The carrot and stick: linking Payments for Ecosystem services (PES) to a water Cap-and-Trade scheme to secure a transition to sustainable water and land management in one of South Africa’s stressed water management areas.

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Environmental Management Policy in South Africa

- Traditional use of ‘command and control’ mechanisms to conserve the environment
  - Protected areas
  - Environmental, Water & Land Use Regulations

- Govt. subsidies for restoration of natural capital and job creation – Working for Water & Wetlands Programmes

- Neither achieving objectives
- Some now advocating more market based mechanisms – esp. PES
Obstacles to development of Watershed PES schemes?

• Limited govt. funding
  – Use of Public Works & Poverty Alleviation Funds
  – Under-pricing of Water

• Difficulties providing adequate data and proving the delivery potential

• PES potential undermined by free riding and non-excludability – no delivery guarantee

• Lack of interest amongst
  – Land owner/users
  – Water Regulators
Positive Factors for development of PES

**Demand Side**
- Demand for water outstripping supply

**Supply Side**
- Agricultural crisis encouraging consideration of alternative land uses
- Increasing number of lifestyle land owners & environmentally aware owners
- Conservation Agencies willing to assist
Institutional Constraints to development of PES schemes

• Excellent water legislation but not yet effectively implemented – capacity constraints
• Control of water use limited to a few govt. Irrigation schemes
• Water is generally not perceived or felt by existing water users to be scarce – – over-allocated and very cheap
• Concerns about using markets
Need to re-think PES idea

• Issue is much broader than providing incentives
• Also need to:
  – Define and enforce water use rights/allocations
  – Secure substantially more government and private sector investment in ES
  – Demonstrate the potential and value of ES
  – Encourage a shift to more sustainable land/water uses
  – Get the cooperation of other government agencies (i.e. Water, Agriculture, Rural development, Land reform)
• Need a broader more integrated Catchment Management Approach
Elements of this Broader Approach

• Needs to be aligned with water reform policies
  – Defining and enforcing water allocations
  – Reducing and redistributing existing water uses in stressed catchments
    • Ecological & Social Reserves
    • Redressing the injustices of the past
    • Accommodating urban growth & new developments
  – Increasing the price of water & investing revenue in ES

• Needs to ensure that viable & sustainable rural/agricultural development options are maintained and/or created
Water Allocation Reforms

Potential Transition Mechanisms (Policy Options)

1. Traditional command-&-control mechanisms – compulsory licensing
2. Increasing Price of Water and facilitating voluntary reductions in existing water allocations
3. Cap and Trade Auctions

Any of these could be combined with Restoration Auctions to increase supply of water
Water Market Mechanisms

I am researching the potential to use 2 different market mechanisms in the Algoa WMA

1. **A stick:** Cap & Trade (C&T) – to deal with over-allocation problem and reduce & redistribute water allocations

2. **A carrot:** Restoration Auctions – to increase water supply and ease water allocation reform process
C&T Preparation & Planning Process

• The C&T Plan needs to be developed by the Catchment Management Agency (CMA) through consultation

• Plan needs to include:
  – Data about the volume of the water resource and existing uses
  – Plan for the accommodation of the ecological & social reserves over time
  – Plan for redress of past imbalances/injustices over time
  – Plan to reduce existing over-allocated registered water uses over time
  – Models and plans to increase water supply through restoration
Hypothetical Water Cap-and-Trade Plan

% of Water Resource Used

<table>
<thead>
<tr>
<th>Year</th>
<th>Ecological</th>
<th>Social</th>
<th>Emergent Farmers</th>
<th>Allocations</th>
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<td>Yr 0</td>
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<td>Yr 10 (Target)</td>
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Linking C &T Auctions with Restoration Auctions

Yr 0
Yr 1
Yr 2
Yr 3
Yr 4
Yr 5
Yr 6
Yr 7
Yr 8
Yr 9
Yr 10 (Target)

- Ecological
- Social
- Emergent Farmers
- Allocations
- Additional PES water

Yr 1 to Yr 9 are represented with different colors indicating different allocations and targets.
**Stick (Cap & Trade) + Carrot (PES)**

**MES – PES continuum** *(Shelley 2011)*

- **Goods & Services with Negative Externalities**
  - Compensation from polluters
  - MES – tradable permits

- **Goods with no externalities**
  - No payment

- **Goods & Services with Positive Externalities**
  - Rewards for Ecosystem Service Stewards
  - PES Incentives

- **Ideal market incentive scenario we should be striving for**
  - Conservation Agriculture
  - Restoration Activities
  - Degrading Agriculture/land-use
My PhD Research – Piloting PES/MES

• Focused on the western Algoa Water Management Area (Baviaanskloof Mega-Reserve)
• Part of an existing broader Stakeholder Engagement Process facilitated by lovinglands
• Will undertake comparative experiments on the different policy options, and explore the potential to use a combination of C&T and Restoration Auctions
Challenges

• Water Allocation Reform runs contrary to the dominant economic pressures for growth of consumption and commercial production
• Will require sophisticated institutional arrangements to ensure compliance and viability - that are beyond the current capacity
• Little political will and potentially much resistance
• Finding alternative livelihood options based on low water use will be critical to success
• Some significant crisis &/or consciousness shift needed.
• None of these policies would be necessary if we all chose to abandon the current growth and wealth accumulation model of development
Thank You

Baviaanskloof Valley, South Africa