Generating Support For Natural Capital Interventions And Broadening The Funding Base By Unlocking Investments In Ecosystem Services Through Land User Incentives, In South Africa

Christo Marais
Department of Environmental Affairs, South Africa
Historic Overview of Policies and Investments in Natural Capital & Ecosystem Services in South Africa

• Going Back as Early as 1943
• Mountain Catchment Areas Act and the Declaration of Mountain Catchment Areas
• The Dawn of the new South Africa
• The Constitution
• The Water Act
• National Environmental Management & Biodiversity Act
• Government Priorities

- While researching the impacts of plantation forestry, Wicht and his colleagues for the 1st time recorded the impacts of plantation forests in fynbos landscapes on streamflow.
Mountain Catchment Areas Act and the Declaration of Mountain Catchment Areas

- Mountain Catchment Areas (MCA) Act 63 of 1970.

- ... the Mountain Catchment Areas Act is to provide the conservation, use, management and control of land situated in mountain catchment areas, ...

[Map showing the distribution of mountain catchment areas and major dams]
The question on everybody’s lips was - How was conservation of natural resources going to compete against the social demands in post apartheid South Africa?
In 1993 - Two Resolutions were Adopted by a Group of Scientists to be Presented to Decision Makers

• to present to local decision makers the threat that invasive alien plants pose to the country’s scarce water resources and

• to approach “the rich north” for support in the battle against invasive alien plants and its impacts on biodiversity
In September 1995 the then Minister of Water Affairs and Forestry, Prof. Kader Asmal took the visionary step to include invasive alien plant management as a programme in the department’s contribution to the Reconstruction and Development Programme of the new government.
The Face of Poverty still haunts South Africa (1997)

Government Decided to Invest R25million in the Clearing of Invasive Alien Plants through the Reconstruction and Development Programme
Prof. Kader Asmal
Launching
Working for Water!!
The “Birth” of the Working for Programmes

Working for Land
Working for Forests

Working on Fire

Working for Wetlands

Working for Water
• 6.5.7 Clearing of Invasive Alien Plants (IAP’s)

• The full cost of control of certain IAP’s may be charged to affected water users. ..., the total cost of control must be communicated to all affected stakeholder organisations. These costs may be supported by subsidy where available and appropriate.
National Environmental Management: Biodiversity (NEMBA) Act 10 of 2004

• State’s trusteeship of biological diversity

3. In fulfilling the rights contained in section 24 of the Constitution, the state through its organs that implement legislation applicable to biodiversity, must and

(a) manage, conserve and sustain South Africa’s biodiversity and its components

(b) implement this Act to achieve the progressive realisation of those rights.

The purpose of NEMBA is to provide for ... the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; ...
Mainstreaming Natural Capital and Ecosystem Services into Government Priorities

- Crime
- Education
- Health
- Job Creation
- Rural Development
The science behind the programmes
“Over simplified” Spectrum of Land Degradation

Desertification

Bush Encroachments & Invasives
The Upper End of the Water Value Chain: What are Watershed Services?

- **Flows**
  - Flood/high flows
  - Low Flows
  - Yield from water infrastructure
  - Ecological Reserve
- **Sediments**
  - Siltation of dams
- **Water quality**
  - Purification costs
  - Waterweed management costs
  - Health risks
Hydrological monitoring before and after clearing has shown that invasive alien plants have a significant impact on runoff.

(Taken from Prinsloo & Scott 1999)
The impact of the clearing of all the trees by January 2004 was a 44% increase in streamflow. This was equivalent to 75,000 cubic meters for the catchment. The relative contribution of the riparian zone compared to the upslope region during the period when both areas were cleared (January 2004 to May 2006) was 16 mm and 78 mm respectively (the riparian zone therefore contributing 21% to annual streamflow). Since the riparian zone represented only 11% of the total catchment area (7.5 ha versus 65 ha, Table 3.1), the significance of the riparian zone to streamflow generation was clearly demonstrated.
Preliminary Estimate of the Impact of Invasive Alien Trees in Rivers and Mountain Catchments on Registered Water Use

• **Current 4%**

• **If left unchecked it will increase to more than 16%**

Gorgens et al 2006
Impacts of desertification on sedimentations and flows (MDTP 2008)

- In the Thukela, good management practice can result in an additional **12.8 million m$^3$** in dry season flows, the same action can reduce sediment yields by **1.2 million m$^3$**.

- In the Umzimvubu, it can result in an **additional 3.9 million m$^3$** dry season flows, and the reduction in sediment is **4.9 million m$^3$** per annum.
<table>
<thead>
<tr>
<th>Dam</th>
<th>% Sedimentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welbedacht</td>
<td>91.1</td>
</tr>
<tr>
<td>Gilbert Eyles</td>
<td>76.5</td>
</tr>
<tr>
<td>Elandsdrifts</td>
<td>70.9</td>
</tr>
<tr>
<td>Bethulie</td>
<td>69.8</td>
</tr>
<tr>
<td>Seshego</td>
<td>62.6</td>
</tr>
</tbody>
</table>

R20/m³ of storage space
R8/m³ to dredge once
silted up
Legge 2010
## Impacts of desertification on the carbon balance

<table>
<thead>
<tr>
<th>Component</th>
<th>Value (t C ha⁻¹)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above ground</td>
<td>40 ± 3</td>
<td></td>
</tr>
<tr>
<td>Litter</td>
<td>11 ± 1</td>
<td></td>
</tr>
<tr>
<td>Roots</td>
<td>25 ± 1.3</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>133 ± 27</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>209 ± 28</td>
<td></td>
</tr>
</tbody>
</table>

**Mills *et al.* (2005)**

*Austral Ecology*
Disaster risk reduction and climate adaptation

Courtesy: Forest Fires Association

Courtesy: Erich Stock
Hectares Invaded = ± 20 million
Condensed Hectares = ± 1.9 million
65% of wetland types and 57% of river types are threatened.

Wetlands cover only 2.4% of country’s surface area.

Courtesy: John Dini
Degraded Areas of the Country
By investing in biodiversity and ecosystem services restoration we can make very significant contributions job creation and rural development.
The Financial And Human Resource Implications Of The Challenge South Africa Faces – High Road Scenario (Restore Over 15 Years)

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>Middle Road Scenario</th>
<th>High Road Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Turnover</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budgets ($ Millions)</td>
<td>$251</td>
<td>$1 670</td>
<td>$7 636</td>
</tr>
<tr>
<td>Annual Employment (Full Time Equivalent)</td>
<td>23 915</td>
<td>95 305</td>
<td>230 824</td>
</tr>
</tbody>
</table>
# The Challenge!!

<table>
<thead>
<tr>
<th></th>
<th>Current Land User Incentives</th>
<th>If Expanded to Full Government Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Resources Unlocked</td>
<td>$29,411,765</td>
<td>$250,994,517</td>
</tr>
<tr>
<td>Private Sector Resources Unlocked</td>
<td>$7,860,992</td>
<td>$67,084,241</td>
</tr>
</tbody>
</table>

*Private/Public Ratio* 0.27  
Private/Public Ratio need for Middle Rd Scenario 6.65  
Private/Public Ratio need for High Rd Scenario 30.42

* There are currently private investments being made in ecosystem services which are not accounted for.
Conclusion – What are the answers?

• An integrated approach
  – Legislation looking at both incentives and disincentives to enhance the delivery ecosystem services
  – Offsets, water, carbon and biodiversity
  – Sustainability investments (Corporate Social Investment)
  – Government Investment through the Expanded Public Works Programme
Thank You!!