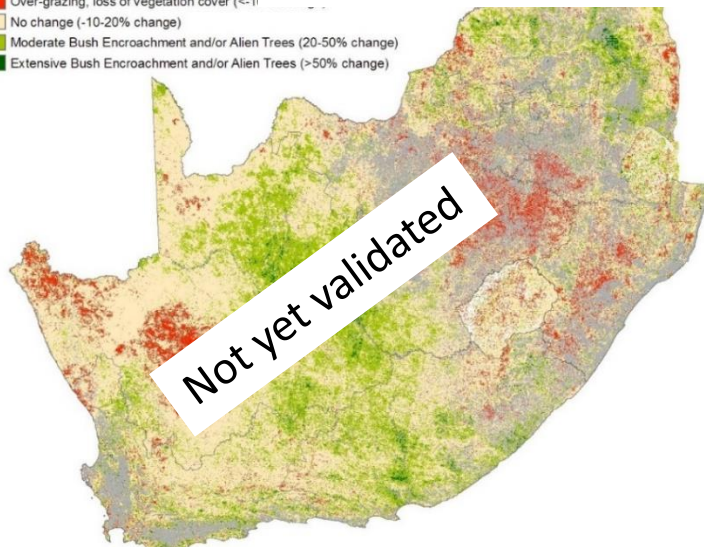
Trends.Earth output



RANGELAND CONDITION
% Change in NDVI over 30 Years

- Over-grazing, loss of vegetation cover (<-1)
- No change (-10-20% change)
- Moderate Bush Encroachment and/or Alien Trees (20-50% change)
- Extensive Bush Encroachment and/or Alien Trees (>50% change)

% change in NDVI over 30 years



Analysis

- SA's SDG reporting based on global method and datasets is **unreliable**
 - increased NPP can signify degradation in the case of **bush encroachment, invasive alien plants**
- Method for ecosystem condition accounts still being developed, and will be related to a Reference condition
 - Degree of resemblance to natural (categories or index)
- Neither NLC nor NDVI alone provide a suitable measure
 - Too recent, needs detailed analysis, ground truthing etc.
- Once developed, will produce a more reliable indicator of **degradation = decline in ecosystem condition**

Conclusion

- Because ecosystem accounts should include condition accounts, SEEA likely to produce better estimates of degradation