

[MoRST Strategy 2008-2011](#)

Science & Technology Transforming New Zealanders' Lives

Science and technology cover a vast territory ranging from mathematics and engineering through to medicine, the social sciences and the humanities. The successful nations of this century will be those with the ability to develop and exploit new ideas. Science and technology will be primary sources of those ideas.

Some of the ideas and opportunities that emerge will be unique to New Zealand. This means we cannot simply rely on discoveries and developments made overseas; we must develop the science and technology capability that fits our particular demands.

Part of this development also involves recognising that we produce a small fraction of the world's research and development and if we do not build our indigenous science and technology capability we will not be able to absorb and benefit from ideas produced overseas.

Given the significant contribution science and technology make to developing and exploiting new ideas, they will be key drivers of economic transformation, particularly in growing internationally competitive firms. Science and technology, however, are not just about economic performance. They are a core part of New Zealand's national identity; we see ourselves as innovators and quick to apply new technology. The research we do in New Zealand also significantly contributes to improving the social and health outcomes for New Zealand families.

What do we do?

We provide high-quality policy advice to our Minister and manage the government's investment in research, science and technology (RS&T).

Our policy advice focuses primarily on the science system and how it operates within the wider innovation system to deliver benefits for New Zealand.

Managing the Government's \$725 million (total Vote RS&T) operating investment in research, science and technology means that we advise the Minister on priorities for investment, ensure there are strong systems in place so that the money is spent wisely, and then evaluate the results of the investment.

How do we do this?

We provide focus, direction and co-ordination in the area where government and science intersect.

New Zealand's RS&T system is split into organisations that purchase research, those that carry out research and those that use it. These organisations are spread across government, higher education and the private sector.

We oversee the RS&T system to ensure it is delivering the results that government seeks from it. We also ensure the ideas and knowledge produced inform government decisions and policies.

We work closely with the other agencies involved in creating an innovative and productive New Zealand. We also contribute significantly to the Government's social, environmental and health goals.

What is our focus?

Our focus is primarily, but not exclusively, on science and how the knowledge generated by it can be applied to benefit New Zealand.

Research, science and technology extend across a vast area and there are other government agencies that have an interest in this area. Our unique role is that we focus on the creation of new scientific knowledge, while recognising that this means we also have an interest in associated areas of research, technology and engineering.

Our core business

We provide advice in two main areas: policy and scientific/technical

Policy advice

Our advice covers the opportunities and issues that affect how New Zealand manages the delivery of RS&T. This advice ensures that RS&T delivers maximum benefit to New Zealand's economy, environment and communities. We provide advice on areas such as the structure of New Zealand's research system and investment mechanisms, and the contribution of science to the innovation system and New Zealand's economic growth.

Managing the government's RS&T investment

The government finances about half of New Zealand's investment in RS&T and owns significant science infrastructure - notably the Crown research institutes (CRIs) - and in some cases government departments also carry out science and research activity. MoRST advises the Government on the opportunities for investment in RS&T to deliver on the Government's priorities, and directs that investment. We also advise the government on how to ensure its research, science and technology investment is connected into other parts of the economy and society.

Contract management

MoRST does not decide what specific research projects are funded. Rather, we provide direction to, and contract, the funding and investment agencies (FIAs) on the areas in which the money should be invested. The actual investment in individual programmes is administered primarily by the Foundation for Research, Science and Technology (FRST), the Health Research Council (HRC), and the Marsden Fund Council.

Evaluation

MoRST monitors and evaluates the results of the government's RS&T investment to ensure it is delivering value and also to help inform future investment decisions. For example, we are currently looking at government investment in linkages with overseas science organisations.

Working with the business sector

MoRST is actively building networks between research providers and the business sector. For example, MoRST and Business NZ jointly established the Capitalising on Research and Development Action Group (CRAG), which works at the interface between research and business. A particular focus is the new R&D Tax Credit.

International

As the majority of the world's R&D takes place outside of New Zealand, international RS&T links are crucial. MoRST facilitates international contacts between researchers and research institutions to develop collaborative programmes, and raises awareness of New Zealand's science and technology capabilities.

For example, we have recently negotiated a science and technology (S&T) co-operation agreement with the European Union that strengthens New Zealand access to European S&T opportunities.

Engaging in cross-government collaborative work

MoRST provides the RS&T perspective across government. Because RS&T plays an important role across a number of areas of government work, such as sustainability, education, the environment, health, and economic and social development, MoRST has a number of links and partnerships across government.

For example, in the field of economic development, MoRST chairs the Innovation Working Group (IWG), which brings together officials from 13 government agencies. The IWG's role is to identify and develop policy proposals to enhance the impact of New Zealand's innovation system.

Scientific and technical advice

We also provide scientific advice to government about current and emerging issues. This includes maintaining an overview of emerging science developments that are important for New Zealand.

For example, we operate a Futurewatch programme that scans scientific trends and issues from around the world and considers potential impacts and opportunities that are specific to New Zealand. We also advise government about New Zealand's needs for large-scale research infrastructure, for example the high-speed Kiwi Advanced Research and Education Network (KAREN).

Strategic Priority 1: Sharpening the agenda for science

The New Zealand RS&T Agenda (the Agenda) charts a long-term direction for RS&T in New Zealand. This agenda sets the scene for all the key actions in this strategic priority.

The published Agenda summarises the series of science roadmaps that guide New Zealand's science and research activity. The roadmaps provide broad context and high-level directions for specific areas of science and are now influencing funding and investment agencies' decisions. Roadmaps in the areas of energy, nanotechnology, biotechnology and environmental research have been completed. A food research roadmap is nearing completion and a sustainable technologies roadmap is about to start. The Agenda signals future work on a health and advanced materials roadmap.

The Agenda also indicates where new investment is likely to be directed when it becomes available. Six areas are highlighted where additional or strengthened RS&T investment can potentially contribute to important national needs or opportunities. The work is focusing on: high-tech platforms, future foods, environmental sensing, cities, innovation in health delivery, and renewable energy. Initial work will involve developing investment plans for renewable energy and high-technology platforms.

In accelerating these areas of activity we will be working across government and business to ensure these areas reflect our distinctive New Zealand strengths, culture and values. This work includes the Vision Mātauranga policy framework, established to unlock the innovation potential of Māori knowledge, resources and people.

RS&T is multifaceted. Alongside government taking a more active role in signalling those areas where science needs to make critical contributions, the importance of untargeted research is not overlooked. We will continue to support basic and blue skies research to provide knowledge to support unanticipated needs.

We also ensure, through our Futurewatch scanning activities, that we are alert to emerging developments in science and technology and their implications for New Zealand.

Strategic Priority 2: Engaging New Zealanders with science and technology

Science and technology are fundamental to transforming our economy and improving our social, environmental and physical well-being. Science and technology play an important role in our national identity and are a core part of what makes this country a great place to live. However:

- we have almost no specialised science media in New Zealand
- in schools, science is often taught as a subject for only the brightest or the 'best' rather than a topic that is useful for all New Zealanders
- much of the research we do is not freely available or is presented in a way that is not easy to understand, and
- MoRST research has shown that while most New Zealanders value science, the understanding of the value is not deep.

So why spend time and money on enhancing how New Zealanders engage with science? Science cannot exist separately from society. New Zealand will face issues that science proposes, for example genetic modification, or that science may offer solutions to, such as global warming. Some of these issues will require value judgements that lie outside of the realm of science.

MoRST is therefore seeking to lift the capability of New Zealanders to engage in the debates on the ideas raised by science and technology.

We will continue to take the lead where there is a clear need for co-ordinated science and technology communications, and in providing key communications infrastructure at a national level. We will look at how the Digital Strategy can support the sharing of scientific information.

School students and their families will continue to be a focus for MoRST. We will achieve this by linking teachers and students to contemporary New Zealand research, and presenting the material in a way that directly links it to the curriculum.

We will also implement a science and technology media centre. This will help overcome some of the obstacles to reporting science, particularly New Zealand science, to New Zealanders through the media.

Strategic Priority 3: Improving business performance through research and development

The Government's goal of economic transformation for New Zealand will ultimately rely on the ability of the business sector to compete in global markets. To accomplish this, New Zealand businesses must increase their level of innovation, and offer a point of difference.

RS&T will be central to achieving economic transformation. Whether or not we are successful in improving business performance through research and development will depend on the uptake and use of new ideas and technology emanating from local research organisations and from overseas.

The recent OECD review of New Zealand's innovation system noted that most of New Zealand's microeconomic and regulatory conditions are conducive to innovation. But given our size and location, those conditions need to be excellent rather than merely good.

By any measure, New Zealand business investment in R&D is low. The R&D Tax Credit starting in 2008 is a major incentive to encourage this. To maximise its impact, MoRST has established a five-year evaluation programme to monitor its uptake as it rolls out, and will identify any barriers to its uptake. MoRST will use the introduction of the Tax Credit as an opportunity to communicate the benefits for businesses from investing in R&D, and the range of support mechanisms for this.

As businesses' R&D levels increase, we will continue to work on improving the collaboration among universities, research institutions and business. Effective linkages in these areas will support private sector innovation. Evaluating the effectiveness of existing development and commercialisation schemes will influence future policy direction.

MoRST will contribute to the Government's economic development priorities through aligning the appropriate areas of Vote RS&T to the Areas of Focus as they are implemented. The new-look Technology New Zealand (TechNZ) grants will be the first to be targeted.

The work of the Capitalising on Research and Development Action Group (CRAG) will continue. CRAG offers a business perspective on major science and technology issues impacting on business innovation and on workplace participation in R&D.

Strategic Priority 4:- Creating a world-class science system for New Zealand

New Zealand needs a world-class science system to realise the potential of science and technology in transforming New Zealanders' lives. This means:

- world-class public and private research organisations that are globally connected and resourced to create, maintain and use capabilities New Zealand needs to succeed
- providing and developing the skills, infrastructure and equipment required to carry out scientific research and technology development
- effective planning and prioritising of investment to align with Government's goals
- high-performing, fit-for-purpose government entities that run effective processes to prioritise, allocate and monitor public money for science and technology, and
- research organisations are appropriately connected to global centres of science excellence.

Demands are being placed on our current system to better meet the demands of the future, and contribute to economic, social and environmental goals for New Zealand. Our science system needs to be ready to respond to these challenges if we are to compete globally and attract the high-quality researchers we need to create the new knowledge, science and technology that will transform New Zealanders' lives for the better.

MoRST is therefore seeking to create an investment environment where entities that invest government science funds are suited for their purpose. We will review and update the role and function of these entities to deliver to our future innovation needs.

MoRST will take the lead in ensuring Vote RS&T investment is effectively planned and prioritised to meet Government's goals and maintain key science capabilities. We will implement the RS&T Agenda through a multi-year investment strategy and ensure that the right incentives are in place to encourage strategic international research collaborations.

Our public research organisations are facing increasing demands to do more and deliver more value to New Zealand. We will create an environment for CRIs to lead transformation in their sectors while also seeking a high degree of co-operation among all research providers. Where friction exists, we will seek to reduce it to maximise the potential for greater collaborative and co-operative efforts.

Attention will also be directed towards how best to internationalise our innovation system.

Strategic framework

Key actions (3-5 years)

Strategic Priority 1: Sharpening the agenda for science

1.1 Focus new RS&T effort towards areas identified in the New Zealand RS&T Agenda as having transformational potential

1.2 Provide science roadmaps in those areas that require stronger co-ordination and communication of government objectives

1.3 Connect areas of priority government activity, particularly the Government's sustainability objectives, with the appropriate science underpinning

1.4 Scan the global environment for emerging science and technologies that will have implications for New Zealand

Strategic Priority 2: Engaging New Zealanders with science and technology

2.1 Increase the linkages between school students and the research going on in New Zealand

2.2 Develop national-level communications infrastructure to improve the breadth and depth of media coverage of New Zealand RS&T

2.3 Increase the availability and accessibility of research findings to the public

Strategic Priority 3: Improving business performance through research and development

3.1 Maximise the impact of the R&D Tax Credit

3.2 Implement government economic development priorities

3.3 Engage with business to support the application of research for business benefit

3.4 Increase the domestic and global flow of technology and knowledge between CRIs, universities and business

Strategic Priority 4: Creating a world-class science system for New Zealand

4.1 Update the role of RS&T funding agencies consistent with the OECD's review of New Zealand's innovation system

4.2 Implement the RS&T Agenda through a multi-year investment strategy

4.3 Create an environment for CRIs to lead transformation in their sectors

4.4 Align investment and purpose of universities, CRIs and research associations

4.5 Enable our research sector to effectively collaborate internationally and respond to the changing international innovation environment

Annual components for 2008-2009

- Co-ordinate Transformational RS&T implementation with other government agencies, with a particular emphasis on new investment plans for renewable energy and high-technology platforms

- Complete the food research roadmap
- Monitor the effectiveness of biotechnology regulation as part of the continuing implementation of the Government's Biotechnology Strategy
- Develop directions for eResearch and position the advanced network for the future
- Assist with integrating the climate research institute into policy processes across central and local government
- Integrate Futurewatch scanning activities with policy development across government, with a focus on the sustainability area
- Expand the Science Learning Hub to include Year 7 and 8 students
- Implement a science media centre that will start to build the relationship between New Zealand scientists and the New Zealand media
- Develop options to support the implementation of the Digital Strategy
- Implement a five-year R&D Tax Credit evaluation that will monitor the uptake of the Tax Credit
- Communicate the government's support programmes and the R&D Tax Credit to businesses
- Co-ordinate the Vote RS&T contribution to the Government's Areas of Focus that will be implemented during 2008/2009
- Support the Capitalising on Research and Development Action Group (CRAG) to pilot sector-specific approaches to public research organisation–firm linkages
- Through the Innovation Working Group actively support FRST, New Zealand Trade and Enterprise and the Tertiary Education Commission (TEC) to pilot joint client management practices and closer working relations through the wider trilateral project
- Evaluate the scope of the Pre-Seed Accelerator Fund (PSAF) as part of the Innovation Working Group's work programme on commercialisation of publicly funded research
- Assess the future role and functions of the Foundation for Research, Science and Technology as part of a review of the Foundation for Research, Science and Technology Act (1990)
- With the Ministry of Health, review the role and function of the Health Research Council
- Extend the Vote RS&T Investment Strategy to incorporate large-scale research infrastructure investments
- Implement the Advanced Skills Action Plan
- With MED and the Crown Company Monitoring Advisory Unit (CCMAU), identify options for improving CRIs' ability to deliver value to their sectors
- With the Ministry of Education (MoE) and TEC, explore options to improve alignment of complementary programmes administered by the RS&T funding agencies, MoE and TEC
- Evaluate the effectiveness of global collaborative research initiatives funded through the International Investment Opportunities Fund (IIOF) and the International Science and Technology (ISAT) Linkages Fund

Government RS&T investment

The Government has committed \$205.4 million of new funding through the RS&T portfolio (Vote RS&T) over the next four years. Also, \$16.6 million was reallocated over the same period for new activity. Including the Budget decisions, the Government's annual operating investment through the RS&T portfolio for 2008/2009 is \$725.7 million. All figures are GST exclusive.

RS&T INVESTMENT (VOTE RS&T AND VOTE EDUCATION)

