Forestry Investment In Australia: The Concept of Natural Infrastructure

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The Nature of Forestry in Australia

• A country the size of the continental USA with 19 million people

• A natural resource super-power, with coal, natural gas, minerals, agribusiness and forestry exports making up a substantial part of the economy.

• Forest sector is evolving towards a plantation base, with natural forests increasingly managed for conservation values

• Climate change, land and water degradation and biodiversity loss are substantial public policy issues
Past clearing of native vegetation is leading to declining water quality....

**THE WATER CYCLE AND DRYLAND SALINITY**

- **Forest maintains natural water table**
- **Discharge zone has good water quality**
- **Healthy agricultural crop**
- **Subsurface salinity remains at depth**
- **Water table rises bringing salinity upwards**
- **Saline water runoff**
- **Deforestation affects water table**
- **Discharge of saline water at surface**
- **Productivity of crops declines**
- **Impact on aquatic ecosystems**
Making the land sustainable..

- Land use change is 20% of the greenhouse balance of Australia
- Loss of native vegetation not only creates salinity problem, but causes erosion, greater susceptibility to drought, and leaching of nutrients
- Spread of feral animals and weeds leads to homogenization of ecosystems.
Action by Governments

- Federal Government has established programs to invest in biodiversity, water quality and greenhouse gas abatement measures, but these are an order of magnitude too small to reverse key trends

- Need to find solutions that leverage private capital and that make the environment a profit centre to investors
TACKLING THE CHALLENGE OF DRYLAND SALINITY

Key regions of dryland salinity:

- NEW SOUTH WALES

Key recharge zones are identified in each region and linked to potential markets:

- Wood Processing or Energy Plant
- Economic Supply Zone

Each property will vary in context and potential for investment:

- Property A
- Existing Native Vegetation
- Property B
- Property C
- Property D
# Environmental Investment at the Property Level

Each property will vary in context and potential for investment.

<table>
<thead>
<tr>
<th>OWNER</th>
<th>CURRENT PRACTICE</th>
<th>PROPOSAL</th>
<th>NET IMPACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Crops/Sheep</td>
<td>Plant 30% of grazing land to trees</td>
<td>Net increase in property income through annuities</td>
</tr>
<tr>
<td>B</td>
<td>Crops</td>
<td>Maintain land use</td>
<td>Benefits from reduced salinity risk</td>
</tr>
<tr>
<td>C</td>
<td>Crops/Sheep</td>
<td>Establish 30% perennial pasture</td>
<td>Some increase in income from salinity credit payment</td>
</tr>
<tr>
<td>D</td>
<td>Sheep</td>
<td>Sell property and have reforested</td>
<td>Land is retired from agriculture. Revenue from environmental services and energy products covers land rent</td>
</tr>
</tbody>
</table>

**REVENUE**
- Cropping $120/ha/yr.
- Sheep $30/ha/yr.
- Forestry annuity payment $80/ha/yr.
- Salinity credits $30/ha/yr.
A new approach to forestry investment

• View forest as a ‘bundle of rights’

• Disaggregate these rights and place their development/management with the right party

• Integrate different forms of investment—government, private investors, institutional investors, corporations

• This approach is very tough to achieve in practice—multitude of legal, contractual and securities issues
Generalized investment Model

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- Wind Rights, Bio-energy
- Carbon Buyer
- Water Quality buyer
- Debt
- Investors
- Forest Product Buyer
- Land Leases
Capitalizing environmental externalities in forestry investment

Figures in AUD$ (Assume NPV based on 9% real discount rate)

<table>
<thead>
<tr>
<th></th>
<th>Original investment</th>
<th>Carbon credits</th>
<th>Timber &amp; pulp</th>
<th>Water credits / salinity</th>
<th>Renewable energy</th>
<th>Land leasing</th>
<th>Potential net gain</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>-60</td>
<td>50</td>
<td>60</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Swiss Re
Key Impediments—Needs for Action

- Governments can facilitate these style of investments by:
  - Defining the key environmental services and creating property rights
  - Establishing regulatory drivers that will internalize the costs of environmental impacts and allow for market-based mechanisms
  - Supporting consumer choice initiatives that allow access to products where environmental impacts have been mitigated
Conclusion

- Australia must develop innovative approaches to facilitate investment in ‘natural infrastructure’
- Market based approaches for greenhouse gas emissions, water quality and biodiversity will leverage private capital
- Challenge is to migrate from a solely a natural resource super-power to a ‘sustainability superpower’