Water Economics and Financing

Water Markets in Integrated Water Management

Trading in and out of trouble
Australian water allocation & trading experience

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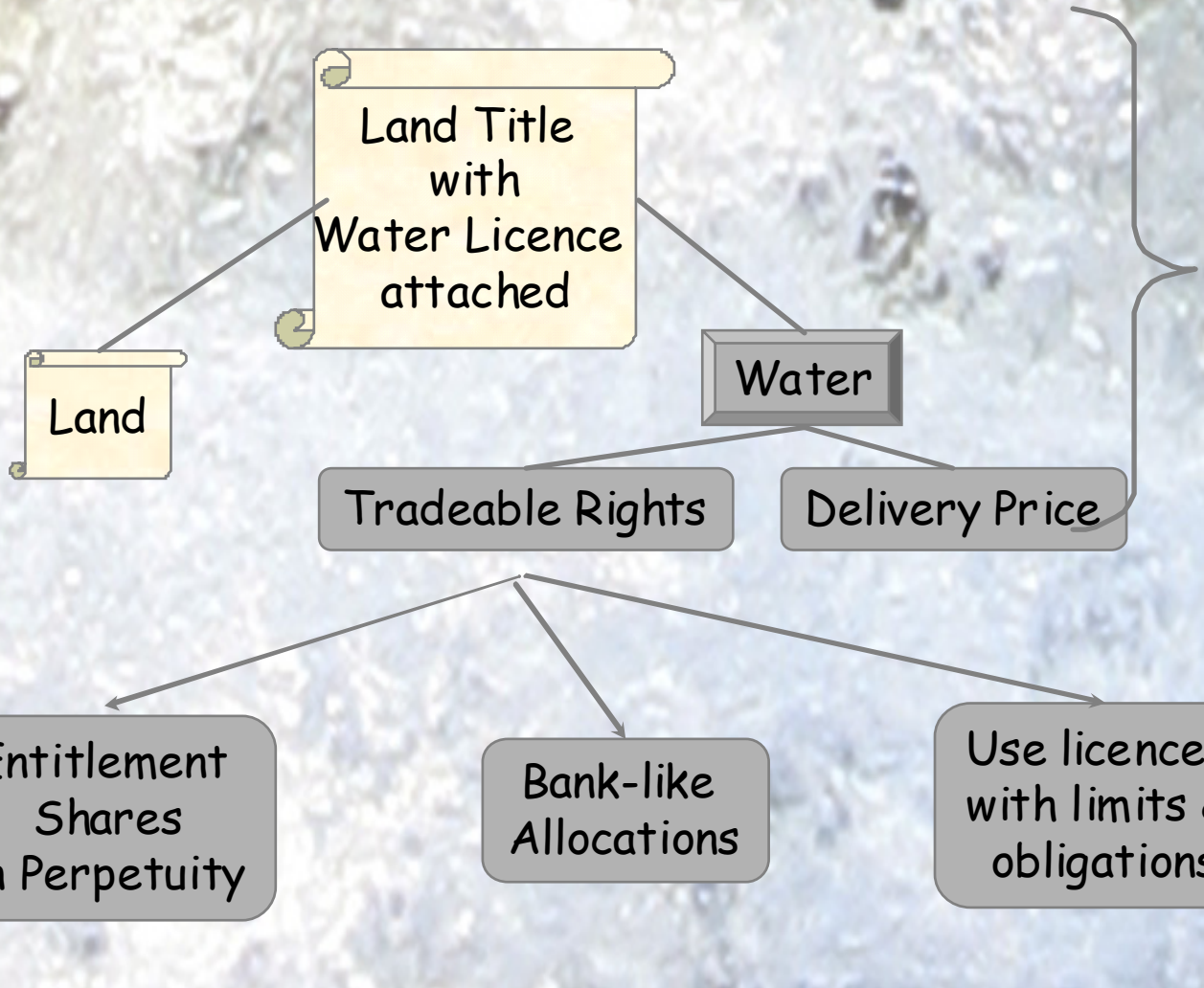
Zaragoza, 28 July 2008

Progressive unbundling

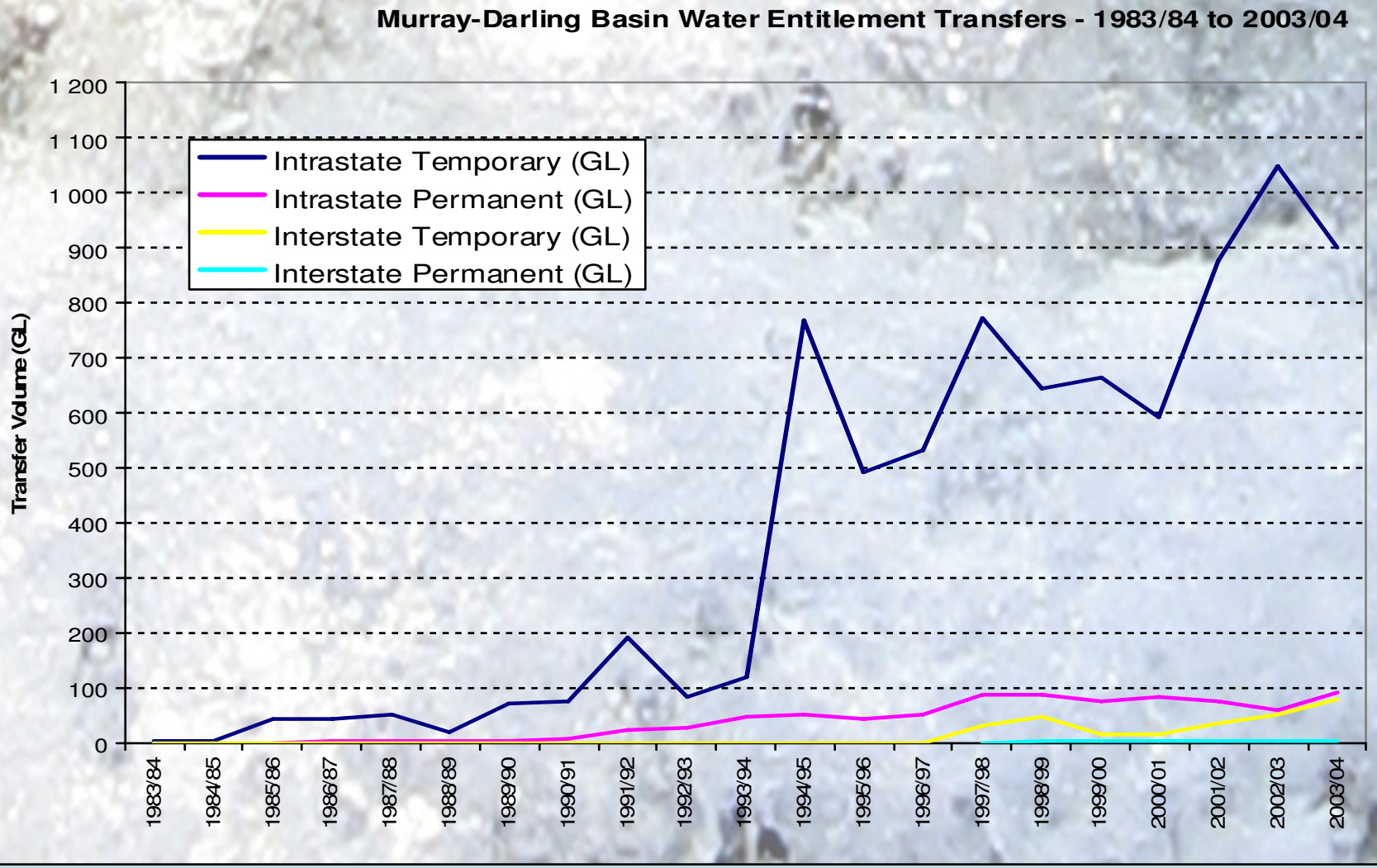


National Competition Policy 1993/94

National Water Initiative 2004

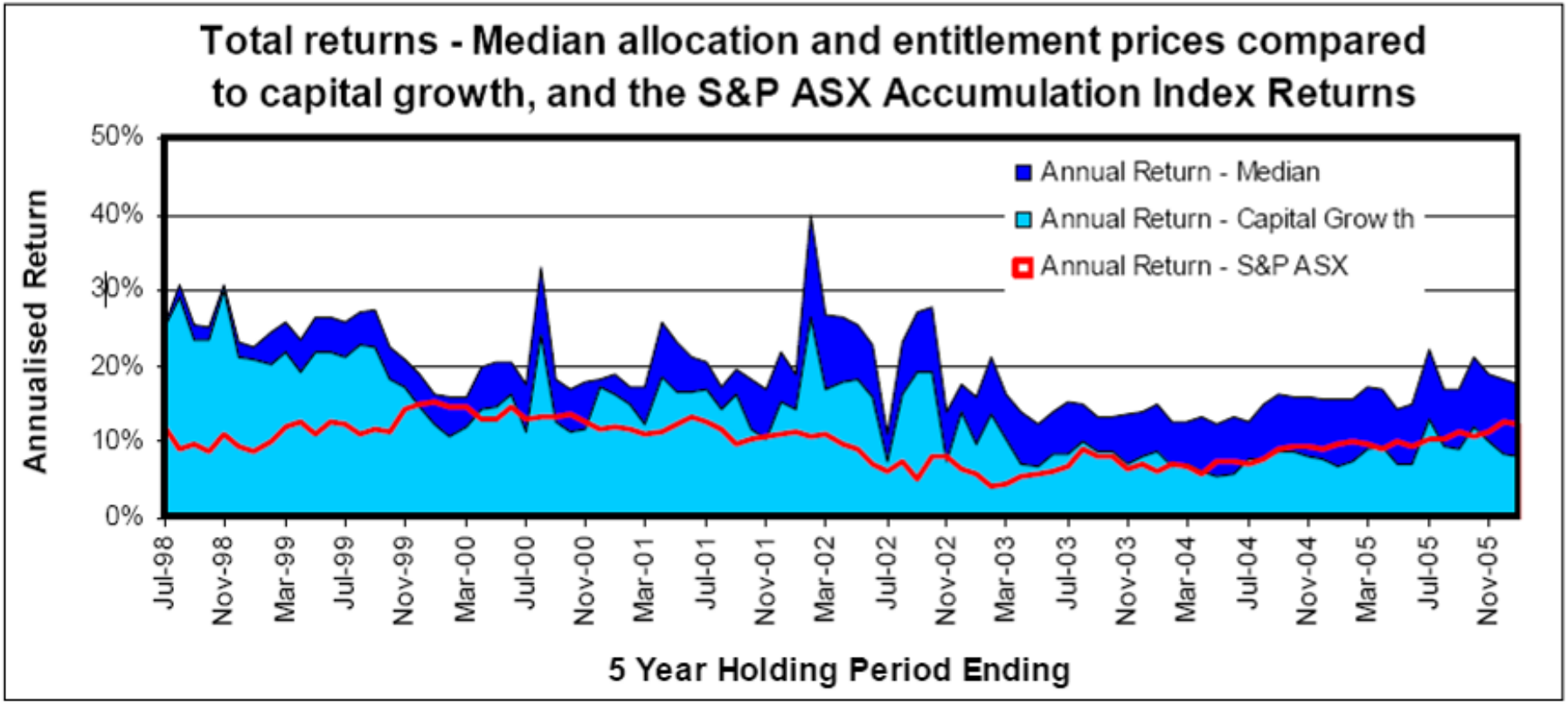
Markets rather than governments as the integrator

Scarcity and Trading



Trading has enabled adoption of new technology and "greenfield" development

Benefits of trading



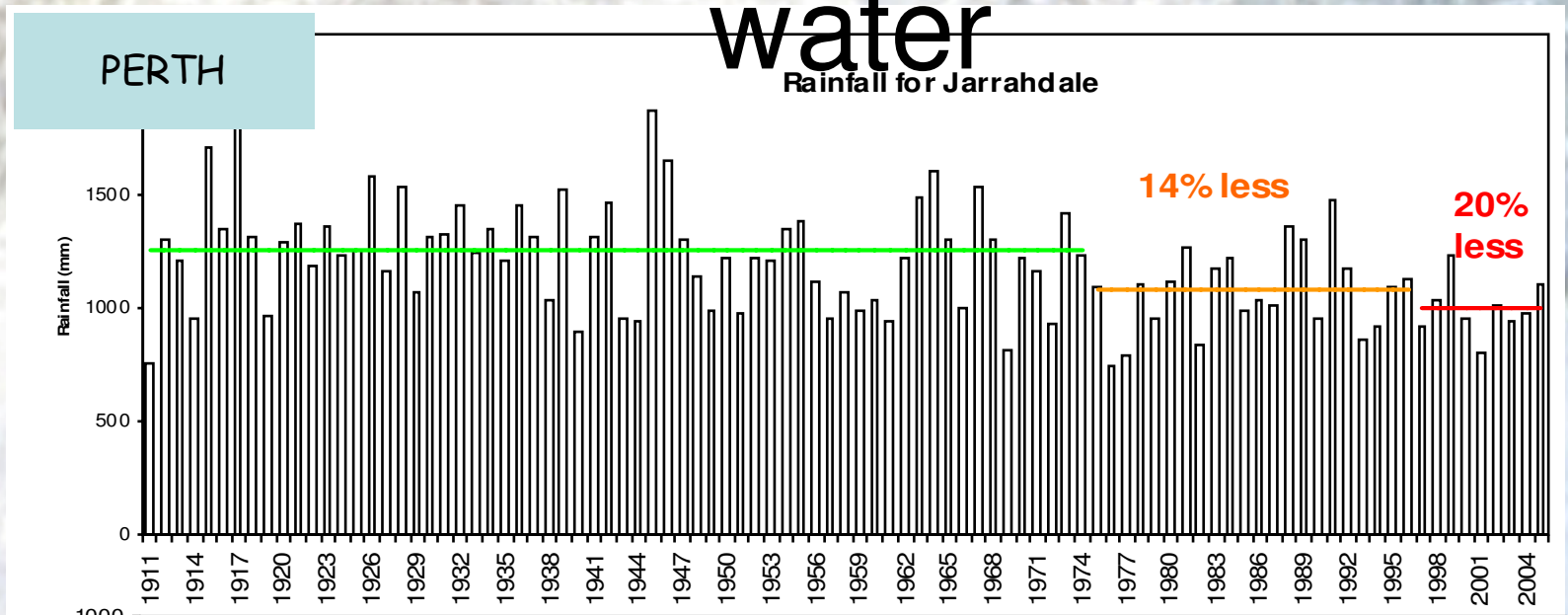
Bjornlund and Rossini 2007

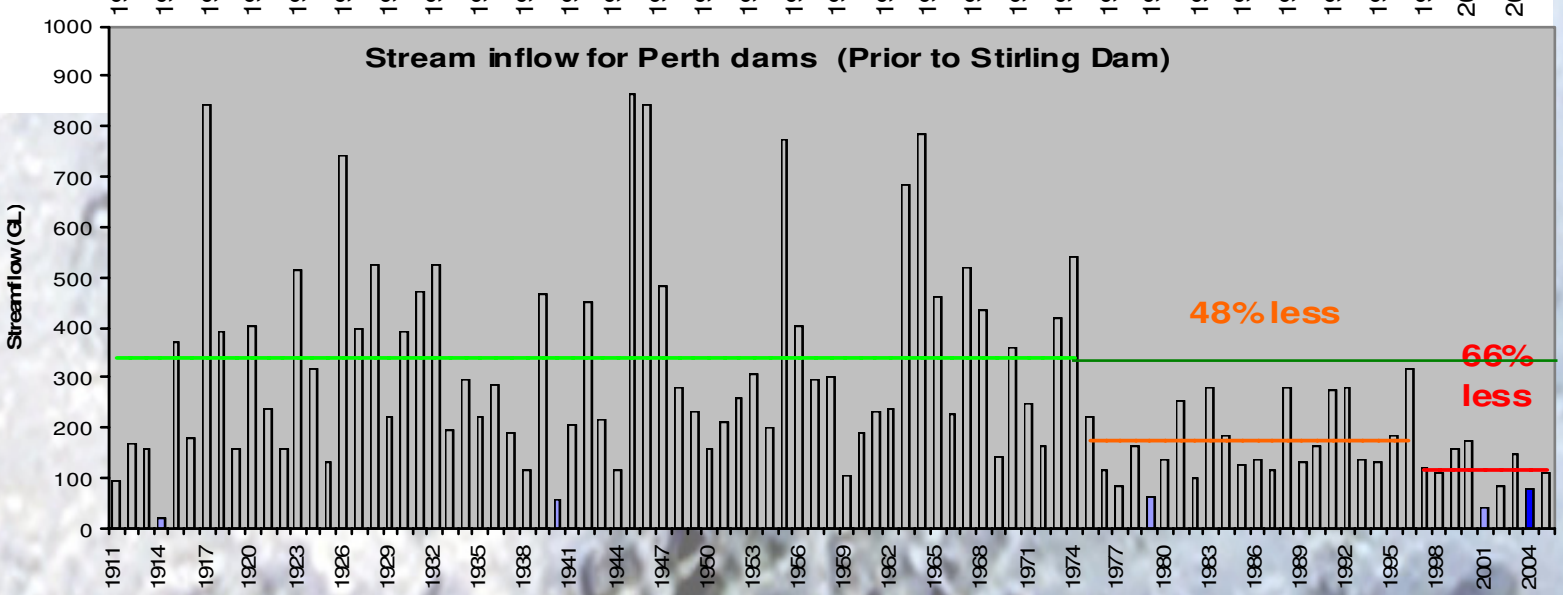
Costs of not getting fundamentals right

- **Australia introduced trading without getting the foundations right**
- **Markets reveal flaws**
  - **Trading has increased the costs of fixing system flaws**
    - Revealed over-allocation by increasing use
    - Revealed administrative reluctance to keep the system in balance
- **Trade now seen as a way to reduce the costs of structural adjustment**

Insufficient planning for less water

PERTH

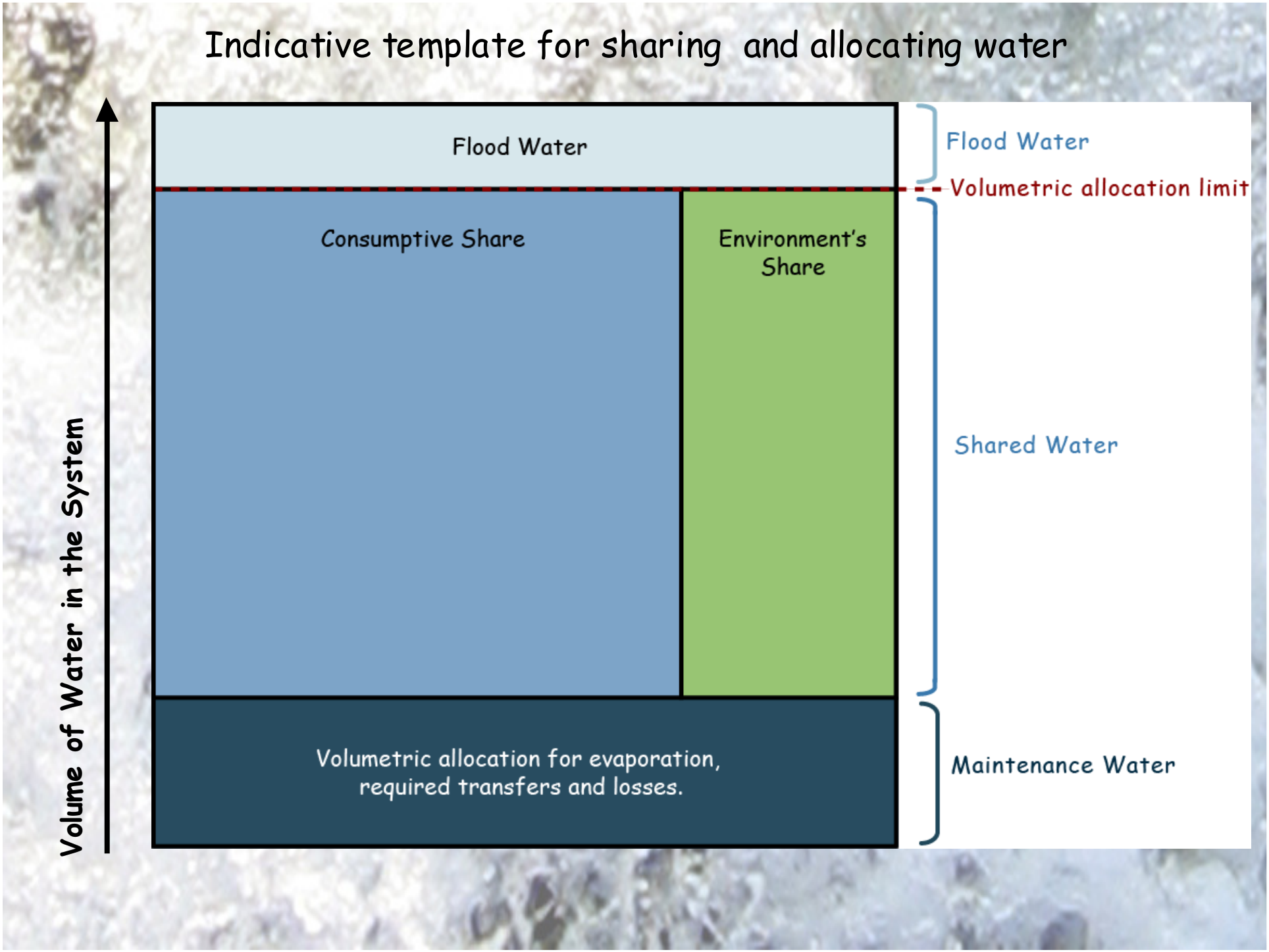




- 1%

- 3%

Indicative template for sharing and allocating water



Unbundling framework

Scale	Policy Objective		
	Distributive Equity	Economic Efficiency	Environmental Externalities
System-wide Management (Strategic Instruments)			
Individual users (Market Instruments)			

Individual entitlements

1. Issue shares not volumetric entitlements
2. Validate registers early
3. Ensure register compatibility
4. Don’t deepen droughts
   - Allow individual users to manage inter-seasonal risk
   - Allow carry-forward of allocations and give market access to storage capacity

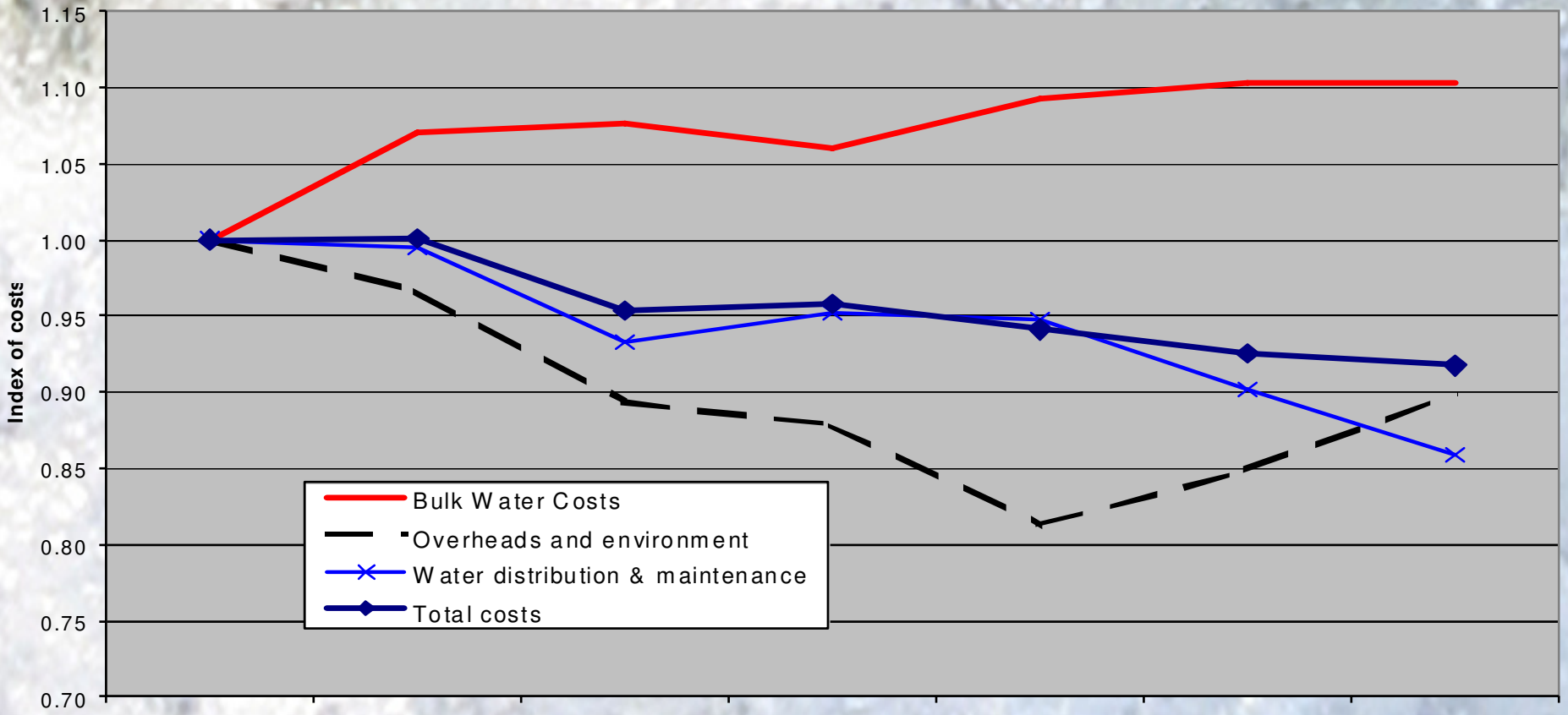
System wide planning & management

1. *Install meters and convert from area to volumetric allocation systems (asap)*
2. *Give the environment a share don't expect communities to plan for adverse climate shifts*
3. *Account for all forms water use – especially the unmeterable*
   - *Forests, farm dams, return flows*
4. *Manage groundwater inter-connectivity*
   - *–When use of one increases the other must decrease*

Efficient supply and delivery

1. *Don't subsidize supply and infrastructure provision*
   - *Charge at marginal cost of delivery*
   - *Transfer ownership of the supply system to entitlement holders.*
2. *Use separate instruments to manage externalities*
   - *Reward users who reduce externalities*

Administrative separation - Murrumbidgee



Separation of policy from water supply has lowed costs.
Allow irrigators to own and run their supply systems

Efficient market design

1. Removal of administrate impediments to trade difficult but necessary.
2. Allocate entitlements to individuals not water supply companies.
3. Announcement policies must attend to equity and fairness.
4. Make trade information available
   - Daily trade volume and price
5. Develop broking industry

Implementation sequence
(Will take a decade)

1. Vest ownership of water in national as whole
   - Establish government right to manage and vary allocations at the system level
2. Issue “unbundled” entitlements to defined parts of each system
3. Install meters and validate registers
4. Convert area entitlements to volumetric entitlements as basis for determining entitlement shares
5. Establish credible accounting and enforcement systems
6. Develop protocols and trial trading
7. Let the market drive innovation

Concluding Comments

1. Develop a principled reform agenda and start the sequence

2. Get the foundations for trade right

3. See trading as a way of facilitating change in a changing world not as a panacea.

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Water Use-Efficiency in Australia

Australian irrigators have increased water use efficiency significantly

- 1991 -2001 water use per hectare down by 50%
- Area under irrigation only reduced by 6%

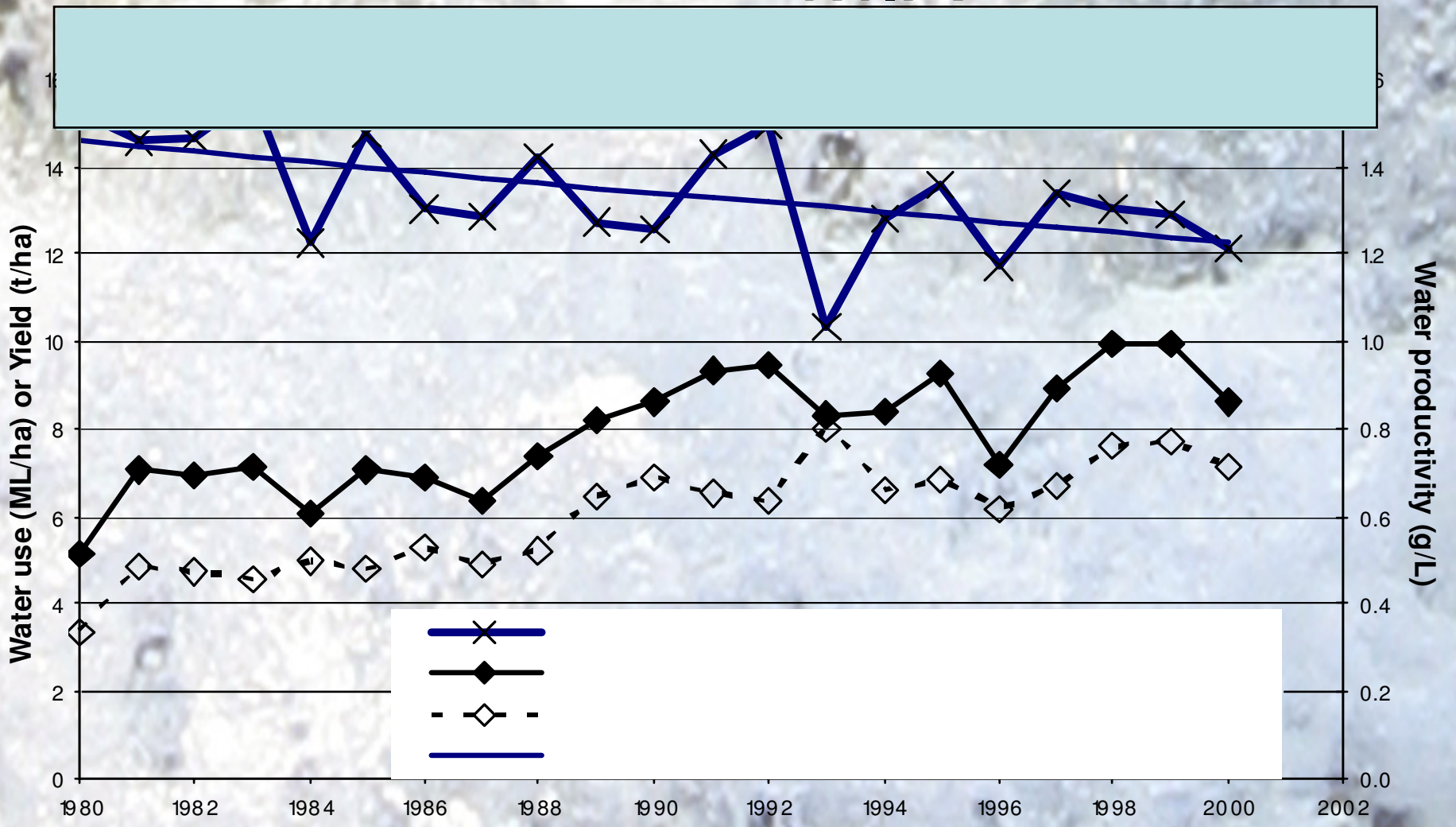
This has been driven by

- Low rates of agricultural protection
- Water reform - since 1994
  - Improved entitlement and risk specification
  - Water trading
  - Separation of policy from delivery
- Impact of prolonged drought since 2001

National Water Reform

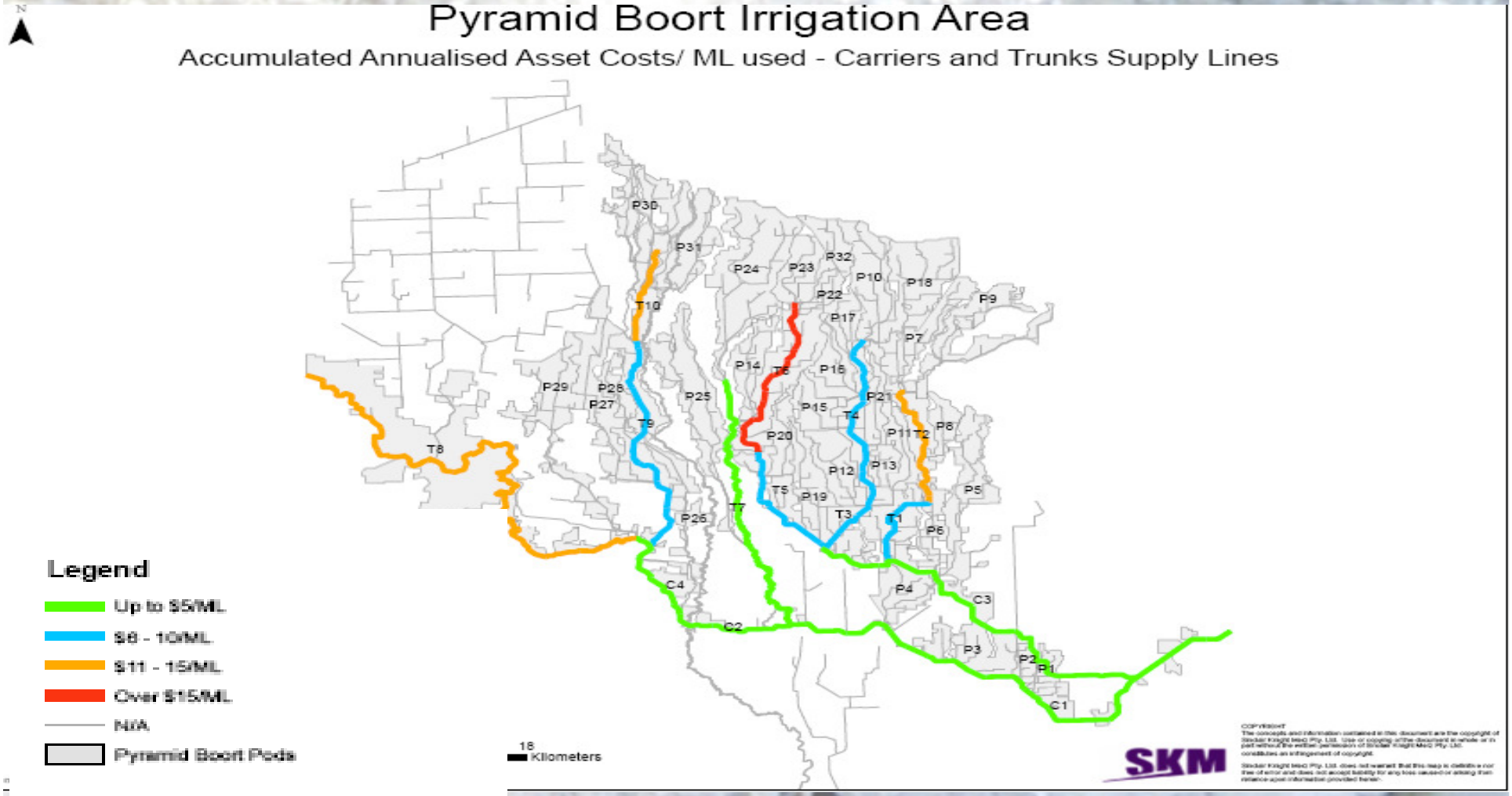
1. Recognition of Scarcity – freeze on new licences
2. Separation of water title from land and trading
3. Administrative separation
4. Full cost pricing (Lower Bound)
5. Formal Planning
6. Reduced allocations per entitlement

Trends in Rice productivity, MIA



***Source*: Modified from Humphreys and Robinson (2003).**

Annualised delivery costs, Pyramid Boort Irrigation Area



Move away from postage stamp pricing or transfer pod management to local farmers

Water Sharing Plans

- Have a statutory legal basis
- Assign climate change risk to irrigators
- Forced community engagement in planning process
- But rarely plan for adverse climate change
  - River Murray Plans reduce env. allocations 83% & users 17%
- Have not succeeded in restoring river health as fast as now seems necessary