



# The potential costs and benefits of addressing land degradation in the Thukela catchment, KwaZulu-Natal

Jane Turpie

*Anchor Environmental Consultants & University of Cape Town*



System of  
Environmental  
Economic  
Accounting



United Nations



stats sa

Department:  
Statistics South Africa  
REPUBLIC OF SOUTH AFRICA



environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

**SANBI**

Biodiversity for Life  
South African National Biodiversity Institute

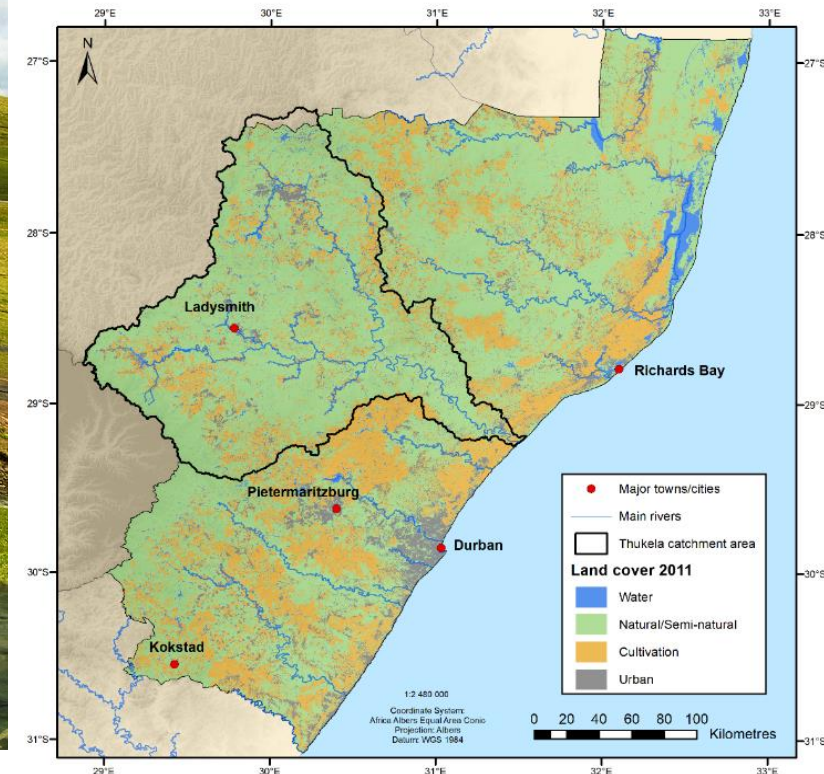


Conservation Partnerships & Consultancy

# Overview

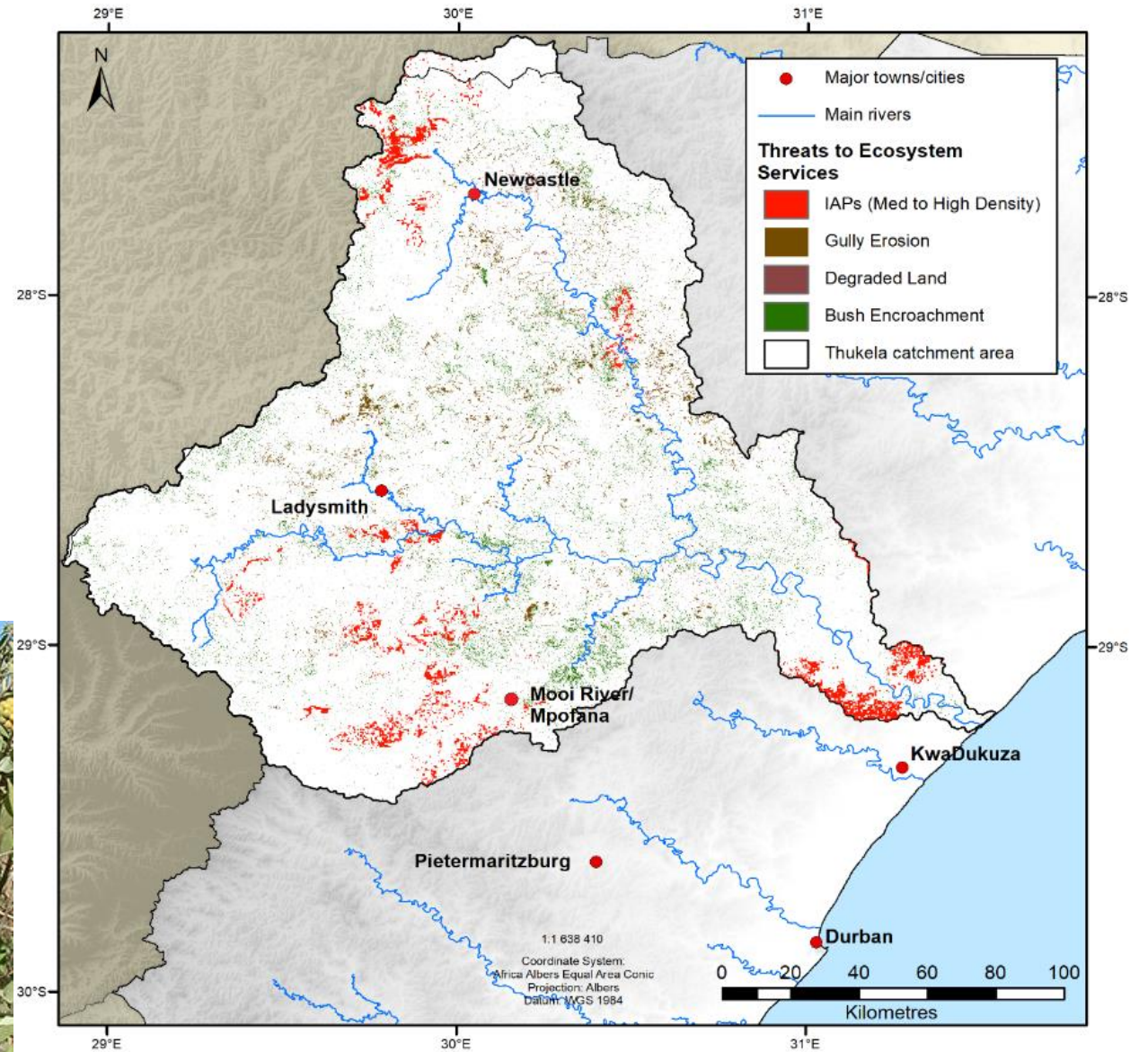


- Important water catchment, threatened by land degradation
- Scenario based approach

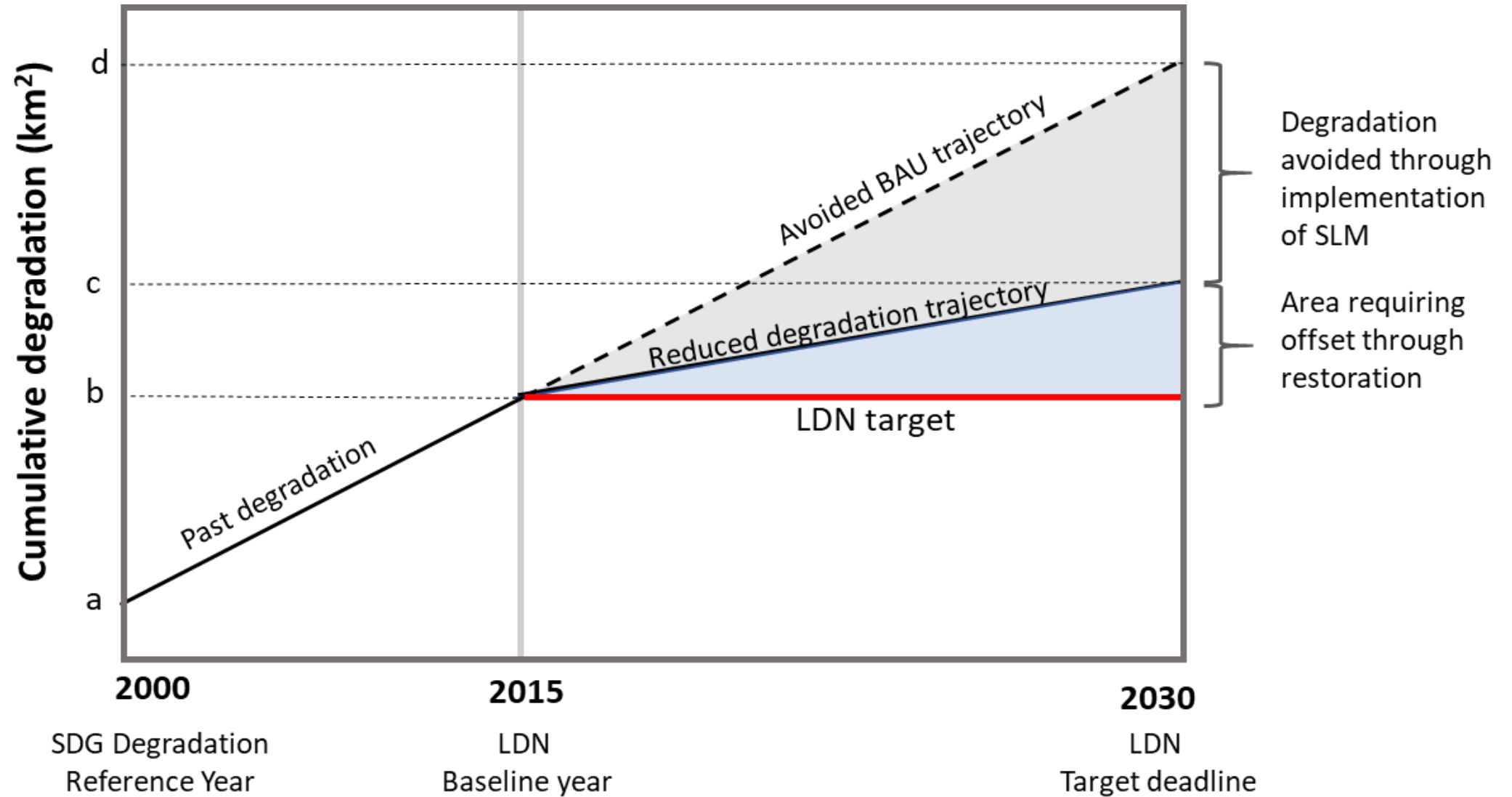


# Main issues in study area

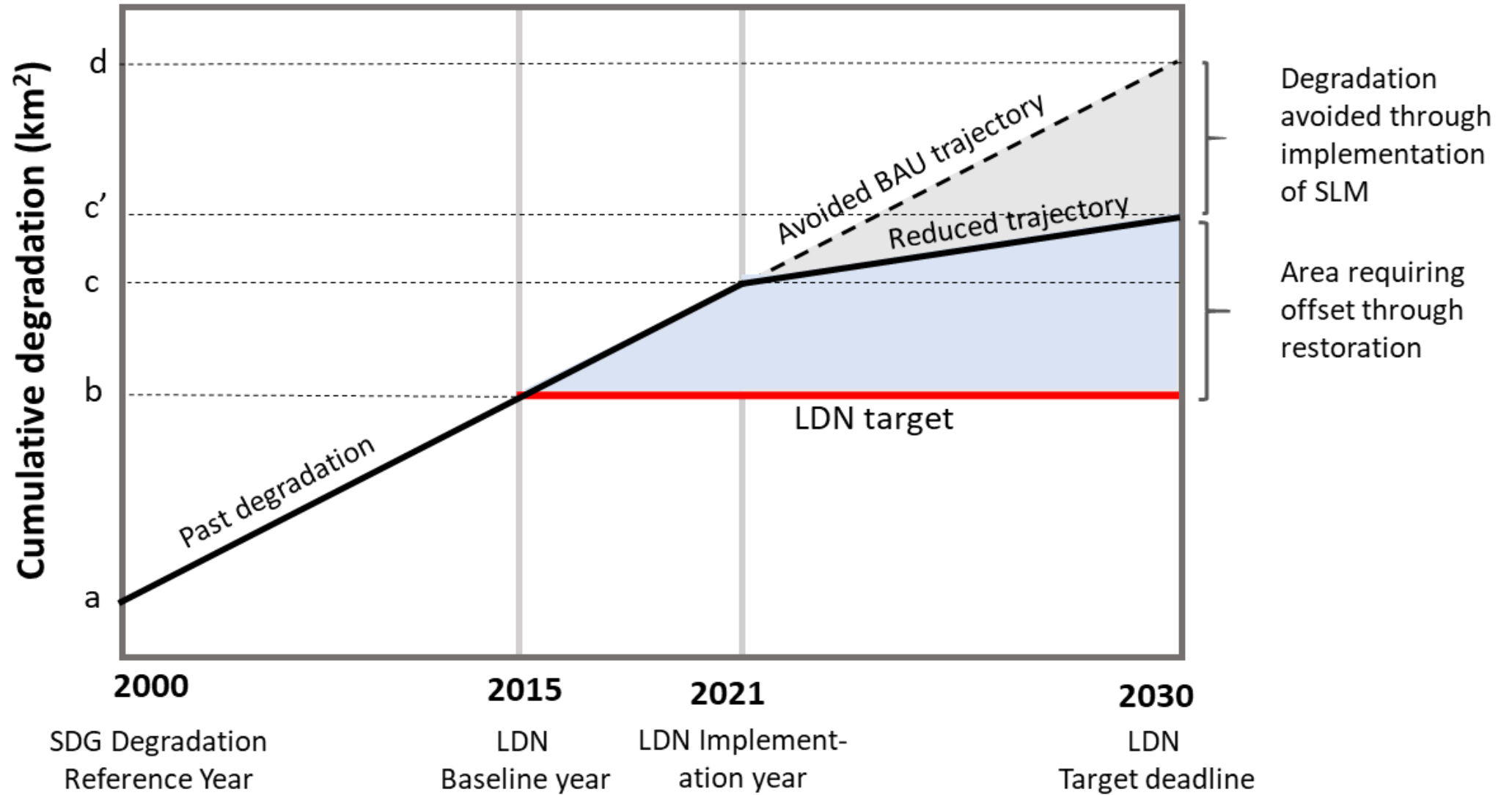
- Reduced vegetation cover and gully erosion
- Bush encroachment
- Invasive alien plants (IAPs)



# Conceptual framework

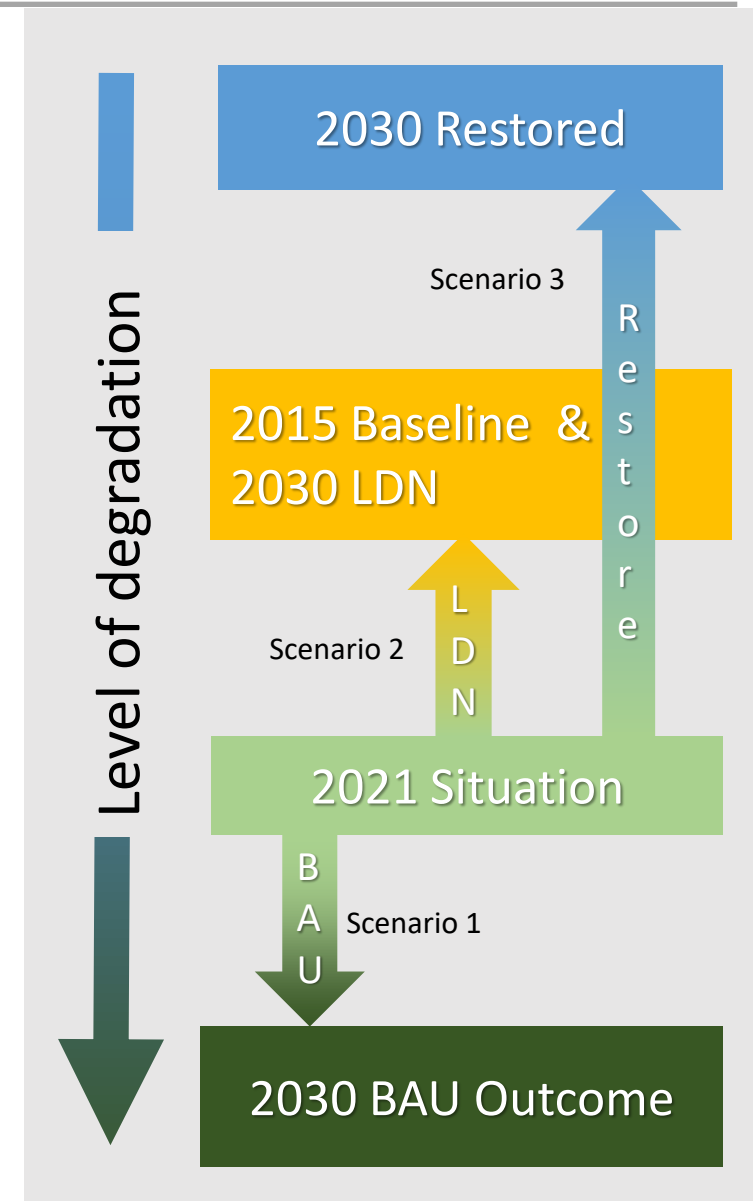


# Delayed start means bigger area to offset



# Study approach

- Estimation of the baseline land cover, trajectory to 2030 under BAU and resulting land cover, and the restored land cover
- Modelling of ecosystem services under BAU, LDN and restored outcomes
  - Same methods as Pilot, including SWAT model
- Costs and benefits of interventions compared with BAU Scenario
  - Costs of interventions based on literature, previous studies
  - Benefits estimated as difference in value of ecosystem services compared to BAU outcome



# Cost-benefit analysis

	Present value (R millions)		
	LDN Scenario		Full Restoration Scenario
	Upper bound costs	Lower bound costs	
<b>Costs relative to BAU</b>			
Clearing IAPs	514.4	514.4	2 355.2
Addressing Bush Encroachment	507.2	237.6	691.1
Active restoration of grasslands, erosion	2 623.6	–	–
Sustainable land management	–	1 981.02	6 093.62
<b>Total present value of costs</b>	<b>3 645.18</b>	<b>2 733.09</b>	<b>9 139.98</b>
<b>Benefits relative to BAU</b>			
Water supply	2 591.4	2 591.4	10 757.2
Sediment retention	38.9	38.9	63.1
Tourism	121.8	121.8	243.6
Carbon storage (avoided national cost)	–274.91	–274.91	597.5
Harvested resources	70.6	70.6	2 391.3
Livestock production	620.7	620.7	1 476.9
<b>Total present value of benefits</b>	<b>3 168.6</b>	<b>3 168.6</b>	<b>15 529.6</b>
<b>Net Present Value</b>	<b>–476.6</b>	<b>435.5</b>	<b>6 389.6</b>
BCR	0.9	1.2	1.7



## Conclusions

- Benefits of LDN depend on effective implementation of SLM measures
- Need to go beyond LDN and restore of previously-degraded grasslands
- Results do not include values of biodiversity, to RoW;
- Delay has already come at significant cost, don't delay
- Mapping degradation is difficult, need to do it properly

# Mail & Guardian

AFRICA'S BEST READ

COVID-19 IN SA NEWS POLITICS OPINION ARTS & CULTURE EDUCATION HEALTH ENVIRONMENT PODCASTS WEBI

ENVIRONMENT

## It pays to save the Thukela River catchment

Sheree Bega 17 Jul 2021



*Benefits: The Wagendrift Dam on the Bushmans River, a tributary of the Thukela River. Rehabilitating the Thukela River catchment in KwaZulu-Natal would reduce soil erosion, improve the grasslands and water supply, all of which*





Thank you

[jane@anchorenvironmental.co.za](mailto:jane@anchorenvironmental.co.za)