The Adaptive Water Governance Project in Australia: Law as a Tool for Adaptation

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Why “Adaptive” Water Governance?

• Water governance must consider the unprecedented RATE of change
• Water governance must consider that change will be NON-LINEAR
Ecological Resilience

Source: Protecting and Enhancing Landscapes and Rural Communities, The Macaulay Land Use Research Institute
http://www.macaulay.ac.uk/issues/ProtectionEnhancementofLandscapesRuralCommunitiesAims.php
Self-Organization – Discontinuities – and the quantum nature of systems

Pool/riffle sequences in gravel bearing streams

Lake eutrophication
Application of AWG Project in Australia
Adaptive governance is appropriate
when. . .
• System is complex;
• System faces change with a degree of uncertainty; and
• System is approaching a potential threshold or regime shift.

Examples
• Lies within multiple jurisdictions
• Climate change
• Evidenced by increasing conflict over resources, increasing scarcity, or actual identification of an approaching threshold.
The Role of Law

• Structure
  – Redundant
  – Polycentric
  – Subsidiarity
  – Nested
  – Integrated

• Capacity
  – Adaptive
  – Participatory

• Process
  – Legitimacy
  – Procedural justice
  – Problem solving approach
  – Balance stability and flexibility
  – Opportunity for reflection and learning
  – Dispute resolution
Adaptive Capacity: The Problem

Planning VS.

• Problem
  – Rigid Solution
  – Slow to adapt

• Benefits
  – Long view
  – Integrated
  – Public input

• Problem
  – Rigid Solution
  – Slow to adapt

• Benefits
  – Certainty
  – Marketability
  – Adapts quickly

• Problem
  – Short-term solutions
  – Public input lacking
  – Market failure
Adaptive Capacity: Solutions

- **Planning**
  - Scenario planning
  - Authority to adjust
  - General scope/local implementation

- **Property**
  - Plan overlay
  - Individualized inquiry on transfers
  - Maintain government authority to adjust
Participatory Capacity: The Problem

• Sustainable development requires self-governance

• Resilience for water-based social-ecological communities required participation by marginalized communities
Participatory Capacity: Solutions

- Build Governance Capacity
- Government-to-government engagement
Integration: The Problem

- The impact of groundwater use on surface water
  - Agricultural use
  - Ecologically dependent ecosystems
- Groundwater and surface water behave differently
Effects of Pumping

- Surface Water Depletion
- GW Depletion
- Flow Rate
- Time
- Pumping Rate
“Pumping effects” propagate in all directions (but not equally in all directions)

What is a “pumping effect”?
The Problem: Water Level Decline
Integration: Solutions

• Conjunctive Management
  – Address difference between ground and surface water
  – Mitigation Plans
  – Artificial recharge

• Adaptive management protection area
  – Separate decision-making from scientific implementation
  – Balance stability and flexibility