

National accounting - limitations

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“GDP is dangerously inadequate as a measure of quality of life.”



- Headline statistic = GDP
- Limitations
 - Measures only what is transacted in markets
 - Does not include informal economy
 - Doesn't measure social or ecological impacts

Time to leave GDP behind

Gross domestic product is a misleading measure of national success. Countries should act now to embrace new metrics, urge **Robert Costanza** and colleagues.

Ecosystem accounting

- Focus is on ecosystems – interacting biotic and abiotic components
 - Ecosystem assets
 - Ecosystem services
- Stocks and flows...



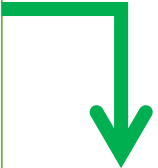
DWA's Present Ecological Status

Level of modification to 6 indicators:

- Instream habitat continuity
- Riparian/wetland zone continuity
- Potential instream habitat
- Riparian-wetland zone
- Potential flow
- Potential physico-chemical

Assessed for two time periods:

- 1999
- 2011



Ecological category	Description
A	Unmodified, natural
B	Largely natural, few modifications
C	Moderately-modified
D	Largely-modified
E	Seriously-modified
F	Critically/Extremely-modified

Present Ecological State (PES) 1999

- Urgent need for a national assessment of river condition to inform national water planning processes
- Main rivers in quaternary catchments (linked with hydrological models)
- Desktop assessment by experts – several workshops over several months in 1998/1999 – very rapid
- Intended for broad-scale use not site-level decisions

PES 1999 based on 6 attributes / characteristics

- Attributes:
 - Flow (e.g. quantity, timing, velocity)
 - Inundation (dams, weirs, other obstructions in the channel)
 - Water quality
 - Stream bed condition
 - Riparian or stream bank condition
 - Introduced in-stream biota
- For each attribute:
 - Extent of modification from natural was assessed
 - Based on data and expert knowledge, with a confidence rating

Present Ecological State 2011

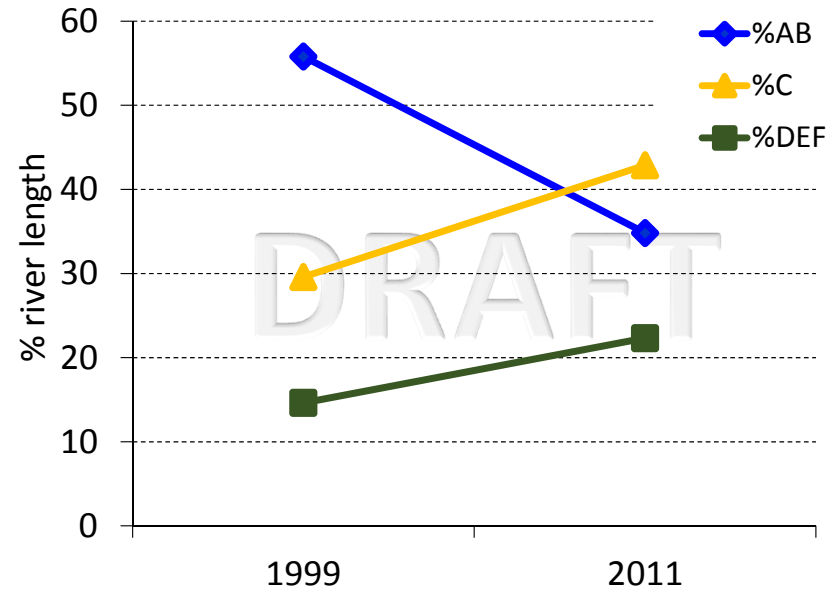
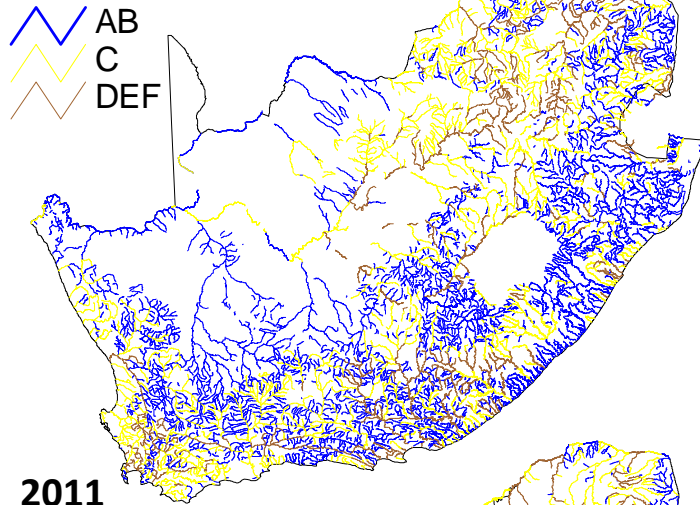
- • Sub-quaternary scale – main rivers and tributaries
- • Based on 6 factors:
 - – Hydrology
 - – Geomorphology
 - – Physico-chemical (water quality)
 - – Fish
 - – Macro-invertebrates
 - – Riparian vegetation
- • [?] Combined to give EcoStatus

Comparison of factors used for PES 1999 and 2011

- Flow
- Inundation
- Water quality
- Stream bed condition
- Riparian condition
- Introduced in-stream biota
- Hydrology
- Geomorphology
- Physico-chemical
- Fish
- Macro-invertebrates
- Riparian vegetation

Trends in ecological integrity

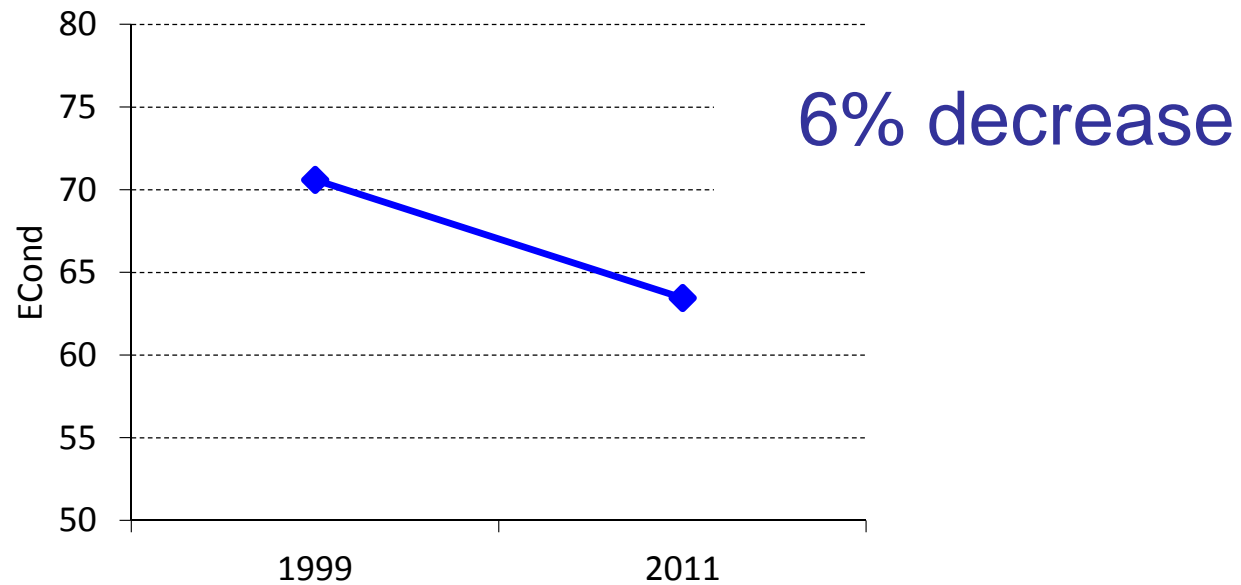
1999 PES + modelled AB tribs

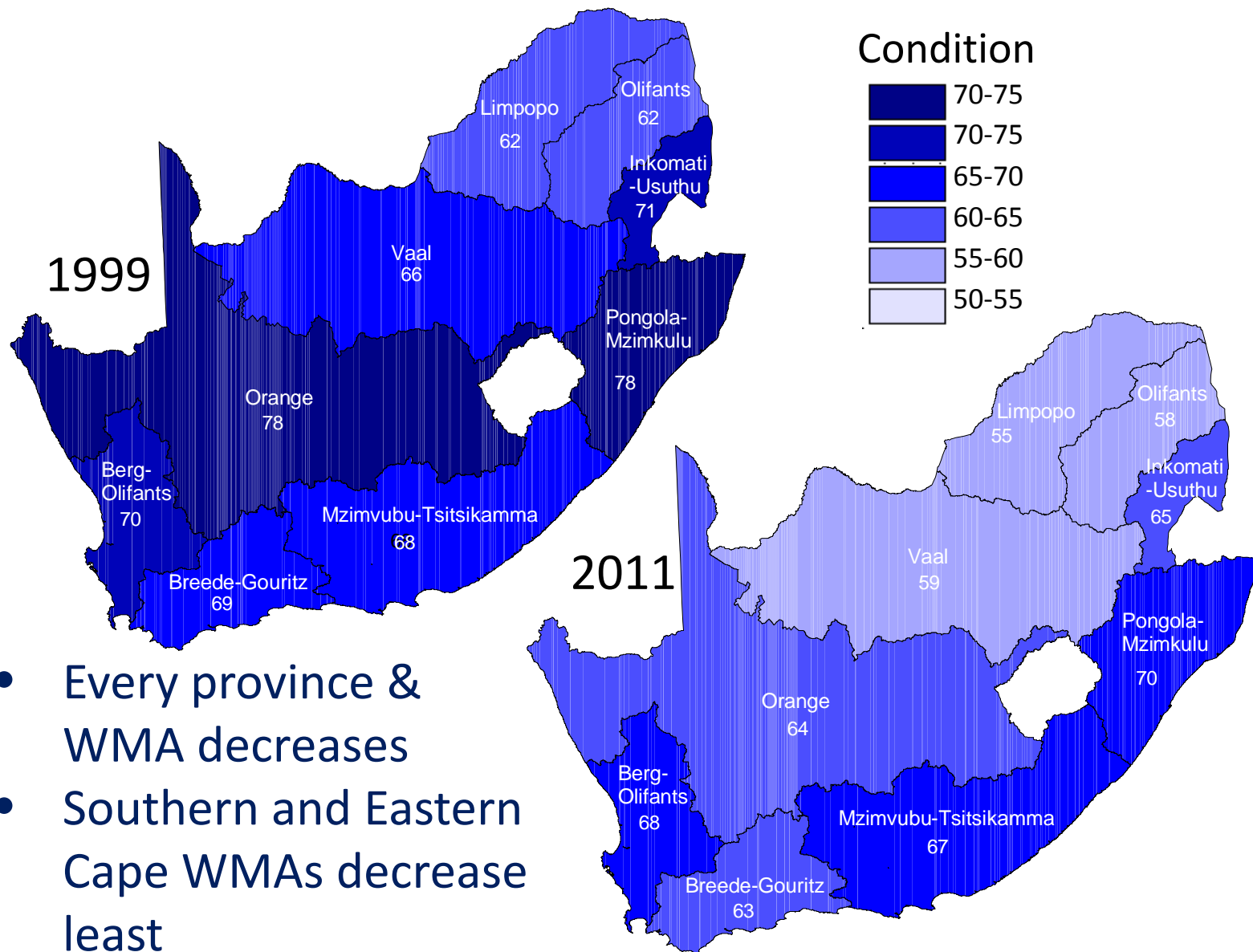


Aggregated condition index

Ecological category	Percentile range	Midpoint	Length (km)	Proportional length	Score
AB	70-100	85	84109	0.56	47.42
C	50-69	60	44610	0.29	17.75
DZ	30-49	40	19452	0.13	5.16
EF	0-29	15	2590	0.02	0.26
ECOND 99					70.59

*Score = Proportional length * midpoint*





- Every province & WMA decreases
- Southern and Eastern Cape WMAs decrease least