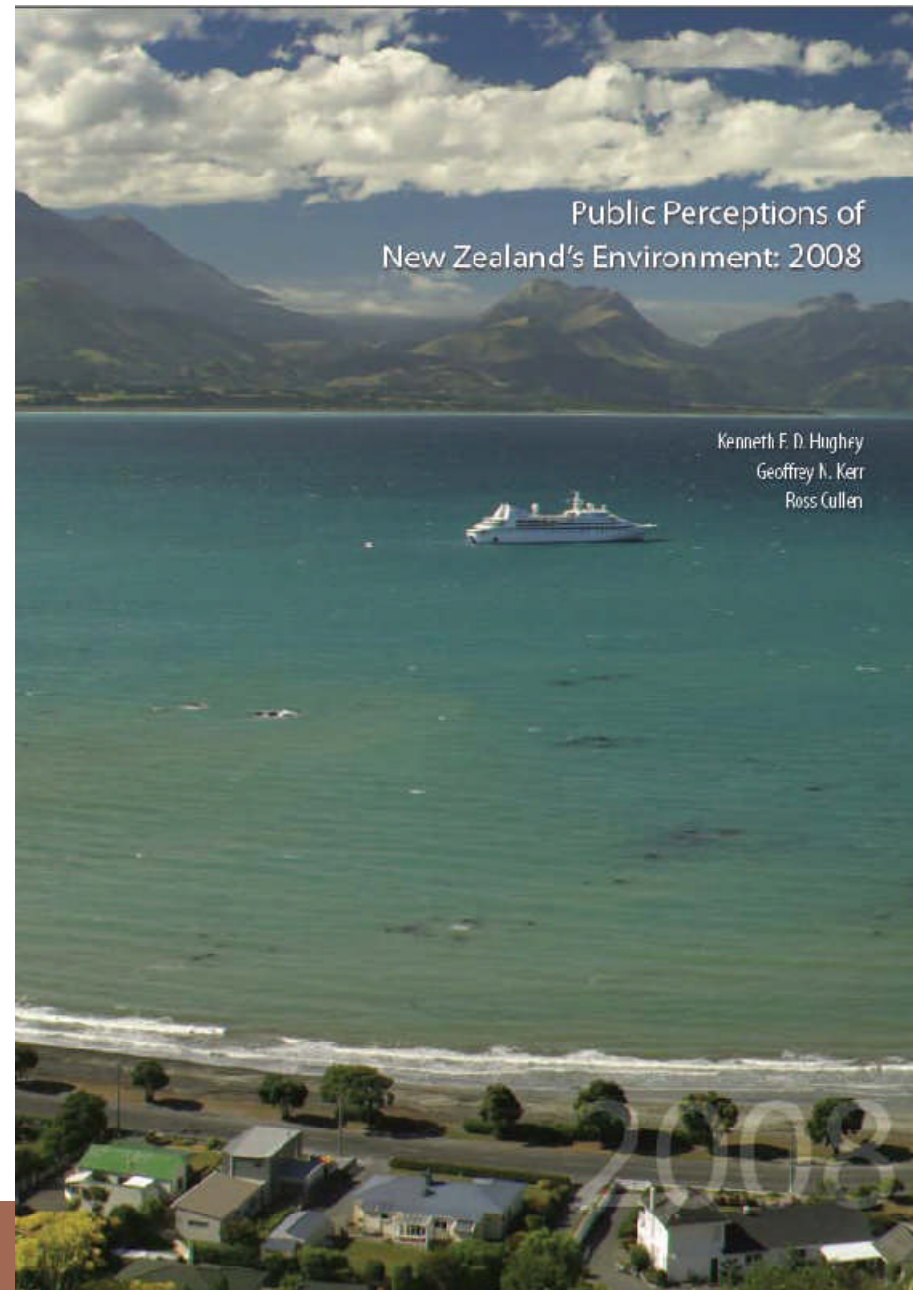# Perceptions of NZ's Environment:
Do perceptions align with science?
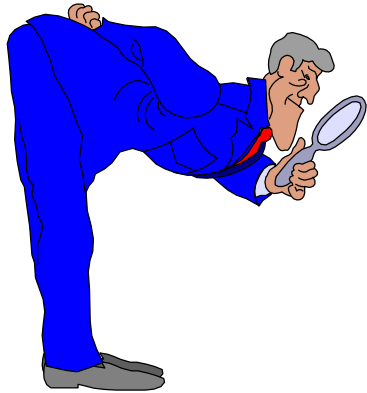
Ken Hughey
Ross Cullen
Geoff Kerr

Lincoln University

MfE, Wellington, 20th October 2009

Images of traditional State of the Environment Reporting:

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an approach resulting in technical measures with little or no reference to what people think about the state of their environment

Perceptions Research: approach

Aims:

- Monitor NZers' perceptions of resources and environmental issues – something increasingly common in other countries;
- Contribute to improved state of environment reporting – matching perceptions to science can identify gaps/issues;
- Inform policy development – understanding perceptions can help with policy initiatives.
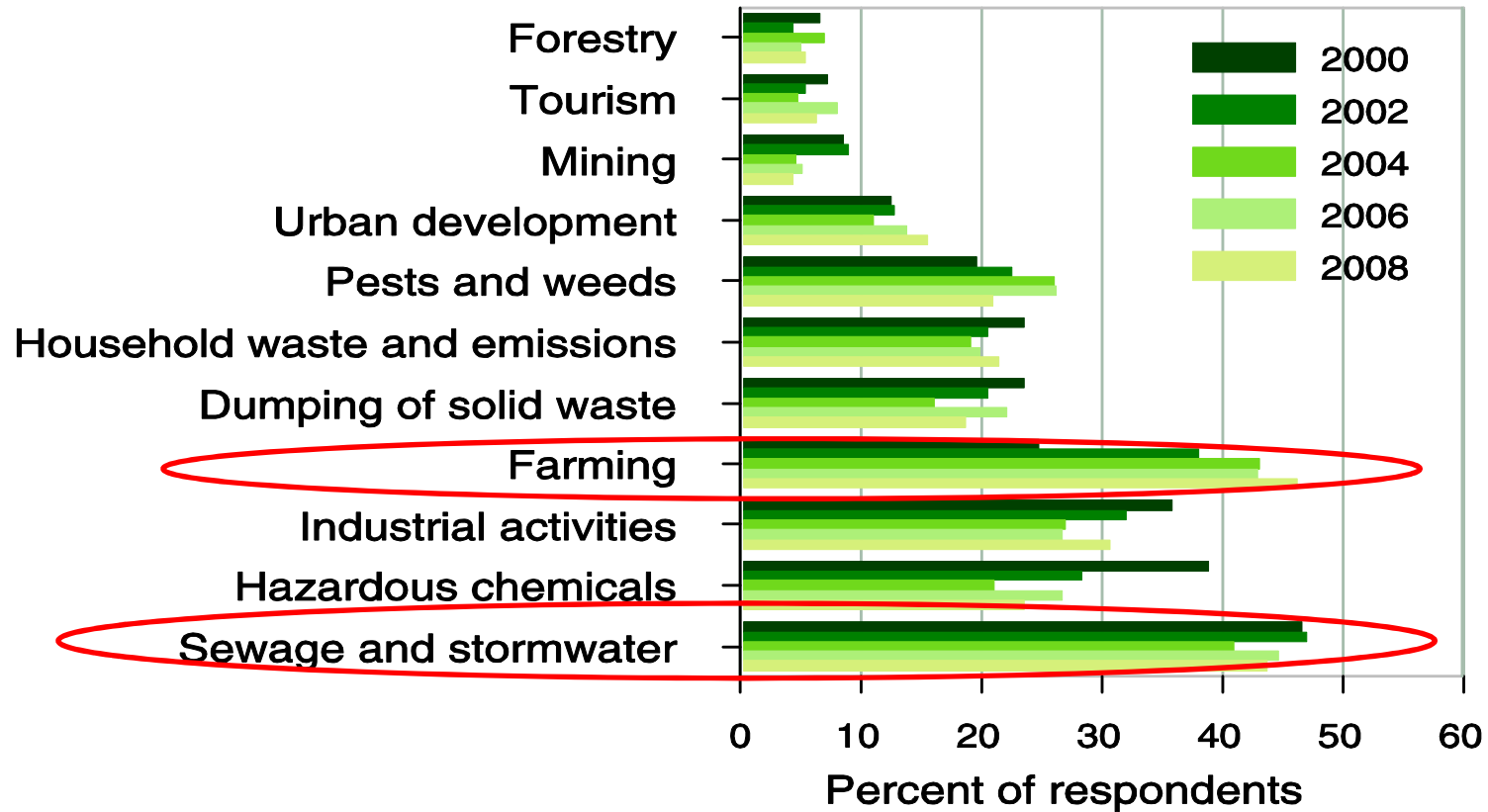
Framework:

- PSR model used by OECD and in MfE environmental reporting programme

Methods:

- Postal Questionnaire, biennially since 2000
- Random sample of 2000 from Electoral Roll
- Maintained a c.40-47% effective response rate

PSR trends – *Pressure:*
Perceived causes of damage to fresh waters

PSR trends – *Pressure:*

Significant changes in causes of damage over time: 2000-2008

Note that the percent figures refer to percentage points of change, e.g., farming has increased as a cause of damage to freshwater by 22 percentage points (from 24.7 in 2000 to 46.2% in 2008, an increase of 87.1%).

	Air	Native land and freshwater plants and animals	Native forests and bush	Soil	Beaches & coastal waters	Marine fisheries	Marine reserves	National parks	Wetlands	Fresh waters
Motor vehicles and transport	ns 1%	ns -2%	ns -2%	ns 2%				ns -2%		
Household waste and emissions	** -7%	ns 1%		* 4%	** -7%	ns 1%	ns -1%		*** -1%	ns -2%
Industrial activities	ns 0%	ns 1%	ns -3%	ns -1%	* -2%	* -3%	ns -2%	ns 2%	*** -5%	* -5%
Pests and weeds		ns -5%	ns	ns -1%		*** 2%	ns 1%	ns 2%	*** 3%	ns 1%
Farming	***** 8%**	***** 17%**	***** 9%**	***** 12%**	***** 4%**	***** 2%**		**ns 0%**	***** 5%**	***** 22%**
Forestry		* -5%	** -8%	ns 3%				*** -7%	ns 0%	ns -1%
Urban development	* 4%	ns 3%	** 7%	ns -2%	** 6%		ns -1%	ns -1%	*** 3%	ns 3%
Mining		ns -2%	ns 3%	n-2%				ns -2%	ns 0%	** -4%
Sewage and storm water	ns 0%	* -5%		ns 1%	ns -3%	ns -1%	ns -3%		ns 0%	ns -3%
Tourism		ns 0%	ns -3%	ns 0%	ns 0%	ns -2%		ns 2%	ns 2%	ns -1%
Commercial fishing					ns 3%	ns 2%	* 6%			
Recreational fishing					ns 1%	ns 4%	* 6%			
Dumping of solid waste	ns 0%	ns -4%	ns 0%	*** -11%	*** -8%	ns -2%	ns -3%	ns -3%	*** -7%	* -5%
Hazardous chemicals	***** -9%**	**** -7%**	*** -3%**	***** -13%**	***** -9%**	***** -13%**	***** -11%**	***** -1%**	***** -8%**	***** -15%**

* Significant at P<0.05, ** Significant at P<0.01, *** Significant at P<0.001.

Freshwater: evidence of 'pressures'/failures

Science:			Region			
			Canterbury	Hawkes Bay	Southland	Waikato
Water quantity	Water allocation and abstraction	Surface water	⇑	⇑	=	⇑
		Groundwater	⇑	⇑	⇑	⇑
	Water quantity	Surface water	?	=	=	?
		Groundwater	?	⇓	=	?
Water quality	Surface water quality	Microbiological	?	?	?	⇓
		Inorganic	?	?	?	⇓
	Groundwater quality	Microbiological	?	?	⇓	?
		Inorganic	⇓	⇓	?	⇓
Future demand			⇑	⇑	?	=
Policy: Regulatory framework (noting that the RMA providing for these plans was introduced in 1991)			Proposed plan notified 2004	Proposed plan notified 1998	Proposed Plan notified 2000	Proposed Waikato Regional Plan

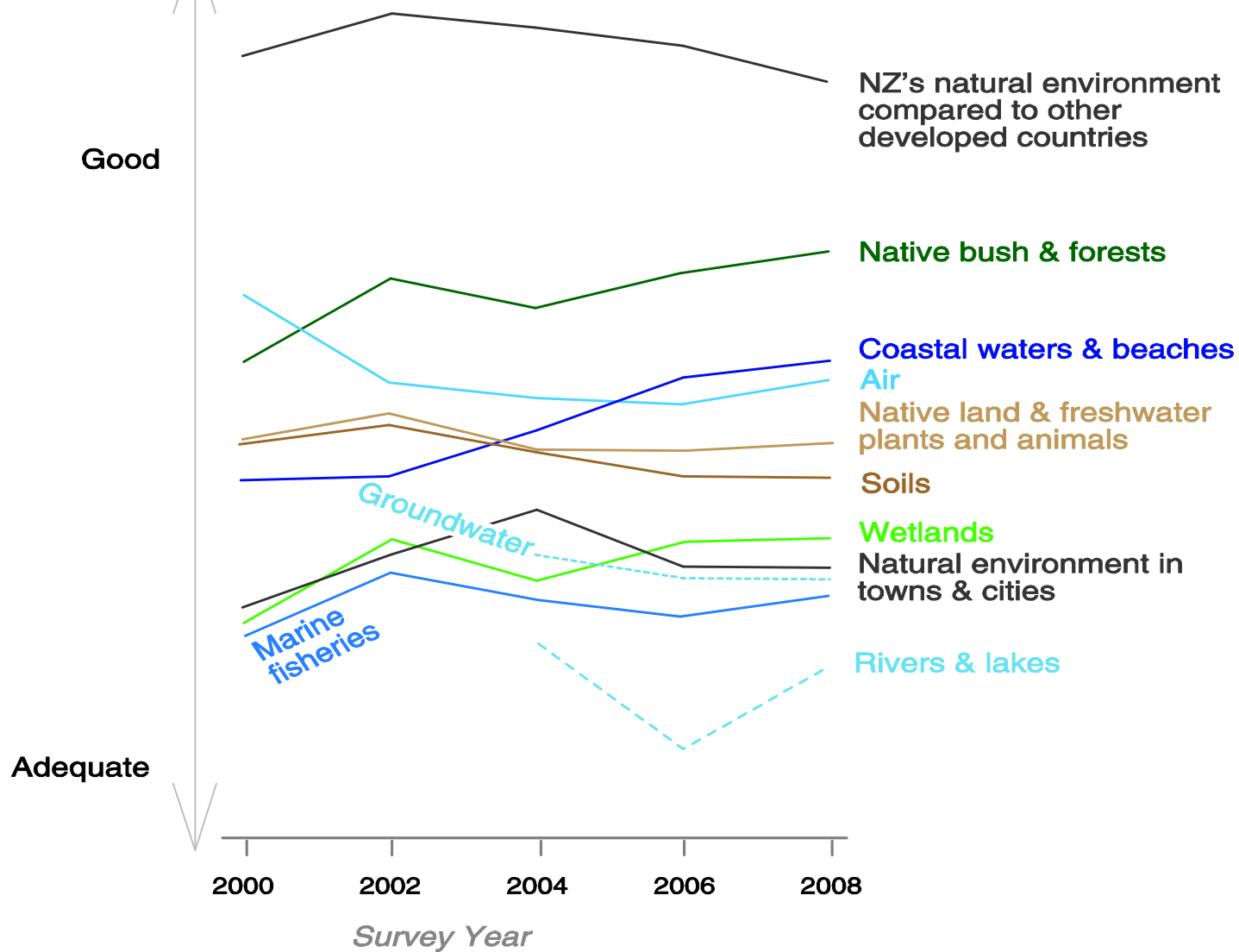Key: ⇑: Increasing; ⇓: Decreasing; =: Steady; ?: Uncertain
Source: Summarised from PCE (2004: 46-50).

PSR trends – *State:* 2008
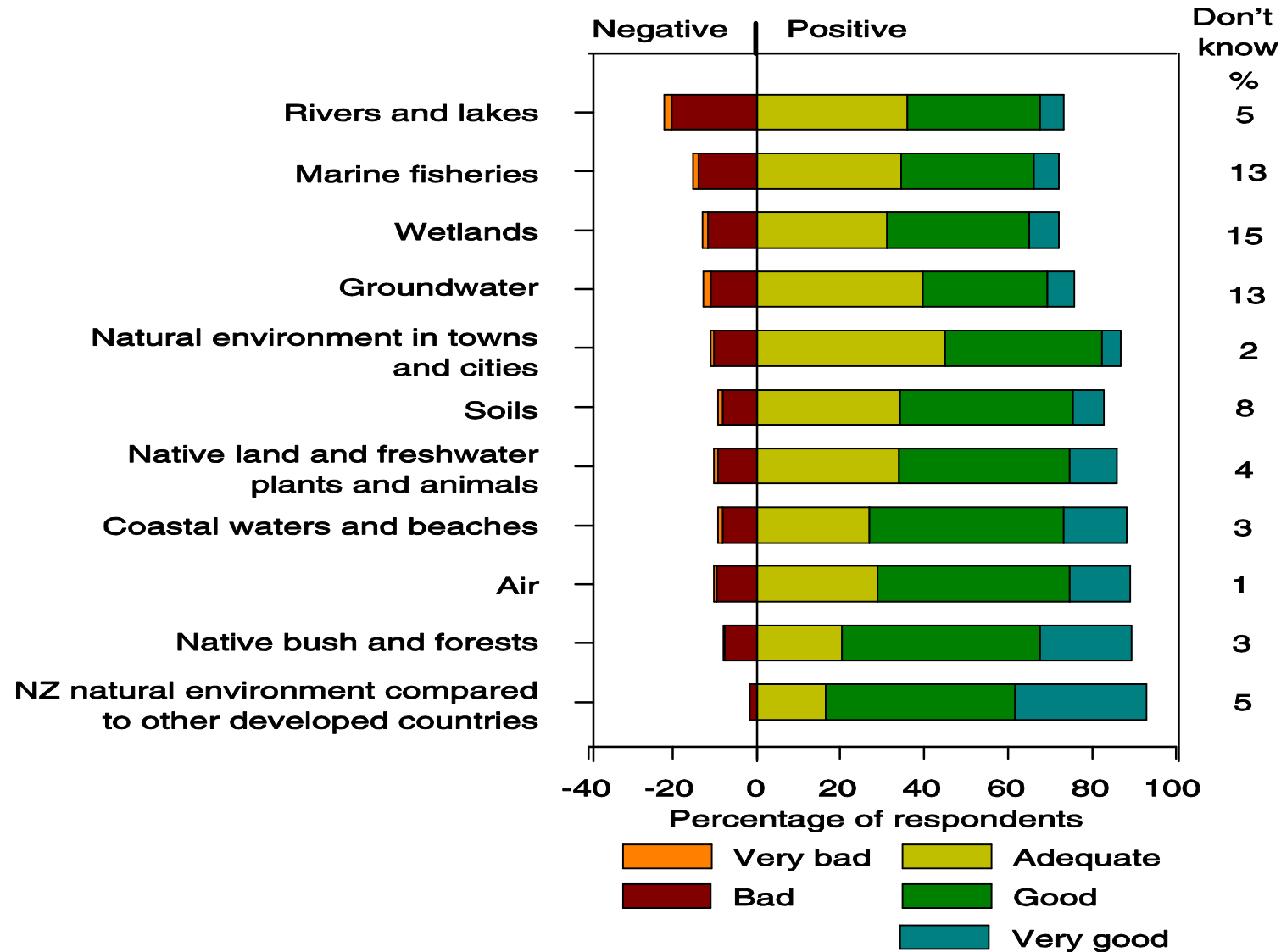
PSR trends – *State* 2000-2008

Mean response

Good

Adequate

NZ's natural environment compared to other developed countries

Native bush & forests

Coastal waters & beaches

Air

Native land & freshwater plants and animals

Soils

Wetlands

Natural environment in towns & cities

Groundwater

Marine fisheries

Rivers & lakes

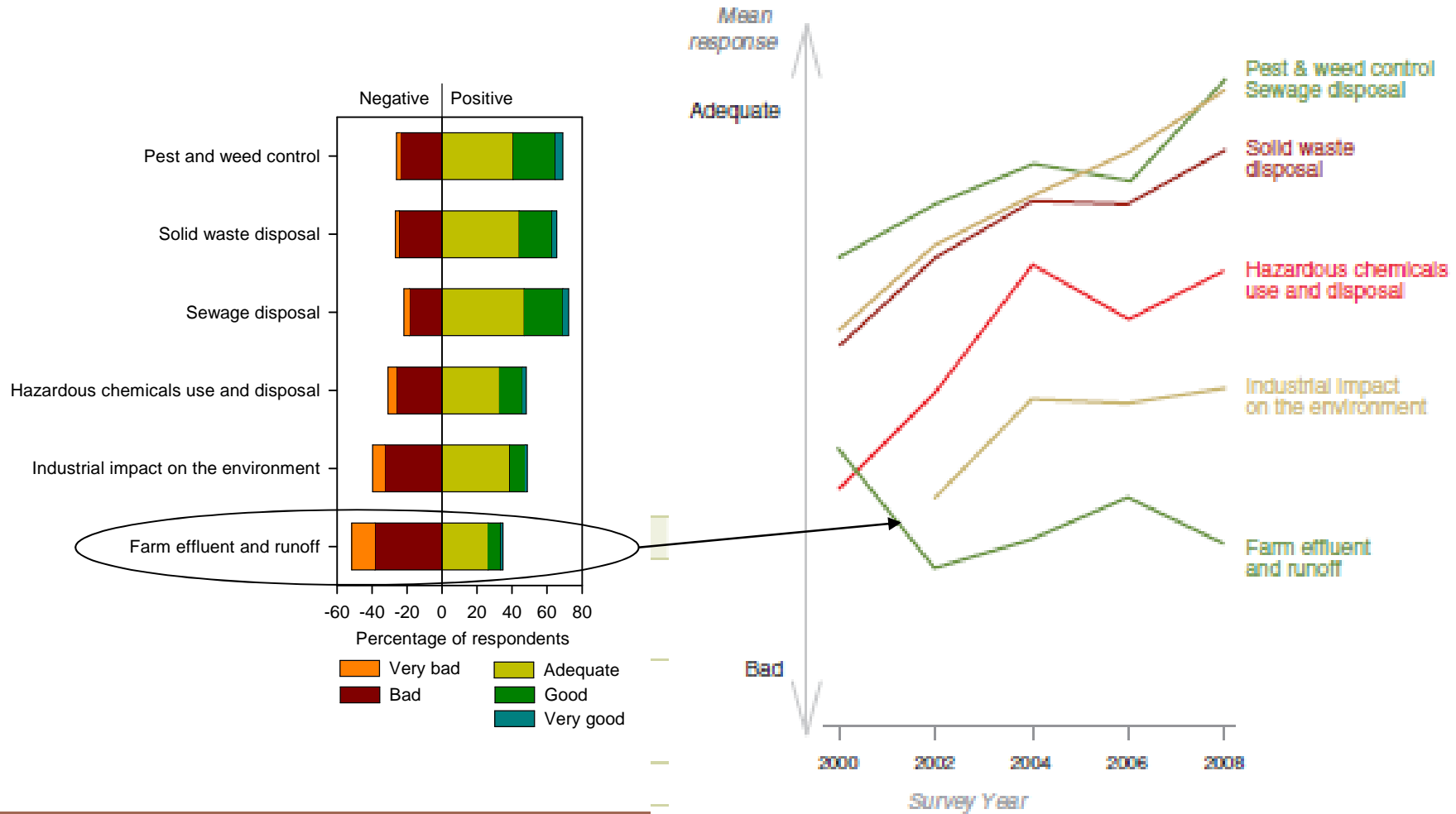Survey Year

2000 2002 2004 2006 2008

Perception of state vs science (as derived from the research literature)

- Perceptions of state of the environment generally positive

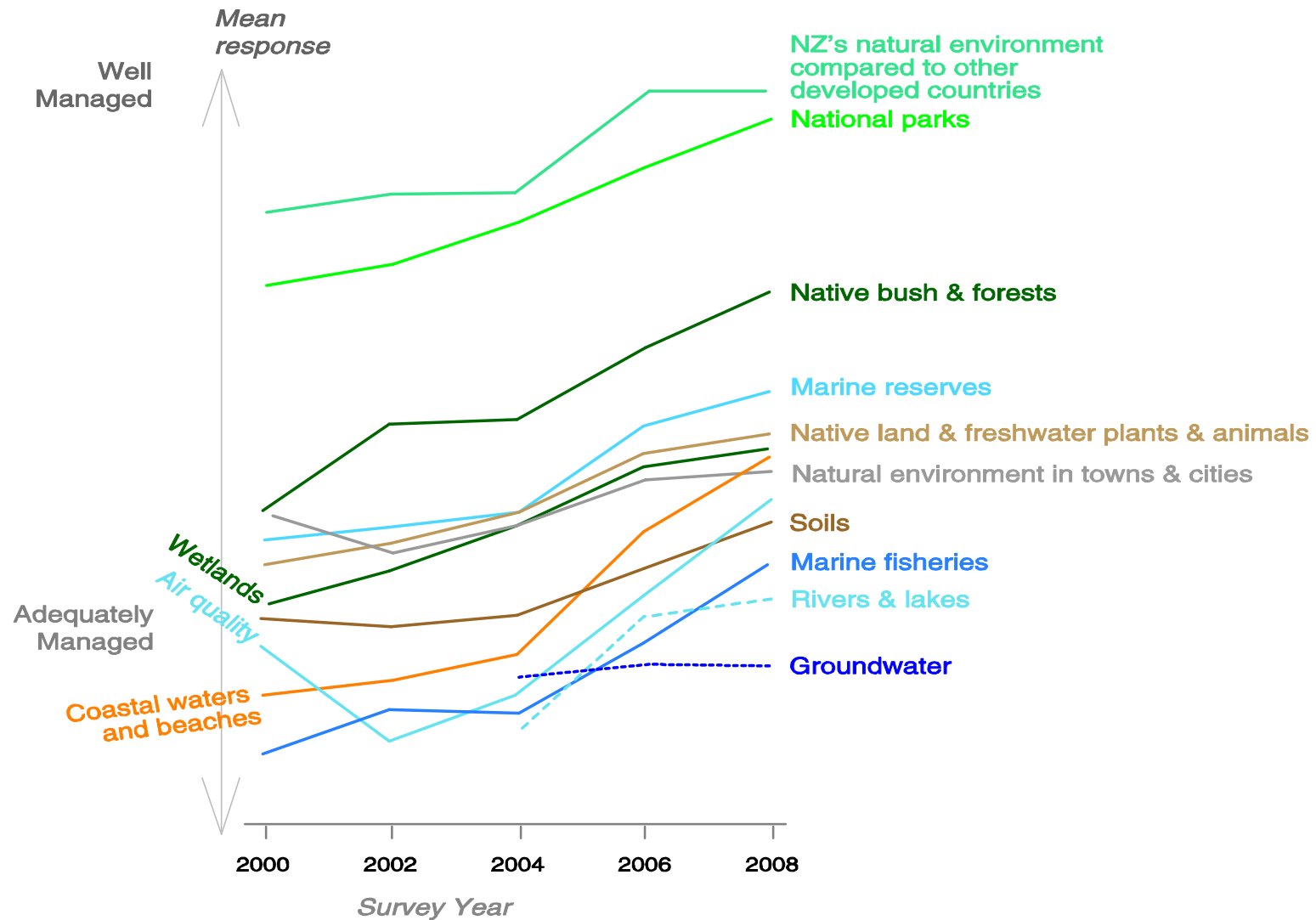- Perceptions sometimes at variance to 'hard' science

	Survey	Science
Natural environment in towns/cities		**?**
Air		**Mixed**
Native land and freshwater plants/animals		
Native bush and forests		**?**
Soil		Mixed
Coastal waters and beaches		
Marine fisheries	**?**	Mixed
Marine reserves		Mixed
National parks		**?**
Wetlands	**?**	
NZ natural environment compared to other developed countries		
Freshwater (mixed) - national		
Freshwater (mixed) - lowland		

PSR trends – *Response:*
Management of activities

PSR trends – *Response:*
Trends in perceived quality of management 2000-2008

Mean response

Well Managed

NZ's natural environment compared to other developed countries

National parks

Native bush & forests

Marine reserves

Native land & freshwater plants & animals

Natural environment in towns & cities

Soils

Marine fisheries

Rivers & lakes

Groundwater

Wetlands

Air quality

Adequately Managed

Coastal waters and beaches

2000   2002   2004   2006   2008

Survey Year

Significant changes in 'state' and 'response' ratings between the 2000 and 2008 periods (note however that for rivers and lakes, and for groundwater, data are only for 2004-2008).

	State	Availability	Management
Natural environment in towns and cities	**	NA	
Air	***(⇓)	NA	***(⇑)
Native land & freshwater plants & animals			***(⇑)
Native bush and forests	***(⇑)		***(⇑)
Soils	***	NA	*(⇑)
Coastal waters & beaches	***(⇑)	NA	***(⇑)
Marine fisheries	***	**	**(⇑)
Marine reserves	NA	***	**(⇑)
Rivers and lakes		**(⇓)	**(⇑)
Groundwater		***(⇓)	
National Parks	NA		***(⇑)
Wetlands			***(⇑)
NZ's natural environment compared to other developed countries			***(⇑)

* Significant at P<0.05, ** Significant at P<0.01, *** Significant at P<0.001.

Results suggest

- Certain pressures increasing in importance
  - Include farming, water quality as a concern
  - Urbanisation

- Differences in scientific vs perceived state of environment
  - Correct for freshwater but not biodiversity: this can have policy consequences

- Perception of management of environment varies across resource type and over time
  - management is improving, but is this cosmetic given perceptions of state remain mostly the same?

- Demographic differences exist (regional, ethnic)
  - there are important implications from these, although they have not been presented today

PSR Survey Lessons

For us:
- Scientifically robust, valuable information on perceptions;
- Manageable and of interest to a broad range of users

For you (and other govt agencies):
- Results provide policy insights
  - lead to better targeting and management of responses, education programmes, etc.
- There are opportunities for further use of the survey findings and for further developments.
- Use survey as public barometer and complement to science
  - For MfE, DoC, RCs, MFish, Treasury, MAF & Statistics NZ, to gauge perceived improvement/decline over time
  - MfE will use in indicator updates, i.e., here is what the public thinks, but this is what the science is saying.

Opportunities and Conclusions

- The biennial perceptions' survey of the state of the environment is the first of its type, anywhere, and is now cited by the OECD.

- Highlights issues, problems, perceptions of response performance, etc., and therefore identifies policy opportunities and information gaps.

- We have a PhD student working on aspects of the survey – changes over time re management vs state and influence of media/information

- Opportunities to include substantial further initiatives for 2010, e.g., will the economic downturn be reflected in changed perceptions? Will the improved perception of management be matched by perceived changes in state?