Forestry Investment In Australia: The Concept of Natural Infrastructure

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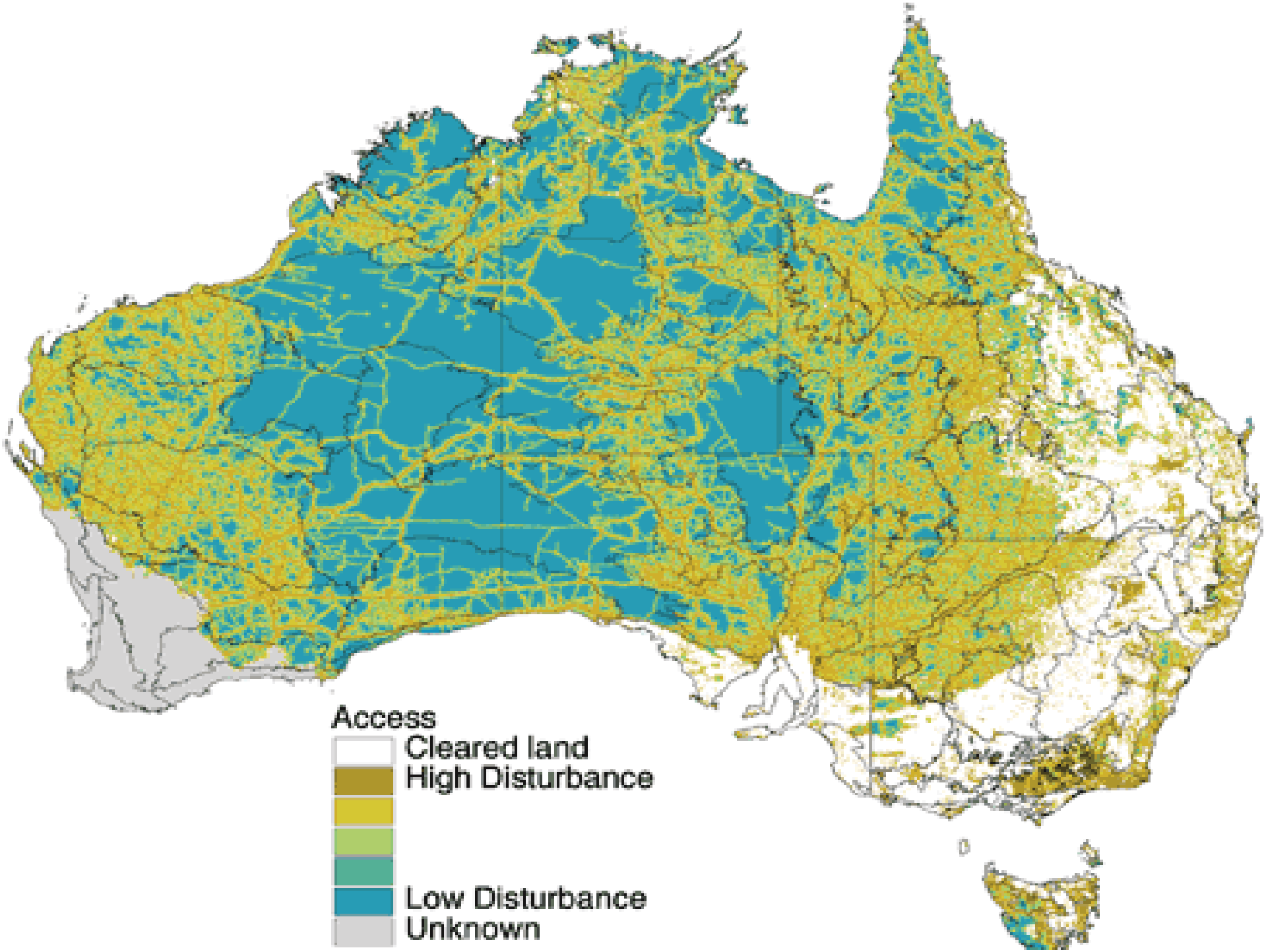
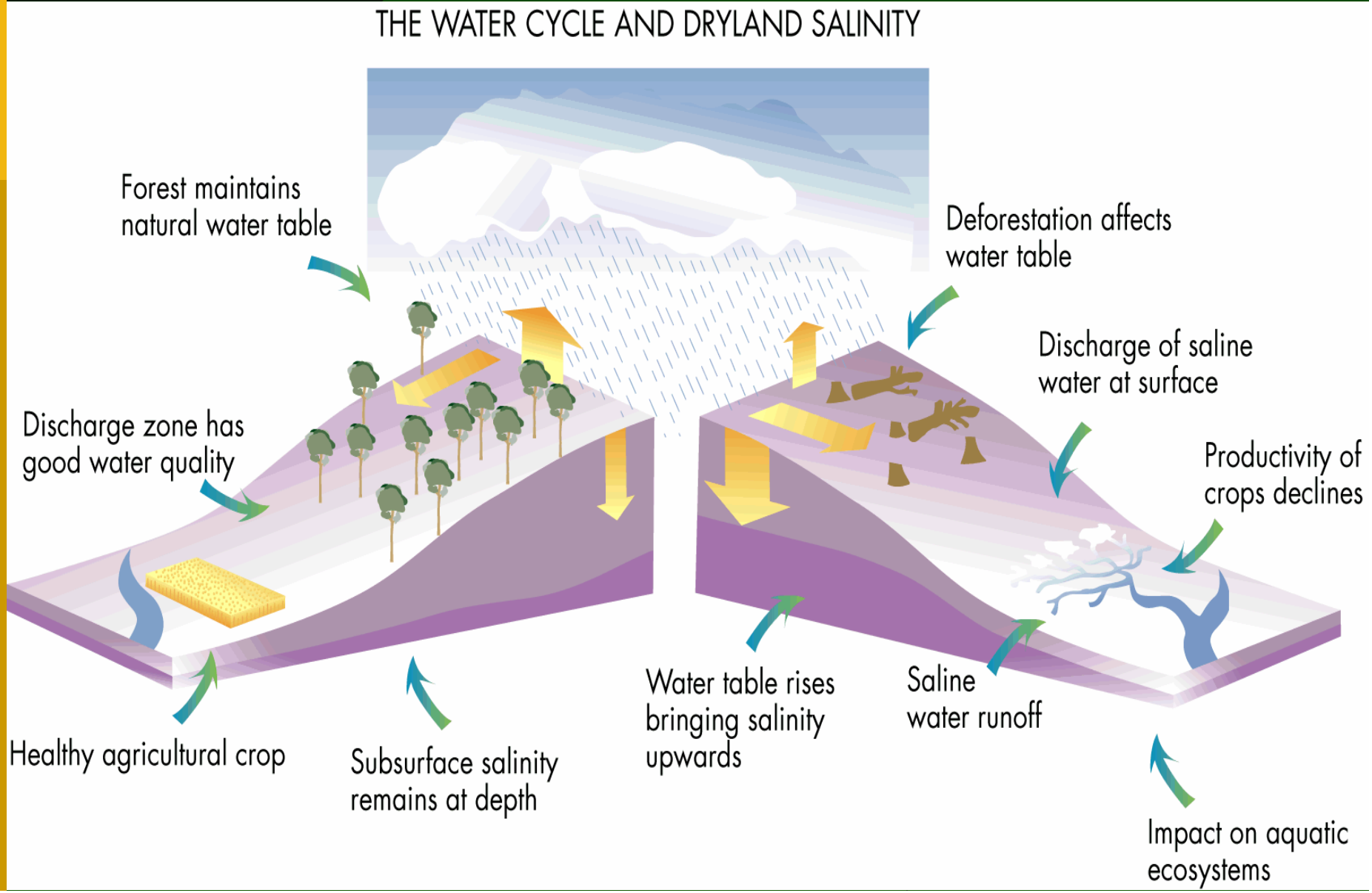
The Nature of Forestry in Australia

- 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

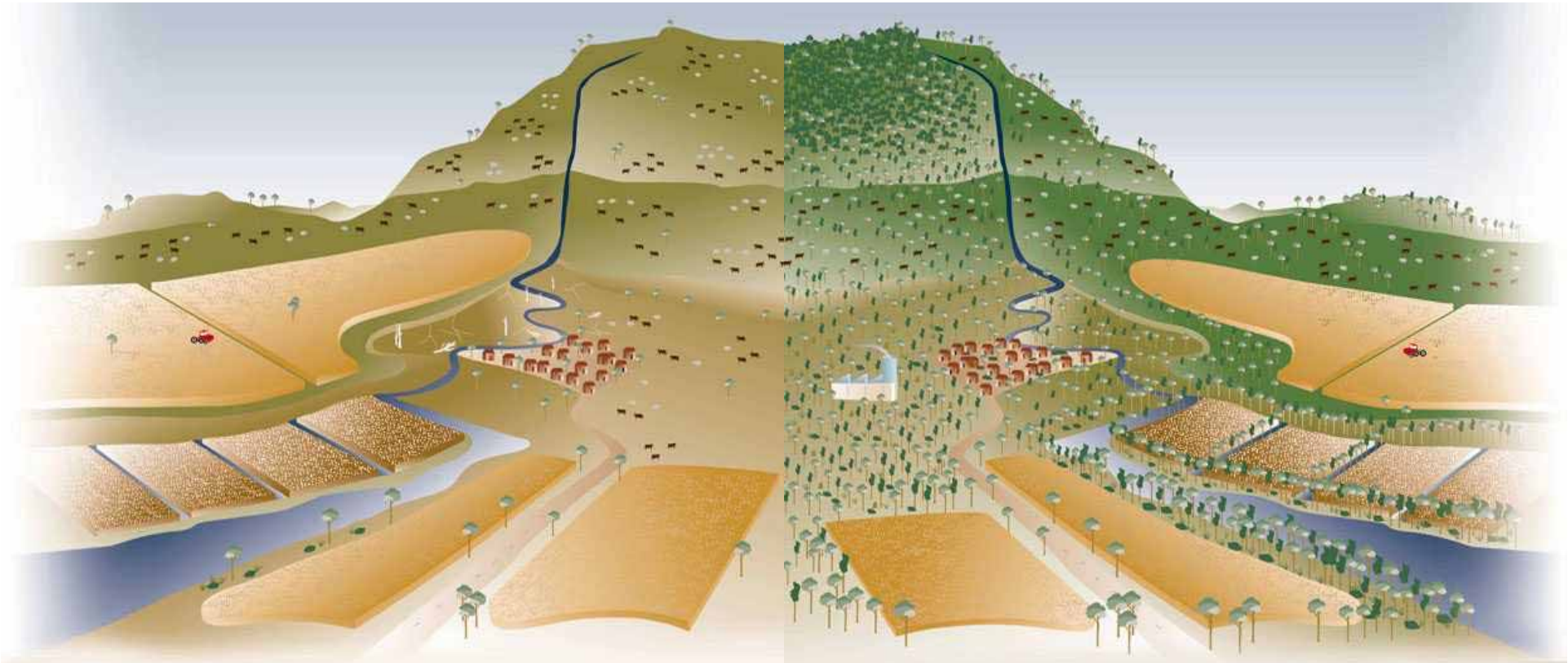

Access
Cleared land
High Disturbance
Low Disturbance
Unknown

Past clearing of native vegetation is leading to Declining water quality….



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.



PRESENT

The existing rural landscape.

LAND USE

OUTPUT	AREA (ha)	REVENUE (000's)
Sheep	250,000	25,000
Cattle	200,000	40,000
Wheat	250,000	118,000
Canola	150,000	112,000
Cotton	150,000	490,000
TOTAL	1,000,000	785,000

ENVIRONMENTAL PROBLEMS

- Dryland salinity increasing
- Rising water tables and saline discharge
- Nutrients leaching into waterways
- Low biodiversity
- Soil erosion and turbid waterways

FUTURE

Planted forests in the landscape create a more diverse economy and a healthier environment.

LAND USE

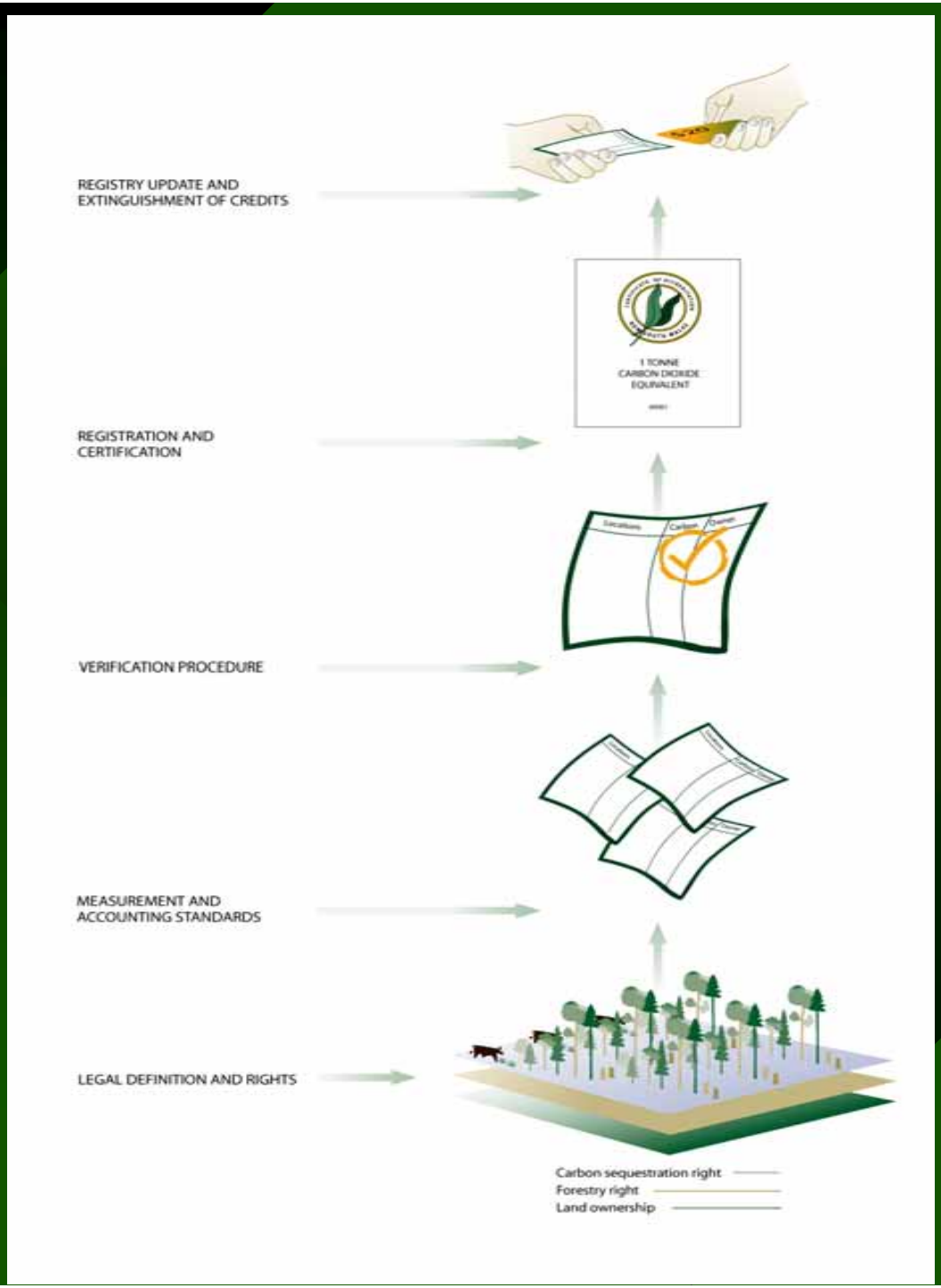
OUTPUT	AREA (ha)	REVENUE (000's)
Sheep	150,000	18,000
Cattle	120,000	28,000
Wheat	200,000	94,000
Canola	120,000	90,000
Cotton	150,000	490,000
Timber	26,000	12,000
Bioenergy	117,000	9,000
Charcoal	117,000	14,000
Carbon credits		41,000
Salinity credits		26,000
TOTAL	1,000,000	822,000

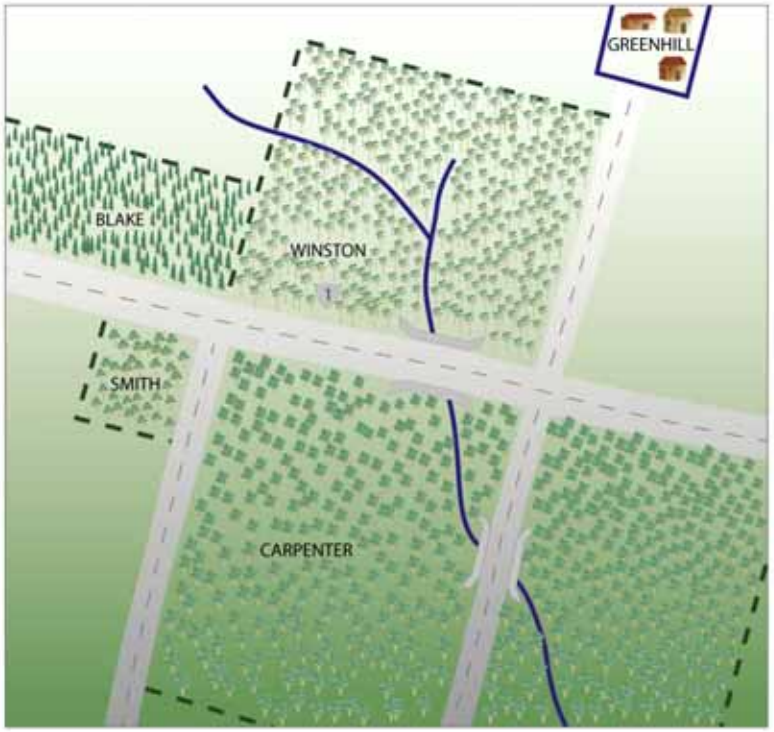
ENVIRONMENTAL BENEFITS

- Dryland salinity reduced
- Lower water tables and clean discharge
- Nutrients retained on farm
- Biodiversity increased
- Soil erosion reduced

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


REGISTRY UPDATE AND
EXTINGUISHMENT OF CREDITS
1 TONNE
CARBON DIOXIDE
EQUIVALENT
REGISTRATION AND
CERTIFICATION
VERIFICATION PROCEDURE
MEASUREMENT AND
ACCOUNTING STANDARDS
LEGAL DEFINITION AND RIGHTS
Carbon sequestration right
Forestry right
Land ownership



CARBON RIGHTS

CARBON POOL, LTD - STATEMENT OF CARBON ACCOUNTS

Property	Area (acres)	Year Planted	Species	Crop type Simulation	Carbon Stock 2008 T CO2	Carbon Stock 2012 T CO2	Carbon Stock Change
Smith	304	1998	Red Oak	50 year rotation	12,700	22,700	10,000
Blake	612	1998	Loblolly Pine	35 year rotation	24,000	60,000	36,000
Winston	1,254	1999	Oak-Hickory	Selection harvest after 30 years	50,000	110,000	60,000
Carpenter	3,067	1999	Aspen	20 year rotation	125,000	300,000	175,000
TOTAL	5,237						281,000

VERIFICATION AND CERTIFICATION

ISSUANCE OF CERTIFICATES

CERTIFICATE OF ACCREDITATION
NEW SOUTH WALES

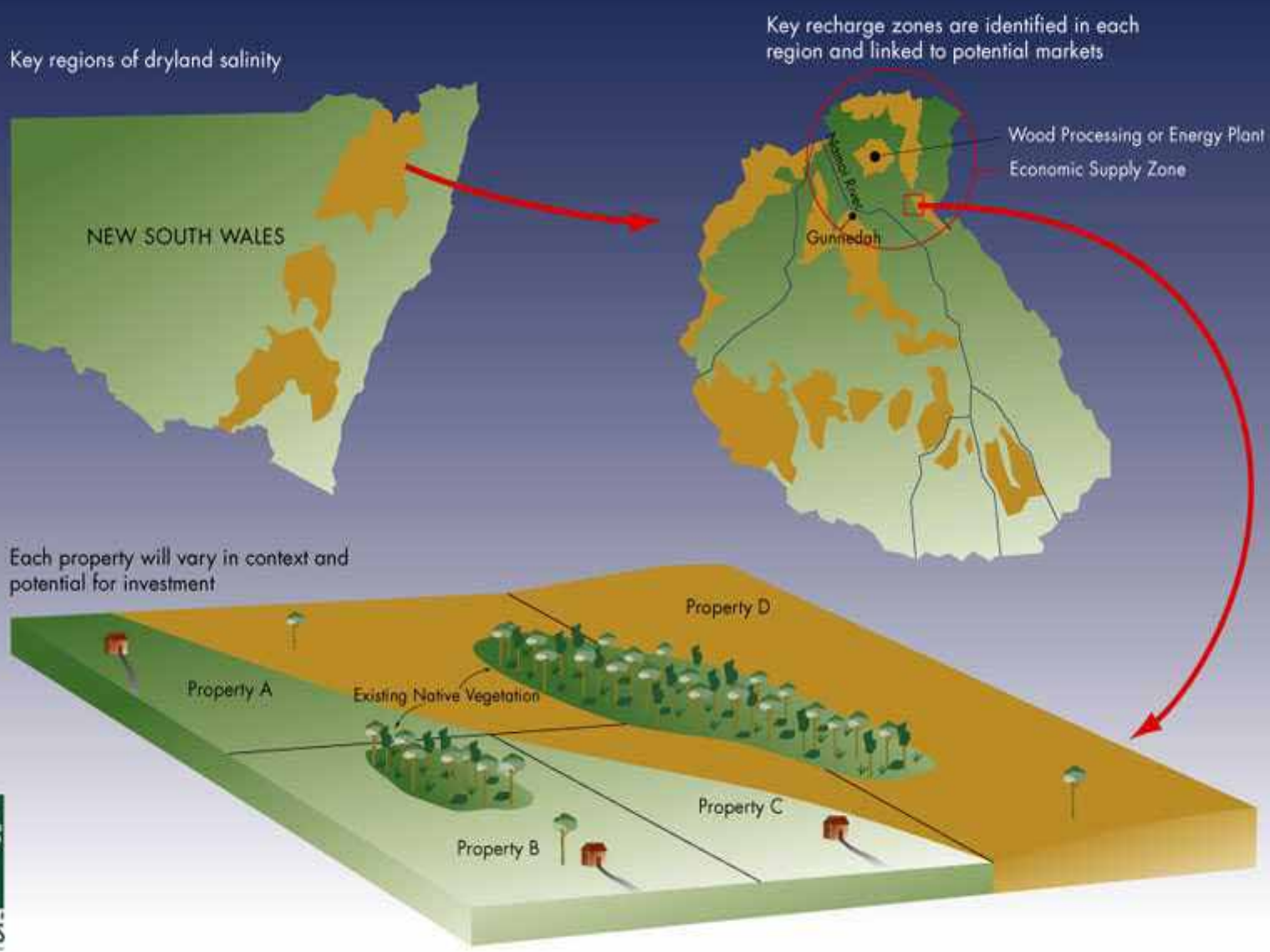
1 TONNE
CARBON DIOXIDE
EQUIVALENT

00001

US GOVERNMENT REGISTRY

Vintage Years	Pool Mgr/Issuer	Serial Number	Owner	Status
2008-2012	Carbon Pool Ltd	0001	PowerCo	Ext.
2008-2012	Carbon Pool Ltd	0002	PowerCo	Ext.
2008-2012	Carbon Pool Ltd	0003	PowerCo	Ext.
2008-2012	Carbon Pool Ltd	0004	Electrico	Active
2008-2012	Carbon Pool Ltd	0005	Electrico	Active
"	"	"	"	"
"	"	"	"	"
"	"	"	"	"
"	"	"	"	"

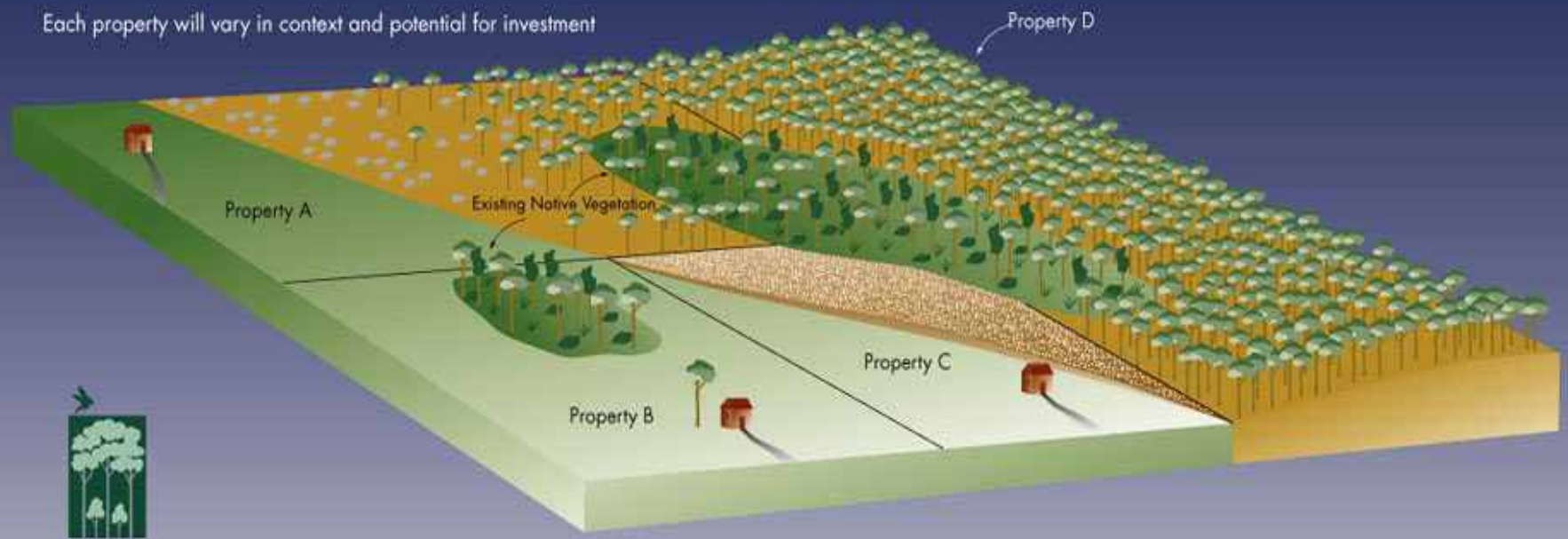
TACKLING THE CHALLENGE OF DRYLAND SALINITY



STATE FORESTS

ENVIRONMENTAL INVESTMENT AT THE PROPERTY LEVEL

Each property will vary in context and potential for investment



FORESTS

OWNER	CURRENT PRACTICE	PROPOSAL	NET IMPACT
A	Crops/Sheep	Plant 50% of grazing land to trees	- Net increase in property income through annuities
B	Crops	Maintain land use	- Benefits from reduced salinity risk
C	Crops/Sheep	Establish 30% perennial pasture	- Some increase in income from salinity credit payment
D	Sheep	Sell property and have reforested	- Land is retired from agriculture. Revenue from environmental services and energy products covers land rent

REVENUE

Cropping $120/ha/yr

Sheep $30/ha/yr

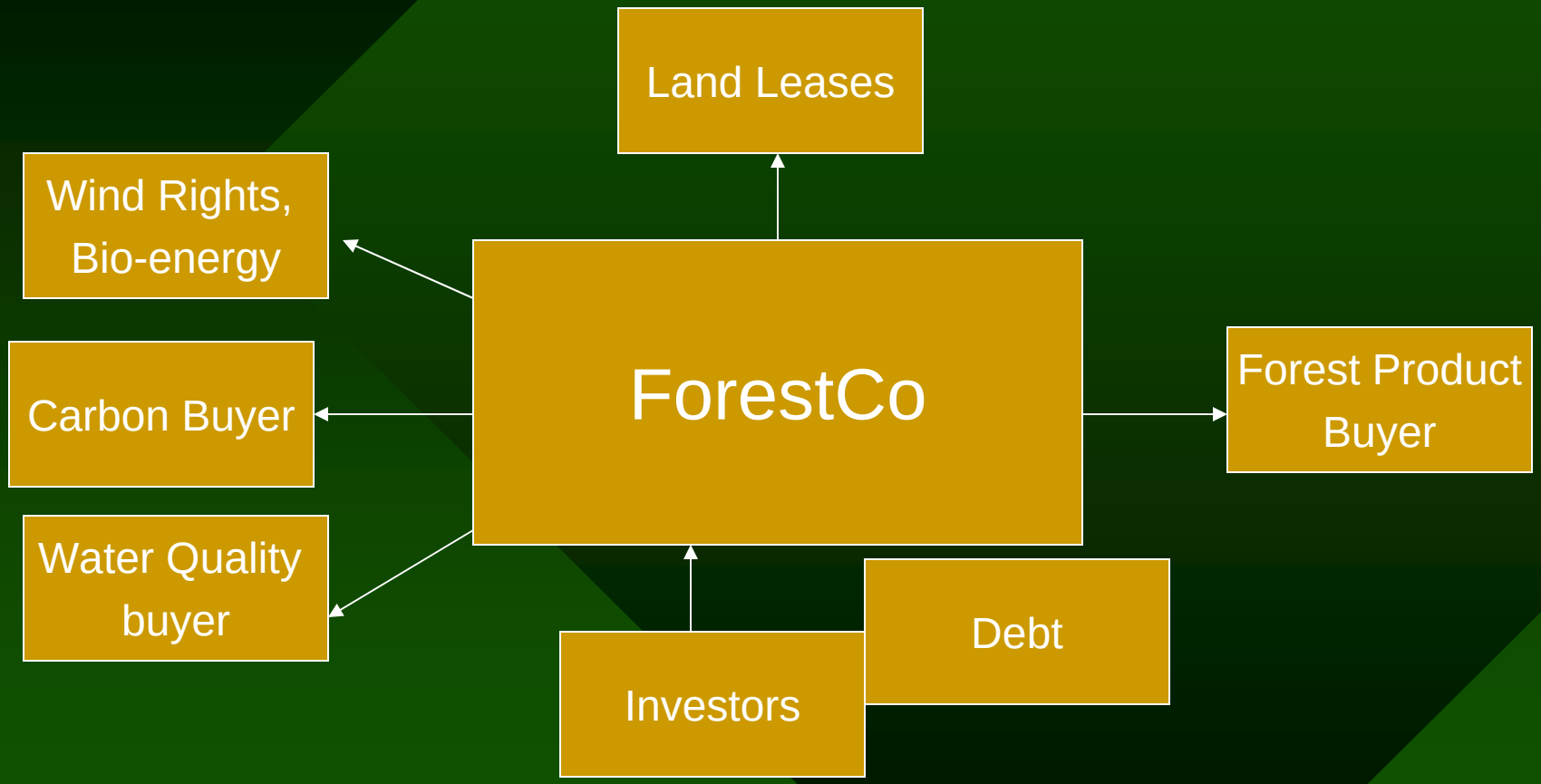
Forestry annuity payment $80/ha/yr

Salinity credits $30/ha/yr

A new approach to forestry investment

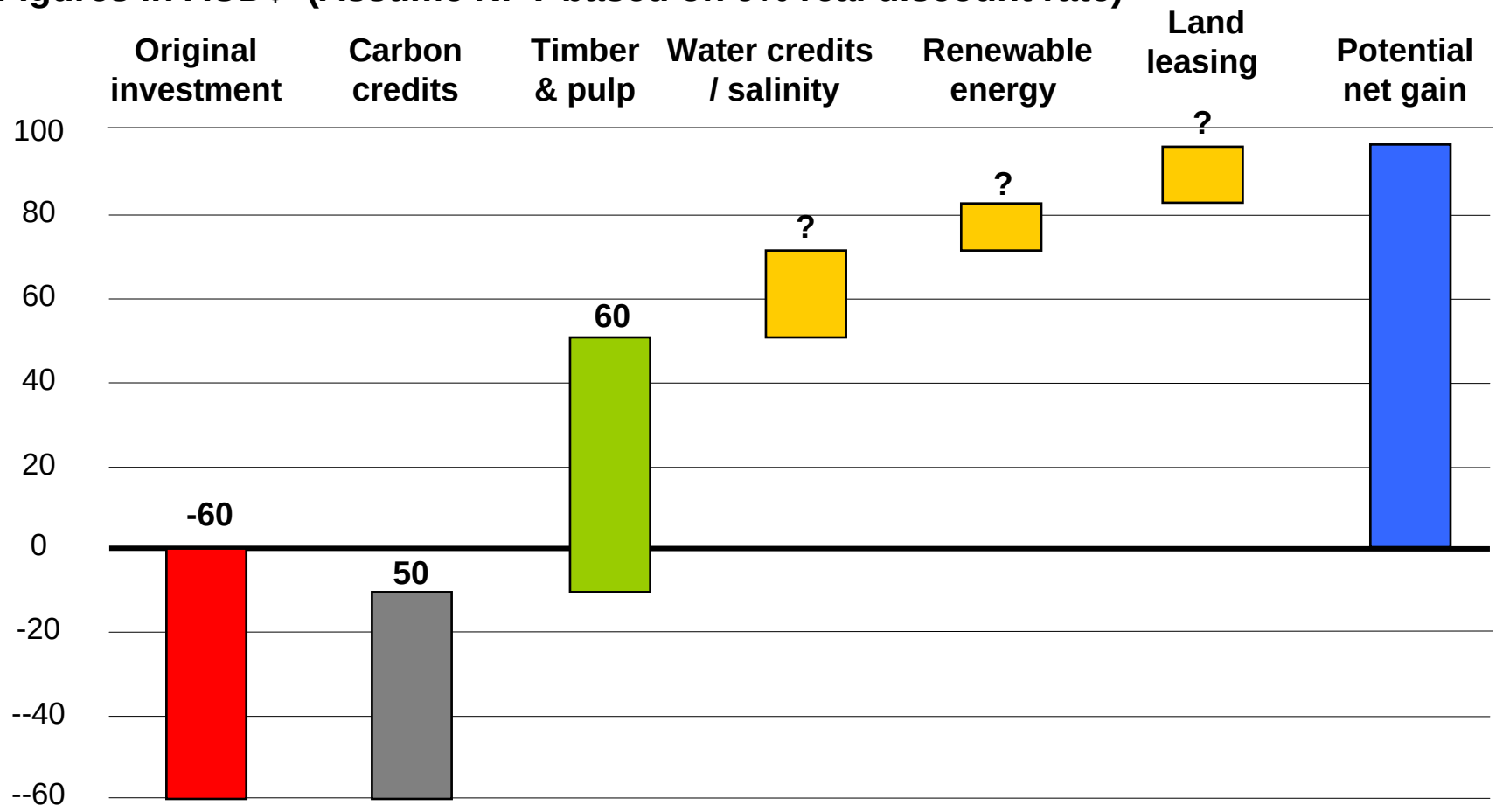
- View forest as a ‘bundle of rights’
- Disaggregate these rights and place their development/management with the right party
- Integrate different forms of investment—government, private investors, institutional investors, corporations
- This approach is very tough to achieve in practice—multitude of legal, contractual and securities issues

Generalized investment Model



Capitalizing environmental externalities in forestry investment

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



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’