

Foundation for Research, Science and Technology

Tūāpapa Rangahau Pūtaiao

Environmental science - A changing landscape

Presentation Outline

- Context: What's driving the changes?
 - Political landscape
 - Other key influences
- Underneath the bonnet
 - Science sector overhaul
- Environmental science: A changing landscape
 - Future directions
 - Council roles

1. Operating context

Economic growth agenda

“The driving goal of the new Government will be to **grow the New Zealand economy** in order to deliver greater prosperity, security and opportunity for all New Zealanders”

PM John Key, Dec 2008 (Speech from the Throne)

Growth agenda underpinned by...

Unlocking natural resources

“New Zealand’s **natural resources** have the potential to significantly raise our economic performance” - PM John Key, Feb 2010

Science & innovation

“A **high-performing public science system** which supports economic growth and delivers better value” - PM John Key, Feb 2010

Other relevant drivers

Water and Climate Change

“The **two most urgent issues** for MfE’s work programme”

– Letter of priorities, Hon Nick Smith, July 2009

Co-management in Treaty settlements

Waikato river – **new model of engagement** with Maori on water management options - Hon Chris Finlayson, July 2009

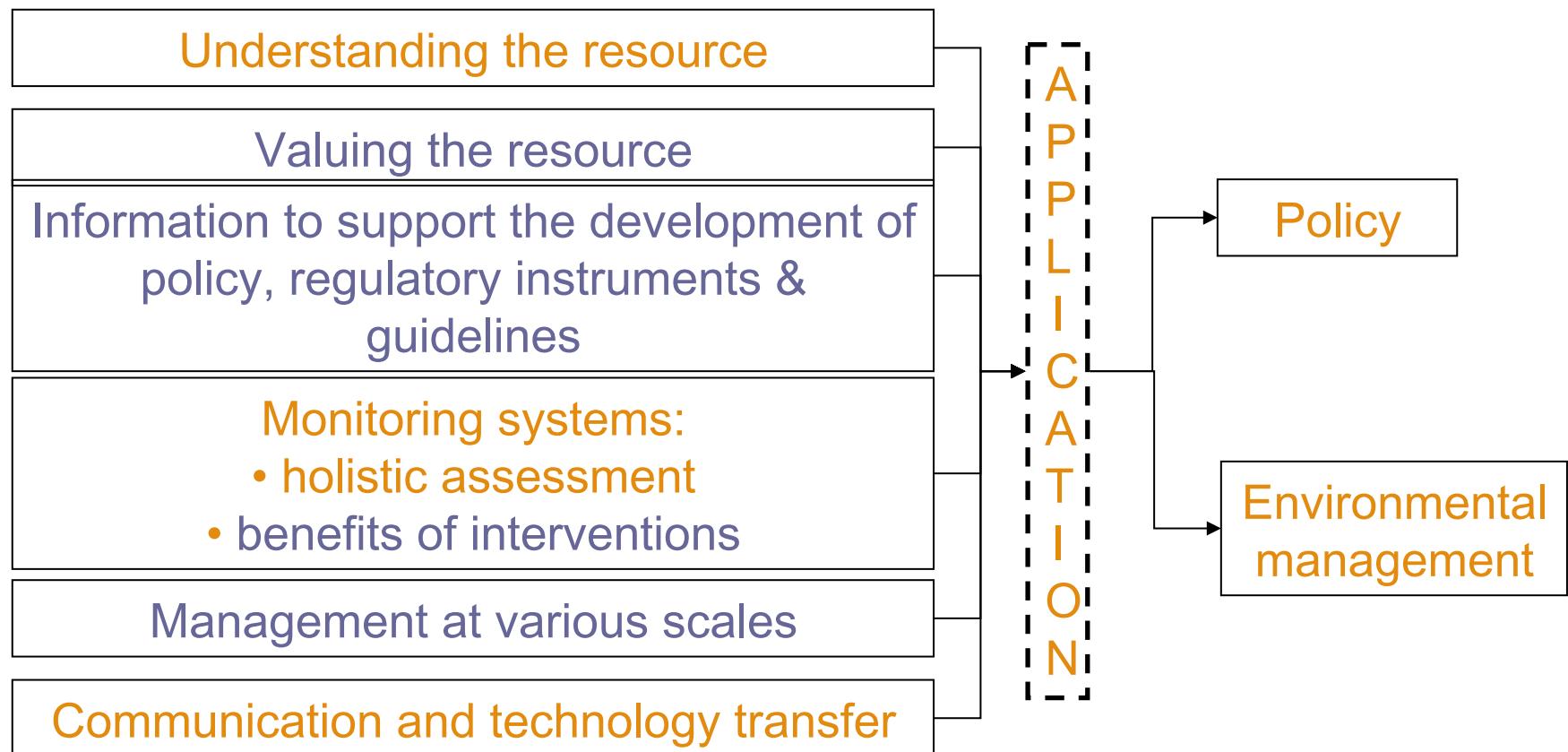
“Inside Out” government [Access to data]

“Government holds a **wealth of information and data**. I see no reason we can’t [make it available] to those outside” - Hon Bill English, Sept 2009

2. Other key influences

CSA

Improving the evidence base



Open data → Here to stay

- OECD Principles and Guidelines for Access to Research Data from Public Funding (April 2007)
- US “Open Government” initiative
- UK National Institutes of Health
- Australian National Data Service
- Data.govt.nz + DigitalNZ + NZGOAL etc

“CleanTech” opportunities

- US, China & Korea stimulus packages + G20 investment
= US\$396b for “green investments”
- Singapore investing US\$700m in clean-tech research
- OECD Green Growth Strategy -> NZ taskforce (October 2010)
- NZ R&D potential -> *plant-based biofuels, sustainable agri-technologies, eco-certification, bio-remediation, etc*

Growing costs of exceeding ecological limits

- Water buy-back in Murray Darling basin: A\$3.1b
- Rotorua & Taupo lakes + Waikato river:
\$450m over next 20 years
- Mapua and Tui Mine contaminated land clean up
\$22m in total costs to Crown
- Water storage costs 8500x > efficiency investments.
- Air pollution = \$1.14b p/a + 1,100 premature mortality
- A UN “Stern report” for biodiversity due end 2010

Source: Australian Productivity Commission 2009

Source: NZ Govt, March 2008

Source: Hon Nick Smith, Speech to EDS 2009

Source: American Rivers 2008

Source: Fisher et al, 2007 (NIWA)

“Clean & Green” under threat?

Yale Environmental Performance Index

- NZ **1st** in the 1st year of the Index (2006) (score = 88)
- **7th** in 2008
- **15th** in 2010 (score = 73.4).
- Poor scores in GHG intensity, fisheries intensity, biodiversity loss & air emissions intensity.

Source: Yale University, 2006,2008 and 2010

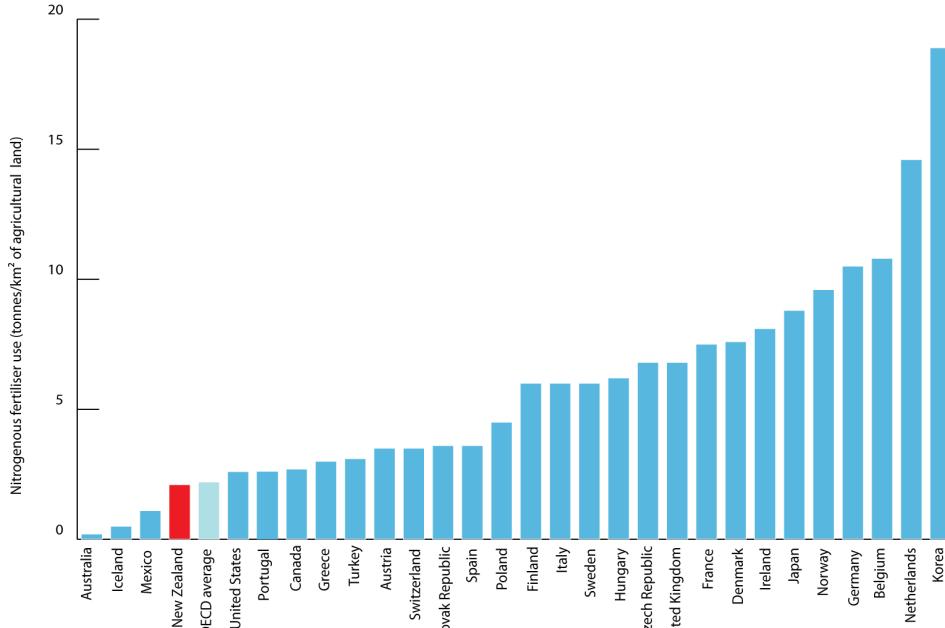
OECD & other comparisons

- “Clean & Green” is as much a *relative* measure
- NZ tourism has green brand: rest of economy doesn’t
- Low population = lower pressures
(BUT intensity ramping up)

Source: John Whitehead, July 2009 (Vic Uni)

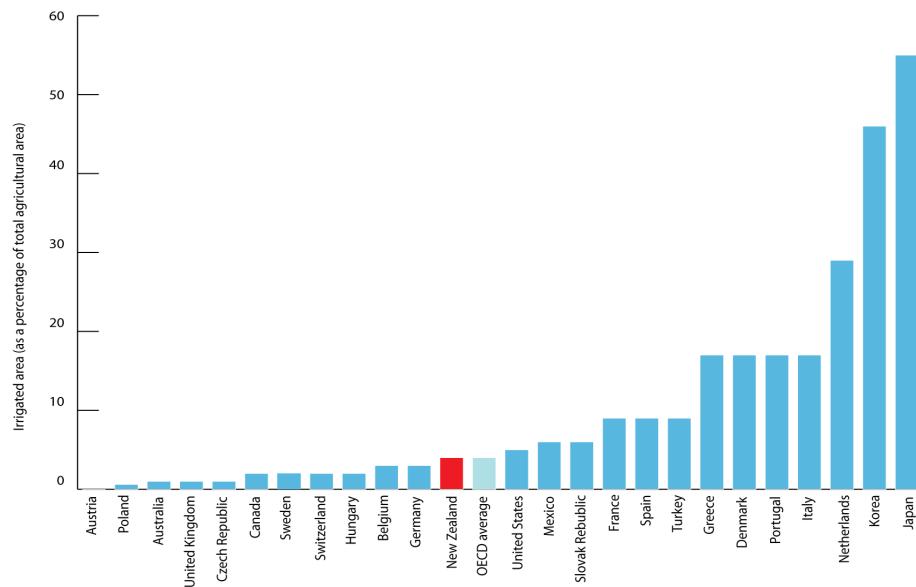


International rankings OK for now...

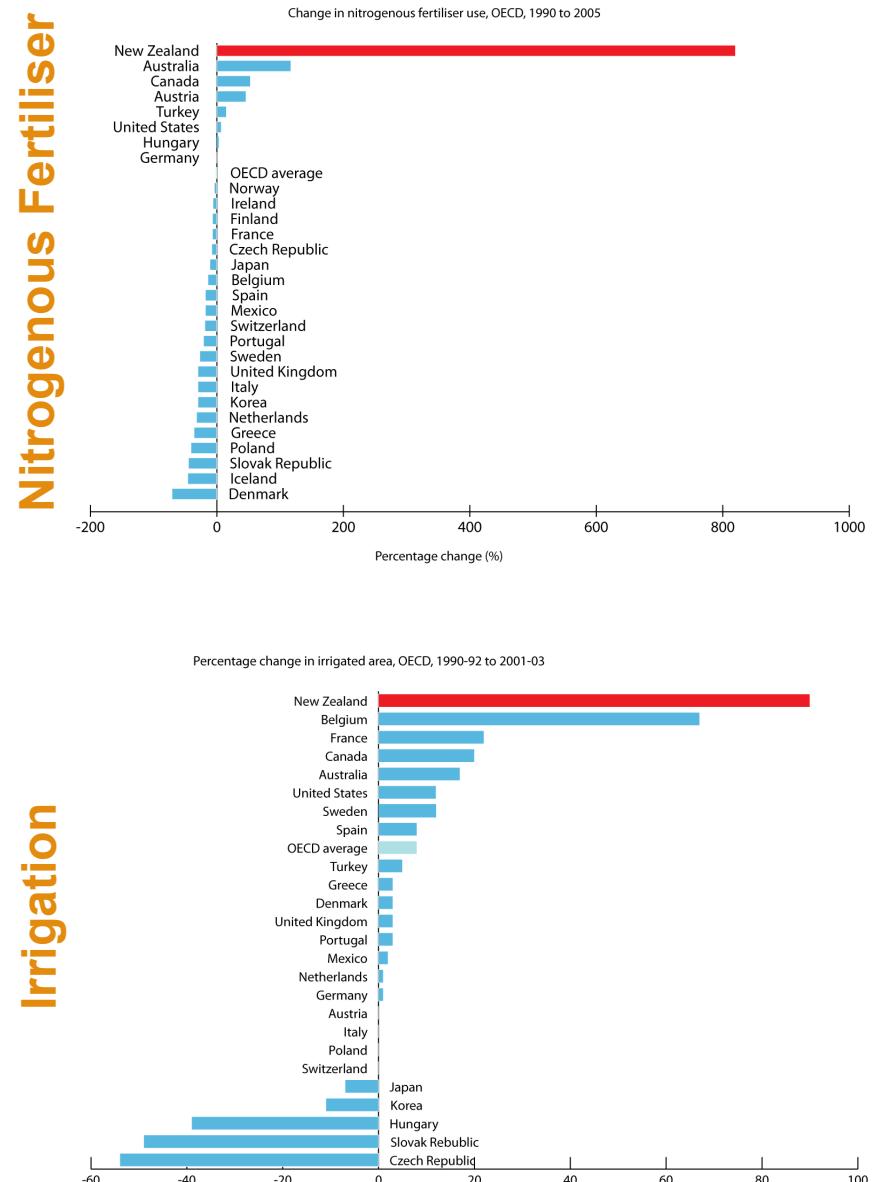
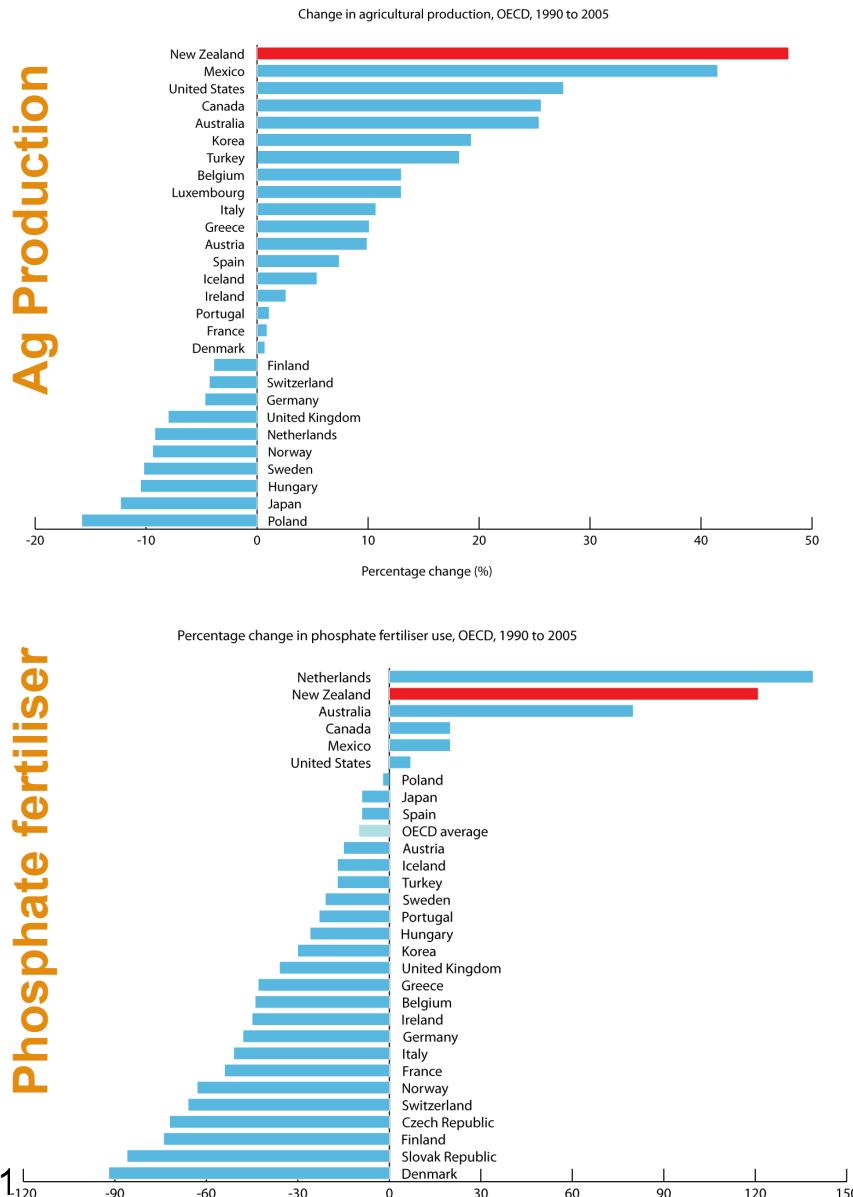


Net application of N fertiliser. NZ on a par with other OECD countries.

Irrigated area as share of total agricultural land - NZ on a par with other OECD countries.



But greater pressures will show up in time



Source: OECD. 2008. *OECD Environmental Data Compendium 2008: Agriculture*.

Summing up

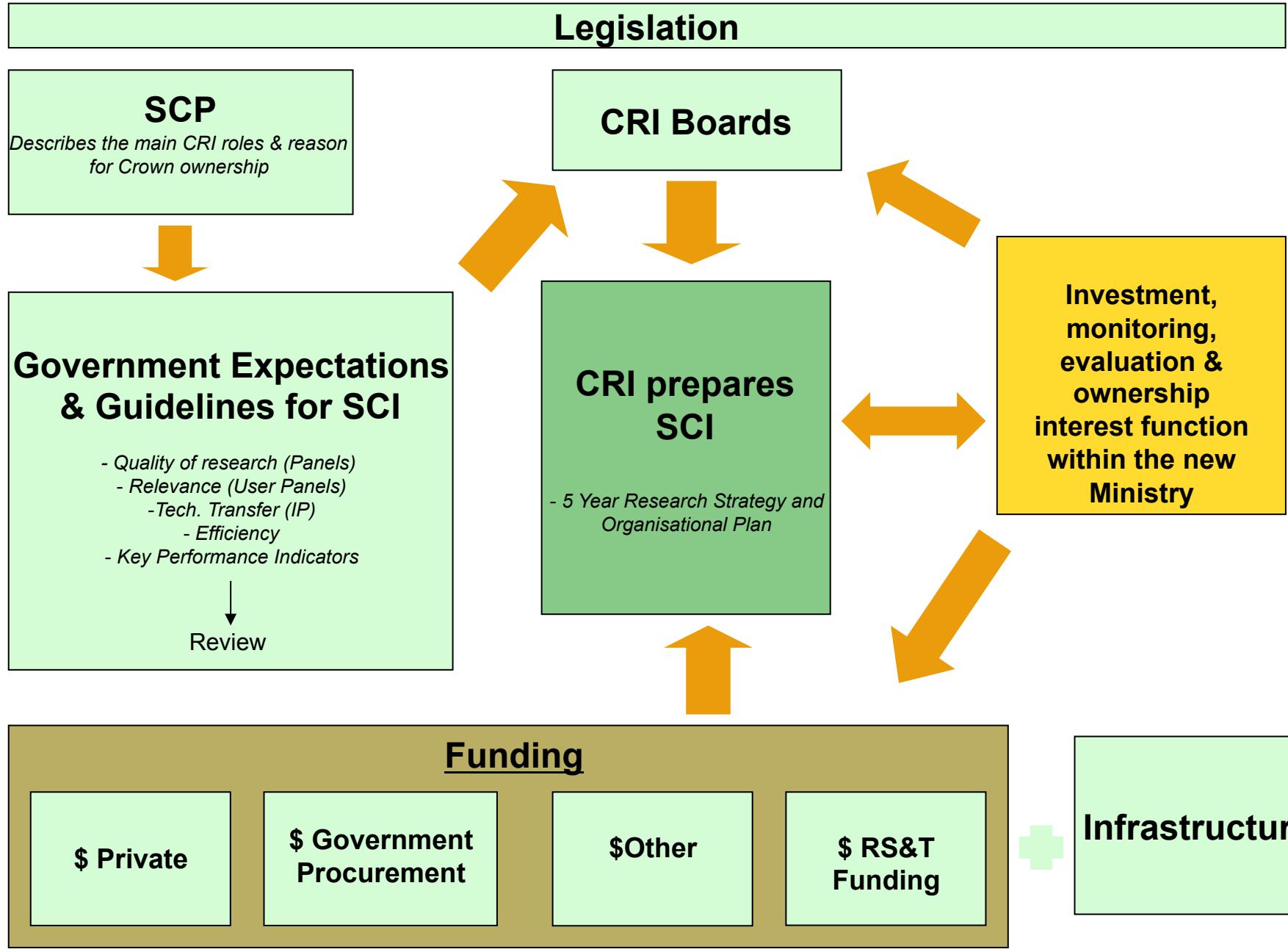
- Science not a pure discipline
- Underpins policy & management decisions
- Helps measure the impact of interventions
- Environment & economy intrinsically linked
- Cost / benefit lens can be helpful
- Weather eye on “Clean & Green” brand value
- International rankings also of interest

3. Science sector reforms

*“Vote RST will increase its focus on improving New Zealand’s **economic performance**, through both an increased emphasis on business R&D and **linking public good research to broader economic outcomes**”*

Hon Dr Wayne Mapp, Science Priorities for Research, Science and Technology (Cabinet paper, 15 Feb 2010)

Reform process



Biggest system change in 20 years

The Government expects to see change through:

- Greater collaboration between research agencies
- Stronger, more stable relationships with users
- Greater transfer of technology & knowledge
- Focus less on CRI bottom lines → more for NZInc
- Better value for money from research investment

But some very big challenges....

- Requires a different mindset for all parts of system
- Greater clarity re ownership expectations
- More (& better) review & evaluation
- Strategic value and outcomes = key focus
- But science quality is still important
- Pace of change vs high expectations
- Any more funding?

4. Environmental science

Current state of play

- Research tends to be fundamental rather than applied
- Comparatively low levels of tech & knowledge transfer
- Primary end users = central and regional govt
- Small but important iwi links (co-governance regimes)
- High degree of backbone, OBIs & stable funding
(only 42% is presently contestable)
- Current contract length = nearly 5.5 years
- Investment largely via CRIs (89% vs 60% FRST average)
- Science quality generally high
- Low levels of co-funding & commercialisation

New strategic direction

“Derive greater value from environmental research”

We can do this by ensuring research:

- has high strategic value
- is of high scientific quality
- is well-used and valued by research users
- creates value by underpinning other research
- grows key science capability

High-level outcomes

- More strategic & coherent science investment
- Better sectoral collaboration
- Enhanced knowledge transfer
- Strengthened open data & greater access to research
- Integrated maatauranga perspectives
- Enhanced review & evaluation

How to get there (1)

- Focus on the “strategic few”
- Less fragmentation & dilution
- Greater focus on delivering priority outcomes
- Dollars targeted to priority areas
- Focus on “mining” value → applied tools & advice
- Strategic alignment & coherence
- Common research strategies agreed to guide funding
- End user research needs supported by strategies
- Investment mapped more systematically
- Less duplication

How to get there (2)

- Leadership and collaboration
- MSI plays a key coordinating / leadership role
- Built common understanding of priority research needs
- Focus on getting better value from research
- Move beyond understanding to prediction
- No reinventing the wheel. Lots of good science offshore
- Evidence-based decisions → better outcomes

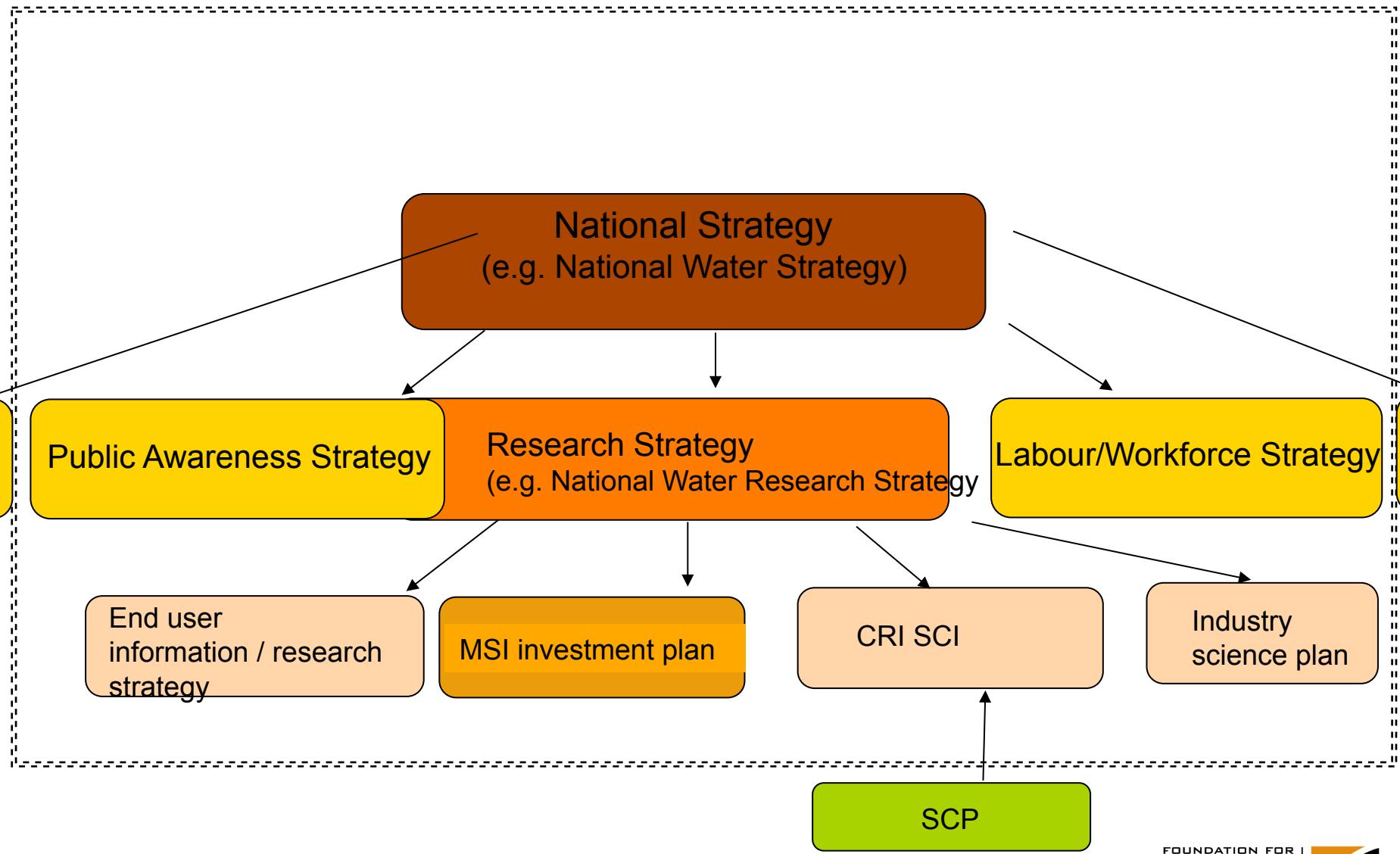
Not forgetting....

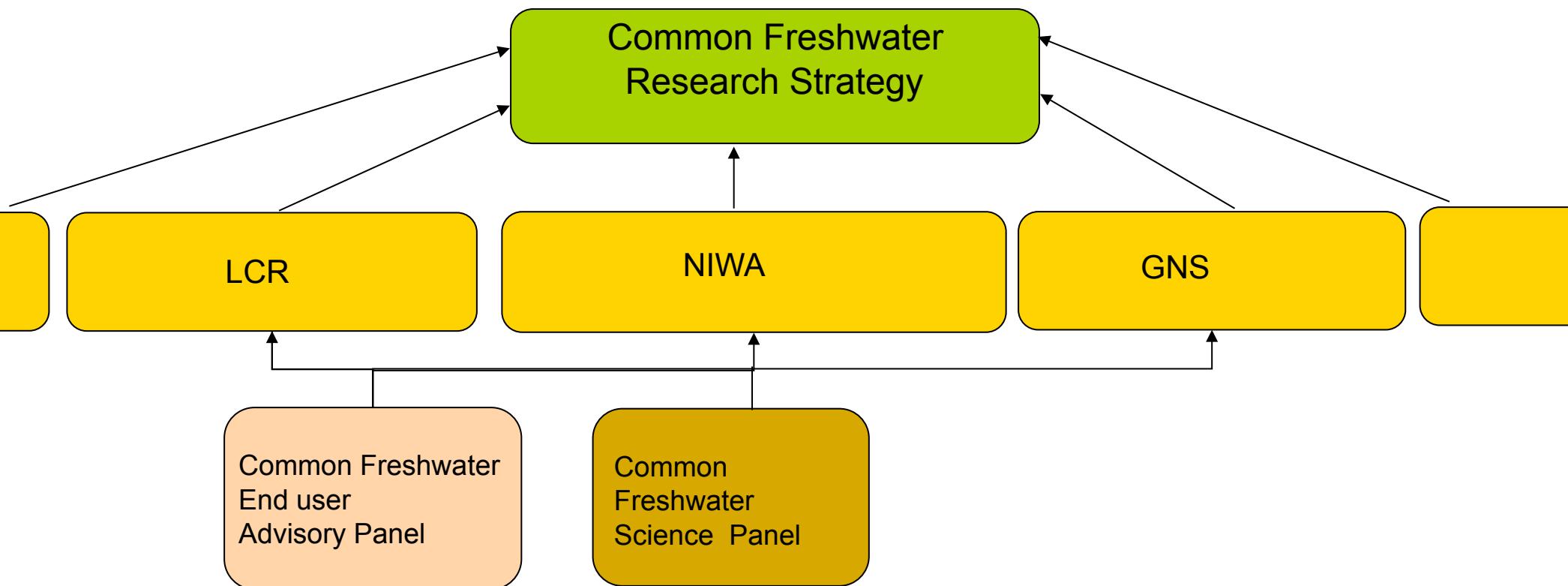
- More than just environmental science
 - Conflict about resource use - *not* just about the science
 - Apply an economic & social lens to ensure take-up
 - Integrated, real-world science findings are important
- Maatauranga Maaori
 - Environment is important to iwi
 - Not just kiaiaki, resource managers & owners too

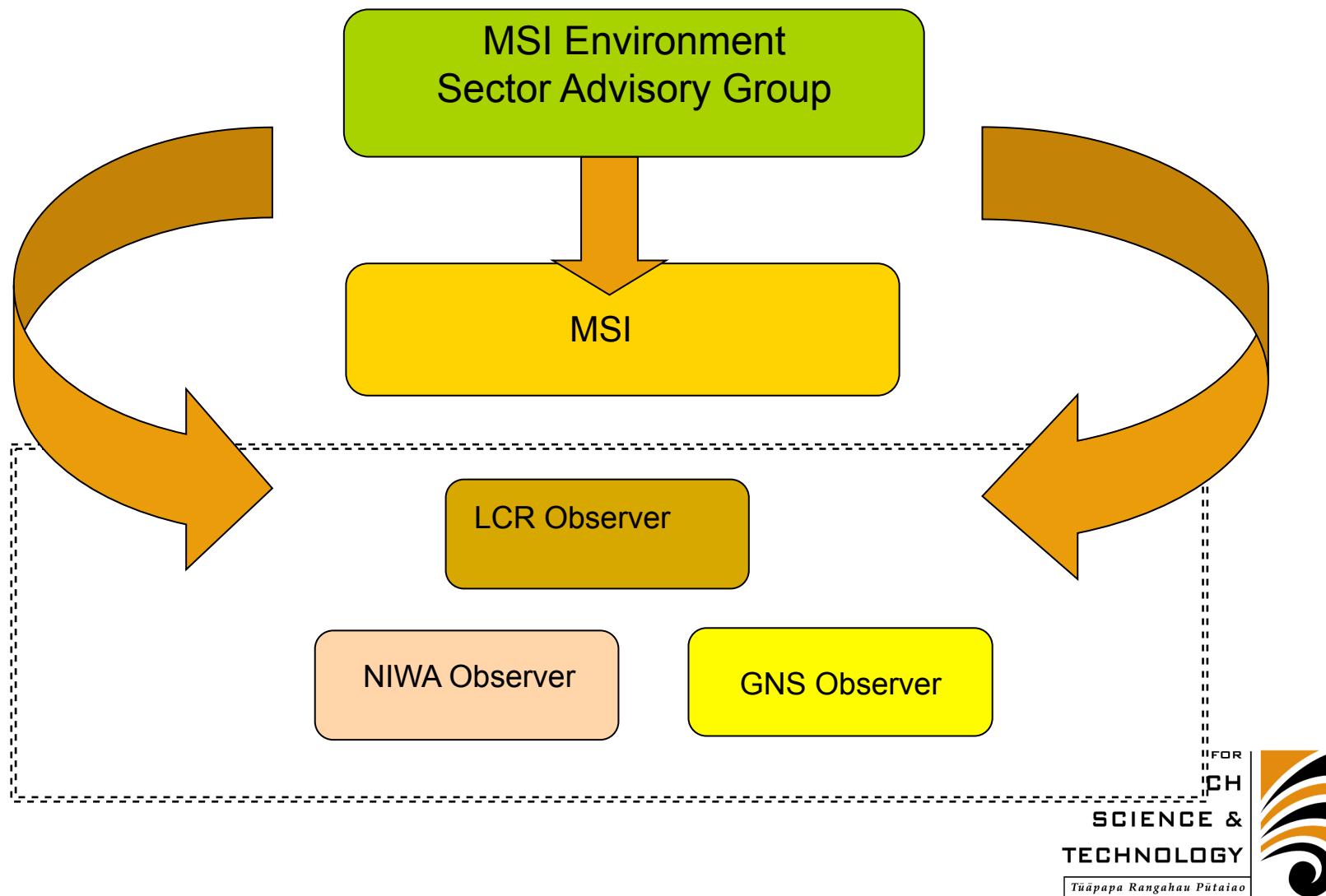
Challenges

- “Focusing on the few” means disappointing some
- Doing “more for less” is hard
- Managing the reduced levels of contestable funding
- Keeping track of investment in core funding
- Contestable vs core funding: review & evaluation of both
- Managing the system shift
(rewarding shifts in behaviour & demonstrating change)
- Merger: May take time to recover full speed

5. Council engagement







Other means of engagement

- CRI Boards
- CRI End User and Science Panels
- MSI Boards?
- MSI review panels & processes
- Stakeholder surveys (performance indicators)
- Regular dialogue with MSI
- MSI investment processes
- Engagement via CRI SCI development