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Changing Water Management Practice in Canterbury to Address Sustainability Limits

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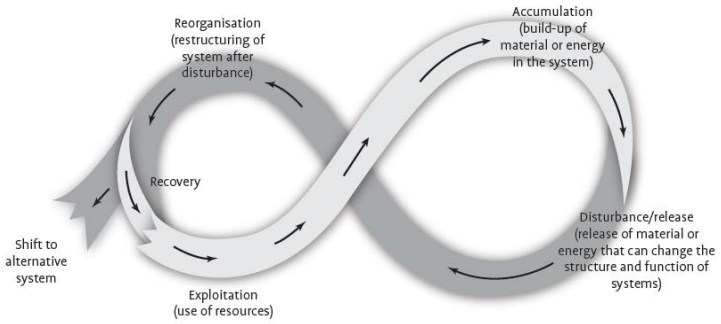
QUESTION ADDRESSED

- **Irrigation expansion** for conversions to dairying
- **Sustainability limits** reached for water availability and cumulative effects of land use intensification
- **Storage proposed** to address water availability
- **Community opposition** to storage and more intensification

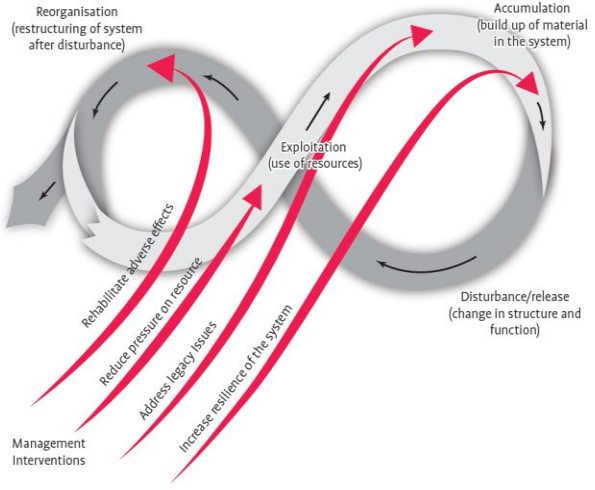
- **Effects-based** institutional arrangements **inadequate** to manage resource extraction at sustainability limits
- Strategic approach introduced based on **nested adaptive systems** and **collaborative governance**

THEORETICAL BASIS

- **Nested adaptive systems**
  (Gunderson & Holling)
  - adaptive cycle
    exploitation/accumulation/disturbance/reorganistaion
  - multiple spatial scales
    region/catchment/tributary/property



- **Sustainability strategies**
  (Chapin, Kofinas & Folke)
  - reduce pressure
  - address legacy issues
  - increase resilience
  - rehabilitate adverse effects



THEORETICAL BASIS


Strategic Choice Workshop

- **Collaborative governance** (Ostrom)

- strategy developed through multi-stakeholder group under auspices of Canterbury Mayoral Forum
- extensive community consultation
- implementation programmes by Zone Committees
- operational delivery by farmer collectives and farm environmental management plans


Ashburton Zone Committee

OUTCOME OF STRATEGY

- Change from **proponent- driven** projects to **community-driven** strategies
- Improved **water use efficiency** more effective than **storage** and reduces nutrient contamination
- Reliance on **new development** would **not achieve sustainable** water management
- **Existing users need to improve** water use efficiency and land management practices for nutrient discharge reduction
- **Shift from storage on alpine rivers** to off-river storage, diversion to tributary storage, on-farm storage and managed aquifer recharge
- Need for **proactive measures** to address water quality degradation, biodiversity loss, ecosystem restoration and Māori involvement

OUTCOME: ZONE IMPLEMENTATION PROGRAMMES

- Identified **actions to achieve community outcomes** across ten target areas, e.g.
  - water quality objectives for lakes and rivers
  - catchment load limits for nutrients
  - environmental flow improvements
  - progress in kaitiakitanga (Māori stewardship)
- **Solution packages** for addressing water quality of degraded lakes and rivers
- **Biodiversity improvement** projects implemented
- **Equity in allocation** of nutrient discharge allowances

OUTCOME: OPERATIONAL DELIVERY

- Definition of **good management practices** for managing nutrient losses
- Establishment of **farmer collectives** (in progress)
  - EMS defining water quality outcomes, inventory of nutrient risks and loss rates, contractual and compliance arrangements for farmer members
- **Farm Environment Plans**
  - specify management actions on-farm
  - monitoring of outcomes
  - auditing of actions and monitoring results

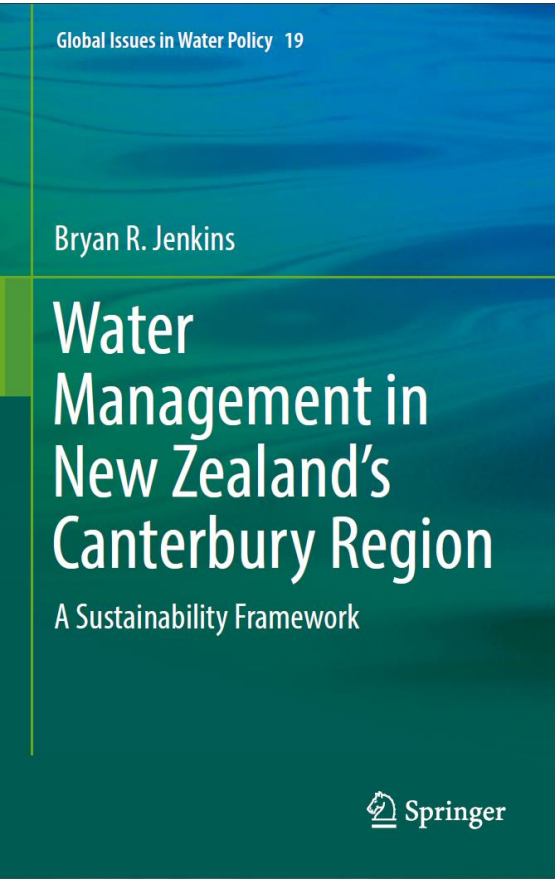
WATER MANAGEMENT CHANGES

- **Reduce pressure**
  - Water use efficiency: irrigation technology and pipe distribution
  - Land management practices for nutrient reduction
- **Address legacy issues**
  - Water quality packages for degraded lakes
  - Environmental flow adjustments
- **Increase resilience**
  - New forms of storage: off-river storage, managed aquifer recharge
- **Rehabilitation**
  - Biodiversity restoration

UNRESOLVED ISSUES

- Solution packages will improve water quality but **not achieve desired targets**; more proactive measures needed
- Zone Committees limited farmer mitigation measures to those considered **"affordable"**
- **Implementation agency** and funding for catchment level infrastructure to improve water quality yet to be identified
- Uneven implementation of ten target areas undermines **"social contract"** of agreed strategy
- Concerns about **power imbalance** between well funded farming interests and poorly funded in-stream users
- **Climate change adaptation** and greenhouse gas emission reduction
- Changes to **institutional arrangements**: framework legislation, sustainability strategies, public good infrastructure

FOR THE FULL STORY



Jenkins B (2018)
Water Management in New Zealand's Canterbury Region:
A Sustainability Framework

Global Issues in Water Policy 19

Springer
(Exhibition Booth 69 Floor 3 Norra Latin)