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# New Zealand's Crown Research Institutes: Legislation, Operation and Governance


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| Principal author | Diane White |
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## About the Author

Diane White completed a Bachelor of Laws from Victoria University of Wellington in 2011, and she also holds a Bachelor of Arts majoring in English Literature and International Relations, which she completed at Uppsala University, Sweden in 2009. She is currently undertaking a Professional Legal Studies course through the College of Law and will be admitted to the roll of Barristers and Solicitors of the High Court of New Zealand in early 2012.

Diane has worked at the Sustainable Future Institute since July 2011. Her main project is *Project Constitutional Review*, which seeks to examine the processes and outcomes of the current constitutional review and encourage youth participation through the project Empower. She has also worked on *Nation Dates: Significant Events that Have Shaped the Nation of New Zealand*; Report 9: *Government-funded Science under the Microscope*, and strategy mapping exercises with high school students. Diane has previously worked in a number of areas including media intelligence and employment law advocacy.


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# 1. Purpose

The purpose of this working paper is to provide background on New Zealand's Crown Research Institutes (CRIs). The Institutes were established in 1992 as government-owned businesses with a scientific purpose; each is centred on a productive sector of the economy or a grouping of natural resources (MoRST, 2010a). This paper documents the principles of their operation under the Crown Research Institute Act 1992 and other relevant legislation; the purpose of each CRI as at the date of establishment in 1992 and in 2011, and the governance, monitoring, reporting and accountability structures in place. It also notes the recommendations of the 2009 CRI Taskforce, the government's response to these recommendations, and the scope for future changes in light of the Taskforce's findings.

Further analysis of the information presented in this working paper is included in the Institute's Report 9, *Government-funded Science under the Microscope*. This analysis will inform the conclusions we draw in Report 9, which aims to help identify the challenges faced by, and opportunities within, the government-funded science system in New Zealand currently and in the future. Report 9 forms part of the Institute's *Project 2058*, the strategic aim of which is to promote integrated long-term thinking, leadership and capacity-building so that New Zealand can effectively seek and create opportunities, and explore and manage risks, over the next 50 years. In order to achieve this aim, the *Project 2058* team is working to:

1. Develop a detailed understanding of the current national planning landscape, and in particular the government's ability to deliver long-term strategic thinking;
2. Develop a good working relationship with all parties that are working for and thinking about the 'long-term view';
3. Recognise the goals of iwi and hapū, and acknowledge te Tiriti o Waitangi;
4. Assess key aspects of New Zealand's society, asset base and economy in order to understand how they may shape the country's long-term future, such as government-funded science, natural and human-generated resources, the state sector and infrastructure;
5. Develop a set of four scenarios to explore and map possible futures;
6. Identify and analyse both New Zealand's future strengths and weaknesses, and potential international opportunities and threats;
7. Develop and describe a desirable sustainable future in detail, and
8. Prepare a *Project 2058* National Sustainable Development Strategy. (SFI, 2009: 3)

# 2. Methodology

## 2.1 Data Collection

All data has been sourced from publicly accessible information, and the working paper has been externally reviewed to ensure there are no gaps or errors in the overall content. The working paper aims to meet the above purpose by undertaking research in four areas.

1. Review and summarise all relevant legislation relating to the operation and functions of CRIs in New Zealand (see Section 3);
2. Review, summarise, and compare the purpose, composition and role of the eight CRIs since 1992, and examine the changes to overall funding arrangements (see Section 4);
3. Review the governance and accountability mechanisms currently in place for the monitoring of CRIs (see Section 5), and
4. Review the purpose, composition and recommendations of the CRI Taskforce and the government response to the Taskforce's recommendations (see Section 6).
5. The data collected in this process has informed the questions posed in Section 7 and the overall conclusions contained in Section 8.

# 3. Overview of CRI Structure

## 3.1 Governing Legislation

The Crown Research Institutes Act 1992 (CRI Act 1992) provides for the formation of Crown-owned companies to undertake research and other related activities. A CRI is a company formed and registered by the relevant Minister for the Crown Research Institutes and the Minister of Finance, who are the shareholding ministers (McMahon, 2011). CRIs are treated as Crown entity companies under section 79 of the Crown Entities Act 2004. The constitution of a CRI is required to state both that the company is a CRI for the purpose of the Crown Research Institutes Act 1992 and a Crown entity under the Crown Entities Act 2004 (CRI Act 1992, s 11(1)). Further, they are registered as companies and are bound by certain provisions of the Companies Act 1993 (CRI Act 1992, s 12(5)). The CRI Act 1992 also makes reference to the Treaty of Waitangi, with shareholding ministers being required to have regard to the principles of the Treaty in the transfer of land or any interest in land (CRI Act 1992, s 10).

As of 2012, there are eight CRIs in New Zealand:

1. Industrial Research Limited (IRL)
2. Institute of Environmental Science and Research (ESR)
3. Institute of Geological and Nuclear Sciences (GNS Science)
4. Landcare Research New Zealand – Manaaki Whenua (Landcare Research)
5. National Institute of Water and Atmospheric Research (NIWA)
6. New Zealand Institute for Plant and Food Research (Plant & Food Research)
7. New Zealand Pastoral Agriculture Research Institute (AgResearch)
8. New Zealand Forest Research Institute Limited (Scion)

## 3.2 Principles of Operation

The purpose of a CRI is to undertake research in accordance with the principles of operation set out in section 5 of the CRI Act. These principles state that CRIs are expected to:

- carry out research for the benefit of New Zealand;
- pursue excellence in all their activities;
- comply with all applicable ethical standards;
- promote the application of the results of research and technological developments;
- be a good employer under section 118 of the Crown Entities Act 2004, and
- exhibit a sense of social responsibility. (MSI, 2011a).

In undertaking research, CRIs must maintain financial viability by operating in a financially responsible manner. However, unlike State Owned Enterprises, the Crown does not expect CRIs to maximise profit but only to cover costs of capital (COMU, 2010). The financial expectations of the shareholders are signalled annually in a letter to each CRI's board. These expectations include both the rate of return and the form of measurement, and are agreed between the boards and the shareholding ministers during the Statement of Corporate Intent (SCI) development process.

# 4. Crown Research Institutes: 1992–2011

## 4.1 Structural Changes to CRIs

In 1992, as part of the economic and institutional reforms that began in the 1980s, a major restructuring of the science system led to the replacement of a number of government research laboratories and funding streams with 10 CRIs (CRIT, 2010: 65). The government sought to subject science and research to market controls in order to achieve three principal objectives: accountability; enhanced economic growth, and improved decision-making (MfE, 1997). The 10 CRIs replaced the Department of Scientific and Industrial Research (DSIR), MAFTech (the separate technology division of the Ministry of Agriculture and Fisheries), the Forest Research Institute, the Department of Health's Communicable Diseases Centre and parts of the Meteorological Service. In 1995 one of the CRIs, the Institute for Social Research and Development, was disestablished due to a lack of financial viability, leaving nine CRIs (CRIT, 2010: 65).

There have also been structural changes within the CRIs. In 1995, MAF Fisheries Research Division was transferred to NIWA. In 1999, AgResearch acquired the Meat Industry Research Institute of New Zealand (MIRINZ) and in 2007 it acquired the Wool Research Organisation of New Zealand (WRONZ). In 2008, HortResearch and Crop and Food Research merged to become Plant & Food Research, reducing the number of CRIs to eight. In 2009, a proposal to merge AgResearch and Lincoln University was considered but rejected by both organisations.

## 4.2 The Purpose of Each CRI

In October 2010, the government approved a Statement of Core Purpose (SCP) for each CRI. These SCPs outline the purpose, outcomes, scope of operation and operating principles for each CRI (MoRST, 2010e). The SCPs of the eight CRIs are as follows:

- Industrial Research Limited (IRL): To increase the contribution of the industrial manufacturing and associated sectors to the New Zealand economy by empowering industry to drive innovation in manufacturing and services. (IRL, 2010: 1)
- Institute of Environmental Science and Research (ESR): To deliver enhanced scientific and research services to the public health, food safety, security and justice systems and the environmental sector to improve the safety and contribute to the economic, environmental and social well-being of people and communities in New Zealand. (ESR, 2010: 1)
- Institute of Geological and Nuclear Sciences (GNS Science): To undertake research that drives innovation and economic growth in New Zealand's geologically-based energy and minerals industries, that develops industrial and environmental applications of nuclear science, that increases New Zealand's resilience to natural hazards and that enhances understanding of geological and earth-system processes. (GNS Science, 2010: 1)
- Landcare Research New Zealand – Manaaki Whenua (Landcare Research): To drive innovation in New Zealand's management of terrestrial biodiversity and land resources in order to both protect and enhance the terrestrial environment and grow New Zealand's prosperity. (Landcare Research, 2010: 1)
- National Institute of Water and Atmospheric Research (NIWA): To enhance the economic value and sustainable management of New Zealand's aquatic resources and environments, to provide understanding of climate and the atmosphere and increase resilience to weather and climate hazards to improve the safety and well-being of New Zealanders. (NIWA, 2010: 1)
- New Zealand Forest Research Institute Limited (Scion): To drive innovation and growth from New Zealand's forestry, wood product and wood-derived materials and other biomaterial sectors, to create economic value and contribute to beneficial environmental and social outcomes for New Zealand. (Scion, 2010: 1)

- New Zealand Institute for Plant and Food Research (Plant & Food Research): To enhance the value and productivity of New Zealand's horticultural, arable, seafood and food and beverage industries to contribute to economic growth and the environmental and social prosperity of New Zealand. (Plant & Food Research, 2010: 1)
- New Zealand Pastoral Agriculture Research Institute Ltd (AgResearch): To enhance the value, productivity and profitability of New Zealand's pastoral, agri-food and agri-technology sector value chains to contribute to economic growth and beneficial environmental and social outcomes for New Zealand. (AgResearch, 2010: 1)

## 4.3 Funding and Relationships Between CRIs

CRIs are funded to varying degrees by public and private sector funding. The early years of the CRIs (1992–1995) were marked by efforts to achieve both financial viability and scientific credibility. The Foundation for Research and Technology (FRST) remained the main revenue source but the competition around FRST's Public Good Science Fund increased considerably when the fund was opened up to universities in 1994 (CRIT, 2010: 65). Competition for funding between CRIs increased dramatically in the period between 1995 and 2002, with building revenue and maintaining financial viability becoming the main priority; 'CRIs were perceived as acting more in their own interests and less in the interests of the country' (CRIT, 2010: 65).

Between 2002 and 2004 CRIs recognised the need to work more cohesively in the public interest and a number of professional groups were developed across the CRIs to 'share best practice and develop skills and a culture of collaboration and trust' (CRIT, 2010: 65). In 2001, the Association of Crown Research Institutes (ACRI) initiated and hosted the first ever gathering of the chief executives of CRIs, universities and research associations, as part of a drive to develop a performance-based science system that would recognise the purpose, value and contribution of all participants in the system. By 2005, CRIs were regularly and consistently working as a group in closer relationships with each other and with universities and research associations. This reflects the fact that the ideal mix of skills, infrastructure and connections exists across institutions rather than residing in just one (CRIT, 2010: 65).

The current funding structure (effective since 1 July 2011) aims to reduce contestability, increase collaboration, and improve the efficiency of and outcomes from New Zealand's science investment. A key mechanism for achieving these goals has been to ensure a level of core funding for each CRI, so as to eliminate the need for repetitive bidding for areas of science in which it is clear an entity holds the core expertise (see Section 6). As a consequence of moving those contracts into core funding, the true level of contestable funding has been revealed.

For 2011/2012, $215 million of the Vote Science and Innovation Fund was specifically allocated to CRI Core Funding (MSI, 2011b: 9). The level of core funding is fixed annually as part of the Government Budget process and represents an average of 31% of CRIs' revenues each year.[1] Further to this core funding, a total of $735 million is to be administered by the Ministry of Science and Innovation (MSI) within the 2011/2012 period for services supplied by providers such as businesses, CRIs, universities and other research providers, in which contestable funds are available to CRIs (MSI, 2011b).

1 While on average core funding represents 31% of CRIs' revenues, it ranges between 14 and 41% for any one CRI.

# 5 Governance and Accountability

## 5.1 Governance Structure

Each CRI has two shareholding ministers: the Minister of Science and Innovation as the relevant Minister for CRIs and the Minister of Finance (MSI, 2011a). Shareholding ministers are required to oversee and manage the Crown's interests in, and relationship with, each CRI and to exercise their statutory responsibilities. In accordance with s 88 of the Crown Entities Act 2004, this includes the functions and powers to appoint and remove members by shareholder resolution in accordance with the Companies Act 1993; to review the operations and performance of the company; to request information from the entity, whether for a review or otherwise, and to participate in the process of setting and monitoring the company's strategic direction and targets. Ministers are required to exercise their powers, duties and functions with respect to CRIs in a manner consistent with the purpose and principles of operation of a CRI (CRI Act 1992, s6(2)).

Shareholding ministers are responsible for appointing a CRI's board of directors in accordance with the Companies Act 1993 and the constitution of the individual CRI (MSI, 2011a). Directors are selected from those who are able to bring a wide range of skills, including broad management skills and expertise in managing or carrying out research generally or in the specific sector in which the CRI operates (CRI Act 1992, s6(2)). Under the Companies Act 1993, board members are required to disclose any relationships and/or matters giving rise to an actual or potential conflict of interest (MSI, 2011a).

A CRI's board of directors has the ultimate responsibility for the governance of its business operations. However, it is able to delegate a number of powers to its chief executive (MSI, 2011a). CRI boards operate in a slightly different manner than those of private companies. Decisions relating to the CRI are to be made by, or pursuant to, the authority of the board in accordance with the CRI's Statement of Corporate Intent, and shareholding ministers, as opposed to the board, are responsible for appointing the chair and deputy chair and setting directors' fees (ibid.). To increase effectiveness or efficiency, a board may establish committees or subcommittees but remains accountable for any decisions made by such committees (ibid.). Audit committees are highly recommended as a way to ensure compliancy and risk management in focusing on the CRI's financial management, reporting and internal controls (ibid.).

Each CRI is expected to have a charter or code of practice so as to provide guidance to directors and enable them to carry out their duties and responsibilities effectively. As a Crown entity, it is also expected that a board's charter will cover the Securities Commission Principles of Corporate Governance (MSI, 2011a). These principles require that:

- Directors should observe and foster high ethical standards;
- There should be a balance of independence, skills, knowledge, experience, and perspectives among directors so that the board works effectively;
- The board should use committees where this would enhance its effectiveness in key areas while retaining board responsibility;
- The board should demand integrity both in financial reporting and in the timeliness and balance of disclosures on entity affairs;
- The remuneration of directors and executives should be transparent, fair and reasonable;
- The board should regularly verify that the entity has appropriate processes that identify and manage potential and relevant risks;
- The board should ensure the quality and independence of the external audit process;
- The board should foster constructive relationships with shareholding Ministers that encourage them to engage with the entity;
- The board should respect the interests of stakeholders within the context of the entity's ownership type and its fundamental purpose. (MSI, 2011a)

## 5.2 Accountability and Reporting Mechanisms

The current accountability and reporting requirements for CRIs take into account the recommendations of the CRI Taskforce (see Section 6) and the recent merging of FRST and MoRST into MSI. Reporting and accountability mechanisms can be broadly divided into key documents and key processes.

### A Key accountability documents

- An annual outlook letter from the shareholding ministers, detailing their expectations for the coming year and possible longer-term objectives (MSI, 2011a).
- A Statement of Core Intent from each CRI, which 'outlines how the CRI plans to contribute to outcomes in the Statement of Core Purpose (SCP) and its rationale for expenditure over the next five years. It will include information relating to the CRI's key stakeholders, its operating environment, all funding sources, and how it will measure and assess progress' (ibid.).
- A Core Funding Agreement between the CRI chair and Vote Minister (ibid.).
- Regular CRI reports, reflecting a longer-term approach to monitoring rather than the former concentration on financial performance: 'From 2011/12, this will include greater use of non-financial performance measures and a more holistic set of financial indicators targeting financial viability (including a tailored return on equity) rather than profit maximisation for the CRI' (ibid.).

The board of each CRI is also required to produce an annual report, a half-yearly report, consolidated financial statements for each financial year, an auditor's report on the financial statements, and a statement of responsibility for the financial statements that complies with s 155 of the Crown Entities Act 2004 (CRI Act 1992, s 17). The annual report and half-yearly report are delivered to shareholding ministers and tabled in Parliament by the responsible minister so to be publicly accessible (MSI, 2011a). An exemption to any of these requirements may be granted by the shareholding ministers if they are satisfied that it would be overly onerous on a CRI to comply (CRI Act 1992, s 16(3A); s 17(3)).

### B Key accountability processes

- Evaluation of each CRI's performance on a five-year rolling basis against their SCP, as issued by the government in 2010 after high-level dialogue with CRIs and their stakeholder communities (MSI, 2011a).
- A meeting of chairs and boards with the shareholding ministers early in each year, to set priorities (ibid.).
- AGMs to be held not later than six months after balance date and not later than 15 months after the previous AGM (ibid.).
- CRIs are subject to the Official Information Act and are expected to respect and comply with the underlying principle of the Act to make information available to the public within the deadline for OIA requests unless there is good reason for withholding the information (CCMAU, 2007: 23).

## 5.3 Monitoring and Indicators

Up until 2011, officials from the Crown Company Monitoring Advisory Unit (CCMAU) and the Treasury monitored CRIs on behalf of the shareholding ministers and provided advice when necessary (SSC, 2008). The Ministry of Science and Innovation has now taken responsibility for monitoring the CRIs. This is done within a separate section of MSI, called CRI Ownership and Performance, to ensure confidential treatment of CRI information and independence of ownership decisions from purchase decisions. Monitoring mechanisms and indicators have also been modified as a result of the CRI Taskforce's recommendations (see Section 6).

On behalf of the shareholding ministers, MSI now has a number of monitoring responsibilities with regard to CRIs. These include commenting on draft Statements of Core Intent; supporting the medium- to long-term strategic direction of CRIs; developing and communicating the government's ownership priorities and objectives for CRIs, and monitoring CRI performance and consulting with boards as issues arise (MSI, 2011a).

A key recommendation of the CRI Taskforce was the development of Key Performance Indicators (KPIs). MSI has developed a 'suite of indicators' for CRIs to use when producing their Statements of Core Intent, which describe their approach to improving performance over time (MSI, 2011a). These indicators focus on end-user collaboration, research collaboration, technology and knowledge transfer, science quality, and core financial indicators (ibid.). MSI will both fund and administer a survey developed in partnership with the CRIs and interested government agencies to measure a number of these indicators (ibid.).

**Table 1: Monitoring indicators for CRIs**
(MSI, 2011a)

| | Overarching goal | Indicators | Frequency |
|---|---|---|---|
| End-user collaboration indicators | As a generic operating principle in a Statement of Core Purpose, CRIs are expected to develop strong, long-term partnerships with industry, government and Māori, and to work with them to set research priorities that are well linked to the needs and potential of their end-users | Percentage and number of relevant funding partners and other end-users that have a high level of confidence in the CRI's ability to set research priorities, and the effectiveness of the collaboration or partnership (survey data). | Annually |
| | | Total dollar value of revenue (in cash and in-kind), and dollar value subcontracted out to other organisations from each 'source category' per annum from rolling five years (administrative data). | Quarterly |
| Research collaboration indicators | As a generic operating principle in a Statement of Core Purpose, CRIs are expected to develop collaborative relationships with other CRIs, universities and other research institutions within New Zealand and internationally to form the best teams to deliver the CRI's core purpose. | Percentage of relevant national and international research providers that have a high level of confidence in the CRI's ability to form the best teams to deliver on the CRI's outcomes (survey data). | Annually |
| | | Number and percentage of joint scientific peer-reviewed publications and IP outputs with other New Zealand or international research institutions per annum (administrative data). | Quarterly |

| | Overarching goal | Indicators | Frequency |
|---|---|---|---|
| Technology and knowledge transfer indicators | As a generic operating principle in a Statement of Core Purpose, CRIs are expected to transfer technology and knowledge from domestic and international sources to New Zealand industry, government and Māori. | Total number and percentage of licensing deals of CRI-derived IP (including technologies, products and services) with New Zealand and international partners per annum (administrative data). | Quarterly |
| | | Percentage of relevant end-users who have adopted knowledge and/or technology from CRIs (survey data). | Annually |
| | | Percentage change in the number of requests and enquiries for the CRI's publicly available collections (administrative data). | Quarterly |
| Science quality indicators | Pursuant to the CRI Act 1992, CRIs are expected to pursue excellence in all their activities. | Total number of international awards, invitations to participate on international committees, and editorial boards for the CRI's published papers, per annum. | Annually |
| | | Average number of citations per CRI published paper. | Quarterly |
| | | Proportion of published papers in the top 25 international journals relevant to the scope of the CRI (as outlined in the SCP) per annum. | Annually |
| Core financial indicators | CRIs are expected to focus on financial viability. | Projected cashflow – the measure of forward looking. | Quarterly |
| | | Operating margin – the profitability of the company dollar per dollar of revenue. | Quarterly |
| | | Profit per FTE – the ability of the company to generate a return from its staff. | Quarterly |
| | | Revenue growth – the measure of whether a company is growing revenue. | Quarterly |

# 6 The Crown Research Institute Taskforce

## 6.1 Purpose

The CRI Taskforce was initiated by the government in October 2009 to 'examine how CRIs can best deliver on the Government's economic priorities and respond to the needs of research users, particularly industry and business' (Mapp, 2010a). The Taskforce was to recommend changes to the setting under which CRIs operate, with a view to positioning them to deliver future benefits to New Zealand. The overarching goal was to enable each CRI to 'increase their effectiveness in delivering benefit to New Zealand, and in particular to assist in achieving a more innovative and higher-productivity economy' (MoRST, 2009).

## 6.2 Scope of the Taskforce

The CRI Taskforce was to provide advice on the following:

- Recommendations and assessment of any alternative or additional initiatives that could be taken to strengthen the CRI model, including the merits of reconfiguring the number and scope of CRIs.
- Guidelines for developing 'statements of core purpose' for each CRI, including how stakeholder views should be incorporated and how often such statements should be issued.
- Advice on how to improve the overall governance of CRIs including consideration of how to strengthen their boards.
- Guidelines for reviewing performance against statements of core purpose and other performance measures.
- Recommendations that will ensure CRIs partner with other research providers and with the private sector, with specific reference to:
    - relationships with universities and the alignment of staff incentives, career paths and the opportunity for staff interchange;
    - relationships with CoREs and the opportunity for staff interchange; and
    - relationships with the private sector and appropriate incentives for transferring knowledge.
- Assessment of the current method of measuring financial performance and viability, any views on alternative methods of ensuring financial performance and viability, and any suitable non-financial performance measures for individual CRIs.
- Principles for determining core funding levels for each CRI including how to achieve a balance between long-term capability needs while ensuring continued short-term dynamism.
- The impact of any changes to core funding to CRIs on wider RS&T (Research Science and Technology) funding mechanisms (e.g. whether core funding to CRIs leaves a critical mass for funding via contestable processes).
- Relationships with international research organisations and other international linkages.
- How any recommended changes to the CRI model fit within the wider RS&T system.
- Any necessary changes to the organisational form of the CRIs including changes to the Crown Research Institute Act (1992) or other legislation.
- An assessment of the timing for introducing change to the CRIs. (MoRST, 2009)

## 6.3 Composition of the Taskforce

The Taskforce comprised four external persons with both domestic and international experience; chief executives (or their delegates) from the Department of the Prime Minister and Cabinet, the Treasury and MoRST, and the chief executive of FRST. Further, the Prime Minister's Chief Science Advisor was to be kept informed of the Taskforce's progress and to contribute to the final recommendations. The Taskforce was also expected to seek input and expertise from a range of government agencies, sector groups and research organisations (MoRST, 2009).

The members of the Taskforce were:

- Neville Jordan (Chair)
- Dr Rod Carr
- John D. McKenzie
- Dr Ron Sandland
- Helen Anderson (MoRST)
- Murray Bain (FRST)
- Andrew Kibblewhite (Department of the Prime Minister and Cabinet)
- Struan Little (Treasury) (CRIT, 2010: 60–61)

## 6.4 Context of the Taskforce's Report

The Taskforce's review of the CRIs and its report were part of wider reforms within the science and innovation system, which when viewed collectively were to 'constitute the most significant reform to the science system in 20 years' (CEGIC, 2010: 1). Other initiatives included setting clearer priorities for the government's investments in RS&T; simplifying the overall science funding system; improving incentives for business-led research and development, and developing a large-scale research infrastructure investment strategy (ibid.).

## 6.5 Main Findings

In February 2010 the Taskforce delivered a comprehensive report entitled *How to Enhance the Value of New Zealand's Investment in Crown Research Institutes: Report of the Crown Research Institute Taskforce*. The main factors the Taskforce recognised as obstructing CRIs' performance under the existing system related to funding, ownership and government arrangements (CRIT, 2010: 7). In summary:

- It was not clear within the system whether a CRI's objective was to generate value for New Zealand or to create value for itself, as a company.
- Individual CRIs were thought to have become more concerned with producing outputs that would be seen in their statements of revenue and balance sheets, rather than on research that contributes to the wellbeing and prosperity of New Zealand.
- There was criticism that the multiple lines of accountability required of CRIs weakened their sense of purpose and direction.
- CRIs had become heavily dependent on competitive contracts of a short-term nature, compared to the timeframe in which science produces results. It was thought that this had made it difficult for CRIs to operate strategically.
- The existing funding and governance arrangements were thought to position natural partners such as universities and firms as competitors. (MoRST, 2010b)

## 6.6 Summary of the Taskforce's Recommendations

The Taskforce made 27 recommendations to the government and proposed a number of specific actions to address their concerns with the existing system. A major theme of its recommendations was to strengthen and improve the effectiveness of the linkages between CRIs and stakeholders (CRIT, 2010: 7). The Taskforce perceived these linkages to be essential in deriving economic and other benefits from CRI research. It did not recommend changing the number of CRIs, their ownership status or their employment arrangements (ibid.).

The recommendations focused on:

- Providing greater certainty of purpose for CRIs;
- Reducing contestability within the system and encouraging collaboration;
- Increased accountability for non-contestable funding;
- Improved governance of CRIs; and
- Greater collaboration between CRIs and the wider science and research system. (CRIT, 2010)

### A Providing a greater degree of certainty for CRIs in purpose and funding

The Taskforce identified that a greater degree of certainty within the system would 'enable CRIs to retain and develop capability, manage risk, and operate within a longer time frame to deliver excellent and relevant research' (CRIT, 2010: 8). With a view to achieving greater certainty, the Taskforce recommended the government clarify in a Statement of Core Purpose the exact role of each CRI in delivering benefits to New Zealand, recognising the distinct role of each CRI relative to other research organisations such as universities (ibid.) (see Section 4.2). The Taskforce believed the government 'must be more explicit about what it wants each CRI to achieve and must fund the CRIs accordingly, so that they can deliver more for the national benefit ... The measure of a CRI's success should be the positive impact it has on New Zealand — be that economic, social or environmental — not the commercial return a CRI has been able to achieve' (ibid.). Government funding should enable each CRI to achieve its individual core purpose, with a greater proportion of funding to be allocated directly and on a long-term basis to reduce the inherent uncertainty around contestable and 'at risk' funding. It was recommended that each CRI develop a Statement of Corporate Intent setting out how it would meet its core purpose over the next five years and what shareholders would receive for their investment (ibid.: 11). The Taskforce felt that under the existing system CRIs faced unnecessary levels of compliance with an excessive number of contracts and that core purpose funding should be consolidated into a single contract, to be negotiated as part of a rolling five-year research strategy (ibid.: 8).

### B Reducing contestability within the system and encouraging collaboration

The Taskforce recommended the system place less emphasis on contestable processes as a way to drive improved performance, as recommended by the 2007 OECD review into New Zealand's innovation system. It was accepted that contestable, open access to funding needed to remain an important element of Vote Research, Science and Technology funding, as this form of funding is 'vital to generate competing ideas and new entrants' (CRIT, 2010: 8). However, this should be on a smaller scale and the proportion of contestable funding should be reduced. To provide an incentive to collaborate in new multi-disciplinary areas of research, the Taskforce recommended a portion of Vote RS&T funding should be set aside for major national collaborative challenges (ibid.). Anthony Scott, Chief Executive of Science NZ, applauds this move to reduce contestability, seeing it as a way to enhance the efficiency of CRIs and make better use of resources: '[Under past structures] money was rarely shifted, but shifted often enough to worry even the most dedicated and excellent science team that when their contract wound down, they could not have reasonable security of employment ... The New Zealand taxpayer is now getting better use of the science research time and the management costs' (Anthony Scott, personal communication, 25 October 2011).

The Taskforce did not recommend immediate changes to the balance and number of CRIs 'as there is no strong case at present for mergers or realignment. CRIs should continue to explore opportunities for realigning their capability where it will benefit New Zealand, and improve their efficiency by combining appropriate scientific and administrative functions' (CRIT, 2010: 13).

### C Increasing accountability for non-contestable funding

In return for reducing the proportion of contestable funding and the government providing upfront surety of funding, the Taskforce stated that CRIs needed to be more accountable for delivering value to New Zealand. Rather than allocating funding against promises of activity, more emphasis should be placed on holding organisations accountable to deliver benefits as defined by their Statement of Core Purpose (CRIT, 2010: 8). This includes increased board accountability; measures of scientific excellence to be assured through the greater use of independent expert science panels; and making a percentage of CRI core funding 'at risk', subject to performance against agreed milestones, if boards fail to manage appropriately (ibid.: 8–9).

To increase accountability, the Taskforce further recommended measuring CRIs' performance against more balanced and comprehensive indicators. Specifically, these performance indicators should include:

- Technology transfer as a core and measurable responsibility of all CRIs. This is to ensure that the benefits of CRIs' ideas contribute to the wealth and well-being of all New Zealand, rather than just that of the CRI balance sheet;
- Measures that ensure CRIs remain financially viable and accountable for all government funding;
- Tailoring the approach to setting financial targets to reflect the need to be financially viable;
- Expectations and targets around collaboration with international and national components of the research and innovation system. (ibid.: 9)

### D Improving governance of CRIs

The Taskforce made a number of recommendations concerning the governance of CRIs, including changes to the way the government appoints their boards and the accountability attached to these boards. The Taskforce recommended that the government combine its long-term investment, ownership and policy responsibilities into one entity responsible for managing contestable funds and funding infrastructure. This would address the 'currently diffuse governance, investment and monitoring arrangements facing CRIs' (CRIT, 2010: 9).

### E Encouraging greater collaboration between CRIs and the wider science and research system

The Taskforce recommended improved collaboration between CRIs and New Zealand businesses so as to develop research talent and the application of knowledge in the broader system. Further, it recommended the government identify technology transfer as a core responsibility of all CRIs and 'require CRIs to develop, invest in and manage intellectual property with the intent of moving that intellectual property from their balance sheet into the private sector as soon as possible' (CRIT, 2010: 12).

A wider view of the research and science system was also recommended, given that CRIs are only one part of the system, alongside private research organisations and universities. The Taskforce recommended a 'national research infrastructure strategy to rationalise and ensure open access to major research infrastructure, where it is clear that national economies of scale apply' (ibid.: 9).

## 6.7 The Government's Response

In March 2010, Treasury and MoRST came back with their response to the Taskforce's recommendations. The government endorsed the overall intent of the recommendations and all but two were subsequently incorporated into MoRST's implementation plan (MoRST, 2010c: 1).[2]

From the Taskforce's recommendations, the government expected to see:

- Clarity of purpose: Through Statements of Core Purpose, CRIs will be required to put technology transfer and value creation for their public and private sector end-users firmly ahead of themselves.
- Alignment of government signals: Positioning government as a true ownership investor will create consistency in signals. It will compel CRIs to focus on their customers and end-users. It will increase the attention CRIs pay to obtaining a return to New Zealand from their operating funding, in addition to securing a return on the Crown's equity. It will remove funding uncertainty as an excuse for under-performance.
- A shift in the point of tension: More secure CRI core funding will reduce the time scientists spend on preparing funding applications. It should increase dynamism by allowing CRIs to move resources to those projects that are most likely to deliver results. The key point of tension in CRIs will accordingly shift from securing funding to delivering value for their end users.
- Increased accountability: The quid pro quo for more CRI core funding will be increased accountability of CRI Boards for science quality and delivery of value to New Zealand, through independent science panels, improved performance monitoring and independent five-yearly organisational reviews.
- Increased collaboration: Funding changes will place a far greater emphasis on collaboration between CRIs, other research providers (e.g. universities), industry and public sector partners to generate benefit to New Zealand.
- On-going use of competition: The competitive tensions in the system will still remain. Around two thirds of CRI funding will still be sourced through contestable and commercial means. (CEGIC, 2010: 4–5)

With a view to increasing collaboration and reducing contestability within the system, the government identified the need for 'a significant behavioural shift in the CRIs, in particular a reduction of the use of competition to drive performance, and a shift of responsibility to the CRIs' boards to lead and be held accountable for their results' (Mapp, 2010b).

The recommendation the government viewed as 'most contentious', which was not subsequently incorporated into MoRST's implementation plan, was Recommendation 25: that the government align the funding, ownership and policy functions for CRIs into a single entity, which could also manage contestable and infrastructure funding, and be responsible for developing policy and strategy for the whole RS&T system (CEGIC, 2010: 28; CRIT, 2010: 13). While it supported reducing the fragmentation in science policy, the government's response stated: 'Ministers may have concerns about the ability of agencies to effectively manage this change' (CEGIC, 2010: 28). Instead, Treasury recommended: 'Ministers [should] consider whether contestable funding should remain a separate agency. This would ensure the contestable funding body stayed independent from CRIs, providing a more level playing field across public and private research organisations, and some checks and balances on the combined RS&T entity' (ibid.). The creation of MSI partially fulfils this recommendation, given the ministry's mandate to develop and implement science policy, make investments, and monitor the CRIs.

The government also expressed concern about some of the Taskforce recommendations relating to technology transfer and infrastructure. There were concerns that if the government actively discouraged CRIs from investing in commercialisation this could in some instances limit legitimate options for transferring knowledge (ibid.: 26). While the government supported the development of a strategy to identify research assets with potential use across several research organisations, concern was also expressed as to the cost of implementing any new infrastructure proposals that could arise from such a strategy: 'We think it is unlikely that CRI dividends will be sufficient to cover the cost of new infrastructure proposals. In the absence of new money, significant prioritisation will be needed to fund new infrastructure' (ibid.).

2 The two that were not incorporated into MoRST's implementaion plan were Recommendations 21 and 25. With respect to Recommendation 21, which pertained to financial returns, the response was that ministers would discuss this with each CRI. Recommendation 25 is discussed below.

## 6.8 Implementation of the Taskforce's Recommendations

In June 2010, MoRST released an implementation plan to bring into effect the recommendations that had government support. The Taskforce's recommendations were divided into seven work streams:

- The 'Statement of Core Purpose' workstream to develop clear, explicit and enduring strategic roles for each CRI.
- The 'Statement of Core Intent' workstream to develop government expectations and provide guidelines to assist each CRI in developing its Statement of Corporate Intent and Key Performance Indicators and Panels (Science and End User).
- A 'Funding' workstream to establish levels of core purpose funding for each CRI, and to describe how other funding mechanisms (contestable and system-wide funding) would operate.
- An 'Infrastructure' workstream to develop a strategy for investing in large scale research and infrastructure and describe how other existing major research assets could be more efficiently managed.
- The 'CRI Boards' workstream to provide advice on the appropriate skills and expertise required on boards, and to describe how performance of the board could be managed.
- A 'Government Procurement' workstream to provide advice to Cabinet on improvements to the government's procurement process in the RS&T sector.
- The 'Legislation' workstream to provide advice on any necessary legislative changes to support the new arrangements. (MoRST, 2010d)

MoRST originally developed an implementation governance structure to reflect the need for MoRST, FRST, the Treasury's Crown Ownership Monitoring Unit (COMU), the CRIs and other government agencies to work together to produce effective outcomes (MoRST, 2010c: 2). However, major changes to the wider science system have led to this structure being updated. The most recent implementation plan, released in December 2010, took into account:

- The merging of MoRST and FRST into MSI;
- The completion of three workstreams and reconfiguration of the remaining workstreams into an integrated work programme; and
- The establishment of a dedicated project team to undertake the work programme. (MoRST, 2010c: 1)

MoRST identified that, in addition to this implementation programme, CRIs have needed to undertake their own work to develop and manage the transition to new practices arising from the Taskforce's recommendations (ibid.: 2). Further, those within the CRI sector, the wider science and government sector, and end users will have a 'reality check' function in the implementation, ensuring the new policies and measures will work in practice before they are finalised (ibid.: 3).

The workstreams are all working towards a 'Pathway to 2012', described as a 'Science and Innovation System that is integrated, responsive and collaborative, and supported by a simple and transparent funding system' (MoRST, 2010d). It was hoped that implementation would be complete in time to allow CRIs to operate under new settings in the 2011/2012 financial year (MoRST, 2010c: 2). Further, it was envisaged that by 2012:

- CRIs will be responsive to end-users and stakeholders;
- CRIs will be agile and innovative, collaborating to ensure New Zealand has the best teams working on New Zealand's big science problems;
- CRIs will focus on New Zealand rather than the institution's bottom line;
- New Zealand's CRIs will be recognised both nationally and internationally as experts at the forefront of their fields;
- CRIs will be proactively connecting knowledge and technology for the benefit of New Zealand, and
- There will be evidence of performance improving across the whole organisation. (MoRST, 2010d)

It is too early in 2012 for this assessment to be made, but the Institute will be following the progression of this vision.

# 7 Scope for Future Improvement to the CRIs

This working paper has documented the history and current structure of New Zealand's CRIs. The following section identifies the Institute's remaining questions and concerns around the CRIs, and the scope for further changes in the future.

1. **A key focus of the CRI Taskforce report was improving collaboration among CRIs and the wider science system, particularly with universities and business. How can the system encourage and incentivise real and effective collaboration in light of the reduction to contestable funding and the increase in core funding?**

Core funding for CRIs was established in 2011, consolidating CRI capability funding and some CRI-held contracts in areas such as the biological industries, environment and hazards, and infrastructure (Science Media Centre, 2011). This should allow more time and flexibility for work on nationally important programmes and reduce contestability within the system – a key recommendation of the CRI Taskforce.

While it is too early to assess the results of this change, there is a risk that with the increase in core funding CRIs will be less incentivised to collaborate with other organisations. Kate Kilkenny, CEO of the Independent Research Association of New Zealand, has expressed a similar concern, stating: 'If the funding systems are to be less contestable in favour of more core funding to CRIs, then it is essential that CRIs have clear consistent direction for collaboration behaviours and the use of core funding to support it' (Kilkenny, 2010).

Anthony Scott, Chief Executive of Science New Zealand, points out that the level of government funding (be it core funding or capability funding) has declined over the past 20 years relative to revenue gained by CRIs bidding for and winning commercial contracts within their market. This suggests CRIs have been collaborating effectively and are seen as well-integrated players in the wider system: 'The test of market connectedness of any entity reliant upon non-subsidised endeavour is how it both wins new business and gains repeat business. In that regard, CRIs clearly have a high level of stakeholder confidence. Undoubtedly, however, as the Taskforce and CRIs recognise, CRIs can do more' (Anthony Scott, personal communication, 25 October 2011).

In 2010, Statistics New Zealand and MSI consulted with businesses for the first time on business engagement with universities and CRIs concerning their R&D needs (Statistics NZ, 2010: 39). Of the businesses that reported expenditure in the area of R&D, 29% noted that they had engaged with CRIs or universities in New Zealand about their R&D needs over the past two years. This was most commonly in the form of professional contact between staff. The survey found 65% of respondents had not engaged with CRIs or universities. When asked why this was, the most common reason given was that CRI or university expertise was not needed. Other reasons included: not being aware of how to make contact with CRIs or universities; CRIs' or universities' costs being too high; CRIs or universities not having the expertise required, and contractual difficulties (ibid.: 40). Further reporting of this kind will provide a useful assessment of the outcomes of engagement and collaboration, and a measure of whether or not the proposed increase in collaboration is fruitful. It is to be hoped that MSI, which monitors the CRIs, will also look closely at how well they collaborate with other research organisations.

### 2. What will the increase in core funding and resultant increase in internal decision-making mean for the funding of research within CRIs and for transparency in the system?

The increase in core funding will allow CRIs greater decision-making power in terms of what projects within a CRI receive funding. Essentially, greater trust is being placed in individual CRIs to determine the best use of funding in the long term. However, this new model of funding could lead to a lack of transparency in decision-making around research. The boards and management of CRIs may have the ability to determine which of their projects receive funding, and less accountability may surround these decisions; there is a risk that CRIs could become the 'gatekeepers' for research funding in core areas (Kilkenny, 2010). While core funding provides CRIs with greater scope for long-term thinking and enables them to determine where funding can be best spent, mechanisms need to be put in place to ensure decision-makers are held accountable. A set of transparent performance indicators, and reviews by both the science community and stakeholders, have been built into the new accountability and reporting regime to ensure robust decision-making. For example, each CRI has a science engagement panel and a stakeholder engagement panel which will report to the board and, through the board, to the shareholding ministers (Anthony Scott, personal communication, 25 October 2011). Further, all stakeholders will be consulted annually on future research (ibid.).

### 3. Within the new accountability framework, a critical issue is the management and leadership within the CRIs. How can CRIs be managed collectively, as well as individually, to enable collaboration and cooperation for work programmes that benefit New Zealand?

CRIs are managed and led largely as individual entities by individual boards, which are appointed by the shareholding ministers and are ultimately responsible for the management of the CRIs' business operations. It is questionable whether this enables sufficient collective leadership and management of the eight CRIs.

Science New Zealand is an incorporated society that is run by a board consisting of the chief executives of all eight CRIs and acts like a private sector industry group. The society's rules describe its purpose as 'to foster appreciation of the value of science and technology in creating economic, environmental and social wealth for New Zealand' (Anthony Scott, personal communication, 25 October 2011). 'Ways in which this is done include providing examples of new science, new thinking and new value from the Crown Research Institutes, and engaging with the public and others' (ibid.) Further, Science New Zealand provides a vehicle for cooperation and coordination among and between the CRIs. This includes providing policy, organisational, relationship and advocacy support for CRIs in their collective championing of the economic transformation of New Zealand (ibid.).

Beyond the work of Science New Zealand, it will be important for the CRI monitoring unit within MSI to monitor the performance of CRIs as a whole and not just individually, with collaboration being a key performance indicator. MSI will also need to be active in encouraging a sense of national leadership across all CRIs. The Taskforce was clear in their view that the number of CRIs should remain at eight and did not suggest further mergers. However, a model promoting greater overarching leadership could foster a sense of unity and collaboration, without going as far as merging CRIs.

# 8 Conclusion

Since their inception in 1992, CRIs have become key institutions in New Zealand's science system. Changes to the structure and number of CRIs, as well as changes in governance and monitoring procedures, have resulted from pressure both from within the CRIs themselves and from the wider government system. The 2010 CRI Taskforce presented a number of recommendations and proposed a new direction for CRIs, with an emphasis on enhancing the value of New Zealand's investment in the Institutes through mechanisms such as greater certainty of funding, reduced contestability within the system, and greater collaboration with other stakeholders and end-users. With the implementation of these recommendations, most of which have been accepted by the government, the CRIs' role in the government-funded science system will become even stronger.

The new model of core funding for CRIs and reduced contestability means it is important that effective collaboration is both incentivised and monitored. With increased internal decision-making, checks and balances need to be in place to ensure CRIs are held accountable for their funding decisions. The Institute identifies strong, central leadership as critical to the success of CRIs in this new era. While MSI has the mandate to lead the CRIs through the current period of transition, there is also scope for organisations such as Science New Zealand to take on a greater central leadership role to improve linkages and increase collaboration between the eight CRIs.

While the formation of MSI and the changes to the science system mean that it is currently in a state of flux, once the overall purpose and specific goals of the system have been refined the CRIs, with renewed focus and a clearer sense of purpose, will be in a strong position to contribute to the future success of the system.

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