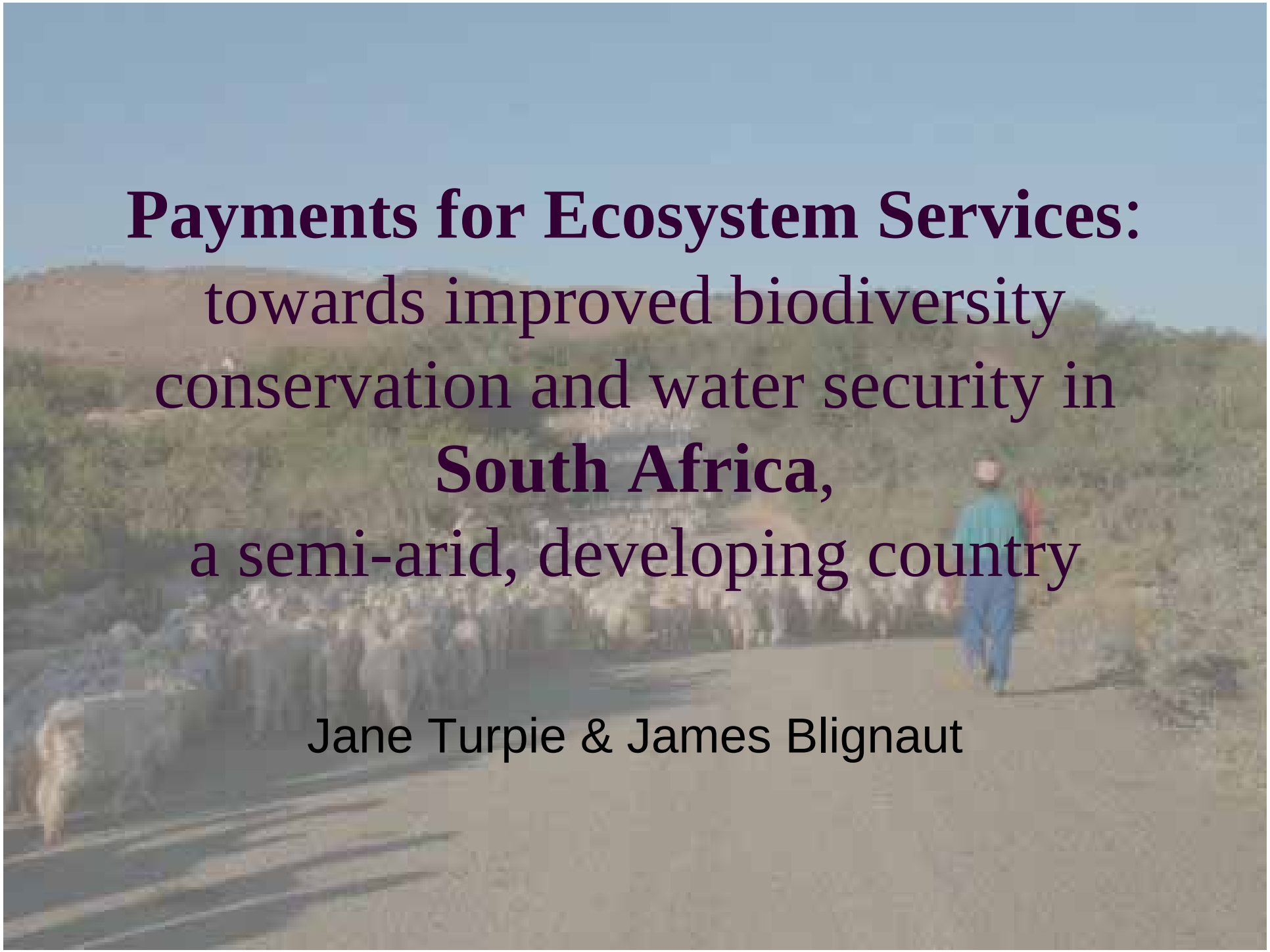
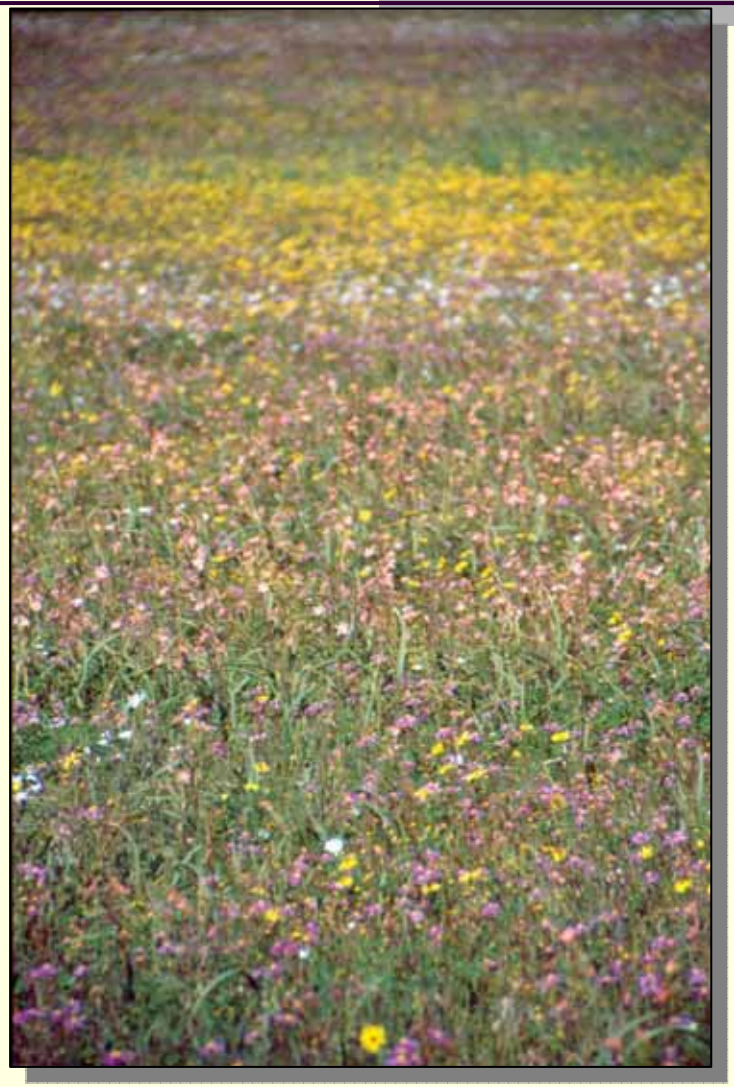


Payments for Ecosystem Services: towards improved biodiversity conservation and water security in **South Africa**, a semi-arid, developing country

Jane Turpie & James Blignaut

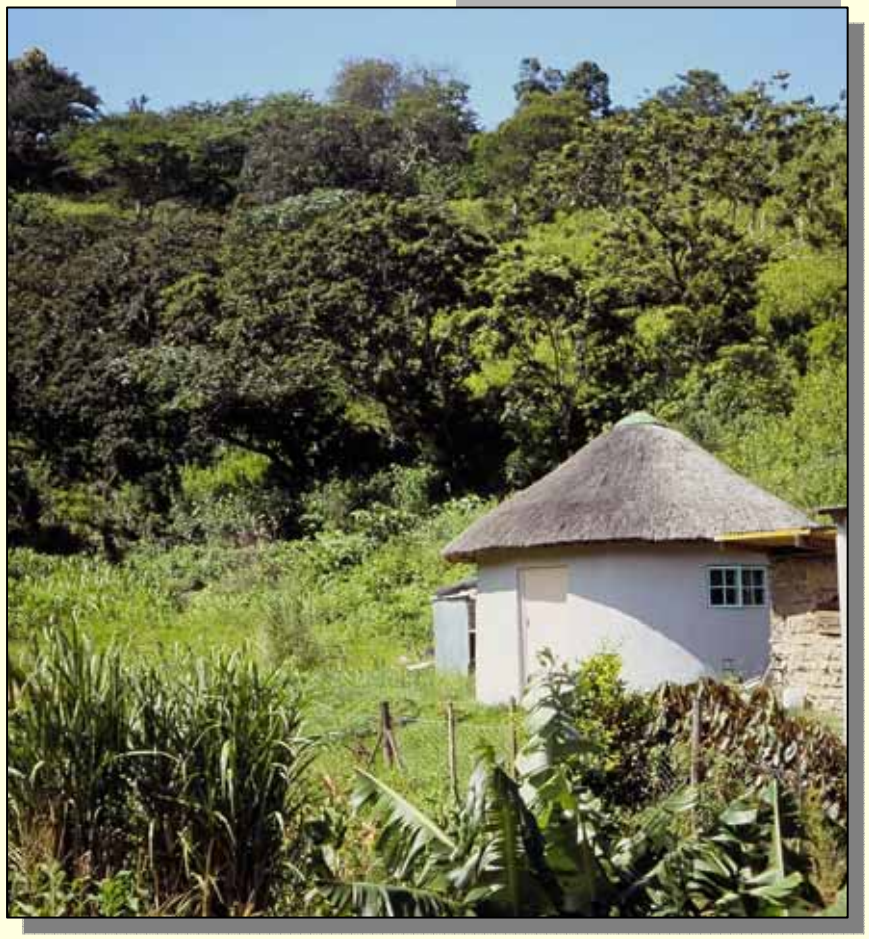
Introduction

- Ecosystems largely managed by means of command and control mechanisms
- Economic value increasingly being recognised
- Use of economic instruments coming to the fore
- Current interest in incentive systems and PES



Why PES?

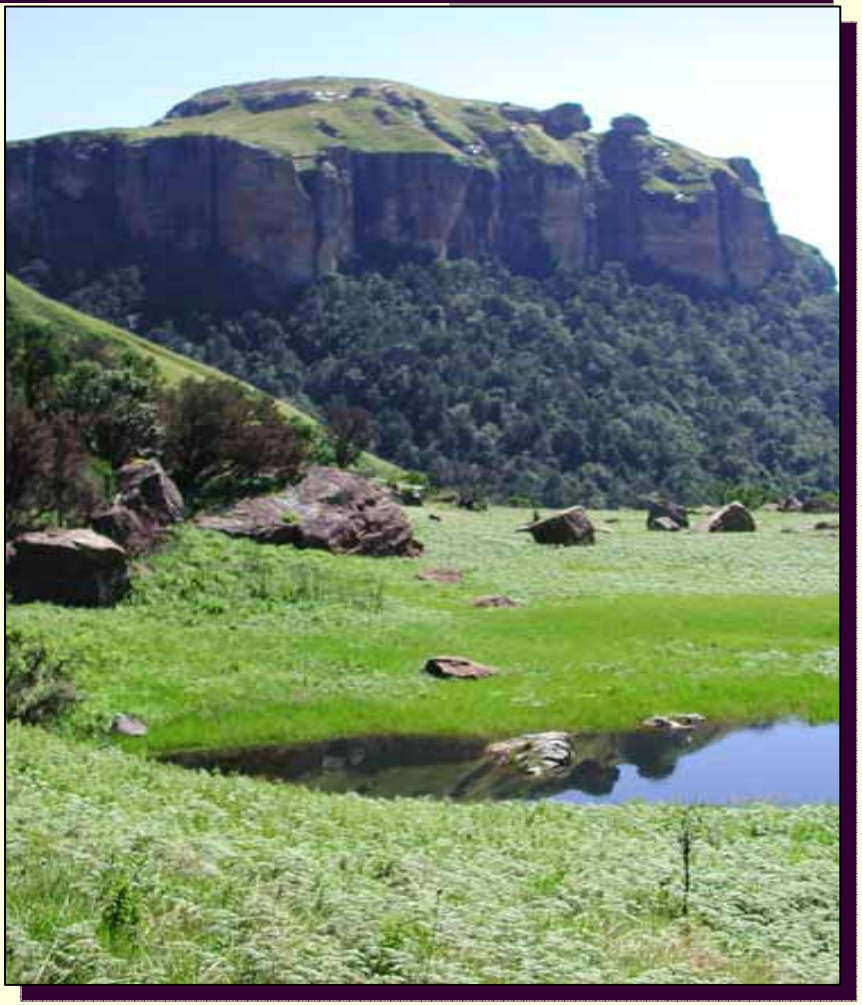
- Conservation vs other government priorities
- Need innovative solutions
- PES systems provide incentives and finance for conservation of ecosystems that yield valuable services



Existing PES systems

- Most applicable examples are payments for management of catchment areas for water supply

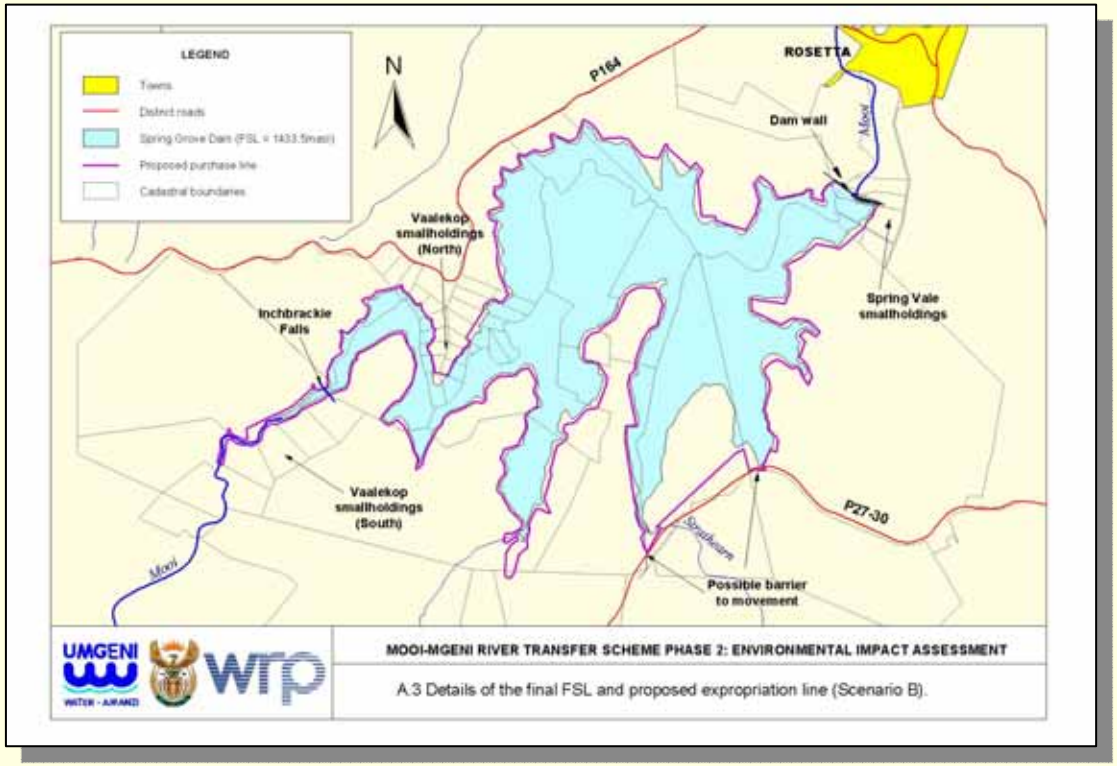
- Currently mostly involve the government's "Working for Water" programme



Water as a key commodity for PES

- Water identified as one of the most important development constraints facing SA

- Situation historically addressed with engineering solutions



- Surface waters heavily committed
- Water imported from neighbouring countries
- Groundwater potential limited

Invasive alien plants (IAPs)

- One of the main threats to biodiversity and water supply in SA:
  - displace natural vegetation,
  - lead to increased fire frequency and intensity,
  - increased soil erosion,
  - major consumers of water

Economic Impacts of IAPs

- In the Western Cape, losses amount to ~ $100 million annually

Consumptive use	-R19.97m
Non-consumptive use	-R5.81m
Indirect use	-R194.49m
Existence value	-R8.63m
Cons use gains	R19.60m
Water loss	-R474.85m
TOTAL	**-R684.16m**

“Working for Water”

- Initiated in 1995 in response to realisation of threat of IAPs to water supplies
- Government programme in which previously unemployed people are contracted to clear IAPs
- Funded as a poverty relief programme
- Annual budget $70m
  (compared with just over $100 million total budget of conservation agencies)

Payments by water users (involuntary)

- Department of Water Affairs and Forestry sells water to consumers
- Price includes “Water Resource Management Fee” to cover:
  - planning
  - pollution control
  - clearing IAPs → Funds WfW
  - demand management
  - water allocation
  - water use control

- Levies for alien clearing based on:

$$\frac{\text{Tot cost allocation to WfW}}{\text{Tot volume water used by agric, domestic, industrial}}$$

- ~ $9 m generated per annum
- 63% generated in Western Cape where threat to water by alien infestation is greatest

Payments by Municipalities

Hermanus municipality:

- demand for water was exceeding supply,
- high prices set for demand management
- part of revenues paid to WfW for clearing catchment
- Consumers participated

George municipality

- Growth of major tourism area potentially limited by water
- Augmentation scheme to increase dam capacity
- Studied impacts of IAPs – viable to invest in clearing
- Committed ~$60 000/year for alien clearing
- Paid to WfW and provincial conservation agency

Payments by public companies

- E.g. “ TCTA” = a liability management body for bulk water supply development
- Constructing the Berg River Dam to supply Cape Town
- Realised benefit of investing in rehabilitation of catchment area
- Will pay ~ $1.2 m over 3 years to WfW to clear catchment

Who pays, for what

Who	How much	For	Who benefits
Water users & distributors	$10 m	Water	Water users & distributors & All society
Government	$60 m	Poverty alleviation, Biodiversity (?)	

Voluntary?

- Mostly involuntary
- Where consumers have been consulted, payment has been voluntary
- Water distributors voluntarily entered into agreements with WfW
- Potential for the future: Catchment Management Agencies (CMAs)
  - Pressure to be financially self-sufficient

Sellers and conditionality

- The “sellers” are roving service providers in the form of small companies
- Seller selection criterion is that contractees must be previously unemployed
- Service providers tender for contracts
- Conditionality – contracts to deliver specified action

Site selection

- Up to now rather ad hoc
- Future site selection to be informed by recently-developed CBA tool

Monitoring – has WfW achieved its objectives

- Costs of clearing very well monitored
- GIS database to track progress (recent)
- Good progress has been made with certain species
- Some will not be under control within next 50 years

Species	Area in SA	Area treated	%
Australian acacias	719 979	23 105	3
Lantana	69 268	10 411	14
Pines	77 093	3 529	5
Gums	62 949	4 722	7
Hakea	64 089	1 013	2

- Restored flows - without the programme, would have lost 250 million m^3 (additionality)

The “side objective”…

- …is really the main objective
- Success of WfW programme hinged on being a poverty-relief programme
  - Uses only previously unemployed
  - Employs > 25 000
  - Provides skills training, health education etc
  - Secondary industries
- Social aspects of WfW valued above water provision

Sustainability..

- May have to compete with other poverty relief programmes for government funding in future
- Need to increase PES element
- Long term sustainability of programme favoured by:
  - Increasing scientific proof of benefits (water delivery, biodiversity protection)
  - The sheer scale of the problem in SA

Other benefits of WfW

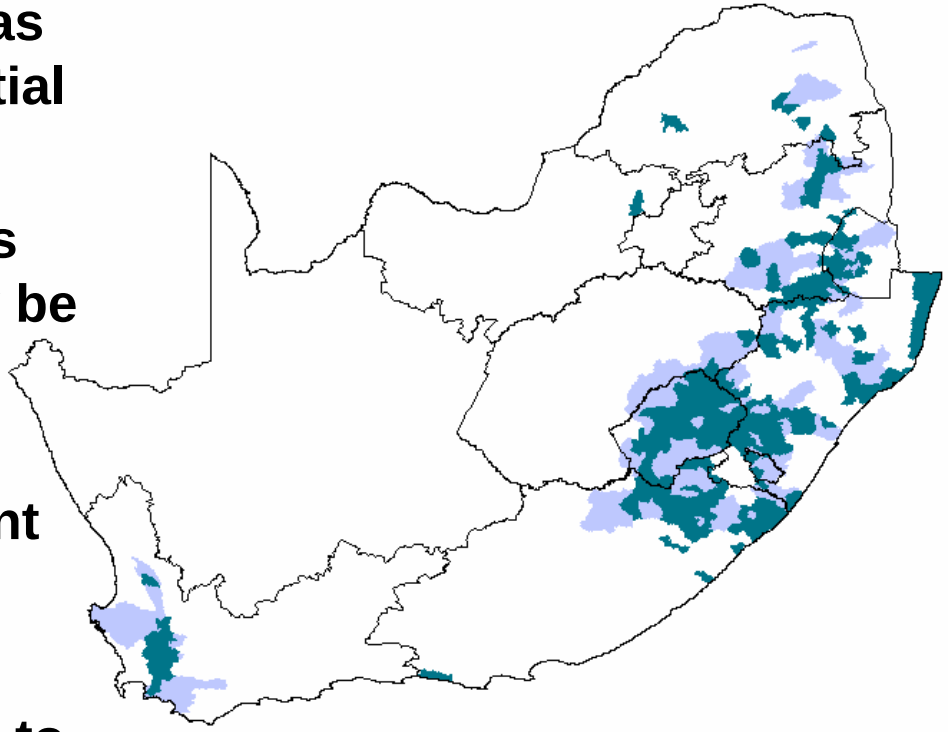
- Research component
  - links between infestation and water supply
  - costs and benefits of management options
- Greater public awareness of ecological issues

WfW as beginning of something bigger

- **WfW provides excellent starting point for broadening PES in SA.**
- **WfW's IAP clearing has expanded to areas where there is no hydrological benefit (ie for biodiversity)**
- **Has also spawned "Working for Woodlands" and "Working for Wetlands".**
- **>>> "Working for Ecosystem Services"?**

Water vs other services

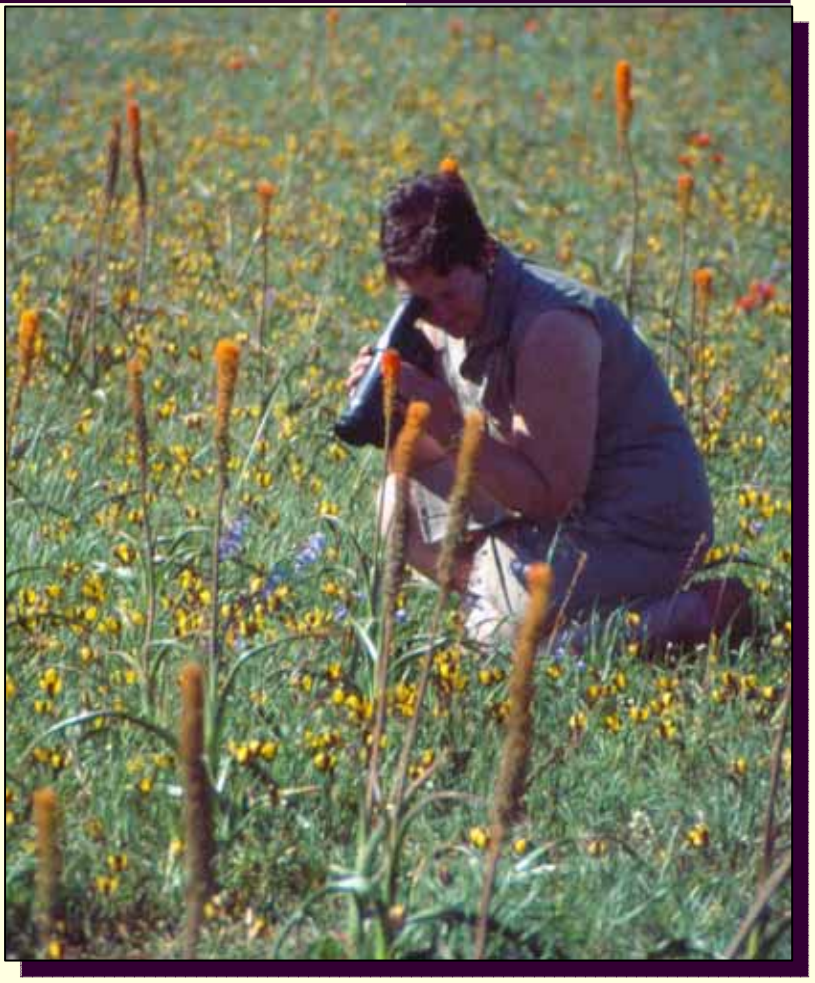
- **Water production areas do not generally coincide with areas with C sequestration potential**
- **Important biodiversity areas coincide with above or may be main service**
- **Main watersheds = important biodiversity areas**
- **Several studies show water to be most valuable service – so where water is an issue, use water**



Areas of high water yield

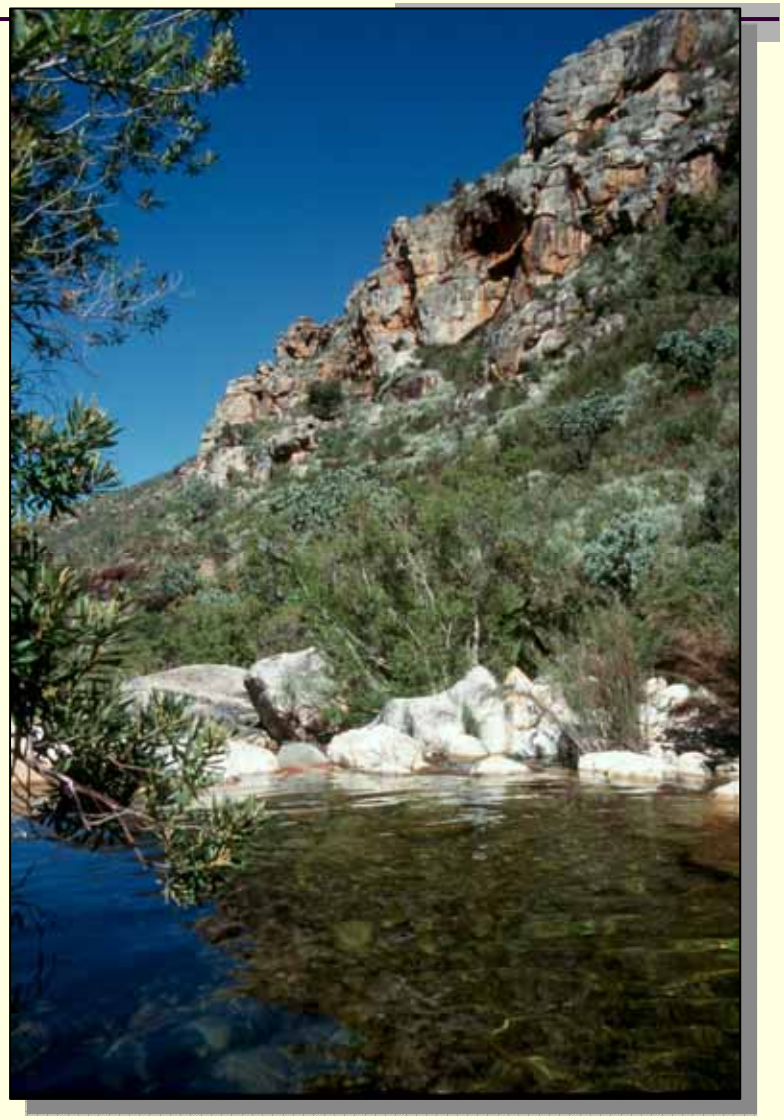
Plans for PES in SA

- Three main projects planning to implement PES systems



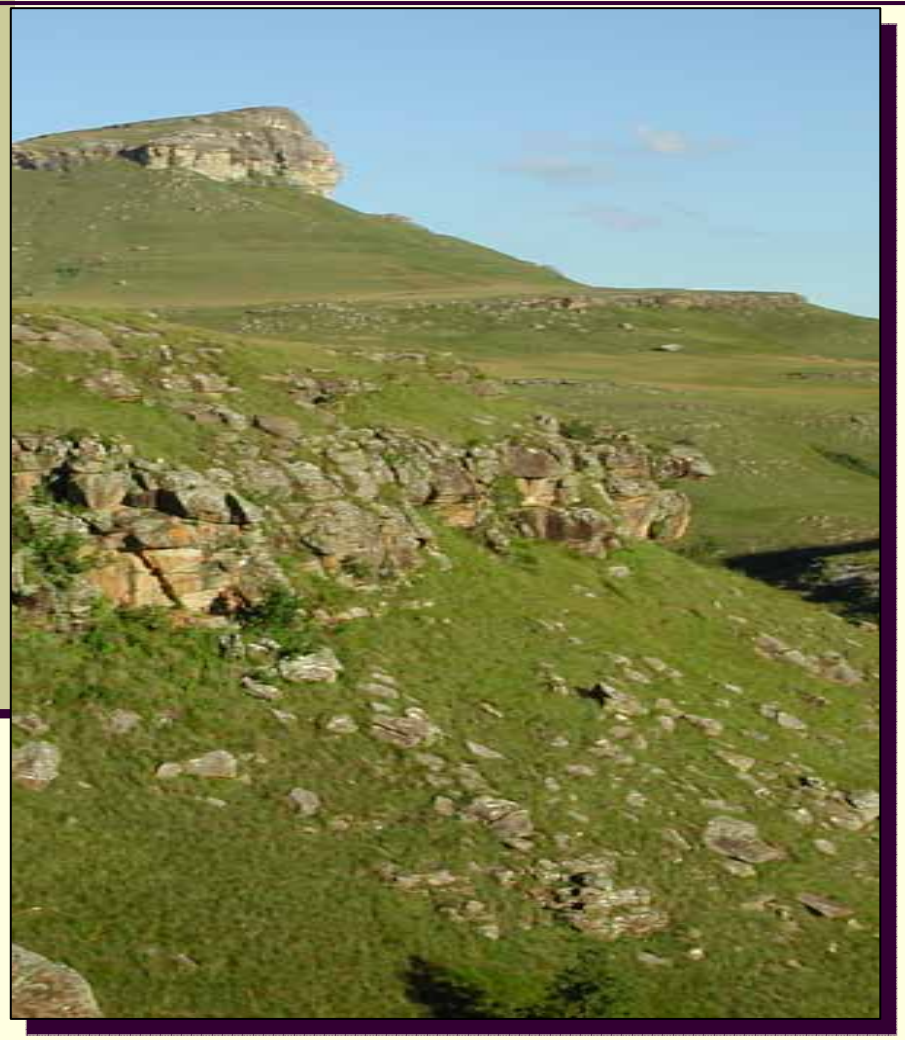
(1) Cape floristic region

- Indigenous fynbos vegetation – a global biodiversity hotspot, very high diversity
- Indigenous vegetation being swamped by invasive alien plants
- Loss of biodiversity, runoff



- **Cape Action Plan for the Environment (C.A.P.E.)**
- Cost of clearing IAPs is crippling to landowners
- PES seen as a financing mechanism
- Water is most tradeable commodity – i.e. expand existing PES systems

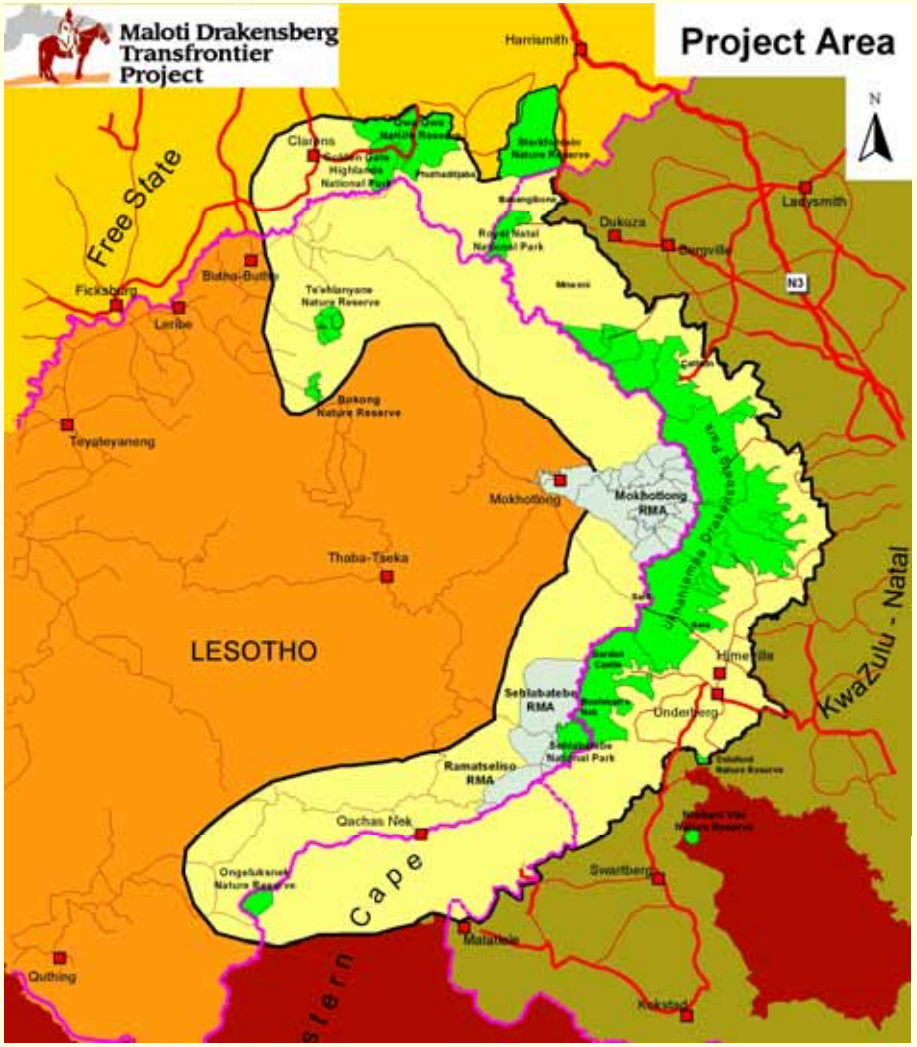
(2) Maloti-Drakensberg grasslands



- Grasslands and associated wetlands – high degree of endemism, important hydrological function
- Most important water supply area in SA - 25% of supply, vast area benefits
- Threats:
  - Invasion of river courses by alien plants
  - Habitat degradation (e.g. burning, grazing)
  - Habitat loss (dams, cultivation, afforestation)

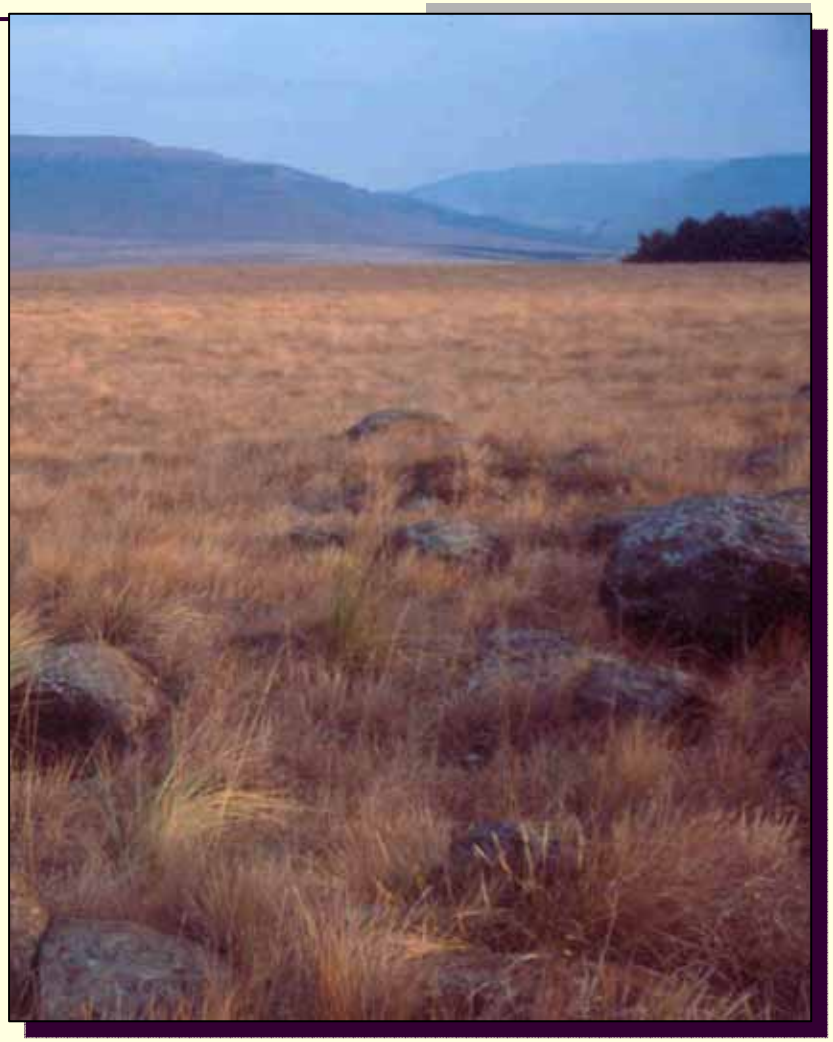
Maloti-Drakensberg Transfrontier Project

- Recently established conservation initiative –
  - protected areas and surrounding lands,
  - SA and Lesotho
- Challenges due to:
  - variety of threats
  - variety of land tenure
  - variety of land uses
  - range of hh income

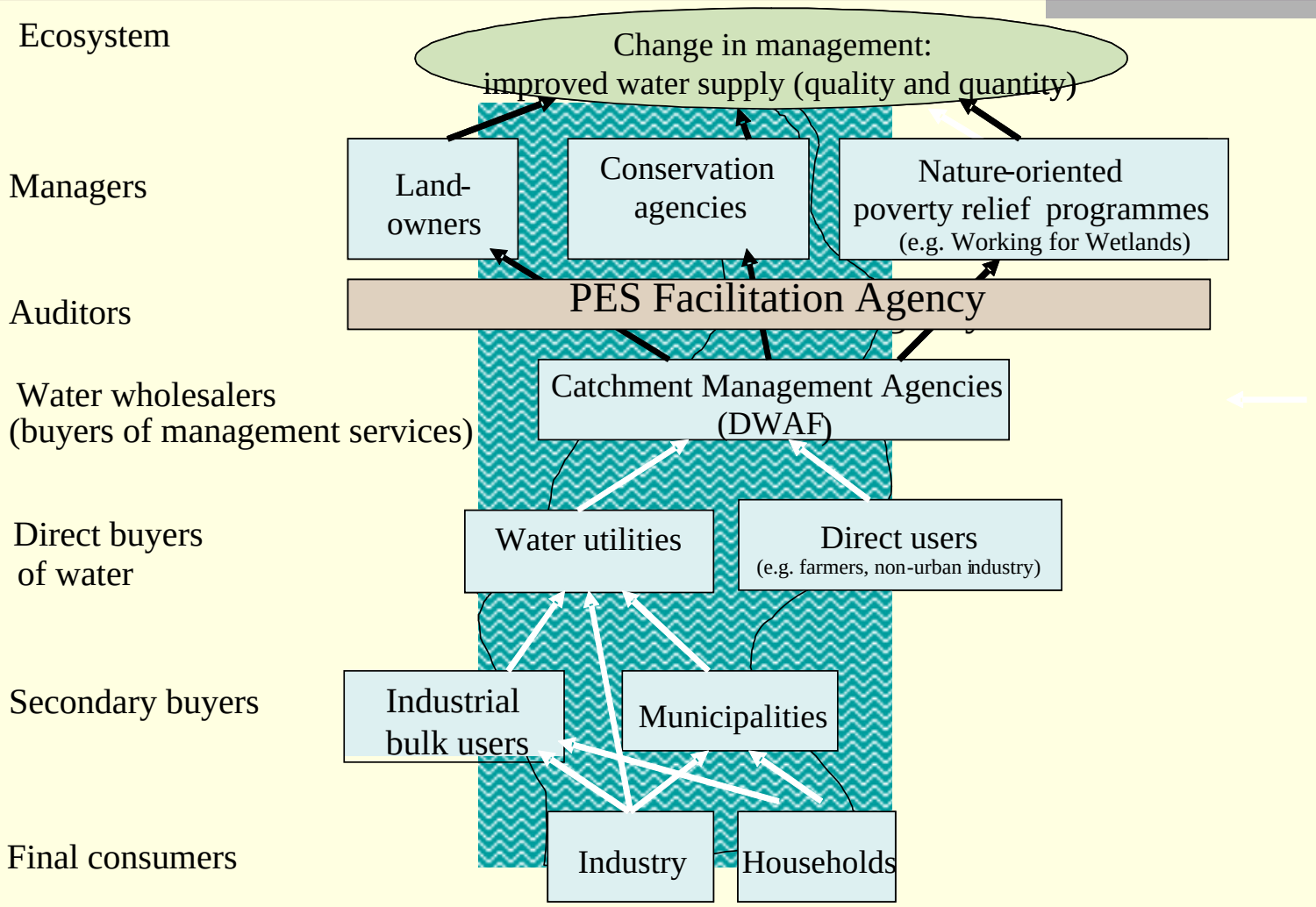


Drakensberg (continued)

- PES seen as an opportunity for
  - Sustainable financing for the publicly-owned sections
  - Incentive for private land owners to engage in conservation
- Water regulation most tradeable service

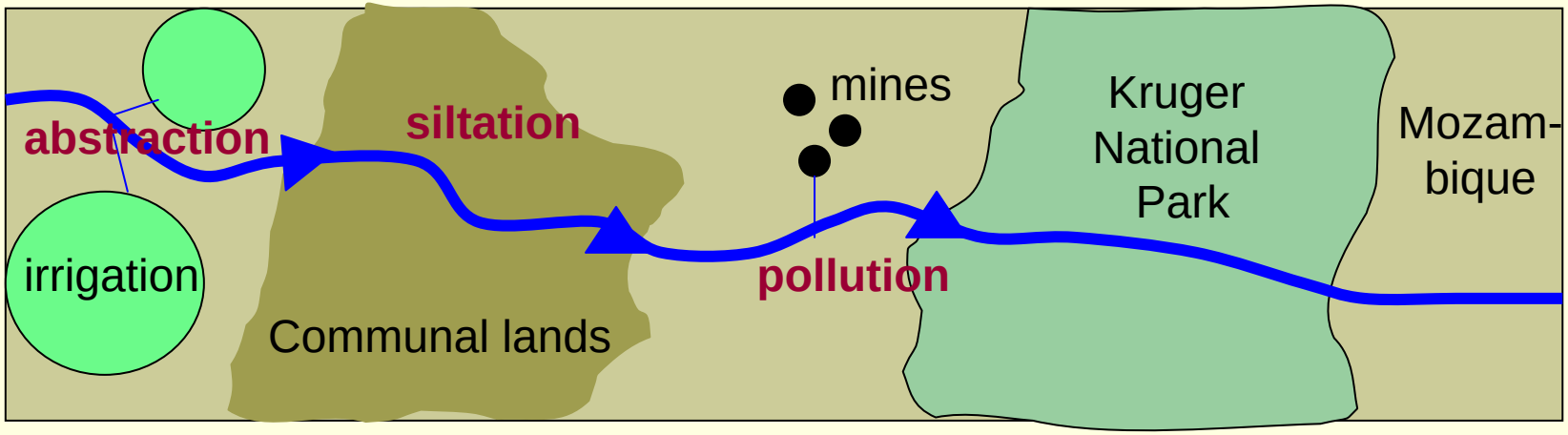


Envisaged model for hydrological services



(3) Olifants River (IIED)

- NE SA, water source and attraction for Kruger National Park
- Water heavily utilised upstream
- Downstream users interested in paying upstream users to improve land management
  - One mine already leases 500ha from upstream rural community to protect riparian zone.



Key challenges

- Increasing voluntary payments for hydrological services with payments linked to service delivery
- Understanding relationships between management actions and service delivery for a broader range of situations, e.g.
  - Wetland restoration & water supply
  - Woodland restoration and carbon sequestration
- Establishing landowners as service providers
- Finding inexpensive ways to monitor service delivery