

How getting the 'demand side' right, by empowering community led initiatives, is leading to sustainable management of freshwater in New Zealand

Ken Hughey
Lincoln University

Sustainable Water Management for Food Security:

An international policy dialogue on progressing water policy reform in
agriculture, with focus on Indonesia, Bogor, Indonesia 12-15 Dec 2011



**Lincoln
University**
Te Whare Wanaka o Aoraki
CHRISTCHURCH • NEW ZEALAND

New Zealand's specialist land-based university

Some comparative context: NZ vs Indonesia

New Zealand	Indonesia
<ul style="list-style-type: none"> Population: 4.5m 	<ul style="list-style-type: none"> Population: 245m
<ul style="list-style-type: none"> Area - 267,710 sq km; 76th in world 	<ul style="list-style-type: none"> Area - 1,904,569 sq km; 15th in the world
<ul style="list-style-type: none"> GDP - purchasing power: \$117.8 billion (2010 est.); 63rd in world 	<ul style="list-style-type: none"> GDP - purchasing power: \$1.03 trillion (2010); 6th in the world
<ul style="list-style-type: none"> GDP - composition by sector (2010): <ul style="list-style-type: none"> – agriculture: 4.6% – industry: 24.4% – services: 71% 	<ul style="list-style-type: none"> GDP - composition by sector (2010): <ul style="list-style-type: none"> - agriculture: 15.3% - industry: 47% - services: 37.6%
<ul style="list-style-type: none"> Total renewable water resources - 397 cu.km. (1995) 	<ul style="list-style-type: none"> Total renewable water resources - 2,838 cu.km. (1999)
<ul style="list-style-type: none"> Freshwater withdrawal (domestic/ industrial/ agricultural): per capita: 524 cu m/yr (2000) 	<ul style="list-style-type: none"> Freshwater withdrawal (domestic/ industrial/ agricultural): per capita: 372 cu m/yr (2000)
<ul style="list-style-type: none"> Irrigated land: 6,190 sq km (2008) 	<ul style="list-style-type: none"> Irrigated land: 67,220 sq km (2008)
<ul style="list-style-type: none"> Labour force — by occupation: services: 74%, industry: 19%, agriculture: 7% (2006) 	<ul style="list-style-type: none"> Labour force — by occupation: agriculture: 38.3%; industry: 12.8%; services: 48.9% (2010 est.)
<ul style="list-style-type: none"> Unemployment rate: 6.5% (2010) 	<ul style="list-style-type: none"> Unemployment rate: 7.1% (2010)

A brief history of NZ – some important context around freshwater

- 1200AD indigenous Maori settled NZ – freshwater vital to Maori
- 1642 Abel Tasman ‘re’discovered NZ, followed by James Cook in 1769 – European whalers then arrived, then farmers, etc
- 1840 Crown and Maori chiefs signed the Treaty of Waitangi - the country’s founding document: pivotal in resource mgt
- 1930s onward - water increasingly important: first for irrigation development; then hydro generation; followed by recreational, environmental (1970s-80s) and now for re-assertive Maori cultural needs (1990s-2000s)
- 1970s onward – slow shift from a single to a quadruple bottom line - Crown retains ownership of water (disputed by Maori)

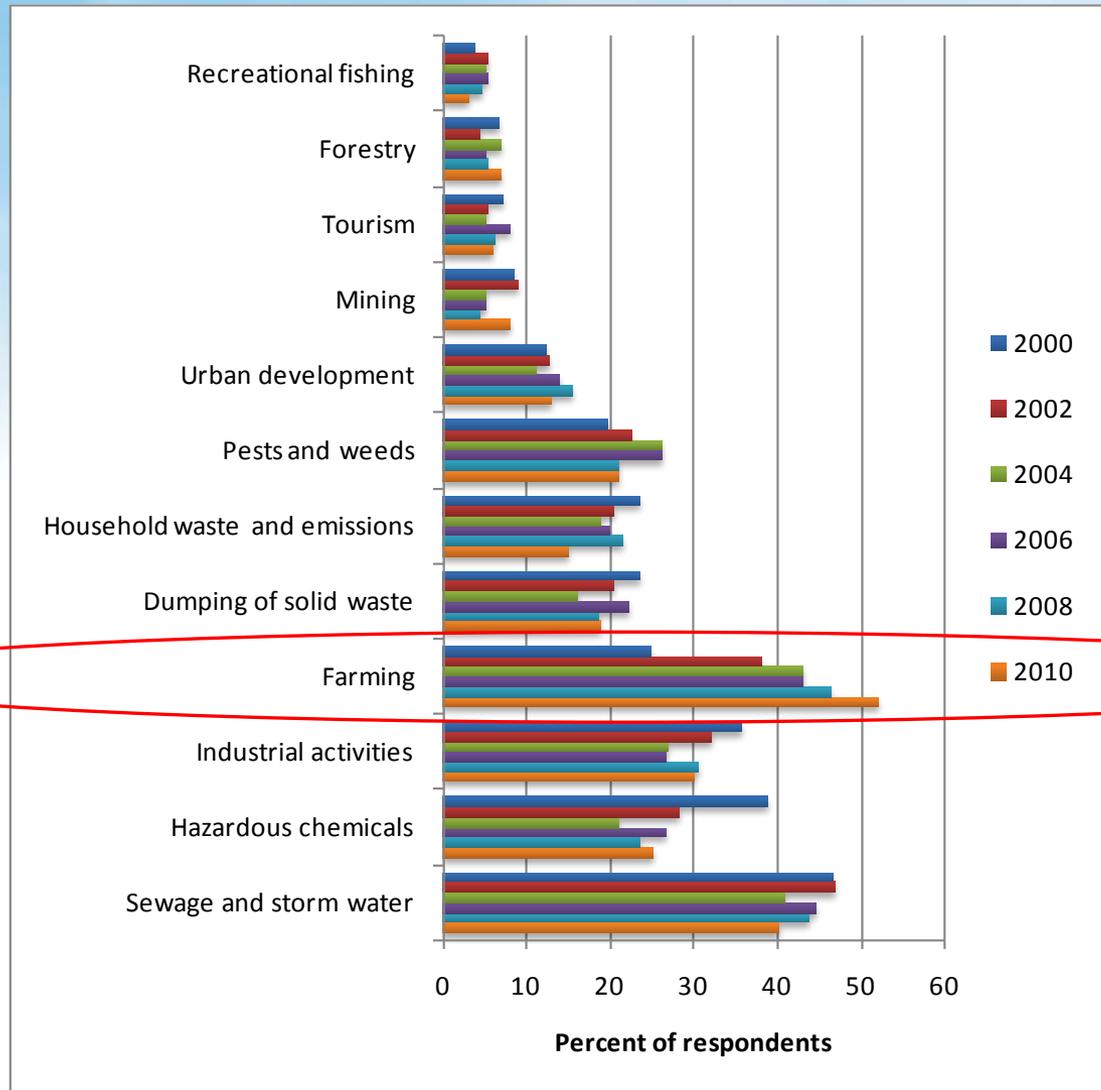
Institutional arrangements – a brief history

- <1967 - range of government agencies, centred around Ministry of Works and Development, and limited legislation
- 1967 Water & Soil Conservation Act – around same time regional & some river authorities established. Act led to first river plans but limited environmental and no Maori coverage
- 1981 'Wild and Scenic Rivers' Amendment Act – for first time environment and recreation could be proactive (but not Maori)
- 1991 Resource Management Act – world leading. All resources except marine fisheries. Integrated hierarchy of national policies and standards, regional policies & plans, and resource consents; and regional and district councils
- 2002 Local Government Act required councils to produce QBL 10-year Long Term Plans (LTPs)

But ongoing concern about freshwater and its management

- 1970 - 264,907 NZers, almost 10% of population, signed Save Manapouri petition – NZ's environmental awakening. But ...
- Many more rivers dammed and groups like Whitewater NZ, NZ Salmon Anglers, Fish and Game NZ & Forest and Bird became increasingly vocal about water sustainability issues. And in ...
- 2001 Fish and Game NZ started its highly successful 'Dirty Dairying' campaign – rivers and lakes were on the national agenda like never before and have never been off since!
- National State of the Environment reports and numerous other research have shown major problems increasing ...

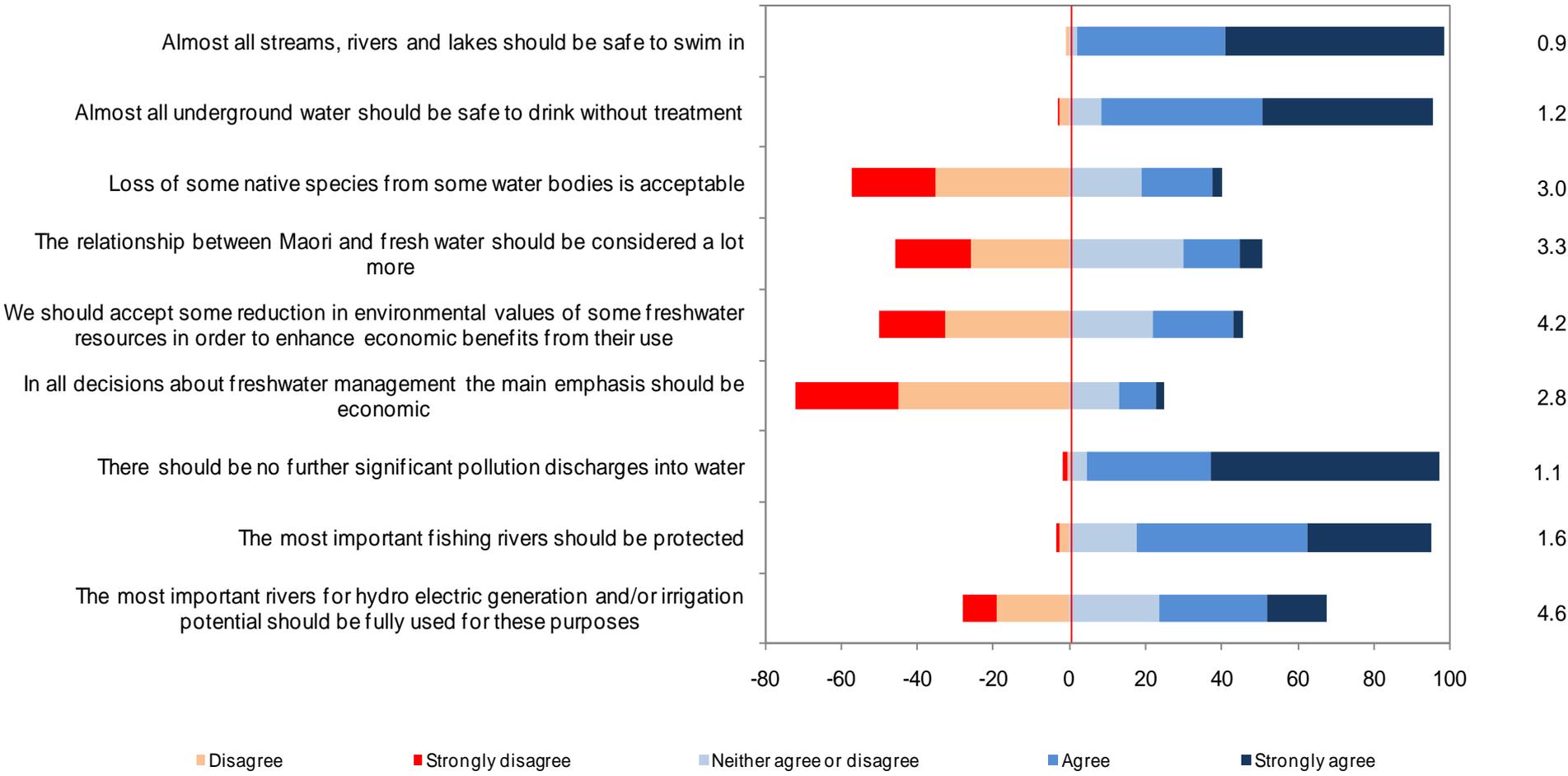
Perceived main causes of damage to fresh waters (Categories <5% omitted)



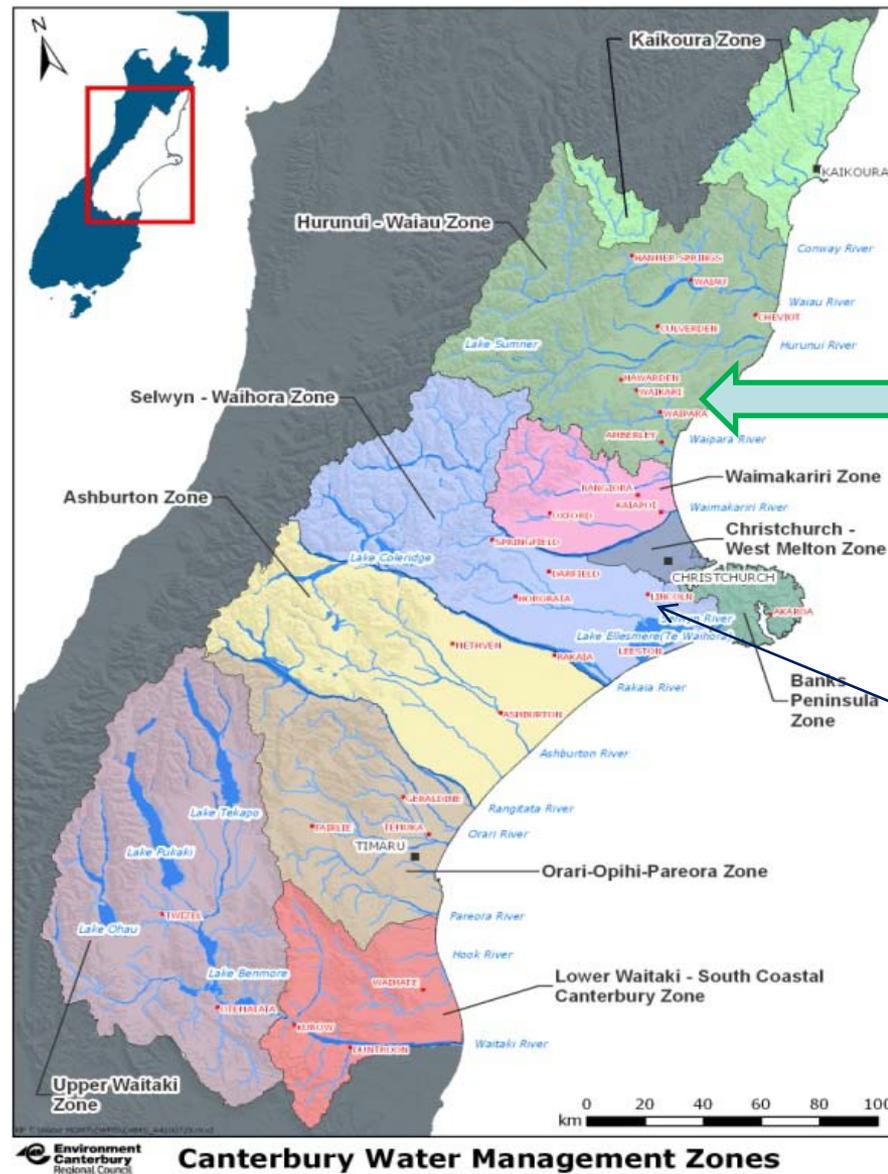
NZ - desired futures for fresh waters

Don't know (%)

Negative Positive



It is within this context that Canterbury, the centre of the irrigation, more cows, and water quality and quantity debate, is trying something new (or is it?)



The zone that I am a committee member of

Lincoln University

The Canterbury region response ...

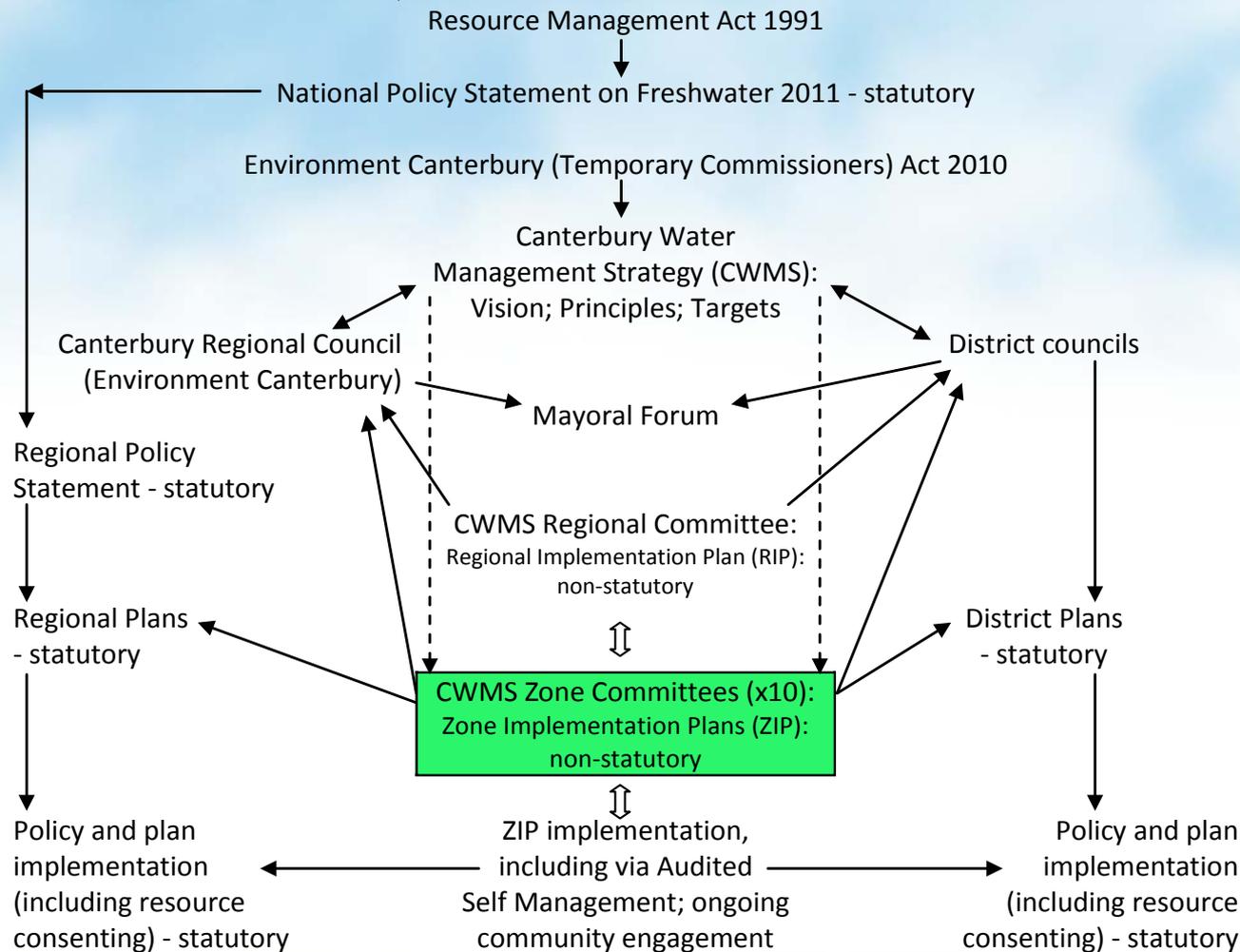
- Local regional and district councils developed the Canterbury Water Management Strategy 2009 (CWMS) - multi staged, long and collaborative (5 stages from 1999 to ongoing ...):

Stage	Coverage
1: Future Water Availability 1999-2002	Assembled key information on: <ul style="list-style-type: none"> The potential long-term requirement for water; The capacity of the region to meet these requirements; The water resources that would come under the most stress; The reliability, over the long term, of water supplied from natural systems for abstractive uses.
2: Major Storage Options 2003-2005	Determination of whether it is practical to meet environmental needs and potential water demands through the use of storage as a core component of integrated management of surface water and groundwater in the Canterbury region.
3: Multi-Stakeholder Evaluation of Storage Options 2005-2007	(i) formation and work of the regional reference group (ii) core reference group members joined consecutively by others in staged meetings of locality-based groups to evaluate storage options in their subregion, and (iii) consultation with interest groups based on the findings of the reference group evaluations.
4: Formulation of the Canterbury Water Management Strategy 2008- 2009	(i) stakeholder and community engagement on option development (ii) definition of strategic options (iii) community consultation on option preferences (iv) strategic investigations of outcomes (v) sustainability appraisal of options
5: Implementation of the CWMS 2010-	Establishment or zone committees and regional committee; production of Zone Implementation Plans; integration of ZIPs into statutory planning and other implementation approaches. Ongoing community engagement at all levels

CWMS – legislation & implementation

- The Environment Canterbury (Temporary Commissioners and Improved Water Management) Act gives statutory weight to CWMS, requiring all decisions in respect of water to have regard to the vision and principles of Strategy, namely:
- Vision: “To enable present and future generations to gain the greatest social, economic, recreational and cultural benefits from our water resources within an environmentally sustainable framework” (ECan 2009: 6).
- Within the CWMS the priorities and Principles that must be met:
 - First order priorities: environment, customary use, community supplies and stock water.
 - Second order priorities: irrigation, renewable electricity generation, recreation and amenity.
- Underneath these requirements is a set of 10 target areas:
 1. Ecosystem health/biodiversity;
 2. Natural character of braided rivers;
 3. Kaitiakitanga;
 4. Drinking water;
 5. Recreational and amenity opportunities;
 6. Water-use efficiency;
 7. Irrigated land area;
 8. Energy security and efficiency;
 9. Regional and national economies;
 10. Environmental limits
 - These targets will all be met over a staggered time period, i.e., 2010, 2015, 2020 and 2040

The institutional arrangements around the CWMS, and where I fit in ...



Importance of the targets and staggered time periods

- ‘Rome wasn’t built in a day’ – transition periods are necessary
- Some targets may appear mutually exclusive but over time and space can be made to work
- Insufficient resources – dollars and people – to do it all now
- Planning and sometimes new tools will be required
- New resources flowing from early investment will be required into the future.
- Targets reflect the QBL and reflect a desire for balance, but only consistent with the Vision and Principles, thus environmental and cultural needs outweigh economic and social but over time all will be achieved.

The Zone Committee & its ZIP

- Hurunui Waiau ctte set up July 2009 – had to produce ZIP within 1 year! Supported by Government imposing moratoria, for 1 year, on further development of two major rivers in zone
- ZCs produce non-statutory ZIPs –Hurunui Waiau ZIP covers:
 - Tangata whenua issues
 - Potable water supplies
 - Every river and lake in the zone
 - Environmental requirements – amount and quality of water needed for the life supporting capacity of water bodies, including the needs for safeguarding native birdlife, native fish, etc
 - Recreational requirements – amount/quality of water for white water kayaking, angling, swimming, etc
 - Irrigation demand (& complementary hydro development where it supports irrigation development)
- ZIP is integrated and ‘demand driven’, i.e., community defined its needs (demands) and these now have to be met (suppliers)
- This philosophy has changed the ‘playing field’ for developers
- Not the developers job to invent the supply side – their job to work collaboratively with the community to meet its demands

Prospects for ‘sustainability’ with implementation of the CWMS?

- Community based approaches to resolving ‘wicked’ environmental problems is not a new idea (Ostrom and many others)
- What is newer is the nested layers of collaboration and engagement, where the statutory and non-statutory complement each other. But ...
- ‘The jury is still out’, i.e., CWMS evaluation will take time, but there are ‘runs on the board’:
 - Community more engaged and more unified than ever been (social capital outcome)
 - Plans and policies (outputs) have been developed or are in the process of development
 - Developers working with zone committee to develop innovative solutions to match ‘demands’ expressed in the ZIP (an output)
 - Upper sections of rivers have, so far, been ‘barred’ from hydro development (an outcome)
 - Restoration projects have already occurred (an outcome).

Increasingly the old saying “the jury is still out on this” means we are waiting for more data to provide the answer



“The jury and our computers find the defendant guilty.”

©T. McCracken mchumor.com

Some conclusions & other insights from looking at NZ's water issues and the CWMS 'solution'

- Despite being water 'rich' NZ has been management 'poor'
- The CWMS is an innovative, integrated, community centred and non-statutory approach, supported by national and regional level statutory policies and plans – it is on trial but:
 - The fact the community is 'demand'ing an integrated set of environmental, cultural, social and economic outcomes (QBL), developed over time is reassuring
 - The multi-tiered collaborative process with environmentalists, tangata whenua and farmers working together is also reassuring
 - Local Hurunui Waiau community as a case example is very strongly agriculturally based, but complemented by wider local and regional environmental and cultural communities of interest. This combination appears committed to ensuring the supply side more than matches the demands
- Having said this it is also clear the 'jury is still out' and the solution may fail – I for one certainly hope this is not the case!