

A DECADE OF PUBLIC PERCEPTIONS OF THE NEW ZEALAND ENVIRONMENT: A FOCUS ON WATER AND ITS MANAGEMENT

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Abstract

Six biennial public perception surveys of the environment have been completed at Lincoln University. The survey asks 2000 people their perceptions of the state of the New Zealand environment and its management. 2010 survey responses are analysed and compared with 2000 - 2008 surveys to identify trends and some key issues with freshwater in New Zealand. There is concern about the quality and management of lowland streams. Blame is increasingly placed on farming for damage to freshwaters. The challenge is how to match political response and policy development to the level of public concern about freshwater and its management.

JEL Codes: Q25; Q53 Q58

Key words: perception surveys; environment; water management

Introduction

The state of the New Zealand environment, pressures on the environment and management of the environment are frequently the subject of public debate. There are continuing proposals for new projects including wind farms, irrigation projects, hydro electric dams, land use intensification including new dairy farms, and mining in national parks, and all are likely to modify parts of the environment. Public debate over project proposals provides an indication of public interest but may not provide an accurate representation of the New Zealand public's views about the environment, the pressures on the environment and management of the environment. Several surveys have been conducted in New Zealand to measure public perceptions of the state of the environment. In this paper we give a brief overview of relevant surveys and identify some strengths and weaknesses from this sort of approach. We then introduce our biennial survey of people's perceptions of the New Zealand environment as one vehicle for trying to make sense of how New Zealanders perceive the state of the environment, the pressures on the environment and environment management. Water quality, allocation of rights to freshwater, and management of freshwater are amongst the most important environmental issues in New Zealand and we focus particularly on New Zealanders perceptions of those issues.

Overview of Key Environmental Surveys in New Zealand

Several environment-related surveys have been undertaken by or on behalf of central government departments and local authorities, by NGOs, business groups, and many researchers. Many are descriptive and few truly analytical. Amongst the best known surveys are:

- Environment Waikato's now triennial surveys - Environmental Awareness, Attitudes and Action Survey, first undertaken in June 1998 to benchmark environmental perceptions within the region, and repeated in 2000, 2003 and 2006 (e.g., Gravitas Research and Strategy Ltd 2007).
- Environment Bay of Plenty's triennial surveys started in 2003 (e.g., Key Research 2007).
- The Lincoln University biennial survey of people's perceptions of the NZ environment (six surveys from 2000, e.g., Hughey et al. 2006; 2008).
- Growth and Innovation Advisory Board (2004): national vs individual preferences for environment, growth, education, etc.

Only the ongoing Lincoln University based survey provides a context for assessing national (and regional, depending on response rate) level perceptions and changes of these over time – it forms the basis for the detailed discussion that follows.

The Biennial Survey of Peoples' Perceptions of the NZ Environment

The survey assesses people's perceptions of the state of the NZ environment with respect to 11 natural resources:

- Natural environment in towns and cities;
- Air;
- Native land and freshwater plants and animals;
- Native bush and forests;
- Soils;
- Coastal waters and beaches;
- Marine fisheries;
- Rivers and lakes;
- Groundwater;
- Wetlands; and
- Natural environment compared to other developed countries.

It is built around the Pressure-State-Response model of environmental reporting (OECD, 1999), which addresses pressures on resources, state of resources, management of resources and problems associated with them. As far as we know, this is the first and only survey of its type anywhere to adopt this model. A postal questionnaire is used to gather data. The large number of questions made a telephone survey unsuitable, and interviews would have been too expensive and cumbersome for sampling the thinly dispersed New Zealand population. Two thousand people aged 18 and over are randomly selected from the Electoral Roll; in 2010 booster sampling was used to increase the number of responses for lightly populated regions such as the West Coast and Gisborne. Demographic variables include: age, gender, region, ethnicity, education, and employment sector. Response rates have been high for all years¹. In 2010 as well as a mail survey we conducted an internet survey – in this paper we report preliminary findings from the mail survey only. Data are analysed descriptively and, where applicable, some of the 2010 survey responses have been compared with the five previous surveys.

Each of our surveys asks an additional set of questions focused on one (and sometimes more) topic area:

- 2000 natural hazards and preparedness;
- 2002 coastal management and marine recreational fishing;
- 2004 freshwater management and recreational fishing;
- 2006 land transport and their externalities, priorities for New Zealanders;
- 2008 conservation, recreation, freshwater;
- 2010 climate and tourism, freshwater and its management.

¹ Effective survey response rates: 2000-48%, 2002-45%, 2004-43%, 2006-46%, 2008-40%.

In this paper we present some general results from the six surveys and specific results from the 2004, 2008 and 2010 freshwater case studies, and the 2008 recreational activities question, as our means of evaluating what people want for New Zealand, and for identifying some of the key issues surrounding these wants.

Priorities for the Government and for Individual New Zealanders

The 2006 survey included a case study on priorities (1) for the government, and (2) for individuals. Questions were designed around evaluating priorities for the environment compared to other key activities, including income, defence, health, law enforcement and education. Figure 1 shows people's individual highest priority for government action. The economy, health and education were the top priorities.

Figure 1. (see attachment)

Each of the items was re-evaluated in terms of ordered average rankings, using a scale of 1 (highest priority) to 7 (lowest priority). When combined, the revised order of priorities was:

- | | |
|--|------|
| • High quality health system
= Highest priority | 2.29 |
| • High quality education system | 2.67 |
| • Strong economy | 3.14 |
| • High quality environment | 3.97 |
| • Low crime rate | 4.43 |
| • Fair level of superannuation and income support | 5.08 |
| • Strong defence system
= Lowest priority | 6.17 |

While a strong economy was the most commonly chosen top priority, when mean priority rankings are calculated for each item the economy rates third, with quality of the environment in fourth position.

The national level priorities for the government can be compared to priorities for individuals. Average Likert scores, on a scale of 1 (very important) to 5 (very unimportant), ranked from top to bottom are listed below:

- | | |
|--------------------------------------|------------------------|
| • Quality of life | 1.18 = Most important |
| • Public health system | 1.46 |
| • Quality of education | 1.50 |
| • Quality of the natural Environment | 1.55 |
| • Crime prevention | 1.60 |
| • Level of wages and salaries | 1.85 |
| • Level of economic growth | 1.89 = Least important |

As with the Growth and Innovation Advisory Board (2004), the 2006 survey shows that quality of life and quality of the natural environment are more important than either the level of wages and salaries, or the level of economic growth.

Our 2006 survey ranked New Zealand's performance against the same attributes. Average Likert scores, on a scale of very good (1) to very bad (5), ranked from top to bottom, are listed below:

- Quality of life
2.07 = Best performance
- Quality of the natural environment
2.35
- Quality of education
2.57
- Level of economic growth
2.92
- Performance in the public health system
3.15
- Level of wages and salaries
3.17
- Crime prevention
3.50 = Worst performance

Only crime prevention performance was considered overall to be less than adequate, with quality of the natural environment and quality of life both considered 'good'.

Box 1. Priorities for the government and for individual New Zealanders: the key messages.

Key priorities for the government are the economy, health and education, followed by the environment.

For individuals the priorities are different and the environment and quality of life are more important drivers than economic considerations.

Selected pressures, states and responses

Pressures

In 2008 we asked people what the most important environmental issues were that New Zealand and the world faced (Figure 2). For New Zealand, water pollution was the most important issue (being identified by 14% of respondents), while for the world it was global warming/climate change (32% of respondents). It is notable that 26% of respondents chose a water-related issue for New Zealand. Two other relevant pieces of data are relevant here. First, as shown in Table 1, data from

the 2008 survey question about outdoor recreational activities shows that 40.8% of respondents undertook freshwater based fishing, boating or waterfowl hunting in the previous year (excluding freshwater swimming and picnicking beside freshwaters). Second, and while not directly comparable, the relative frequencies of chapter downloads from the MfE the Environment 2007 report website are indicative of the level of interest in water – 26% downloaded the freshwater chapter with the next highest being biodiversity at 12% (MfE 2008: 3).

Figure 2 (see attachment)

Table 1 (see attachment)

Causes of damage to natural resources were also evaluated. We focus on the main perceived causes of damage to freshwater (Figure 3). From 2000-2010 there has been a steady and significant increase in the proportion of respondents identifying farming as one of the main causes of damage.

Figure 3 (see attachment)

Analysis of the 2008 responses indicates a significant difference between ethnic groups' perceptions of damage to freshwater and its causes. Notably, compared with Maori or other ethnicities, New Zealand European respondents much more frequently ascribed blame to farming and dumping of solid waste for damage to freshwater, and less frequently blamed sewage and stormwater and hazardous chemicals (Figure 4).

State

The public have overall positive views about the state of New Zealand resources (Figure 5), with only rivers and lakes, and marine fisheries, having significant negative ratings. This view has not changed significantly over the life of the surveys.

Figure 5 (see attachment)

While the overall positive rating for freshwater aligns with biophysical scientific assessment at the national level (see MfE 2007), it is countered by assessments of lowland streams and lakes (see for example Larned et al. 2003, Parkyn & Wilcock 2004) which indicate poor quality of water and often significantly reduced flows. Responses to statements about rivers, streams and lakes (Figure 6, and see Hughey et al. 2004, Cullen et al. 2006, and Hughey et al. 2007 for further examples and analysis) were supportive of the science findings, indicating that people think lowland streams in their region have low water quality. Figures 7 and 8 show differences in perceptions based on demographics. Respectively, people working in resource based industries had more positive views on the quality of water in

lowland streams than the majority of respondents; anglers (38% of all respondents, Hughey et al. 2004) were less favourable towards extraction of more water from large rivers than were non anglers.

Figure 6 (see attachment)

Figure 7 (see attachment)

Figure 8 (see attachment)

Response

A variety of question types have been used to evaluate management response and its adequacy. Perhaps most interestingly, except for the management of farm effluent and runoff, all other resource types show a significant improvement in perceived quality of management over the 2000-2008 period (Hughey et al., 2008).

Figure (see attachment)

However, a finer analysis of freshwater, as demonstrated in Figure 10, shows that in every survey undertaken most respondents do not consider lowland streams in their region to be well managed. Interestingly (Figure 11), again there are major differences in perceptions amongst two key user groups, namely those employed in resource based industries and others, and freshwater anglers and non anglers.

Figure 10 (see attachment)

Figure 11 (see attachment)

In 2010 respondents were asked to rate organisations' performance in undertaking their water management functions. Average Likert score responses (range of 1 for extremely poor to 5 for extremely good), ranked from top to bottom, are presented below:

Fish and Game NZ	3.5 Highest ranking
Department of Conservation	3.4
Ministry of Health	3.3
Ministry for the Environment	3.1 = Lowest ranking
Regional councils	3.1 = Lowest ranking
District and City councils	3.1 = Lowest ranking

No organisation is considered to be performing extremely well.

The 2004 survey asked respondents about their willingness to pay for lowland stream enhancement work (Figure 12). Over half of respondents were willing to pay a targeted rate for this purpose.

Figure 12 (see attachment)

Followup open-ended explanations were evaluated. Those supportive or strongly supportive of a \$20 rate increase made comments like:

- 'Small price to pay for the common good' (43% of 484 responses); followed by:
- 'Good to pass onto future generations';
- 'To clean up the water'; and
- 'Better than cleaning it up later'.

Those opposed or strongly opposed said:

- 'Rates are too high already' (23% of 484 responses);
- 'Industry or farmers should pay for this, not ratepayers'; or
- 'No proof projects are being done efficiently' and 'On a low income'.

Box 2. Pressures, States and Responses with a focus on fresh water: the key messages

The overall state of the New Zealand environment is perceived as very good, although freshwater, of all resources considered, rates the lowest. At a more local level there is considerable concern about lowland streams. (We only provide evidence here on lowland)

The key pressures on these resources are human-induced. Farming is increasingly blamed for damaging freshwater but also for damage to a range of other resources. Freshwater related issues are the single biggest environmental concern for New Zealanders.

There are important demographic differences. Those employed in resource based industries are much more positive about the state of specific water resources than are others – anglers are more pessimistic.

Management by a range of organisations of water management activities is not ranked highly, and of lowland streams is considered inadequate, but people are willing to pay for on the ground actions to improve lowland streams.

What people want and what might get us there

The 2010 survey explored the relative importance of a range of 'values' linked to rivers and streams. Mean Likert scores (1 lowest, 5 highest) ordered from highest to lowest importance are:

Nature 4.3 Highest importance

Scenic/visual	3.8	
Community household and other use	3.7	
Recreation	3.6	
Commercial use	3.3	
Customary Maori	2.6	Lowest importance

Responses to four statements about what survey participants think fresh water should be like in the future are shown in Figure 13. Respondents are clearly interested in conserving a range of instream values, while also wanting key potential hydro resources developed.

Figure 13 (see attachment)

Several questions in the 2010 survey focused on policy instruments for achieving sustainable outcomes in freshwater management. Responses to a range of statements about water resources, their state and their management related to user say in management and user pays (Figure 14) clearly indicate that respondents expect businesses to pay for water use, but want environmental and recreational interests to have a stronger say in water resource management.

Figure 14 (see attachment)

Respondents were asked some questions about specific approaches to water management, namely (i) regulations, rules and standards, (ii) economic instruments, and (iii) voluntary and/or advocacy approaches. Figures 15a-c reports findings for each of these approaches. Notable is the relatively high level of support for the roles of both regulation and economic approaches, whereas there is a bimodal response for voluntarism and advocacy approaches.

Figure 15a (see attachment)

Figure 15b (see attachment)

Figure 15c (see attachment)

Figure 16 presents responses to statements about these three approaches, which show:

- Most people believe enforced regulation will protect the environment;
- While economic instruments send clear signals about environmental responsibility, they are unlikely by themselves to change commercial use behaviour;
- Reliance on voluntary and related mechanisms will not protect the environment;
- Price and related economic signals can improve water use efficiency and improve prospects for management in the longer term.

Box 3. What people want and what might get us there.

People want environmental and recreation values of rivers protected, but are also willing to see water used, although not at the expense of these other values.

Economic and Regulatory approaches are those most favoured by respondents for achieving desired outcomes.

There is strong support for putting an economic value on the commercial use of water and for charging users.

Overall discussion and conclusions

The 2000-2010 biennial surveys of people's perceptions of the NZ environment have delivered consistent results across the range of pressure, state and response indicators that are routinely monitored. Complementing these messages are findings from periodic case studies. In this paper our examination of trend findings and freshwater case study results from various surveys reveals a set of messages that should influence government, policy makers and others.

Three main sets of messages arise from this analysis. First, while the government's main concerns should be with health, education and the economy, individuals place higher priorities on quality of life and quality of the environment. Secondly, given this level of individual interest in, and the high overall rating of, the state of the New Zealand environment, there is considerable concern about the quality and management of lowland streams and an increasing amount of blame is being placed on farming for damage to freshwaters. Third, the public are generally supportive of the use of economic and regulatory approaches to management.

These messages lead us to the following views, based on our survey research:

- People 'don't want' development to wreck fresh water environments they recreate in, they value the ecology and nature of these resources highly;
- Farming is increasingly understood to be a cause of damage to the environment – it should not be permitted to do this; a range of tools, including sending clear economic signals, are supported by a majority of respondents;
- People are worried about freshwater, its management and pollution; and
- Given that individual and government priorities place a high emphasis on the environment (and noting that individuals are willing to pay for

improvements and/or mitigation where key rural resources are damaged), it is clear that rural land development/intensification that increasingly impacts fresh water resources needs to occur with sustainability as a requirement, and not as a retrospective (partial) fix.

- Government leadership is needed to address rural water management issues. New policies, tools and more resources are needed to tackle these issues.

New Zealand has amongst the most plentiful supplies of freshwater per capita of any country on the planet. Current management is failing to deal adequately with the growing pressures on freshwater resources. . The important challenge that arises from these conclusions is how to match political response and policy development to the level of public concern about the pressures, state and management of freshwater.

Acknowledgments

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Figure 1. Priorities for the NZ government - 2006 (source: Hughey et al. 2006).

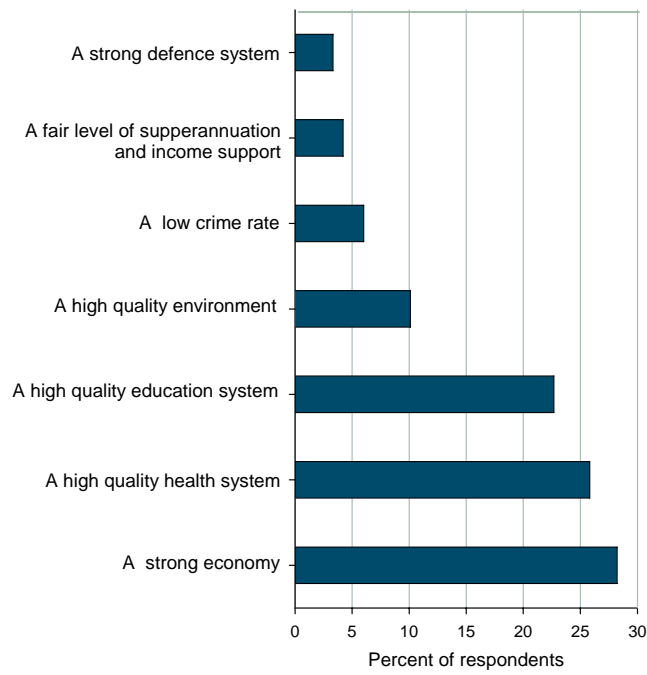


Figure 2: Most important environmental issue in NZ and the World – 2008 (Source: Hughey et al. 2008)

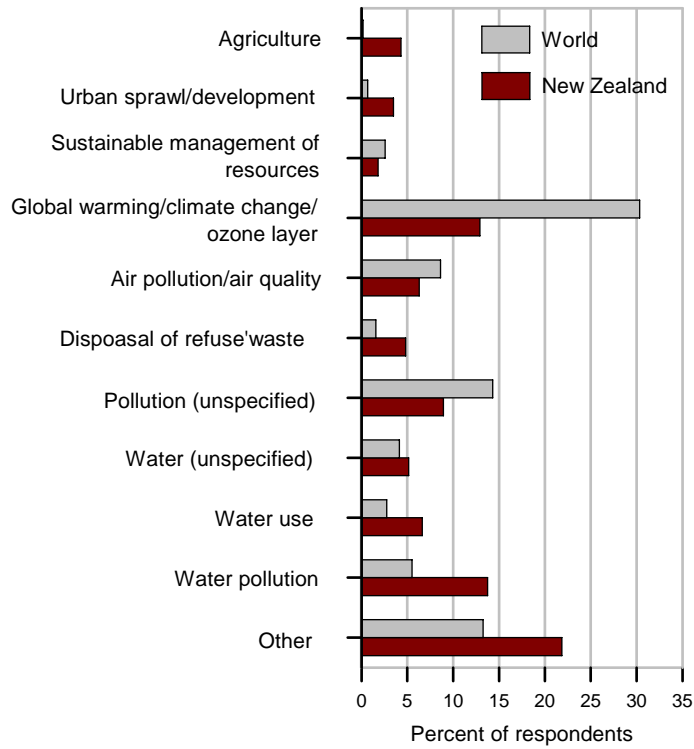


Table 1: Respondent participation in a freshwater recreation activity over the previous year (N=752) (Based on Hughey et al. 2008)

Freshwater activity	Percent participating	Number of respondents	95% confidence intervals
Fishing	16.9%	127	14.2-19.6%
Boating	32.8%	247	29.5-36.2%
Water Fowl Hunting	4.8%	36	3.3-6.3%
Any of these activities	40.8%	307	37.3-44.3%

Figure 3: Main causes of damage to freshwater (2000-2010) (Source: Hughey et al. in prep.)

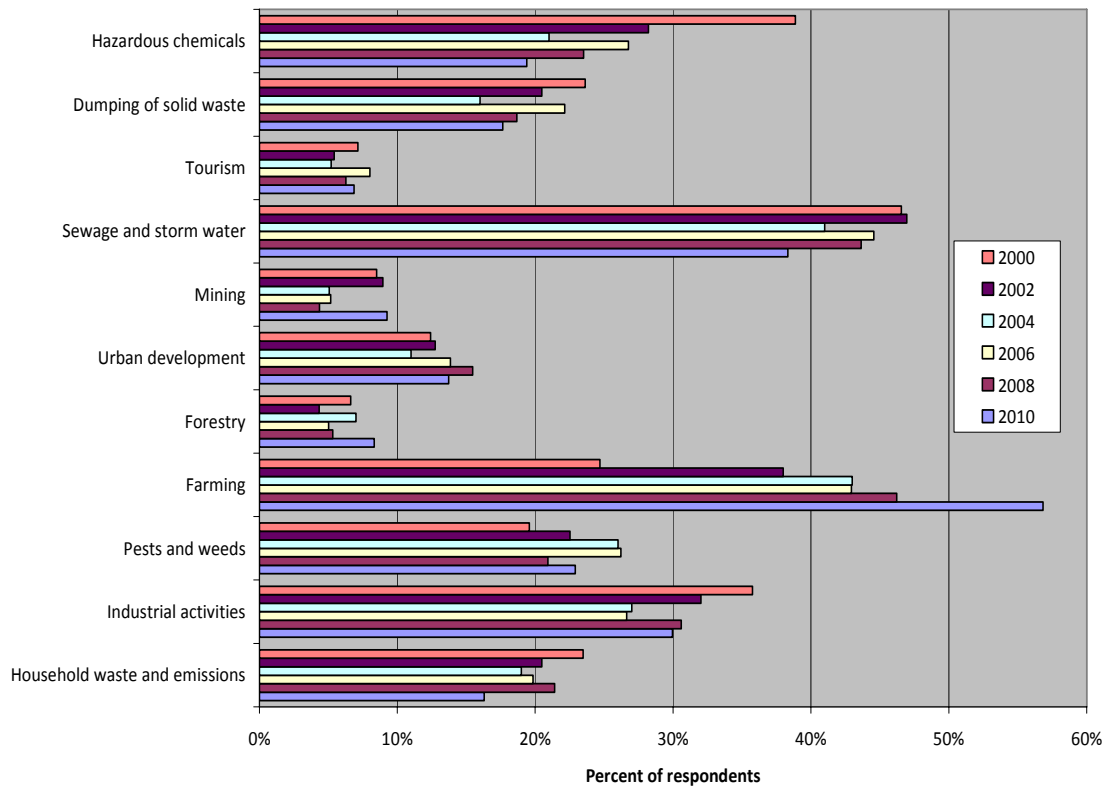


Figure 4: Main causes of damage to freshwater by ethnicity - 2008 (Source: Hughey et al. 2008)

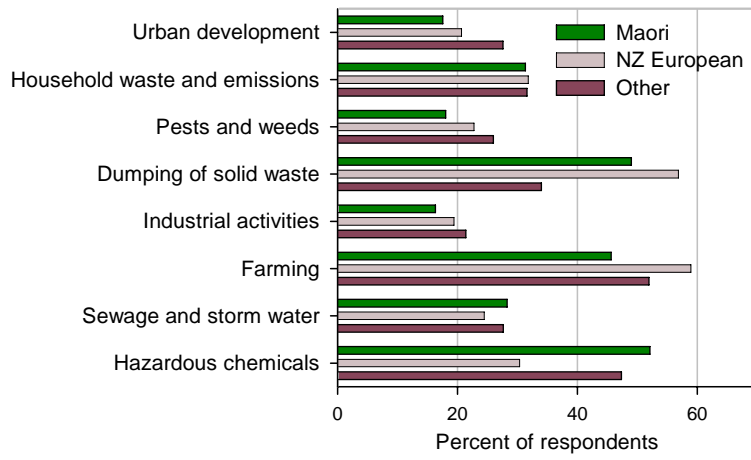


Figure 5: The state of New Zealand resources in 2008 (Source: Hughey et al. 2008)

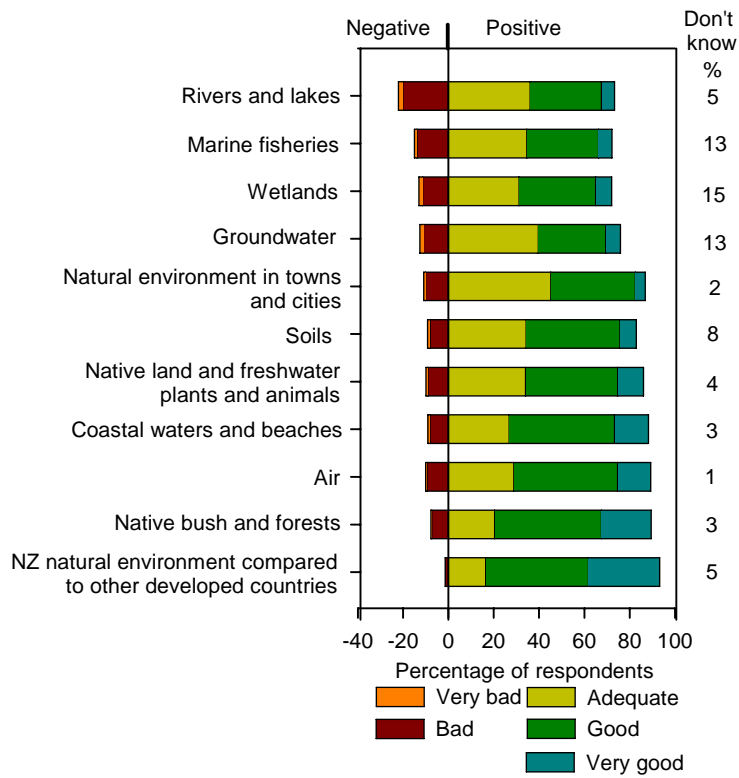


Figure 6: 'Small lowland streams in my region have high water quality' (2004, 2008)

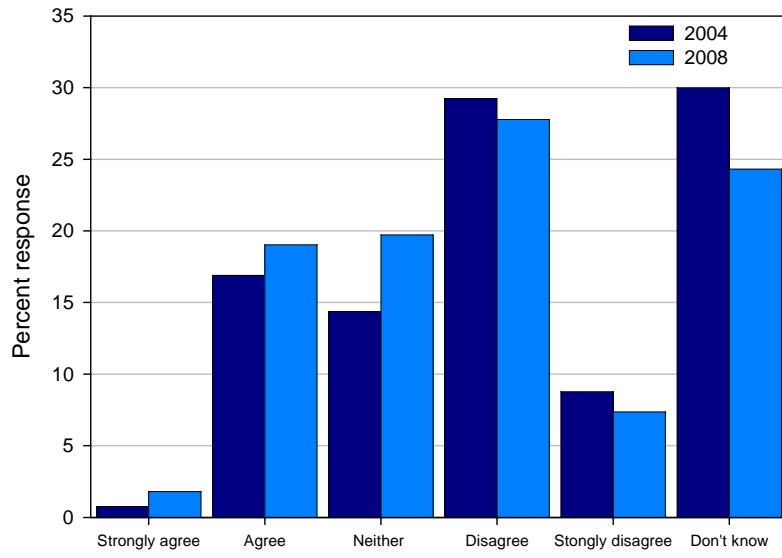


Figure 7: Small lowland streams in my region have high water quality - 2004

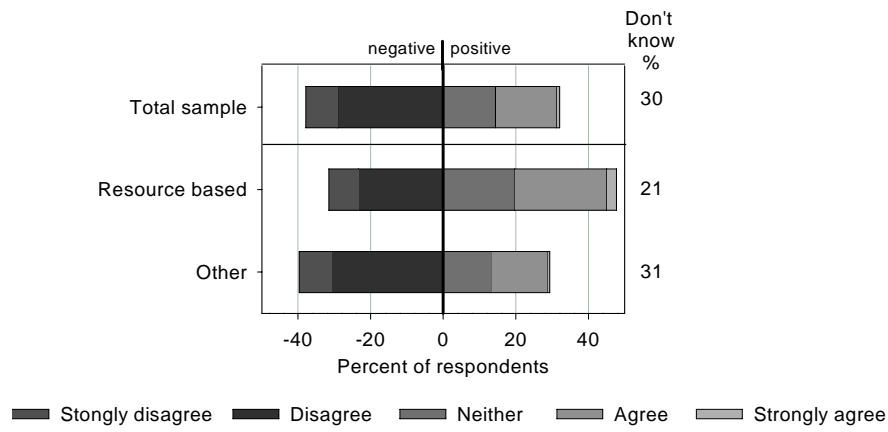


Figure 8: More water should be taken from large rivers for irrigation even if it has a negative impact on freshwater fisheries - 2004

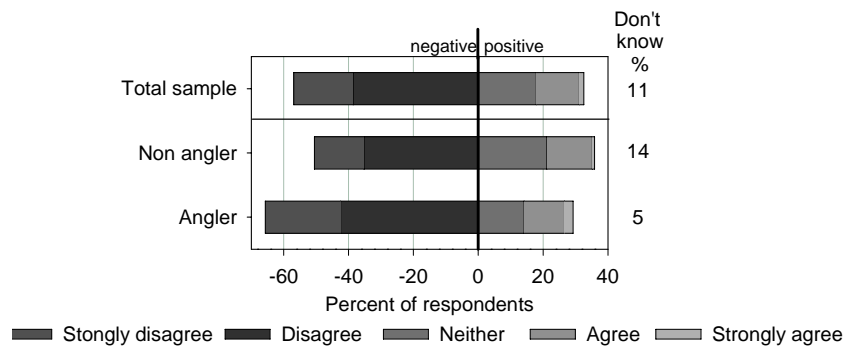


Figure 9: Trends in perceived quality of management activities 2000-2008

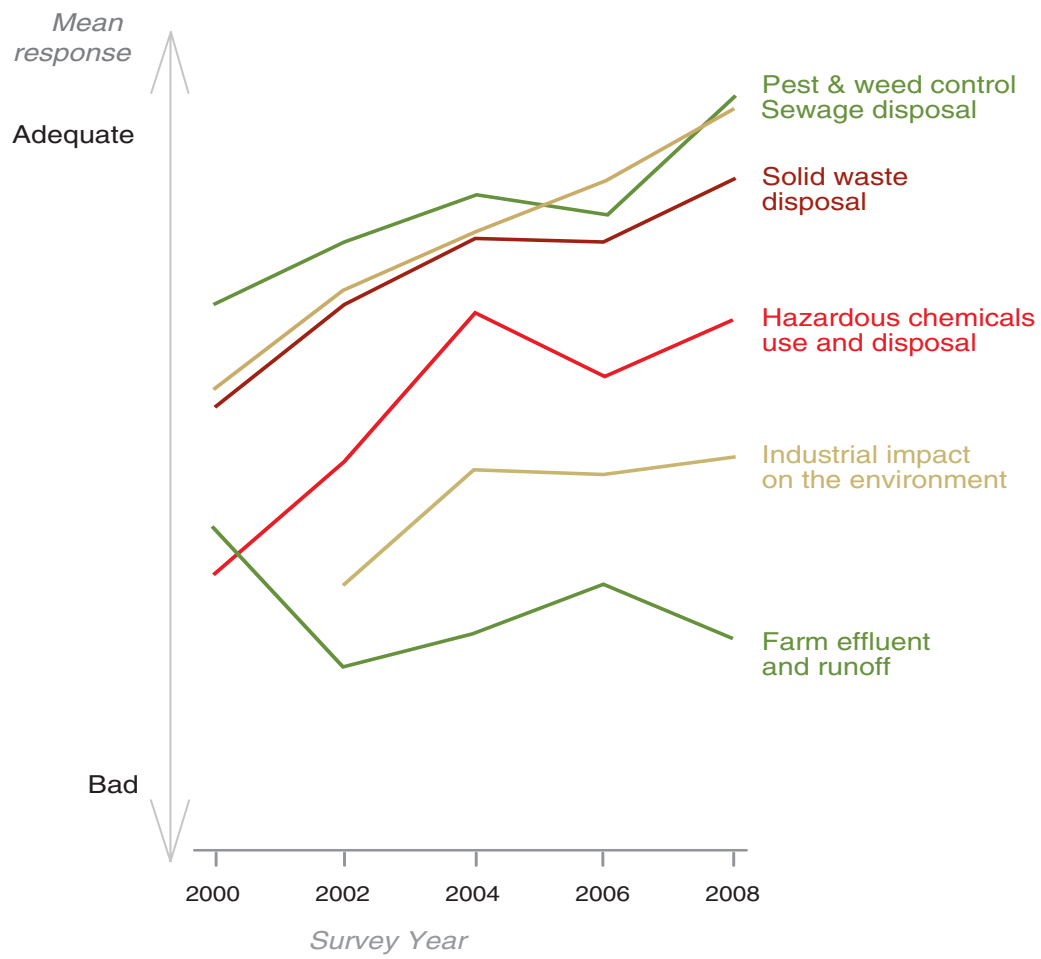


Figure 10: Small lowland streams in my region are well managed (2004, 2008)

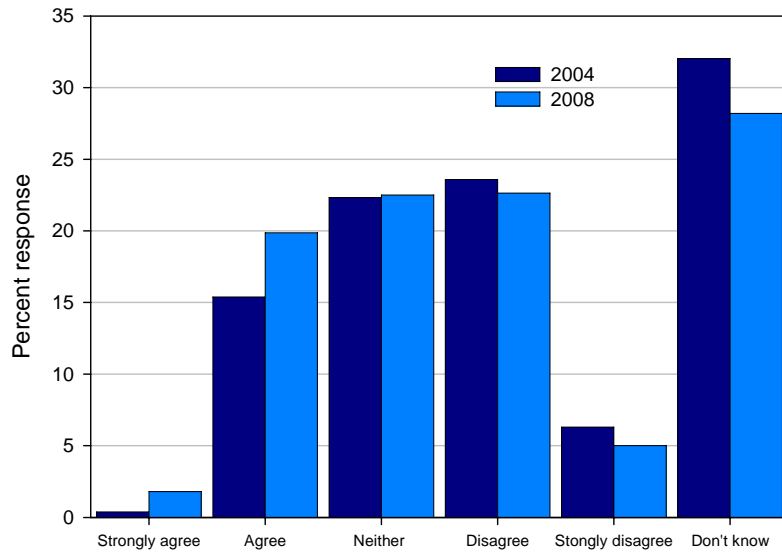
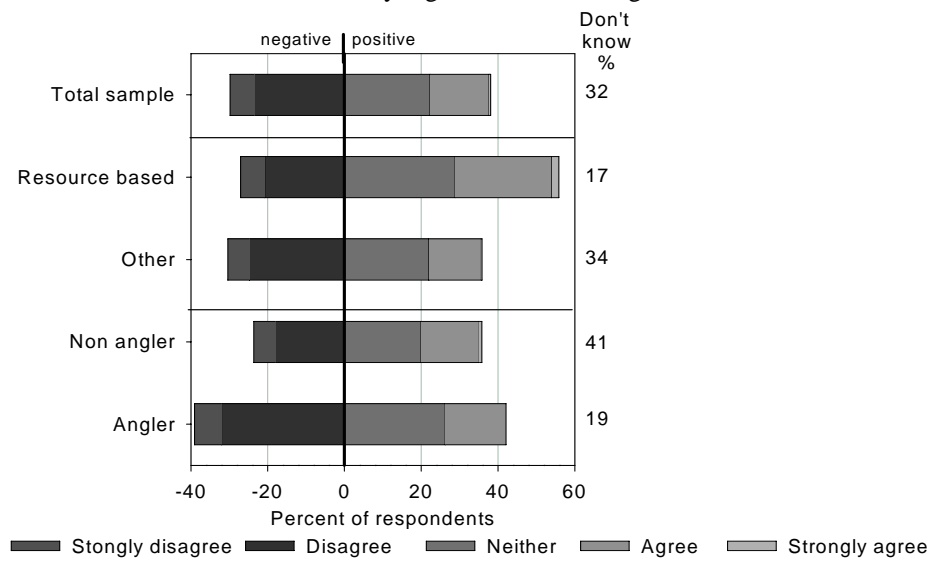


Figure 11: Small lowland streams in my region are well managed -



2004

Figure 12: Willingness to pay \$20 per year in additional rates for 10 years to pay for lowland stream enhancement work (Source: Hughey et al. 2004)

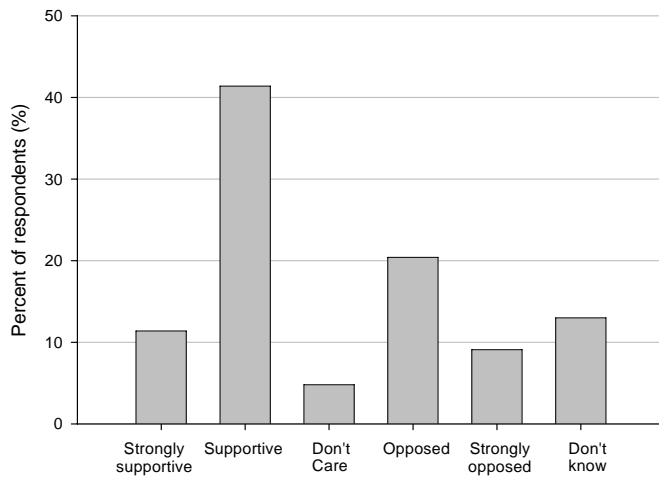


Figure 13: Levels of support for a range of freshwater futures in New Zealand

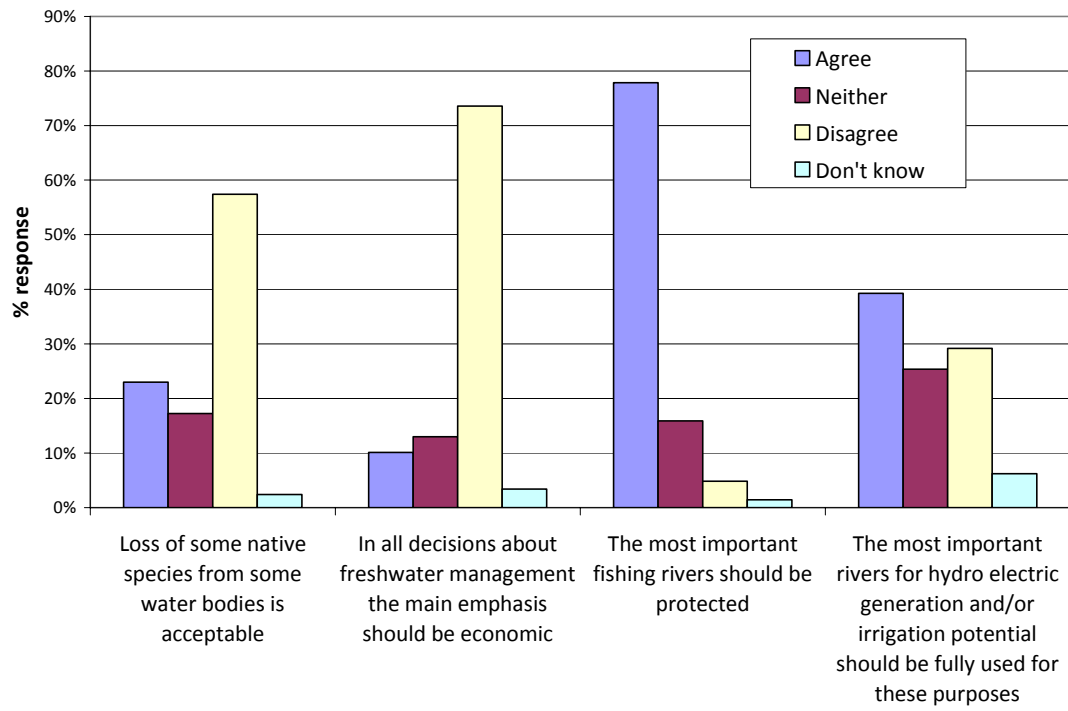


Figure 14: Views on various aspects of freshwater use and management

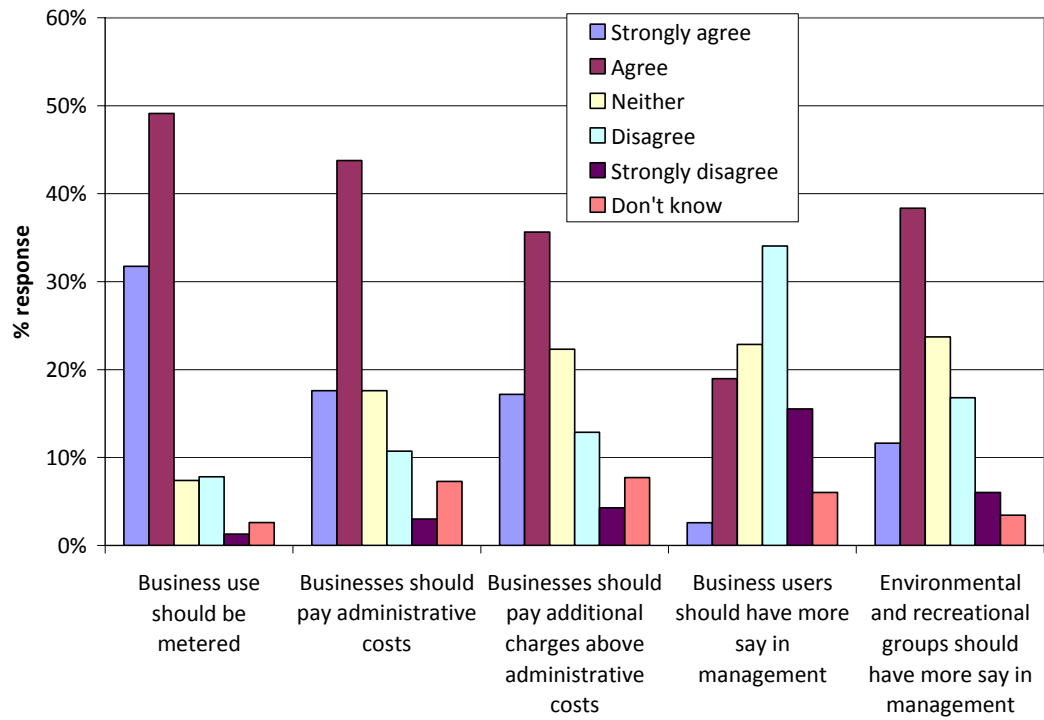


Figure 15a: Effectiveness of approaches to management of freshwater – regulation alone: 2010

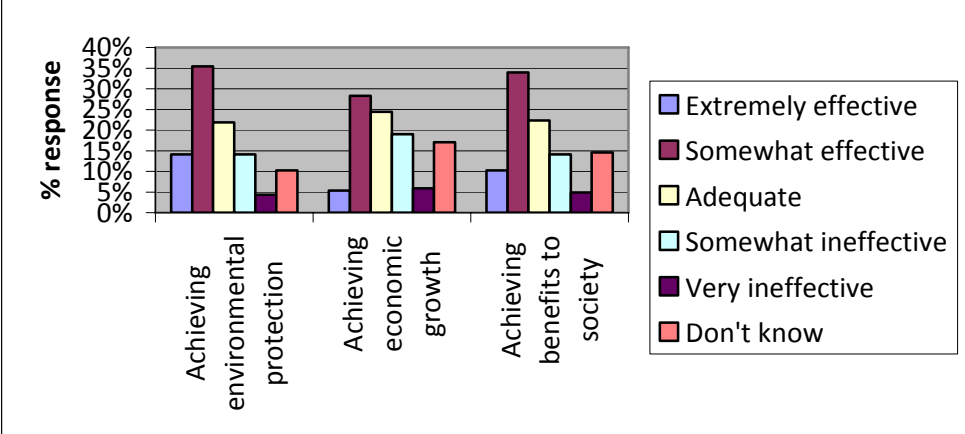


Figure 15b: Effectiveness of approaches to management of freshwater – economic instruments alone: 2010

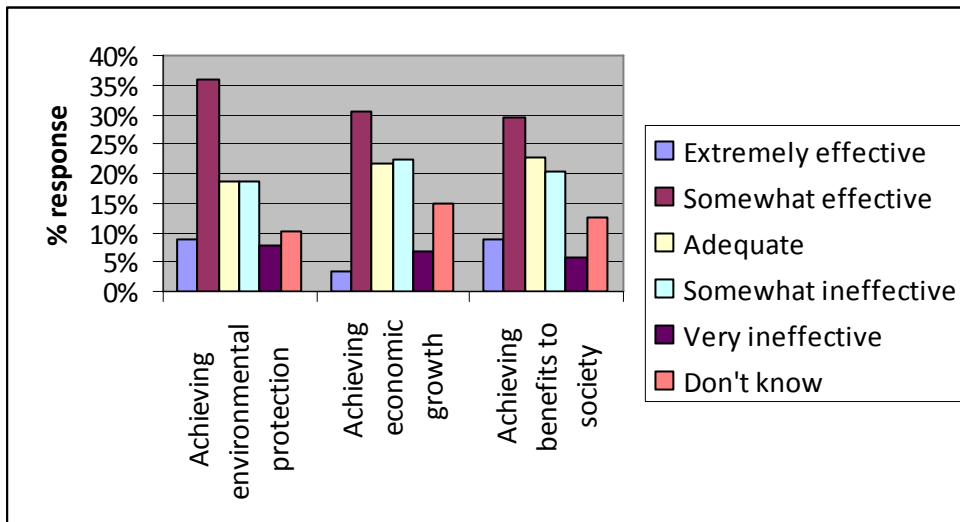


Figure 15c: Effectiveness of approaches to management of freshwater – voluntary action and advocacy by themselves: 2010

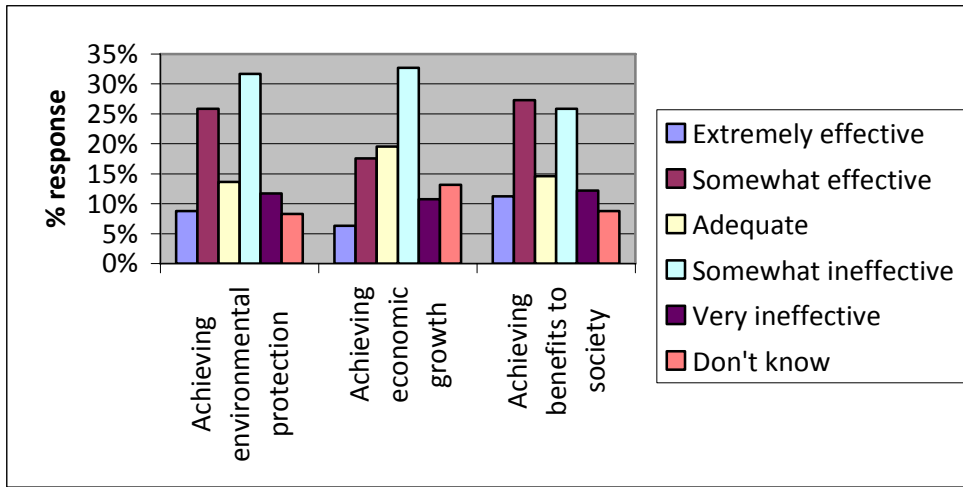


Figure 16: Respondents views of various approaches to water resource management

