

Managing Ecosystem Services the South African experience

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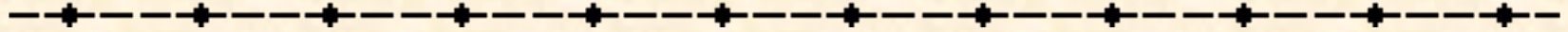
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Pre-CoP meeting, Nagoya, Japan

22 March 2010



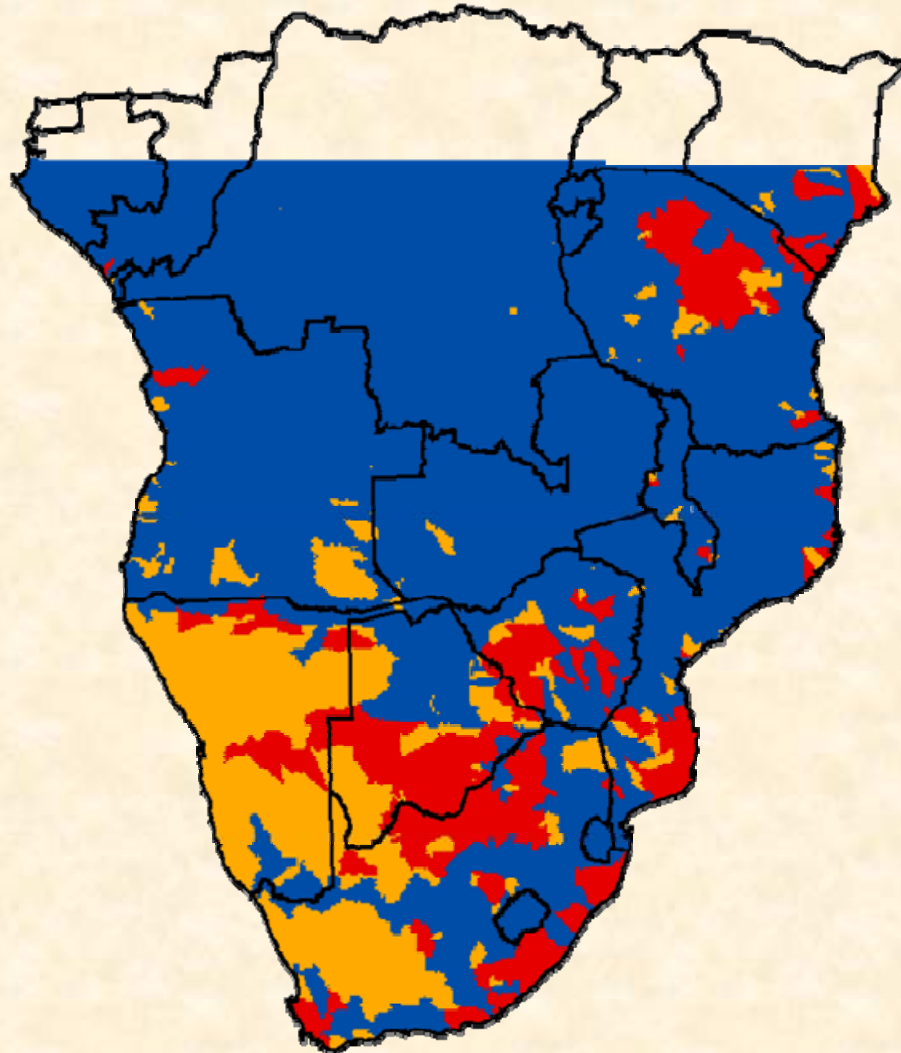
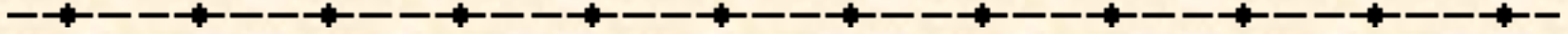
A brief history





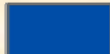
- **The Great Fire of 1850 destroyed half of the forest resource**
- **Wildlife herds depleted by 1880**
- **First reserves declared 1890 to 1898**
- **Mountain catchments declared 1920**
- **Droughts in 1930s and 1960s led to soil and rangeland conservation measures**

Water availability

Southern African Millennium Ecosystem Assessment



Driest month

-  Severe shortages
-  Vulnerable areas
-  Adequate supply

Data

UNH Global Runoff
CIESIN population





Water as an ecosystem service

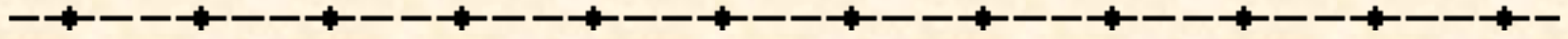
- **Upper catchments mostly protected**
- **Many planted to fast-growing *Pinus* and *Eucalyptus***
- **Research revealed reduction in streamflow of 300 mm/y as a result**
- **Restrictions in fraction of catchment that could be planted**
- **New Water Act (1995)**
 - Human basic needs and Ecological Reserve first
 - ‘Streamflow reduction activities’ pay fee
 - Catchment Management Authorities established
 - Hydrological Cycle treated holistically



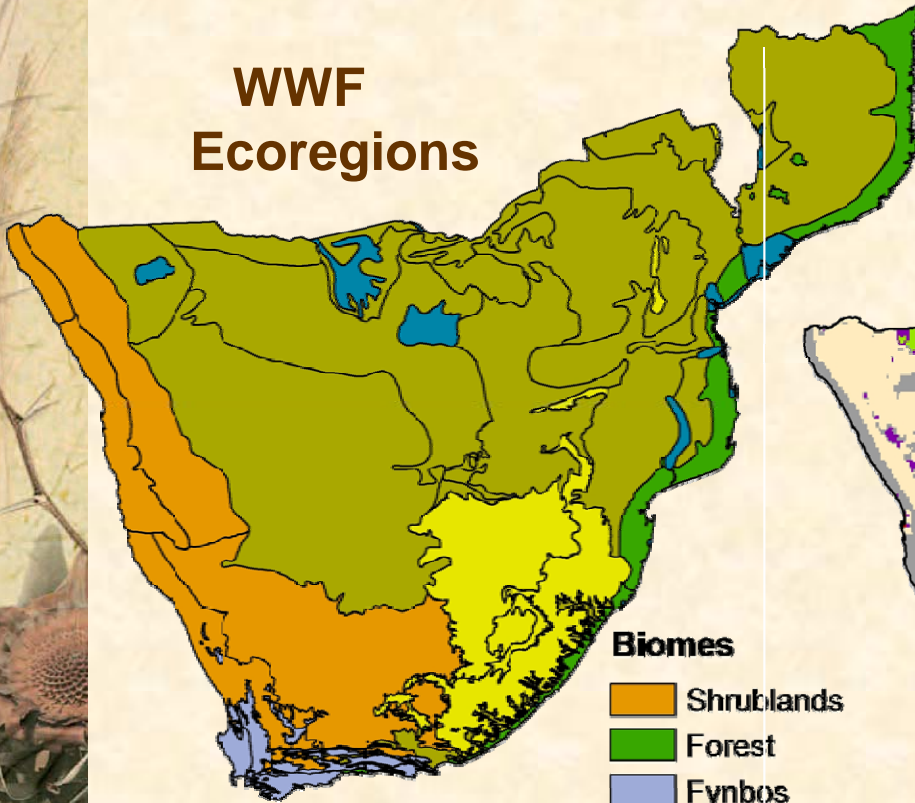
‘Working for Water’

- **Poverty alleviation project, launched 1994**
- **Removes invasive alien vegetation**
 - Increases streamflow
 - Reduces threat to native biodiversity
 - Provides skills and experience
 - Provides temporary employment
- **Spinoffs**
 - ‘Working on Fire’
 - ‘Working for Wetlands’
 - ‘Working on Coasts’

Biodiversity & Land use



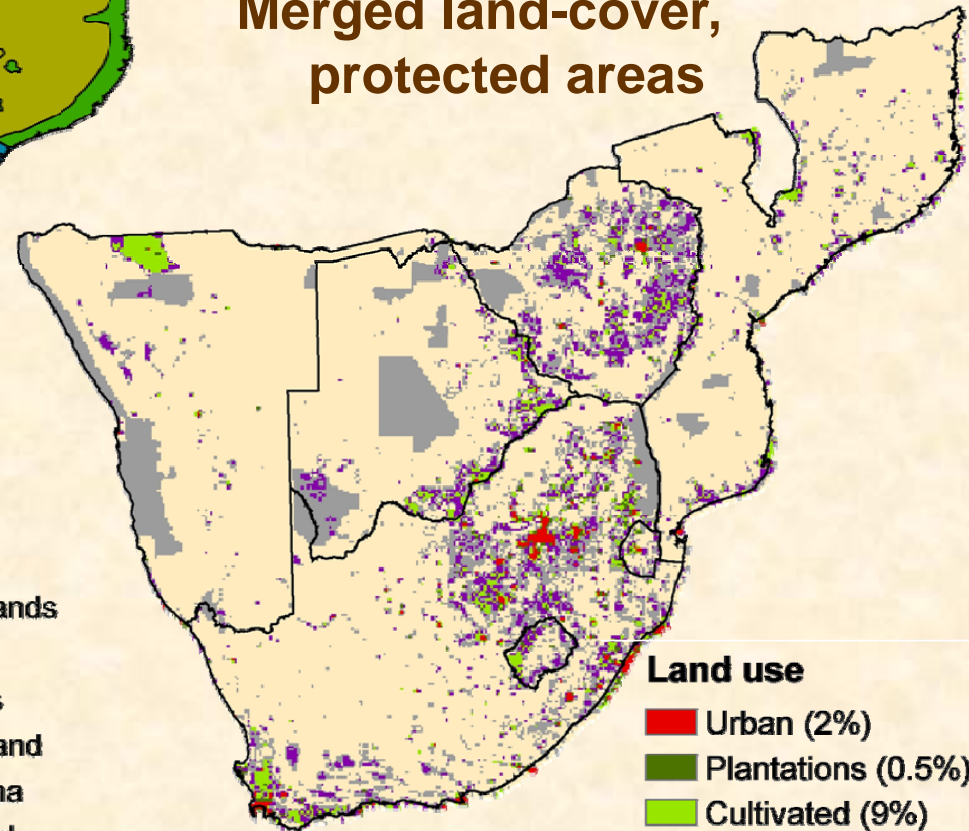
WWF
Ecoregions



Biomes

- Shrublands
- Forest
- Fynbos
- Grassland
- Savanna
- Wetland

Merged land-cover,
protected areas

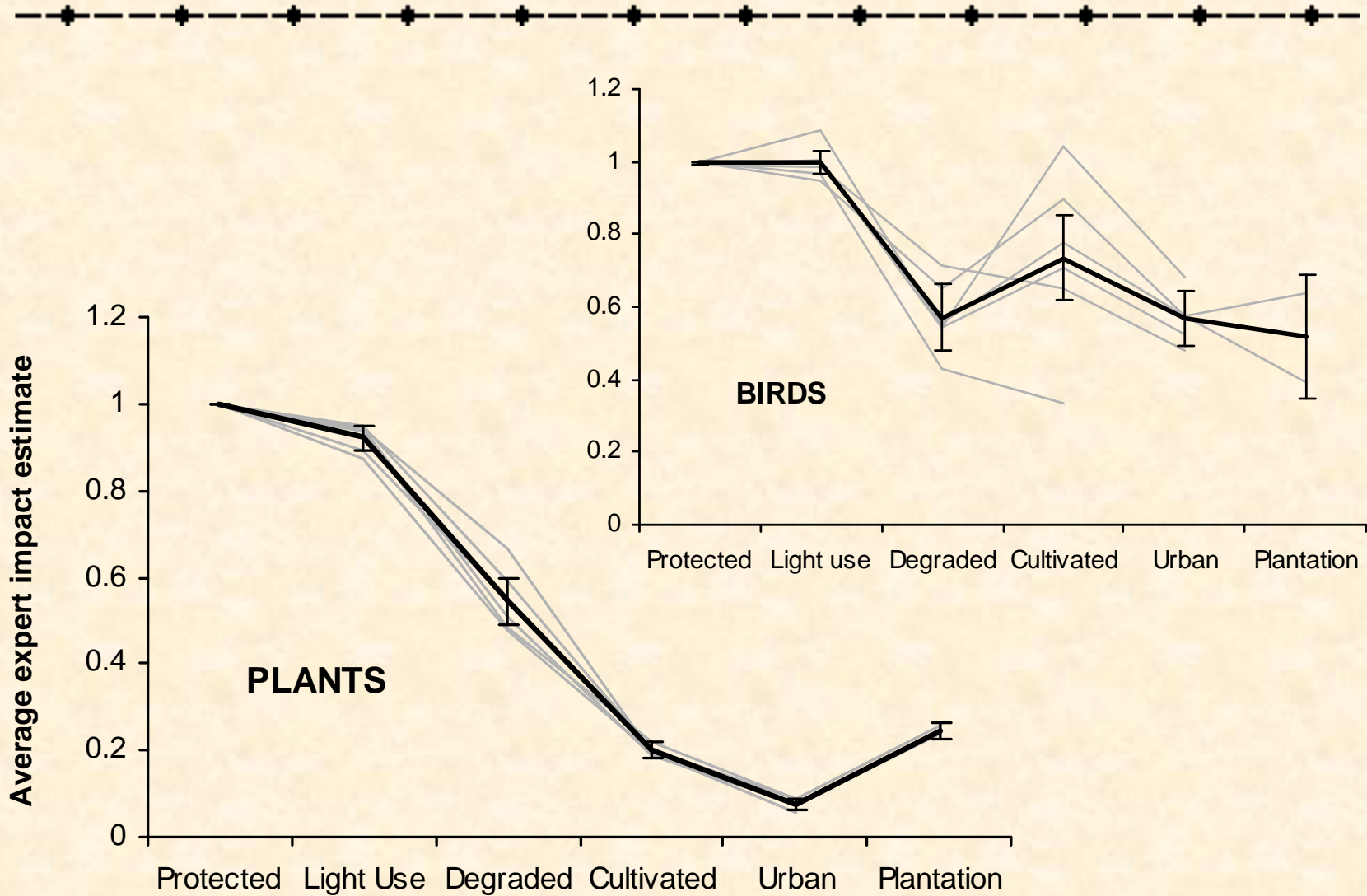


Land use

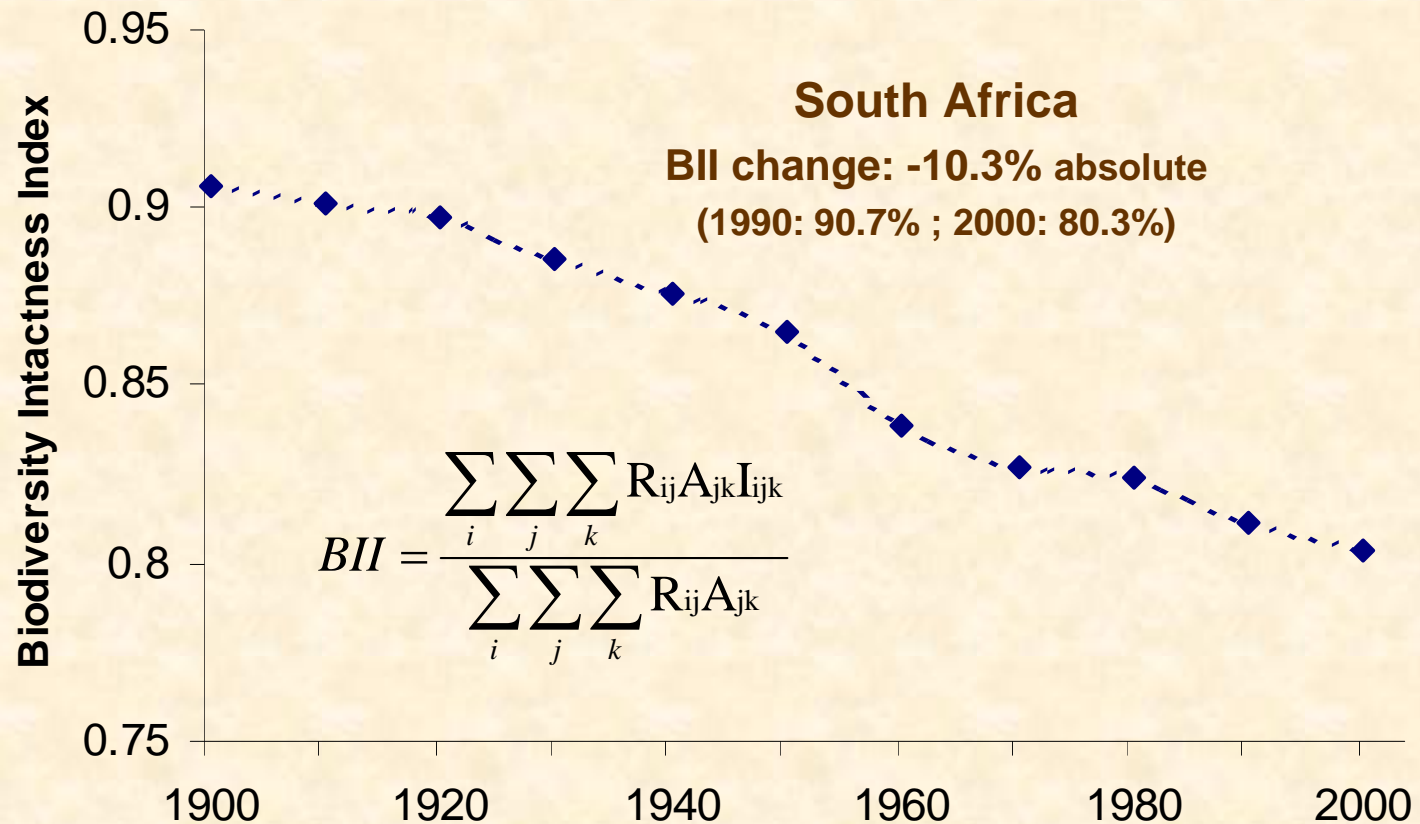
- Urban (2%)
- Plantations (0.5%)
- Cultivated (9%)
- Degraded (2%)
- Protected (8%)
- Light Use (78%)



'Dose-response curves' for broad groups of biodiversity components



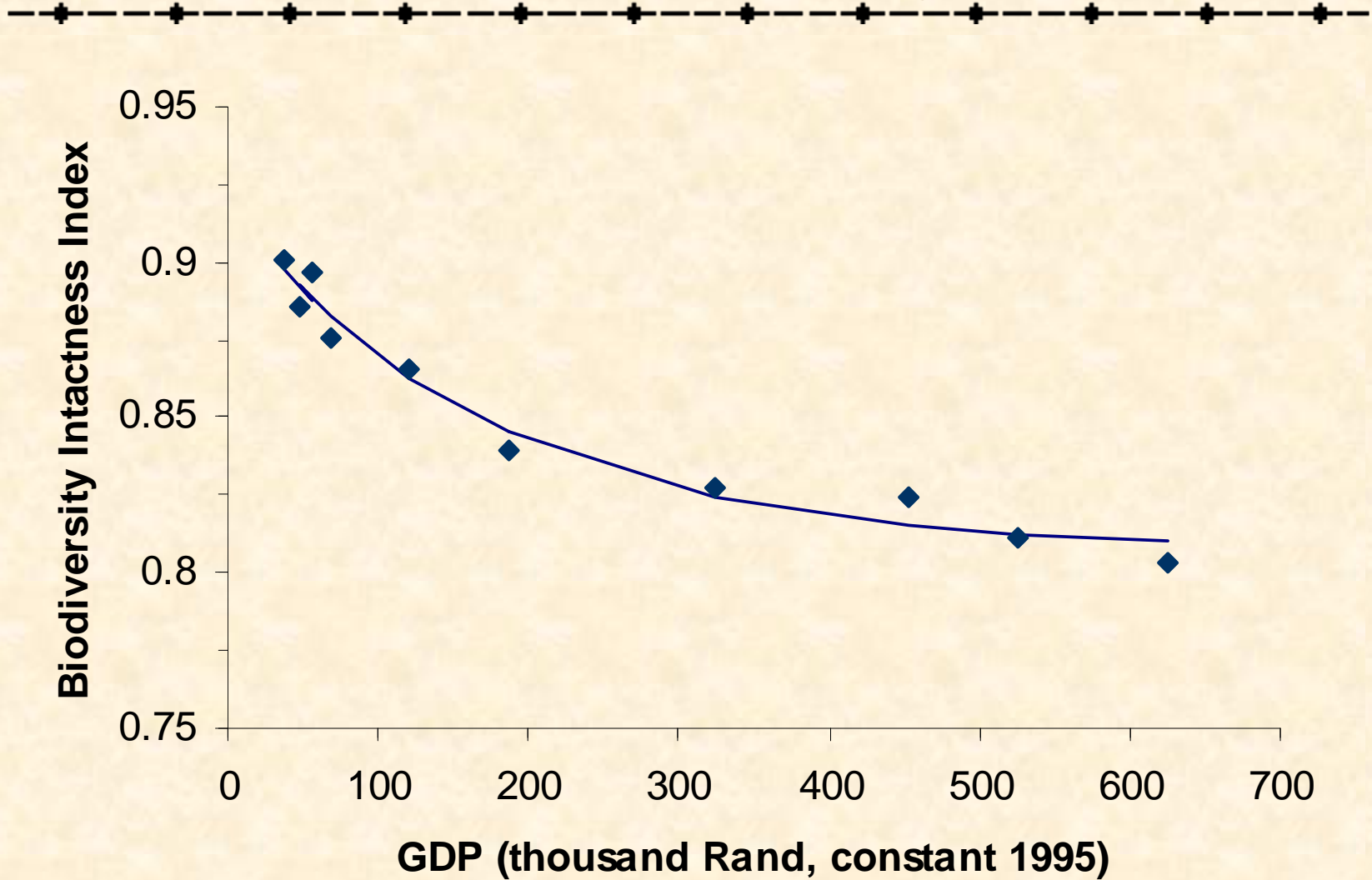
BII changes in the 20th century in South Africa



R. Biggs and R.J. Scholes (2008) Historical changes in natural capital in South Africa: An approach using changes in biodiversity In: *Restoring Natural Capital* S.J. Milton and J. Aronson (eds) Island Press: Washington, D.C.

Biodiversity loss in South Africa 1900-2000

R. Biggs and R.J. Scholes (in press) Historical changes in natural capital in South Africa: An approach using changes in biodiversity In: *Restoring Natural Capital: Views from the South* S.J. Milton and J. Aronson (eds) Island Press: Washington, D.C.





The switch back to wildlife

- **Since 1980, about 20% of South Africa has reverted to using wildlife as the primary land use rather than cattle or sheep**
 - Complex drivers
 - Ecological and veterinary advantages
 - Security
 - Changing landowner perceptions
- **Nature-based tourism is now one of the fastest-growing economic sectors**
 - Larger than agriculture or forestry

Southern African Millennium Ecosystem Assessment

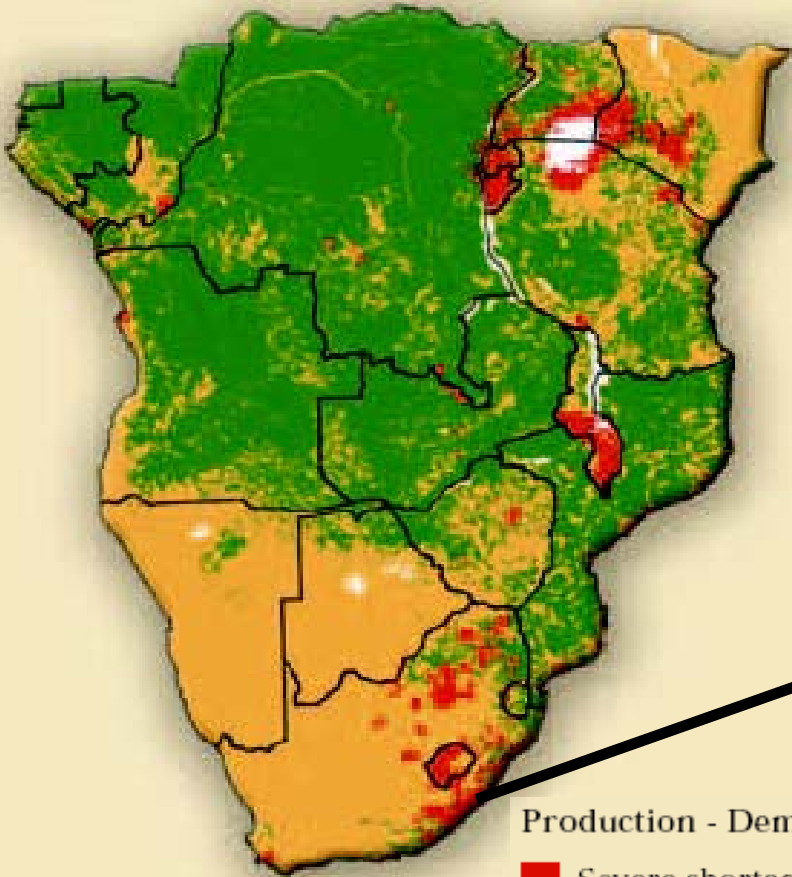
Ecosystem services assessed

	REGIONAL	BASIN	LOCAL
Water	X	X	X
Food	X	X	X
Energy	X	X	X
Biodiversity	X	X	X
Cultural	X		X
Livestock	X	X	X
Air quality	X	X	
Minerals		X	
Medicinal plants			X
Building material			X

Woodfuel energy

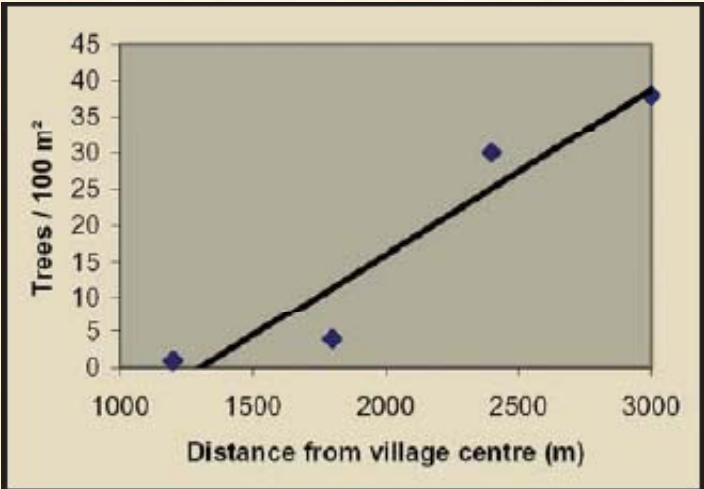
(b) Woodfuel demand

(c) Production - demand



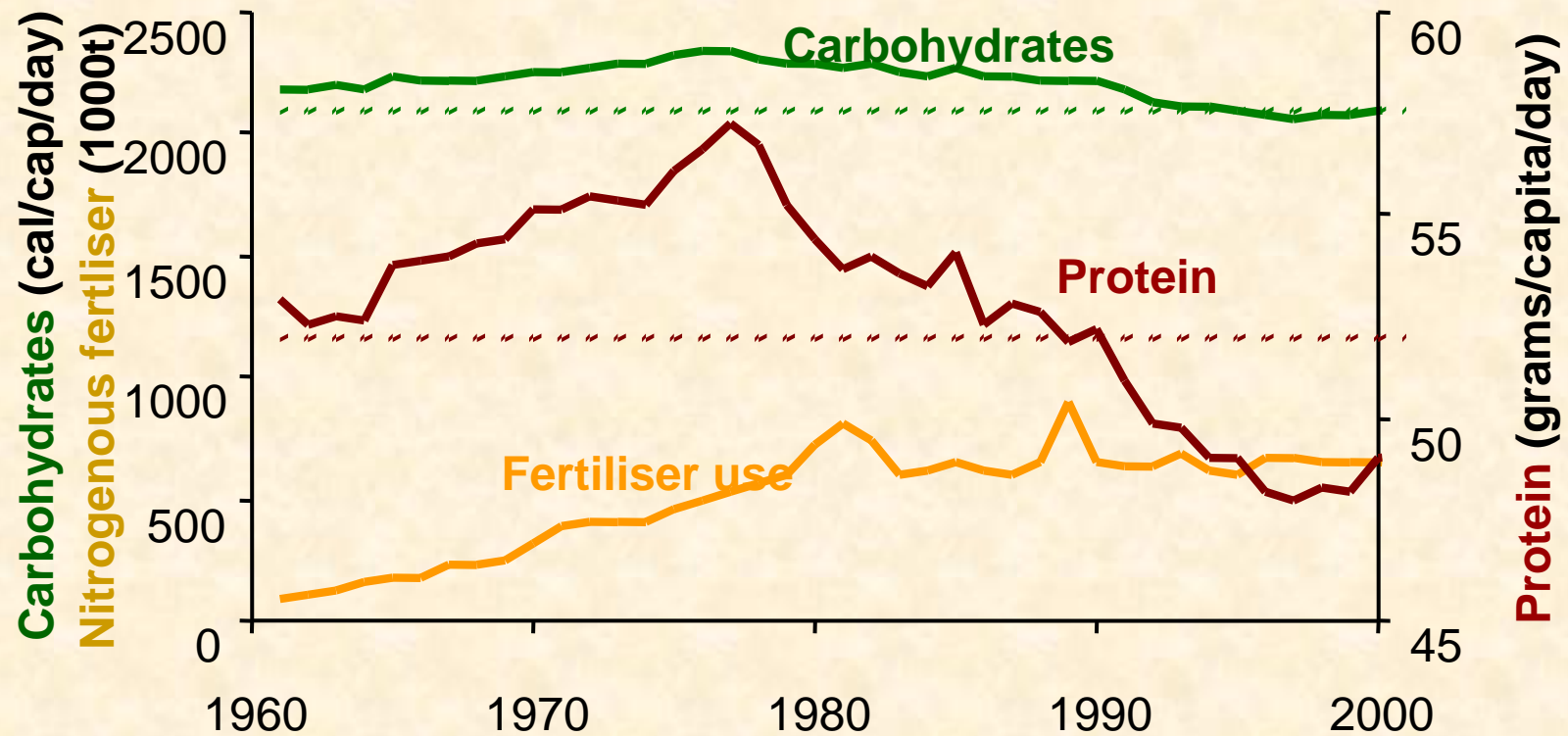
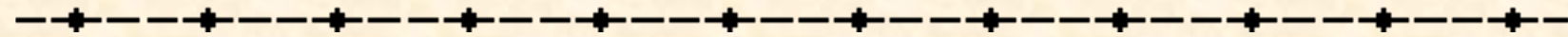
Production - Demand

- Severe shortages
- Vulnerable
- Adequate supplies



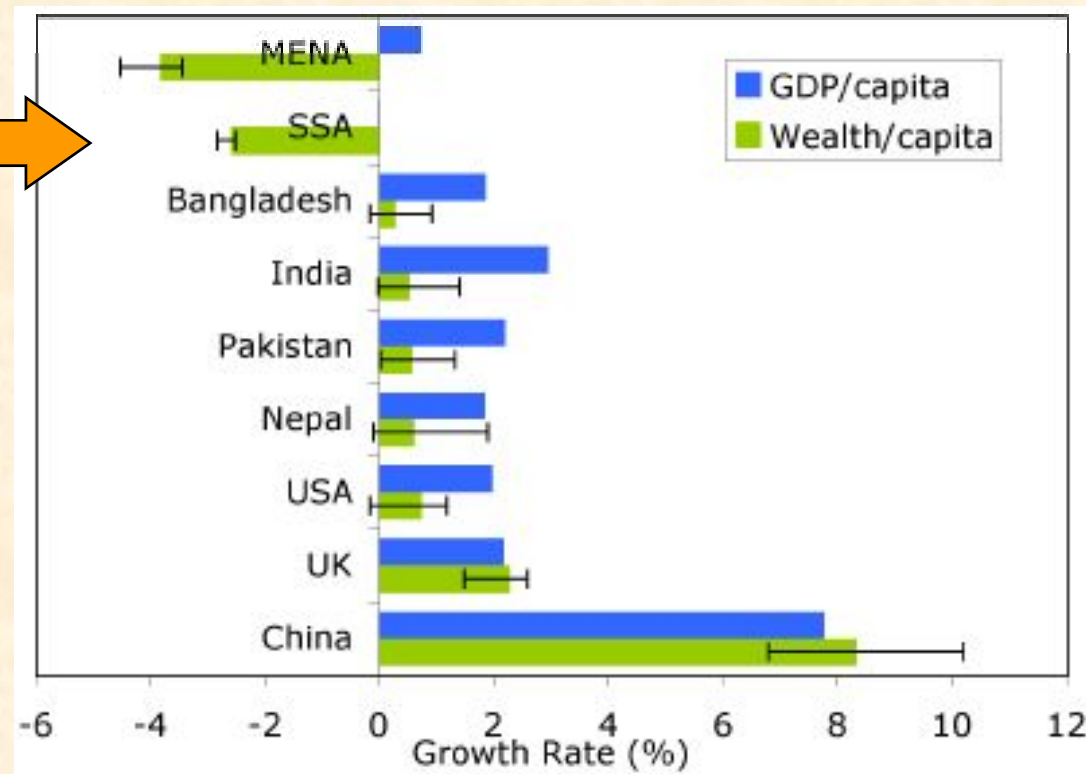
The soils have become nutrient-depleted

Africa is short of protein, not starch



Despite economic growth, Africa is getting poorer

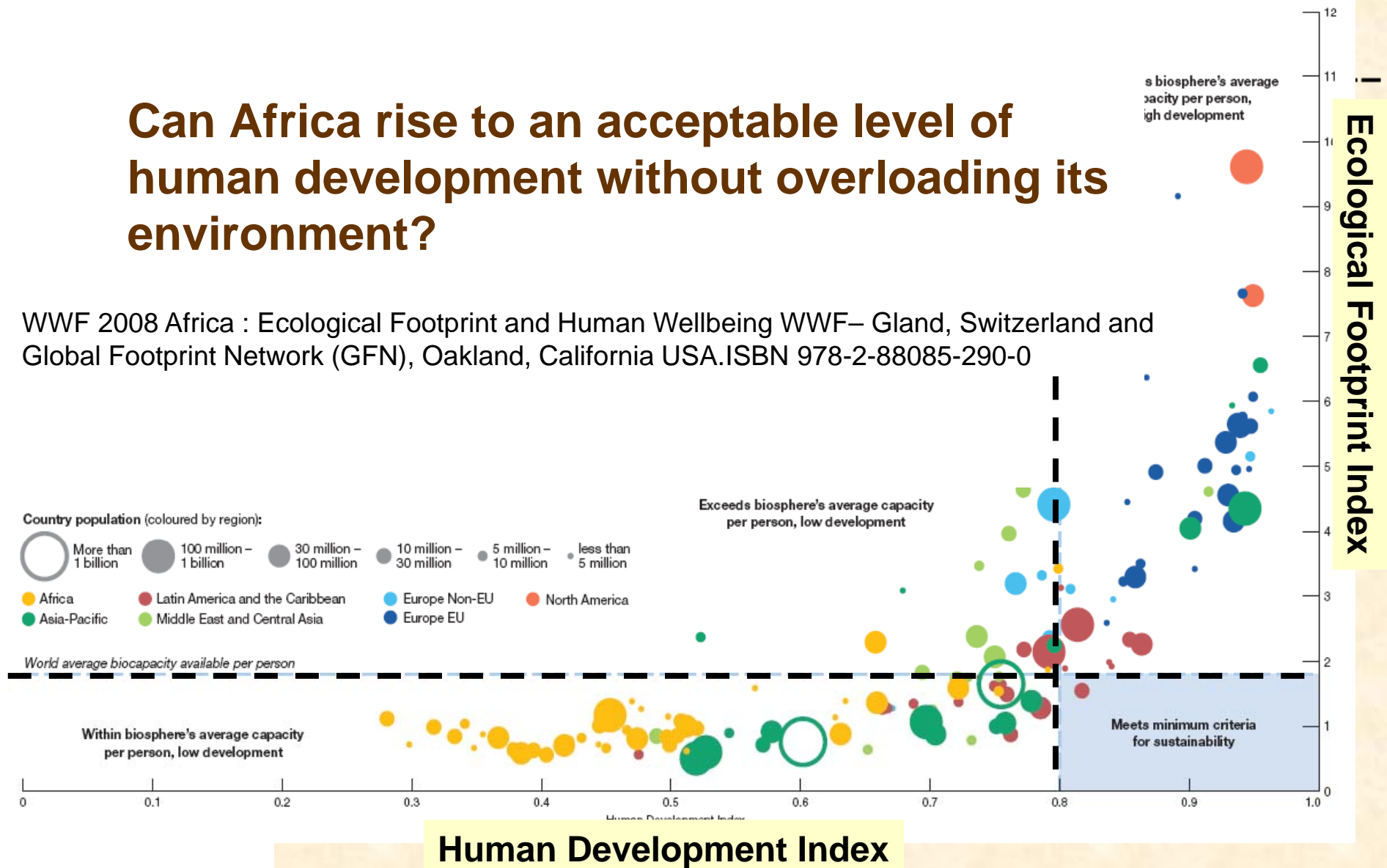
Inclusive wealth = Manufactured capital+Human Capital+Natural Capital



Arrow, K, P Dasgupta, L Goulder, G Daily, P Ehrlich, G Heal, S Levin, K-G Maler, S Schneider, D Starrett and B Walker 2004 Are We Consuming Too Much? *Journal of Economic Perspectives* **18** (3): 147–172

Can Africa rise to an acceptable level of human development without overloading its environment?

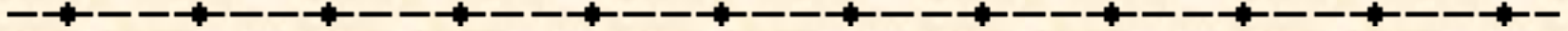
WWF 2008 Africa : Ecological Footprint and Human Wellbeing WWF– Gland, Switzerland and Global Footprint Network (GFN), Oakland, California USA. ISBN 978-2-88085-290-0





Conclusions

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- Viewing biodiversity and ecosystems as victims or opponents of development is unproductive
 - Ecosystem services are a *means* to improving human wellbeing
 - Mapping, valuation, inclusion in national accounts and plans and the creation of management institutions all help



Semper aliquid novi Africam adferre
‘Africa always brings something new’

Pliny the Elder

